Draft
Environmental Impact Report

SCH# 2022080056

Volume 3

Appendices J - M

MALIBU VINEYARDS INDUSTRIAL PARKWAY PROJECT

by Malibu Vineyards, LP

(PP21116)

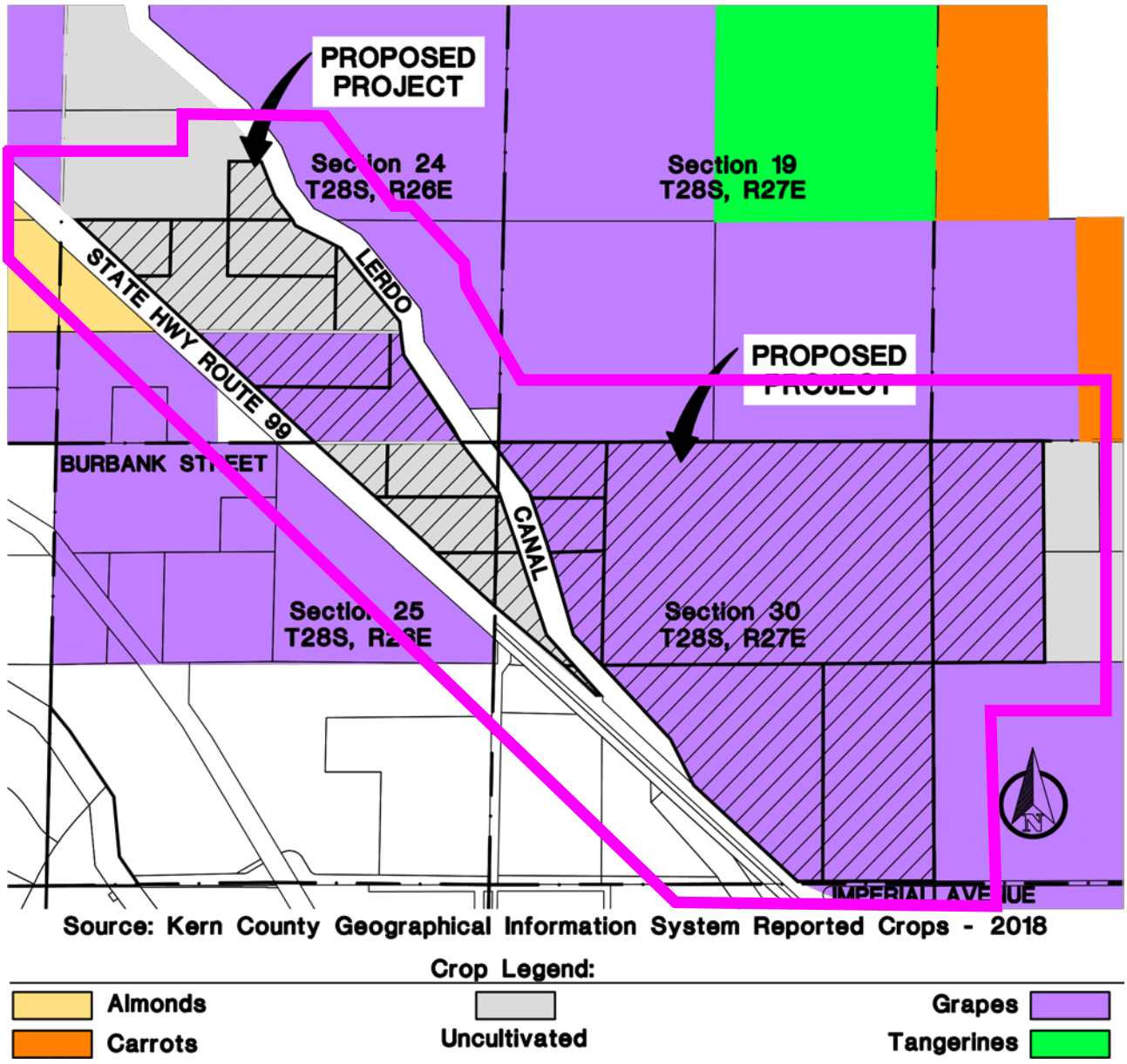
Adoption of Specific Plan
General Plan Amendment No. 9, Map No. 80
General Plan Amendment No. 23, Map No. 81
Zone Classification Change No. 13, Map No. 80
Zone Classification Change No. 92, Map No. 81
Precise Development Plan No. 2, Map No. 80
Precise Development Plan No. 74, Map No. 81
Precise Development Plan No. 75, Map No. 81

Kern County
Planning and Natural Resources Department
Bakersfield, CA

July 2024

APPENDIX J

Figures



PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Zone of Influence Boundary Map

Figure J-1

TABLE 8
FINAL LESA SCORESHEET

Factor Name	Factor Rating (0-100 Points)	Factor Weighting (Total=1.0)	Weighted Factor Rating
LAND EVALUATION			
Land Capability Classification	85.90	0.50	42.95
Storie Index Rating	-	-	-
SITE ASSESSMENT			
Project Size	100.00	0.15	15.00
Water Resource Availability	100.00	0.15	15.00
Surrounding Agricultural Lands	90.00	0.15	13.50
Protected Resource Lands	20.00	0.05	1.00
		Total LESA Score	87.45

TABLE 9
California LESA Model Scoring Thresholds

Total LESA Score	Scoring Decision
0 to 39 points	not considered significant
40 to 59 points	considered significant ONLY if LE AND SA subscore are each greater than or equal to 20 points
60 to 79 points	considered significant UNLESS either LE OR SA subscore is LESS than 20 points
80 to 100 points	considered significant

CALIFORNIA AGRICULTURAL

LAND EVALUATION AND SITE ASSESSMENT MODEL

Instruction Manual



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LAND EVALUATION AND SITE ASSESSMENT MODEL

Instruction Manual
1997

Department of Conservation
Office of Land Conservation

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EXECUTIVE SUMMARY

Land Evaluation and Site Assessment (LESA) is a term used to define an approach for rating the relative quality of land resources based upon specific measurable features. The formulation of a California Agricultural LESA Model is the result of Senate Bill 850 (Chapter 812 /1993), which charges the Resources Agency, in consultation with the Governor's Office of Planning and Research, with developing an amendment to Appendix G of the California Environmental Quality Act (CEQA) Guidelines concerning agricultural lands. Such an amendment is intended "to provide lead agencies with an optional methodology to ensure that significant effects on the environment of agricultural land conversions are quantitatively and consistently considered in the environmental review process" (Public Resources Code Section 21095).

The California Agricultural LESA Model is composed of six different factors. Two Land Evaluation factors are based upon measures of soil resource quality. Four Site Assessment factors provide measures of a given project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. For a given project, each of these factors is separately rated on a 100 point scale. The factors are then weighted relative to one another and combined, resulting in a single numeric score for a given project, with a maximum attainable score of 100 points. It is this project score that becomes the basis for making a determination of a project's potential significance, based upon a range of established scoring thresholds. This Manual provides detailed instructions on how to utilize the California LESA Model, and includes worksheets for applying the Model to specific projects.

INTRODUCTION

Defining the LESA System

The Land Evaluation and Site Assessment (LESA) system is a point-based approach that is generally used for rating the relative value of agricultural land resources. In basic terms, a given LESA model is created by defining and measuring two separate sets of factors. The first set, Land Evaluation, includes factors that measure the inherent soil-based qualities of land as they relate to agricultural suitability. The second set, Site Assessment, includes factors that are intended to measure social, economic, and geographic attributes that also contribute to the overall value of agricultural land. While this dual rating approach is common to all LESA models, the individual land evaluation and site assessment factors that are ultimately utilized and measured can vary considerably, and can be selected to meet the local or regional needs and conditions for which a LESA model is being designed to address. In short, the LESA methodology lends itself well to adaptation and customization in individual states and localities. Considerable additional information on LESA may be found in *A Decade with LESA - the Evolution of Land Evaluation and Site Assessment* (8).

Background on LESA Nationwide

In 1981, the federal Natural Resources Conservation Service (NRCS), known then as the Soil Conservation Service, released a new system that was designed to provide objective ratings of the agricultural suitability of land compared to demands for nonagricultural uses of lands. The system became known as Land Evaluation and Site Assessment, or LESA. Soon after it was designed, LESA was adopted as a procedural tool at the federal level for identifying and addressing the potential adverse effects of federal programs (e.g., funding of highway construction) on farmland protection. The Farmland Protection Policy Act of 1981 (5) spells out requirements to ensure that federal programs, to the extent practical, are compatible with state, local, and private programs and policies to protect farmland, and calls for the use of LESA to aid in this analysis. Typically, staff of the NRCS is involved in performing LESA scoring analyses of individual projects that involve other agencies of the federal government.

Since its inception, the LESA approach has received substantial attention from state and local governments as well. Nationwide, over two hundred jurisdictions have developed local LESA methodologies (7). One of the attractive features of the LESA approach is that it is well suited to being modified to reflect regional and local conditions. Typical local applications of LESA include assisting in decision making concerning the sitting of projects, changes in zoning, and spheres of influence determinations. LESA is

also increasingly being utilized for farmland protection programs, such as the identification of priority areas to concentrate conservation easement acquisition efforts.

Because of the inherent flexibility in LESA model design, there is a broad array of factors that a given LESA model can utilize. Some LESA models require the measurement of as many as twenty different factors. Over the past 15 years, the body of knowledge concerning LESA model development and application has begun to indicate that LESA models utilizing only several basic factors can capture much of the variability associated with the determination of the relative value of agricultural lands. In fact, LESA models with many factors are increasingly viewed as having redundancies, with different factors essentially measuring the same features, or being highly correlated with one another. Additional information on the evolution and development of the LESA approach is provided in, A *Decade with LESA -The Evolution of Land Evaluation and Site Assessment* (8).

Development of the California Agricultural LESA Model

In 1990 the Department of Conservation commissioned a study to investigate land use decisions that affect the conversion of agricultural lands in California. The study, conducted by Jones and Stokes Associates, Inc., was prepared in response to concerns about agricultural land conversion identified in the *California Soil Conservation Plan* (1) (developed by the ad hoc Soil Conservation Advisory Committee serving the Department of Conservation in 1987). Among these concerns was the belief that there was inadequate information available concerning the socioeconomic and environmental implications of farmland conversions, and that the adequacy of current farmland conversion impact analysis under the California Environmental Quality Act (CEQA) was not fully known. The findings of this study are included in the publication, *The Impacts of Farmland Conversion in California* (2).

Currently, neither CEQA nor the State CEQA Guidelines contains procedures or specific guidance concerning how agencies should address farmland conversion impacts of projects. The only specific mention of agricultural issues is contained in Appendix G of the State CEQA Guidelines, which states that a project will normally have a significant effect on the environment if it will “convert prime agricultural land to non-agricultural use or impair the agricultural productivity of prime agricultural land”.

Among the conclusions contained in *The Impacts of Farmland Conversion in California* study was that the lack of guidance in how lead agencies should address the significance of farmland conversion impacts resulted in many instances of no impact analysis at all. A survey of environmental documents sent to the Governor's Office of Planning and Research (OPR) between 1986 and 1988 was performed. The survey

showed that among projects that affected at least 100 acres of land and for which agriculture was a project issue, nearly 30 percent received Negative Declarations, and therefore did not did not receive the environmental impact analysis that would be provided by an Environmental Impact Report (EIR).

Of those projects involving the conversion of agricultural lands and being the subject of an EIR, the study found a broad range of approaches and levels of detail in describing the environmental setting, performing an impact analysis, and providing alternative mitigation measures. The only agricultural impacts found to be significant in the EIRs were those involving the direct removal of prime agricultural lands from production by the project itself. The focus on prime farmland conversion in the projects surveyed was deemed to be related to the narrow direction provided in Appendix G of the State CEQA Guidelines.

The formulation of a California LESA Model is the result of Senate Bill 850 (Chapter 812 /1993), which charges the Resources Agency, in consultation with the Governor's Office of Planning and Research, to develop an amendment to Appendix G of the California Environmental Quality Act (CEQA) Guidelines. Such an amendment is intended "to provide lead agencies with an optional methodology to ensure that significant effects on the environment of agricultural land conversions are quantitatively and consistently considered in the environmental review process" (Public Resources Code Section 21095). This legislation authorizes the Department of Conservation to develop a California LESA Model, which can in turn be adopted as the required amendment to Appendix G of the CEQA Guidelines.

Presentation of the California LESA Model

The California LESA Model is presented in this Manual in the following sections:

Section I. provides a listing of the information and tools that will typically be needed to develop LESA scores for individual projects.

Section II. provides step-by-step instructions for scoring each of the six Land Evaluation and Site Assessment factors that are utilized in the Model, with an explanation of the rationale for the use of each factor.

Section III. defines the assignment of weights to each of the factors relative to one another, and the creation of a final LESA score for a given project.

Section IV. assigns scoring thresholds to final LESA scores for the purpose of determining the significance of a given project under CEQA where the conversion of agricultural lands is a project issue.

Additionally:

Appendix A. provides an abridged set of step-by-step LESA scoring instructions that can be used and reproduced for scoring individual projects.

Appendix B. demonstrates the application of the California LESA Model to the scoring of a hypothetical project.

The California Agricultural LESA Model

Section I. Required Resources and Information

The California Land Evaluation and Site Assessment (LESA) Model requires the use and interpretation of basic land resource information concerning a given project. A series of measurements and calculations is also necessary to obtain a LESA score. Listed below are the materials and tools that will generally be needed to make these determinations.

Land Evaluation and Site Assessment calculations will require:

1. A calculator or other means of tabulating numbers

2. An accurately scaled map of the project area, such as a parcel map

3. A means for making acreage determinations of irregularly shaped map units. Options include, from least to most technical:

    - A transparent grid-square or dot-planimeter method of aerial measurement

    - A hand operated electronic planimeter

    - The automatic planimetry capabilities of a Geographic Information System (GIS)

4. A modern soil survey, generally produced by the USDA Natural Resources Conservation Service, which delineates the soil-mapping units for a given project. [Note: If modern soil survey information is not available for a given area of study, it may be necessary to draw upon the services of a professional soil scientist to perform a specific project survey].

5. Maps that depict land uses for parcels including and surrounding the project site, such as the Department of Conservation's Important Farmland Map series, the Department of Water Resources Land Use map series, or other appropriate information.

6. Maps or information that indicate the location of parcels including and surrounding the project site that are within agricultural preserves, are under public ownership, have conservation easements, or have other forms of long term commitments that are considered compatible with the agricultural use of a given project site.

Section II. Defining and Scoring the California Land Evaluation and Site Assessment Model Factors

This section provides detailed step-by-step instructions for the measurement and scoring of each of the Land Evaluation and Site Assessment factors that are utilized in the California Agricultural LESA Model, and is intended to serve as an introduction to the process of utilizing the Model. Once users are familiar with the Model, a more streamlined set of instructions and scoring sheets is available in Appendix A. In addition, the scoring of a hypothetical project is presented using these scoring sheets in Appendix B.

Scoring of Land Evaluation Factors

The California LESA Model includes two Land Evaluation factors that are separately rated:

1. The Land Capability Classification Rating
2. The Storie Index Rating

The information needed to make these ratings is typically available from soil surveys that have been conducted by the federal Natural Resources Conservation Service (formerly known as the Soil Conservation Service). Consultation should be made with NRCS staff (field offices exist in most counties) to assure that valid and current soil resource information is available for the project site. Copies of soil surveys are available at local field offices of the NRCS, and may also be available through libraries, city and county planning departments, the Cooperative Extension, and other sources. In addition, a Certified Professional Soil Scientist (CPSS) may also be consulted to obtain appropriate soil resource information for the project site. A directory of CPSS registered soil consultants is available through the Professional Soil Scientists Association of California, P.O. Box 3213, Yuba City, CA 95992-3213; phone: (916) 671-4276.

1) The USDA Land Capability Classification (LCC) - The LCC indicates the suitability of soils for most kinds of crops. Groupings are made according to the limitations of the soils when used to grow crops, and the risk of damage to soils when they are used in agriculture. Soils are rated from Class I to Class VIII, with soils having the fewest limitations receive the highest rating (Class I). Specific subclasses are also utilized to further characterize soils. An expanded explanation of the LCC is included in most soil surveys.

2) The Storie Index - The Storie Index provides a numeric rating (based upon a 100 point scale) of the relative degree of suitability or value of a given soil for intensive agriculture. The rating is based upon soil characteristics only. Four factors that represent the inherent characteristics and qualities of the soil are

considered in the index rating. The factors are: profile characteristics, texture of the surface layer, slope, and other factors (e.g., drainage, salinity).

In some situations, only the USDA Land Capability Classification information may be currently available from a given published soil survey. However, Storie Index ratings can readily be calculated from information contained in soil surveys by qualified soil scientists. Users are encouraged to seek assistance from NRCS staff or Certified Professional Soil Scientists to derive Storie Index information for the soils as well. If, however, limitations of time or resources restrict the derivation of Storie Index ratings for the soils within a region, it may be possible to adapt the Land Evaluation by relying solely upon the LCC rating. Under this scenario the LCC rating would account for 50 percent of the overall LESA factor weighting.

Identifying a Project's Soils

In order to rate the Land Capability Classification and Storie Index factors, the evaluator must identify the soils that exist on a given project site and determine their relative proportions. A **Land Evaluation Worksheet** (Table 1A.) is used to tabulate these figures, based upon the following:

Step 1.
Locate the project on the appropriate map sheet in the Soil Survey.

Step 2.
Photocopy the map sheet and clearly delineate the project boundaries on the map, paying close attention to the map scale.

Step 3.
Identify all of the soil mapping units existing in the project site (each mapping unit will have a different map unit symbol) and enter the each mapping unit symbol in **Column A** of the **Land Evaluation Worksheet** (Table 1A).

Step 4.
Calculate the acreage of each soil mapping unit present within the project site using any of the means identified in **Section 1**, **Required Resources and Information**, and enter this information in **Column B**.

Step 5.

Divide the acres of each soil mapping unit by the total project acreage to determine the proportion of each unit that comprises the project, and enter this information in Column C.

1. Land Evaluation - The Land Capability Classification Rating

Step 1.
In the Guide to Mapping Units typically found within soil surveys, identify the Land Capability Classification (LCC) designation (e.g., IV-e) for each mapping unit that has been identified in the project and enter these designations in **Column D** of the **Land Evaluation Worksheet** (Table 1A.).

Step 2.
From Table 2., **The Numeric Conversion of Land Capability Classification Units**, obtain a numeric score for each mapping unit, and enter these scores in **Column E**.

Step 3.
Multiply the proportion of each soil mapping unit (**Column C**) by the LCC points for each mapping unit (**Column E**) and enter the resulting scores in **Column F**.

Step 4.
Sum the LCC scores in **Column F** to obtain a single LCC Score for the project. Enter this LCC Score in **Line 1** of the **Final LESA Worksheet** (Table 8)

Table 2. Numeric Conversion of Land Capability Classification Units

Land Capability Classification	LCC Point Rating
I	100
IIe	90
IIs,w	80
IIIe	70
IIIs,w	60
IVe	50
IVs,w	40
V	30
VI	20
VII	10
VIII	0

Table 1A.
Land Evaluation Worksheet

Land Capability Classification (LCC) and Storie Index Scores

A	B	C	D	E	F	G	H
Soil Map Unit	Project Acres	Proportion of Project Area	LCC	LCC Rating	LCC Score	Storie Index	Storie Index Score
Totals		(Must Sum to 1.0)		***LCC Total***		***Storie Index Total***	

Table 1B.
Site Assessment Worksheet 1.

Project Size Score

	I	J	K
	LCC Class I - II	LCC Class III	LCC Class IV - VIII
Total Acres			
Project Size Scores			

Highest Project Size Score |

2. Land Evaluation - The Storie Index Rating Score

Step 1.
From the appropriate soil survey or other sources of information identified in Appendix C, determine the Storie Index Rating (the Storie Index Rating is already based upon a 100 point scale) for each mapping unit and enter these values in **Column G** of the **Land Evaluation Worksheet** (Table 1A.).

Step 2.
Multiply the proportion of each soil mapping unit found within the project (**Column C**) by the Storie Index Rating (**Column G**), and enter these scores in **Column H**.

Step 3.
Sum the Storie Index Rating scores in **Column H** to obtain a single Storie Index Rating score for the project. Enter this Storie Index Rating Score in **Line 2** of the **Final LESA Worksheet** (Table 8)

Scoring of Site Assessment Factors

The California LESA Model includes four Site Assessment factors that are separately rated:

1. **The Project Size Rating**
2. **The Water Resources Availability Rating**
3. **The Surrounding Agricultural Land Rating**
4. **The Surrounding Protected Resource Land Rating**

1. Site Assessment - The Project Size Rating

The Project Size Rating relies upon acreage figures that were tabulated under the Land Capability Classification Rating in Table 1A. The Project Size rating is based upon identifying acreage figures for three separate groupings of soil classes within the project site, and then determining which grouping generates the highest Project Size Score.

Step 1.
Using information tabulated in **Columns B** and **D** of the **Land Evaluation Worksheet** (Table 1A), enter acreage figures in **Site Assessment Worksheet 1. - Project Size** (Table 1B) using either **Column I, J,** or **K** for each of the soil mapping units in a given project.

Step 2.
Sum the entries in **Column I** to determine the total acreage of Class I and II soils on the project site.

Sum the entries in **Column J** to determine the total acreage of Class III soils on the project site.

Sum the entries in **Column K** to determine the total acreage of Class IV and lower rated soils on the project site.

Step 3.
For each of the three columns, apply the appropriate scoring plan provided in Table 3, **Project Size Scoring**, and enter the **Project Size Score** for each grouping in the **Site Assessment Worksheet 1. - Project Size** (Table 1B). Determine which column generates the highest score. The highest score becomes the overall **Project Size Score**. Enter this number in **Line 3** of the **Final LESA Scoresheet** (Table 8).

Table 3. Project Size Scoring

LCC Class I or II soils		LCC Class III soils		LCC Class IV or lower	
Acres	***Score***	***Acres***	***Score***	***Acres***	***Score***
80 or above	100	160 or above	100	320 or above	100
60-79	90	120-159	90	240-319	80
40-59	80	80-119	80	160-239	60
20-39	50	60-79	70	100-159	40
10-19	30	40-59	60	40-99	20
fewer than 10	0	20-39	30	fewer than 40	0
		10-19	10		
		fewer than 10	0		

Explanation of the Project Size Factor

The Project Size factor in the California Agricultural LESA Model was developed in cooperation with Nichols-Berman, a consulting firm under contract with the Department of Conservation. A thorough discussion of the development of this rating is presented by Nichols-Berman in a report to the Department entitled, *Statewide LESA Methodologies Report - Project Size and Water Resource Availability Factors* (3).

The inclusion of the measure of a project's size in the California Agricultural LESA Models is a recognition of the role that farm size plays in the viability of commercial agricultural operations. In general, larger farming operations can provide greater flexibility in farm management and marketing decisions. Certain economies of scale for equipment and infrastructure can also be more favorable for larger operations. In addition, larger operations tend to have greater impacts upon the local economy through direct employment, as well as impacts upon support industries (e.g., fertilizers, farm equipment, and shipping) and food processing industries.

While the size of a given farming operation may in many cases serve as a direct indicator of the overall economic viability of the operation, The California Agricultural LESA Model does not specifically consider the issue of economic viability. The variables of economic viability for a specific farm include such factors as the financial management and farming skills of the operator, as well as the debt load and interest rates being paid by an individual operator, which are issues that cannot readily be included in a statewide LESA model.

In terms of agricultural productivity, the size of a farming operation can be considered not just from its total acreage, but the acreage of different quality lands that comprise the operation. Lands with higher quality soils lend themselves to greater management and cropping flexibility and have the potential to provide a greater economic return per unit acre. For a given project, instead of relying upon a single acreage figure in the Project Size rating, the project is divided into three acreage groupings based upon the Land Capability Classification ratings that were previously determined in the Land Evaluation analysis. Under the Project Size rating, relatively fewer acres of high quality soils are required to achieve a maximum Project Size score. Alternatively, a maximum score on lesser quality soils could also be derived, provided there is a sufficiently large acreage present. Acreage figures utilized in scoring are the synthesis of interviews that were conducted statewide for growers of a broad range of crops. In the interviews growers were queried as to what acreage they felt would be necessary in order for a given parcel to be considered attractive for them to farm.

The USDA LCC continues to be the most widely available source of information on land quality. Project Size under this definition is readily measurable, and utilizes much of the same information needed to score a given project under the Land Evaluation component of the methodology. This approach also complements the LE determination, which, while addressing soil quality, does not account for the total acreage of soils of given qualities within a project.

This approach allows for an accounting of the significance of high quality agricultural land as well as lesser quality agricultural lands, which by virtue of their large area can be considered significant agricultural resources. In this way, no single acreage figure for a specific class of soils (e.g., soils defined as “prime”) is necessary.

2. Site Assessment - The Water Resources Availability Rating

The Water Resources Availability Rating is based upon identifying the various water sources that may supply a given property, and then determining whether different restrictions in supply are likely to take place in years that are characterized as being periods of drought and non-drought. **Site Assessment Worksheet 2. - Water Resources Availability Worksheet** (Table 4) is used to tabulate the score.

Step 1.
Identify the different water resource types that are used to supply the proposed project site (for example, irrigation district water, ground water, and riparian water are considered to be three different types of water resources). Where there is only one water source identified for the proposed project, skip to Step 4.

Step 2.
Divide the proposed project site into portions, with the boundaries of each portion being defined by the irrigation water source(s) supplying it. A site that is fully served by a single source of water will have a single portion, encompassing the entire site. A site that is fully served by two or more sources that are consistently merged together to serve a crop's needs would also have a single portion. (e.g., a portion of the proposed project may receive both irrigation district and groundwater). If the project site includes land that has no irrigation supply, consider this acreage as a separate portion as well. Enter the water resource portions of the project in **Column B** of Table 4, **Site Assessment Worksheet 2. - Water Resources Availability**.

[As an example, a hypothetical project site is determined to have four separate water supply portions:

Portion 1 is served by irrigation district water only;
Portion 2 is served by ground water only;
Portion 3 is served by *both* irrigation district water and ground water;
Portion 4 is not irrigated at all.**]**

Step 3.
Calculate the proportion of the total project area that is represented by each water resource portion, and enter these figures in **Column C** of **Site Assessment Worksheet 2. - Water Resources Availability**, verifying that the sum of the proportions equals 1.0.

Table 4. Site Assessment Worksheet 2. - Water Resources Availability

A	B	C	D	E
Project Portion	Water Source	Proportion of Project Area	Water Availability Score	Weighted Availability Score (C x D)
1				
2				
3				
4				
5				
6				
		(Must Sum to 1.0)	***Total Water Resource Score***	

Step 4.

For each water resource supply portion of the project site, determine whether irrigated and dryland agriculture is *feasible*, and if any *physical* or *economic restrictions* exist, during both *drought* and *non-drought* years. These italicized terms are defined below:

- A *physical restriction* is an occasional or regular interruption or reduction in a water supply, or a shortened irrigation season, that forces a change in agricultural practices -- such as planting a crop that uses less water, or leaving land fallow. (This could be from cutbacks in supply by irrigation and water districts, or by ground or surface water becoming depleted or unusable. Poor water quality can also result in a physical restriction -- for example by requiring the planting of salt-tolerant plants, or by effectively reducing the amount of available water.)

- An *economic restriction* is a rise in the cost of water to a level that forces a reduction in consumption. (This could be from surcharge increases from water suppliers as they pass along the cost of finding new water supplies, the extra cost of pumping more ground water to make up for losses in surface water supplies, or the extra energy costs of pumping the same amount of ground water from deeper within an aquifer.)

- Irrigated agricultural production is *feasible* when:

  1) There is an existing irrigation system on the project site that can serve the portion of the project identified in Step 2;

  2) *Physical* and/or *economic restrictions* are not severe enough to halt production; and

  3) It is possible to achieve a viable economic return on crops though irrigated production.

(A major question that should be considered is, if there is an irrigated crop that can be grown within the region, can it actually be grown on the project site? Depending upon the jurisdiction, some typical crops that have a large water demand may not be feasible to grow on the project site, while others that require less water are feasible. Information to aid in making this determination can be obtained from county agricultural commissioners, the UC Cooperative Extension, irrigation districts, and other sources.)

- *Dryland production* is *feasible* when rainfall is adequate to allow an economically viable return on a nonirrigated crop.

- A *drought year* is a year that lies within a defined drought period, as defined by the Department of Water Resources or by a local water agency. Many regions of the state are by their arid nature dependent upon imports of water to support irrigated agriculture. These regions shall not be considered under periods of drought unless a condition of drought is declared for the regions that typically would be providing water exports.

Step 5.
Each of the project's water resource supply portions identified in **Step 2** is scored separately. Water Resources Availability scoring is performed by identifying the appropriate condition that applies to each portion of the project, as identified in Table 5., **Water Resource Availability Scoring**. Using Table 5, identify the option that best describes the water resource availability for that portion and its corresponding water resource score. Option 1 defines the condition of no restrictions on water resource availability and is followed progressively with increasing restrictions to Option 14, the most severe condition, where neither irrigated nor dryland production is considered feasible. Enter each score into **Column D** of Table 4.

Step 6.
For each portion of the project site, determine the section's weighted score by multiplying the portion's score (**Column D**), by its proportion of the project area (**Column C**), and enter these scores in **Column E**, the weighted Water Availability Score. Sum the **Column E** scores to obtain the total Water Resource Availability Score, and enter this figure in **Line 4** of the **Final LESA Score Sheet** (Table 8).

Table 5. Water Resource Availability Scoring

Option	Non-Drought Years			Drought Years			WATER RESOURCE SCORE
	RESTRICTIONS			RESTRICTIONS			
	Irrigated Production Feasible?	Physical Restrictions ?	Economic Restrictions ?	Irrigated Production Feasible?	Physical Restrictions ?	Economic Restrictions ?	
1	YES	NO	NO	YES	NO	NO	100
2	YES	NO	NO	YES	NO	YES	95
3	YES	NO	YES	YES	NO	YES	90
4	YES	NO	NO	YES	YES	NO	85
5	YES	NO	NO	YES	YES	YES	80
6	YES	YES	NO	YES	YES	NO	75
7	YES	YES	YES	YES	YES	YES	65
8	YES	NO	NO	NO	-- --	-- --	50
9	YES	NO	YES	NO	-- --	-- --	45
10	YES	YES	NO	NO	-- --	-- --	35
11	YES	YES	YES	NO	-- --	-- --	30
12	Irrigated production not feasible, but rainfall adequate for dryland production in both drought and non-drought years						25
13	Irrigated production not feasible, but rainfall adequate for dryland production in non-drought years (but not in drought years)						20
14	Neither irrigated nor dryland production feasible						0

Explanation of the Water Resource Availability Rating

The Water Resource Availability factor in the California Agricultural LESA Model was developed in cooperation with Nichols-Berman, a consulting firm under contract with the Department of Conservation. A thorough discussion of the development of this rating is presented by Nichols-Berman in a report to the Department entitled, *Statewide LESA Methodologies Report - Project Size and Water Resource Availability Factors* (3). During the development of this factor it became apparent that certain conditions unique to California would need to be represented in this system.

First, it was decided to classify water reliability based upon the *effects* on agricultural production (such as being forced to change to lower-value crops, putting in groundwater pumps, or cutting back on the acreage farmed) rather than the actual *type* of limitation (such as a limitation on the quantity, frequency, or duration of water delivery). LESA systems have traditionally focused on the latter. However, it was found that the many types of limitations are too varied in California to adequately represent in the LESA system. In the Statewide LESA system, these effects are referred to as *restrictions*.

Second, the factor had to include an interrelation with cost. The historical shortages and unreliability of California water use has led to the establishment of various interconnected and dual systems. Probably more than any other state, reliability is related with cost -- a more reliable water supply can sometimes be obtained, but at a greater cost. Therefore, *restrictions* were classified into two major categories -- *physical* and *economic*. These are separated because, generally, a physical restriction is more severe than an economic restriction and this should be reflected in the LESA system.

Third, the factor had to include the effects of the drought cycle in California. During the drought of 1987 to 1992, many agricultural areas of the state experienced water shortages. The impact of these shortages resulted in a number of different actions. Some areas were able to avoid the worst effects of the drought simply by implementing water conservation measures. Other areas were able to obtain additional water supplies, such as by securing water transfers or simply pumping more groundwater, but at an increase in the overall price of water. Other options included shifting crops, replanting to higher value crops to offset the increase in water prices, or leaving land fallow. A project site that experiences restrictions during a drought year should not be scored as high as a similar project site that does not.

The easiest way to make determinations of irrigation feasibility and the potential restrictions of water sources is to investigate the cropping history of the project site. For instance, was the water supply to the project site reduced by the local irrigation district during the last drought? If the site has a ground water supply, do area ground water levels sometimes drop to levels that force markedly higher energy costs to pump the water?

If the history of the project site is unavailable (including when the site has recently installed an irrigation system), look at the history of the general area. However, remember that the project site may have different conditions than the rest of the region. For instance, the project site could have an older water right than others in the region. Although certain areas of the state had severe restrictions on water deliveries during the last drought, some parcels within these areas had very secure deliveries due to more senior water rights. If this was the case in the region of the project site, check the date of water right and compare it with parcels that received their total allotment during the last drought. The local irrigation district should have information on water deliveries.

The scoring of water resource availability for a project site should not just reflect the adequacies of water supply in the past -- it should be a *prediction* of how the water system will perform in the future. For instance, a local jurisdiction might find that the allocation of flows to stream and river systems has been recently increased for environmental reasons, which will decrease the future available surface water supply. In this case, the past history of the site is not an adequate representation of future water supply and water system performance.

3. Site Assessment - The Surrounding Agricultural Land Rating

Determination of the surrounding agricultural land use rating is based upon the identification of a project's "Zone of Influence" (ZOI), which is defined as that land near a given project, both directly adjoining and within a defined distance away, that is likely to influence, and be influenced by, the agricultural land use of the subject project site. The determination of the ZOI is described below, and is illustrated with an example in Figure 1.

Defining a Project's "Zone of Influence"

Step 1.
Locate the proposed project on an appropriate map and outline the area and dimensions of the proposed project site.

Step 2.
Determine the smallest rectangle that will completely contain the project site (Rectangle A).

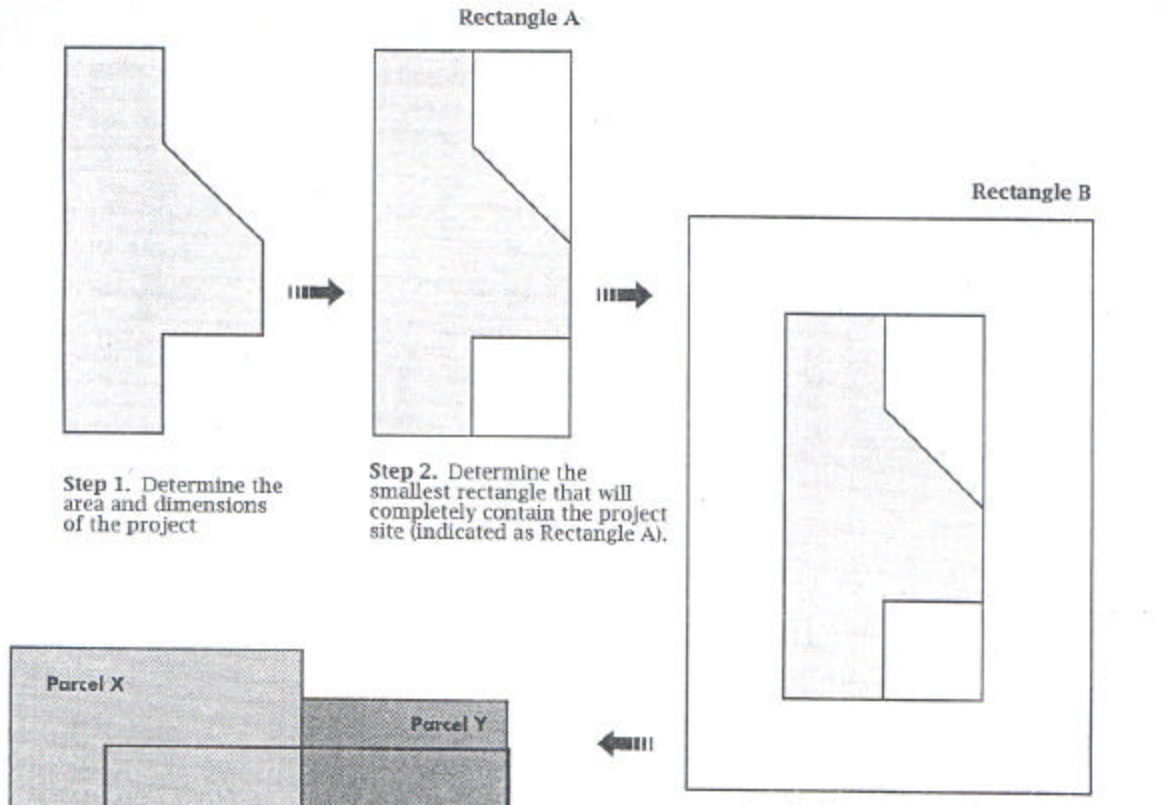
Step 3.
Create a second rectangle (Rectangle B) that extends 0.25 mile (1320 feet) beyond Rectangle A on all sides.

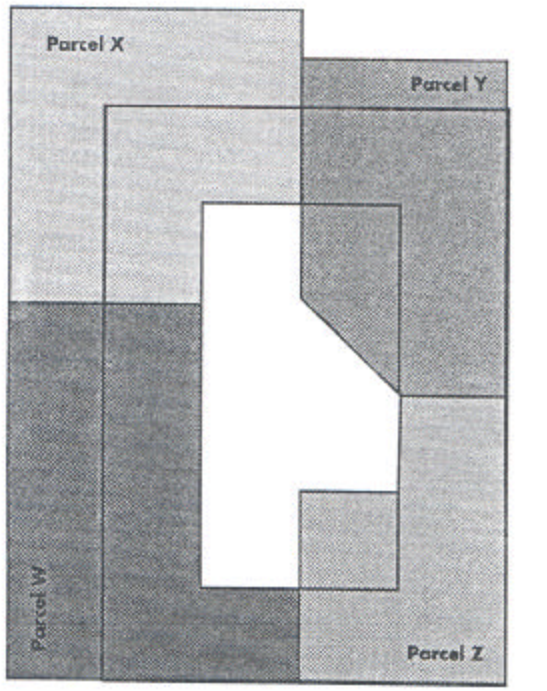
Step 4.
Identify all parcels that are within or are intersected by Rectangle B.

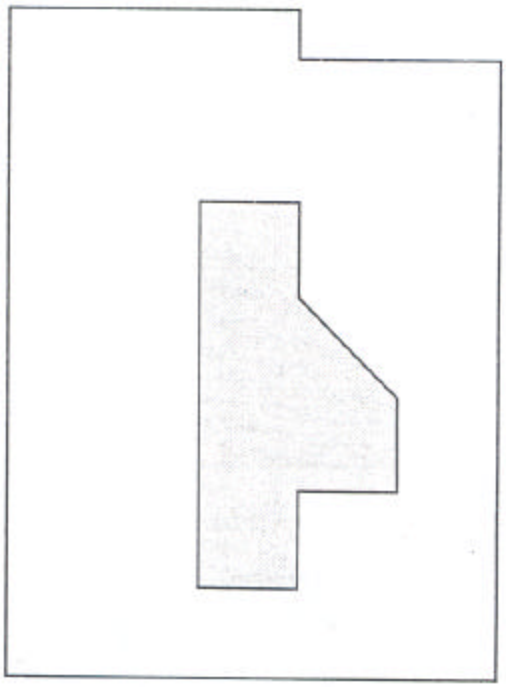
Step 5.
Define the project site's "zone of influence" as the entire area of all parcels identified in Step 4, less the area of the proposed project from Step 1.

[In the illustration provided in Figure 1, Parcels W, X, and Y extend beyond Rectangle B and are therefore included in their entirety in defining the project site's Zone of Influence.**]**

Figure 1: Defining a Project's Zone of Influence







Measuring Surrounding Agricultural Land

Step 1.
Calculate the percentage of the project's Zone of Influence that is currently producing agricultural crops. **[**This figure can be determined using information from the Department of Conservation's Important Farmland Map Series, the Department of Water Resources' Land Use Map Series, locally derived maps, or direct site inspection. For agricultural land that is currently fallowed, a determination must be made concerning whether the land has been fallowed as part of a rotational sequence during normal agricultural operations, or because the land has become formally "committed" to a nonagricultural use. Land that has become formally committed, whether fallow or not, should not generally be included in determining the proportion of the Zone of Influence that is agricultural land. For further information on the definition of Committed Land, refer to the following Explanation of the Surrounding Agricultural Land Rating.**]**

Step 2.
Based on the percentage of agricultural land in the ZOI determined in Step 1, assign a Surrounding Agricultural Land score to the project according to Table 6, and enter this score in **Line 5** of the **Final LESA Scoresheet** (Table 8) .

Table 6. Surrounding Agricultural Land Rating

Percent of Project's Zone of Influence in Agricultural Use	Surrounding Agricultural Land Score
90 - 100%	100 Points
80 - 89	90
75 - 79	80
70 - 74	70
65 - 69	60
60 - 64	50
55 - 59	40
50 - 54	30
45 - 49	20
40 - 44	10
40 <	0

Explanation of the Surrounding Agricultural Land Rating

The Surrounding Agricultural Land Rating is designed to provide a measurement of the level of agricultural land use for lands in close proximity to a subject project. The California Agricultural LESA Model rates the potential significance of the conversion of an agricultural parcel that has a large proportion of surrounding land in agricultural production more highly than one that has a relatively small percentage of surrounding land in agricultural production. The definition of a "Zone of Influence" that accounts for surrounding lands up to a minimum of one quarter mile from the project boundary is the result of several iterations during model development for assessing an area that will generally be a representative sample of surrounding land use. In a simple example, a single one quarter mile square project (160 acres) would have a Zone of Influence that is a minimum of eight times greater (1280 acres) that the parcel itself.

Land within a Zone of Influence that is observed to be fallow will require a case by case determination of whether this land should be considered agricultural land. The Department of Conservation's Important Farmland Maps may be of assistance in making this determination. In addition, land currently in agricultural production may be designated as being "committed" to future nonagricultural development. The Department of Conservation's Farmland Mapping and Monitoring Program has a land use designation of Land Committed to Nonagricultural Use, and is defined as "land that is permanently committed by local elected officials to nonagricultural development by virtue of decisions which cannot be reversed simply by a majority vote of a city council or county board of supervisors. The "committed" land must be so designated in an adopted local general plan, and must also meet the requirements of either (a) or (b) below:

(a). It must have received one of the following final discretionary approvals:

1. Tentative subdivision map (approved per the Subdivision Map Act);
2. Tentative or final parcel map (approved per the Subdivision Map Act);
3. Recorded development agreement (per Government Code §65864);
4. Other decisions by a local government which are analogous to items #1-3 above and which exhibit an element of permanence. Zoning by itself does <u>not</u> qualify as a permanent commitment.

<u>Or</u>

(b) It must be the subject of one of the final fiscal commitments to finance the capital improvements specifically required for future development of the land in question as shown below:

1. Recorded Resolution of Intent to form a district and levy an assessment;
2. Payment of assessment;
3. Sale of bonds;
4. Binding contract, secured by bonds, guaranteeing installation of infrastructure;
5. Other fiscal commitments which are analogous to items #1-4 above and exhibit an element of permanence."

Lead agencies are encouraged to identify Land Committed to Nonagricultural Use within a project's ZOI and make the determination whether this land, while still in agricultural production, be considered nonagricultural land for the purposes of the calculation performed here.

4. Site Assessment - The Surrounding Protected Resource Land Rating

The Surrounding Protected Resource Land Rating is essentially an extension of the Surrounding Agricultural Land Rating, and is scored in a similar manner. Protected resource lands are those lands with long term use restrictions that are compatible with or supportive of agricultural uses of land. Included among them are the following:

- Williamson Act contracted lands
- Publicly owned lands maintained as park, forest, or watershed resources
- Lands with agricultural, wildlife habitat, open space, or other natural resource easements that restrict the conversion of such land to urban or industrial uses.

Instructions for the Surrounding Protected Resource Land Rating

Step 1.
Utilizing the same "Zone of Influence" (ZOI) area calculated for a project under the Surrounding Agricultural Land Rating, calculate the percentage of the ZOI that is Protected Resource Land, as defined above.

Step 2.
Assign a Surrounding Protected Resource Land score to the project according to Table 7, and enter this score on **Line 6** of the **Final LESA Scoresheet** (Table 8).

Table 7. Surrounding Protected Resource Land Rating

Percent of Project's Zone of Influence Defined as Protected	Surrounding Protected Resource Land Score
90 - 100%	100 Points
80 - 89	90
75 - 79	80
70 - 74	70
65 - 69	60
60 - 64	50
55 - 59	40
50 - 54	30
45 - 49	20
40 - 44	10
40 <	0

Section III. Weighting of Factors and Final LESA Scoring

The California LESA Model is weighted so that 50 percent of the total LESA score of a given project is derived from the Land Evaluation factors, and 50 percent from the Site Assessment factors. Individual factor weights are listed below, with the sum of the factor weights required to equal 100 percent.

Land Evaluation Factors

Land Capability Classification	25%
Storie Index Rating	25%
Land Evaluation Subtotal	**50%**

Site Assessment Factors

Project Size	15%
Water Resource Availability	15%
Surrounding Agricultural Lands	15%
Surrounding Protected Resource Lands	5%
Site Assessment Subtotal	**50%**
Total LESA Factor Weighting	**100%**

Each factor is measured separately (each on 100 point scale) and entered in the appropriate line in **Column B** of the **Final LESA Scoresheet** (Table 8). Each factor's score is then multiplied by its respective factor weight, resulting in a weighted factor score in **Column D** as indicated in Table 8. The weighted factor scores are summed, yielding a Total LESA Score (100 points maximum) for a given project, which is entered in **Line 7** of **Column D**.

Table 8. Final LESA Scoresheet

A	B		C		D
Factor Name	Factor Rating (0-100 points)	X	Factor Weighting (Total = 1.00)	=	Weighted Factor Rating
<u>Land Evaluation</u>					
1. Land Capability Classification	<Line 1>_____	X	0.25	=	_____
2. Storie Index Rating	<Line 2>_____	X	0.25	=	_____
<u>Site Assessment</u>					
1. Project Size	<Line 3>_____	X	0.15	=	_____
2. Water Resource Availability	<Line 4>_____	X	0.15	=	_____
3. Surrounding Agricultural Lands	<Line 5>_____	X	0.15	=	_____
4. Protected Resource Lands	<Line 6>_____	X	0.05	=	_____
			Total LESA Score (sum of weighted factor ratings)		<Line 7>_____

Section IV. California Agricultural LESA Scoring Thresholds - Making Determinations of Significance Under CEQA

A single LESA score is generated for a given project after all of the individual Land Evaluation and Site Assessment factors have been scored and weighted as detailed in Sections 2 and 3. Just as with the scoring of individual factors that comprise the California Agricultural LESA Model, final project scoring is based on a scale of 100 points, with a given project being capable of deriving a maximum of 50 points from the Land Evaluation factors and 50 points from the Site Assessment factors.

The California Agricultural LESA Model is designed to make determinations of the potential significance of a project's conversion of agricultural lands during the Initial Study phase of the CEQA review process. Scoring thresholds are based upon both the total LESA score as well as the component LE and SA subscores. In this manner the scoring thresholds are dependent upon the attainment of a minimum score for the LE and SA subscores so that a single threshold is not the result of heavily skewed subscores (i.e., a site with a very high LE score, but a very low SA score, or vice versa). Table 9 presents the California Agricultural LESA scoring thresholds.

Table 9. California LESA Model Scoring Thresholds

Total LESA Score	Scoring Decision
0 to 39 Points	Not Considered Significant
40 to 59 Points	Considered Significant only if LE and SA subscores are each greater than or equal to 20 points
60 to 79 Points	Considered Significant unless either LE or SA subscore is less than 20 points
80 to 100 Points	Considered Significant

Bibliography

1. *Conserving the Wealth of the Land - A Plan for Soil Conservation*, Department of Conservation. 1987.

2. *The Impacts of Farmland Conversion in California*. Prepared by Jones and Stokes, Associates, Inc., for the California Department of Conservation. 1991.

3. *Statewide LESA Methodologies Report - Project Size and Water Resource Availability Factors*. Prepared by Nichols - Berman, for the Department of Conservation. 1995.

4. *LESA Guidelines for Local Jurisdictions - Project Size and Water Resource Availability Factors*. Prepared by Nichols - Berman, for the Department of Conservation. 1995.

5. Office of the Federal Register National Archives and Records Administration. The Farmland Protection and Policy Act, part 658. Code of Federal Regulations - Agriculture, Parts 400 to 699. 1990.

6. Pease, J and R. Coughlin. Land Evaluation and Site Assessment: *A Guidebook for Rating Agricultural Lands, Second Edition*; prepared for the USDA Natural Resources Conservation Service; Soil and Water Conservation Society. 1996.

7. Pease, J., et al. *State and Local LESA Systems: Status and Evaluation*; In: Steiner, F., J. Pease, and R. Coughlin, eds. *A Decade with LESA: The Evolution of Land Evaluation and Site Assessment*. Soil and Water Conservation Society. 1994.

8. Steiner, F., J. Pease, and R. Coughlin, eds. *A Decade with LESA: The Evolution of Land Evaluation and Site Assessment*. Soil and Water Conservation Society. 1994.

Appendix D

Air Quality Impact Analysis

AIR QUALITY IMPACT ANALYSIS

Malibu Vineyards Light Industrial
Bakersfield, CA

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August 2020 (revised March 2023, March 2024)

Project 190505.0209

Trinity Consultants

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1. EXECUTIVE SUMMARY

Trinity Consultants has completed an Air Quality Impact Analysis (AQIA) for the Malibu Vineyards Light Industrial Project. The Project site is located northwest of Bakersfield, California along the eastern side of Highway 99 between Imperial Street and the northern side of Burbank Street.

The Project will revise the existing land use and agricultural zoning (R-IA/A) in support of the General Plan Amendment (GPA) for the development of a light to medium industrial park (SI/M-2/PD) on approximately 727.17 gross acres. The Project will be developed in two phases with Phase 1 being the portion that is east of the Lerdo Canal and Phase 2 being west of the Lerdo Canal. The focus of the industrial development will be for distribution warehousing.

The proposed Project's construction would include the following criteria pollutant emissions: reactive organic gases (ROG), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and suspended particulate matter (PM_{10} and $PM_{2.5}$). Project operations would generate air pollutant emissions from mobile sources (vehicle activity from employees and distribution trucks), energy sources (natural gas usage), and area sources (incidental activities related to architectural coating, consumer products, and landscape maintenance). Project construction and operational activities would also generate greenhouse gas (GHG) emissions. Criteria and GHG emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2022.1 (California Air Pollution Control Officers Association (CAPCOA) 2022), which is the most current version of the model approved for use by the San Joaquin Valley Air Pollution Control District (SJVAPCD).

Table 4-3 presents the Project's construction emissions and provides substantial evidence to support a *less than significant* air quality impact on the San Joaquin Valley Air Basin. Table 4-4 presents the Project's operations emissions and provides substantial evidence to support a *less than significant* air quality impact on the San Joaquin Valley Air Basin. Based on the foregoing conclusions, the Project is considered to have *less than significant* air quality impacts on the San Joaquin Valley Air Basin.

SJVAPCD uses a single threshold for determination of significance for both project specific and cumulative impacts. As such, a qualitative evaluation of the cumulative projects supports a finding that the Project's contribution would not be cumulatively considerable because the proposed Project's incremental emissions would be *less than significant*.

2. INTRODUCTION

2.1 Purpose

This AQIA was prepared pursuant to the SJVAPCD Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI) (SJVAPCD 2015), the Kern County Planning and Community Development Department's (KCPD) Air Quality Preparation Guidelines (KCPD 2006), and the California Environmental Quality Act (CEQA) Statute and Guidelines (CEQA 2023).

2.2 General Project Description

The Malibu Vineyards Project proposes to revise the existing land use and zoning (Agriculture) in support of the General Plan Amendment and Zone Change for the development of a light to medium industrial park (SI/M-2/PD) on approximately 727 gross acres containing a total of 8,907,446 square feet of distribution and non-distribution warehousing. The Project is located North of Imperial Avenue and generally East of State Route 99 with site access from Saco Road and Imperial Avenue, further described as a portion of Sections 24 & 25, T28S, R26E; and a portion of Sections 29 & 30, T28S, R27E, County of Kern, State of California. The Project will be developed in two phases. Phase 1 is East of the Lerdo Canal; Phase 2 is West of the Lerdo Canal.

Figure 2-1 depicts the regional location and **Figure 2-2** depicts an aerial view of the Project location. Construction of both phases is conservatively estimated to begin June 2025, with Phase 1 operations beginning 2050 and Phase 2 operations beginning in 2031. The Project will build approximately 290,000 sf per year; the defaults in the CalEEMod emissions model were applied to estimate a construction schedule.

Figure 2-1. Regional Location

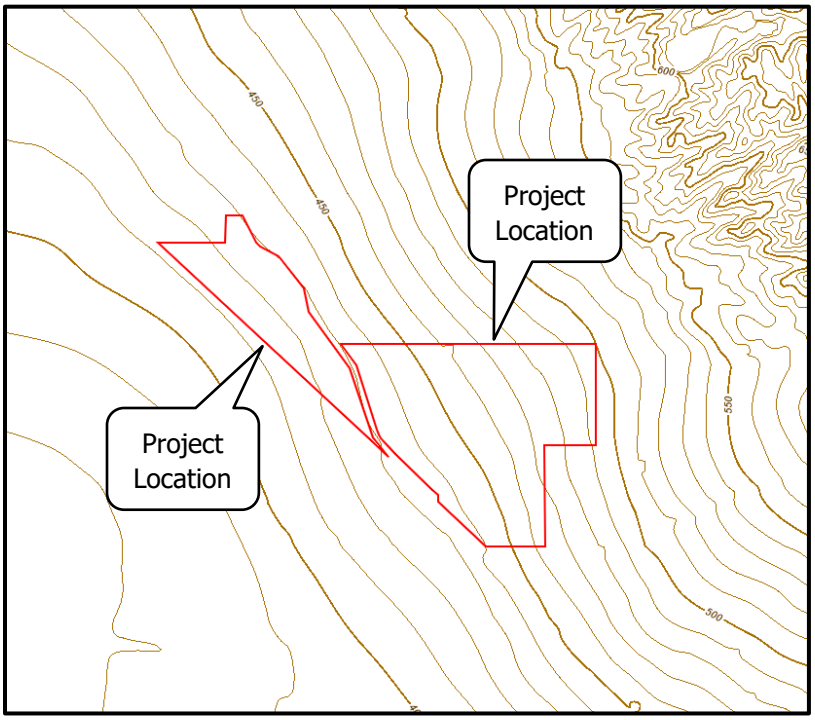


Figure 2-2. Project Location



Figure 2-3 depicts the Project site's topography based on Kern County GIS (2023). The Project site is located at an elevation of approximately 450 feet above mean sea level and is surrounded by agricultural land uses.

Figure 2-3. Project Site Topography



3. SETTING

Protection of the public health is maintained through the attainment and maintenance of ambient air quality standards for various atmospheric compounds and the enforcement of emissions limits for individual stationary sources. The Federal Clean Air Act requires that the U.S. Environmental Protection Agency (EPA) establish National Ambient Air Quality Standards (NAAQS) to protect the health, safety, and welfare of the public. NAAQS have been established for ozone (O_3), CO, NO_2, SO_2, PM_{10} and $PM_{2.5}$, and lead (Pb). California has also adopted ambient air quality standards (CAAQS) for these "criteria" air pollutants. CAAQS are more stringent than the corresponding NAAQS and include standards for hydrogen sulfide (H_2S), vinyl chloride (chloroethene), and visibility reducing particles. The U.S. Clean Air Act Amendments of 1977 required each state to identify areas that were in non-attainment of the NAAQS and to develop State Implementation Plans (SIP's) containing strategies to bring these non-attainment areas into compliance. NAAQS and CAAQS designation/classification for Kern County are presented in **Section 3.1** below.

Responsibility for regulation of air quality in California lies with the California Air Resources Board (CARB) and the 35 local air districts with oversight responsibility held by the EPA. CARB is responsible for regulating mobile source emissions, establishing CAAQS, conducting research, managing regulation development, and providing oversight and coordination of the activities of the 35 air districts. The air districts are primarily responsible for regulating stationary source emissions and monitoring ambient pollutant concentrations. CARB also determines whether air basins, or portions thereof, are "unclassified," in "attainment" or in "non-attainment" for the NAAQS and CAAQS relying on statewide air quality monitoring data.

3.1 Air Quality Standards

The Project area is located within Kern County's portion of the San Joaquin Valley Air Basin (SJVAB or Basin). Kern County is included among the eight counties that comprise the SJVAPCD. The SJVAPCD acts as the regulatory agency for air pollution control in the Basin and is the local agency empowered to regulate air pollutant emissions for the Project area. **Table 3-1** provides the NAAQS and CAAQS.

Table 3-1. Federal & California Air Quality Standards

Pollutant	Averaging Time	NAAQS	CAAQS
		Concentration	
O_3	8-hour	0.070 ppm (137 µg/m^3)[a]	0.070 ppm (137 µg/m^3)
	1-hour		0.09 ppm (180 µg/m^3)
CO	8-hour	9 ppm (10 µg/m^3)	9 ppm (10 µg/m^3)
	1-hour	35 ppm (40 µg/m^3)	20 ppm (23 µg/m^3)
NO_2	Annual Average	53 ppb (100 µg/m^3)	0.030 ppm (57 µg/m^3)
	1-Hour	100 ppb (188.68 µg/m^3)	0.18 ppm (339 µg/m^3)
SO_2	3-Hour	0.5 ppm (1,300 µg/m^3)	
	24 Hour	0.14 ppm (365 µg/m^3)	0.04 ppm (105 µg/m^3)
	1-Hour	75 ppb (196 µg/m^3)	0.25 ppm (655 µg/m^3)
Particulate Matter (PM_{10})	Annual Arithmetic Mean		20 µg/m^3
	24-Hour	150 µg/m^3	50 µg/m^3
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 µg/m^3	12 µg/m^3
	24-Hour	35 µg/m^3	
Sulfates	24-Hour		25 µg/m^3
Pb[d]	Rolling Three-Month Average	0.15 µg/m^3	
	30 Day Average		1.5 µg/m^3
H_2S	1-Hour		0.03 ppm (42 µg/m^3)
Vinyl Chloride (chloroethene)	24-Hour		0.010 ppm (26 µg/m^3)
Visibility Reducing particles	8 Hour (1000 to 1800 PST)		[b]

ppm = parts per million
ppb = parts per billion
mg/m^3 = milligrams per cubic meter
µg/m^3 = micrograms per cubic meter

Source: CARB 2016

a. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm

b. In 1989, CARB converted both the general statewide 10-mile visibility standards and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Under the provisions of the U.S. Clean Air Act, the Kern County portion of the SJVAB has been classified as nonattainment/extreme, nonattainment/severe, nonattainment, attainment/unclassified, attainment, or unclassified under the established NAAQS and CAAQS for various criteria pollutants. **Table 3-2** provides the SJVAB's designation and classification based on the various criteria pollutants under both NAAQS and CAAQS.

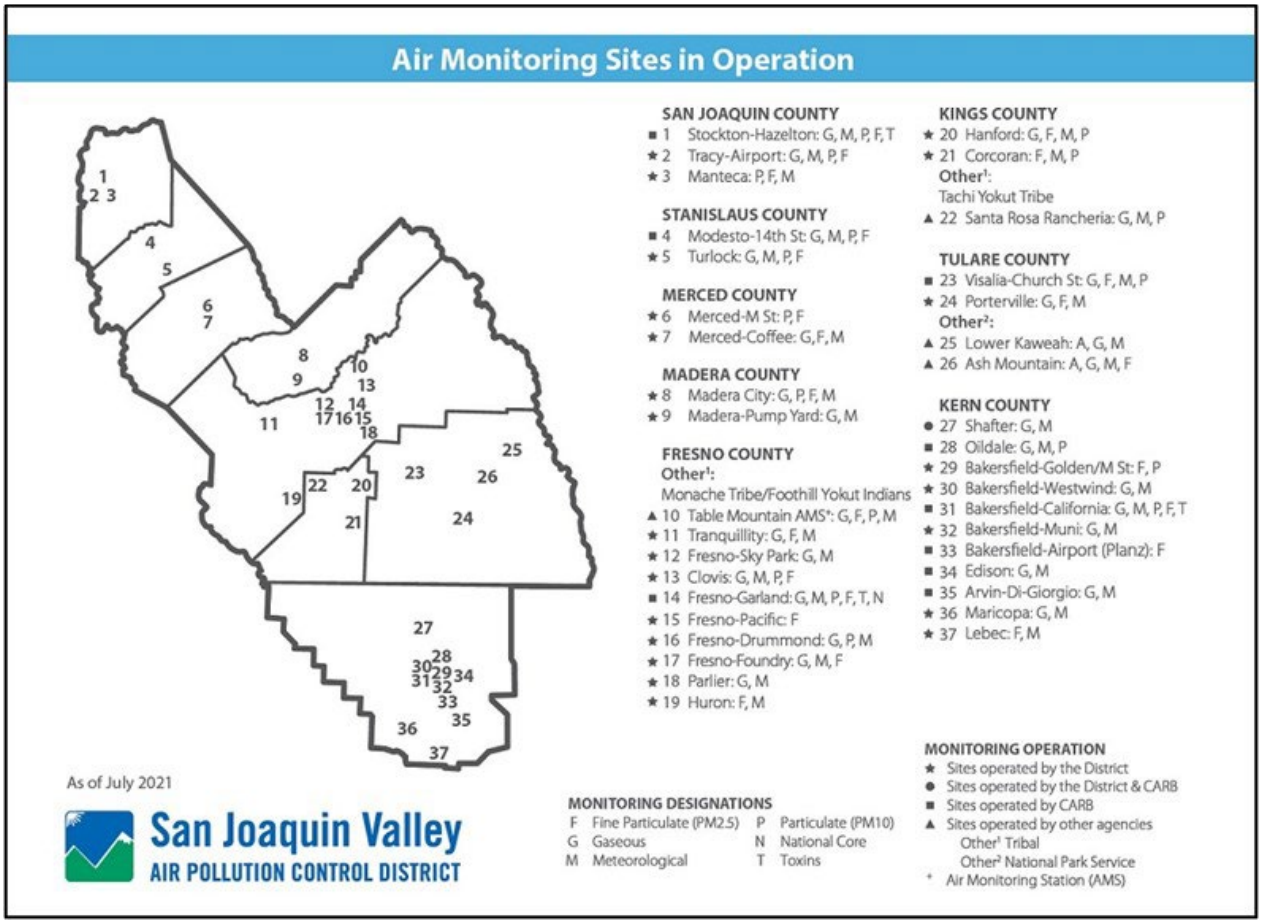
Table 3-2. SJVAB Attainment Status

Pollutant	NAAQS[a]	CAAQS[b]
O_3, 1-hour	No Federal Standard[f]	Nonattainment/Severe
O_3, 8-hour	Nonattainment/Extreme[e]	Nonattainment
PM_{10}	Attainment[c]	Nonattainment
$PM_{2.5}$	Nonattainment[d]	Nonattainment
CO	Attainment/Unclassified	Attainment/Unclassified
NO_2	Attainment/Unclassified	Attainment
SO_2	Attainment/Unclassified	Attainment
Pb (Particulate)	No Designation/Classification	Attainment
H_2S	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility Reducing Particulates	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment

Source: SJVAPCD 2021a
Note:
a. See 40 CFR Part 81
b. See CCR Title 17 Sections 60200-60210
c. On September 25, 2008, EPA redesignated the San Joaquin Valley to attainment for the PM_{10} National Ambient Air Quality Standard (NAAQS) and approved the PM_{10} Maintenance Plan.
d. The Valley is designated nonattainment for the 1997 $PM_{2.5}$ NAAQS. EPA designated the Valley as nonattainment for the 2006 $PM_{2.5}$ NAAQS on November 13, 2009 (effective December 14, 2009).
e. Though the Valley was initially classified as serious nonattainment for the 1997 8-hour O_3 standard, EPA approved Valley reclassification to extreme nonattainment in the Federal Register on May 5, 2010 (effective June 4, 2010).
f. Effective June 15, 2005, the EPA revoked the federal 1-hour O_3 standard, including associated designations and classifications. EPA had previously classified the SJVAB as extreme nonattainment for this standard. EPA approved the 2004 Extreme Ozone Attainment Demonstration Plan on March 8, 2010 (effective April 7, 2010). Many applicable requirements for extreme 1-hour O3 nonattainment areas continue to apply to the SJVAB.

The SJVAPCD, along with CARB, operates an air quality monitoring network that provides information on average concentrations of those pollutants for which Federal or State agencies have established NAAQS and CAAQS, respectively. The monitoring stations in the San Joaquin Valley are depicted in **Figure 3-1**.

Figure 3-1. SJVAPCD Monitoring Network



Source: SJVAPCD 2021b

3.2 Existing Air Quality

For the purposes of background data and this air quality analysis, this analysis relied on data collected in the last three years for the CARB monitoring stations that are located in the closest proximity to the project site. **Table 3-3** provides the background concentrations for O_3, particulate matter of 10 microns (PM_{10}), particulate matter of less than 2.5 microns ($PM_{2.5}$), CO, NO_2, SO_2, and Pb. Information is provided for the Bakersfield-5558 California Avenue, Bakersfield-Golden State Highway, Bakersfield-Municipal Airport, Bakersfield-410 E. Planz Rd., and Edison monitoring stations for 2019 through 2021. No data is available for H_2S, Vinyl Chloride or other toxic air contaminants in Kern County.

Table 3-3. Existing Air Quality Monitoring Data in Project Area

Pollutant and Monitoring Station Location	Maximum Concentration			Days Exceeding Standard		
	2019	2020	2021	2019	2020	2021
O_3 – 1-hour CAAQS (0.09 ppm)						
Bakersfield - 5558 California Ave	0.097	0.110	0.090	2	3	0
Oildale - 3311 Manor Street	0.099	0.109	0.107	1	3	6
Shafter - Walker Street	0.087	0.116	0.104	0	6	1
O_3 – 8-hour CAAQS (0.07 ppm)						
Bakersfield - 5558 California Ave	0.088	0.098	0.081	28	25	11
Oildale - 3311 Manor Street	0.087	0.096	0.095	20	24	46
Shafter - Walker Street	0.077	0.098	0.086	15	34	16
O_3 – 8-hour NAAQS (0.070 ppm)						
Bakersfield - 5558 California Ave	0.088	0.098	0.080	24	25	11
Oildale - 3311 Manor Street	0.086	0.096	0.095	16	23	43
Shafter - Walker Street	0.077	0.098	0.085	14	34	15
PM_{10} – 24-hour CAAQS (50 µg/m^3)						
Bakersfield - 5558 California Ave	125.9	196.8	439.3	17	18	124
Bakersfield – Golden State Hwy	664.2	144.0	176.3	21	26	25
PM_{10} – 24-hour NAAQS (150 µg/m^3)						
Bakersfield-5558 California Ave	116.3	193.8	437.5	0	1	3
Bakersfield – Golden State Hwy	652.2	146.8	175.0	1	0	1
$PM_{2.5}$ - 24-hour NAAQS (35 µg/m^3)						
Bakersfield – 5558 California Ave	59.1	150.7	72.3	12	44	40
Bakersfield – Golden State Hwy	66.1	150.2	78.5	4	10	43
CO - 8-Hour CAAQS & NAAQS (9.0 ppm)						
No data collected	*	*	*	*	*	*
NO_2 - 1-Hour CAAQS (0.18 ppm)						
Bakersfield - 5558 California Ave	67	50	57	0	0	0
Shafter - Walker Street	49	40	47	0	0	0
NO_2 - 1-Hour NAAQS (0.10 ppm)						
Shafter - Walker Street	49.3	40.9	47.8	0	0	0
Bakersfield-5558 California Avenue	67.1	50.4	57.2	0	0	0
SO_2 – 24-hour Concentration - CAAQS (0.04 ppm) & NAAQS (0.14 ppm)						
No data collected	*	*	*	*	*	*
Pb - Maximum 30-Day Concentration CAAQS (1500 ng/m^3)						
Bakersfield-5558 California Avenue	8.5	5.7	9.9	0	0	0

Source: CARB 2023a
Notes: ppm= parts per million
* There was insufficient (or no) data available to determine the value.

The following is a description of criteria air pollutants, typical sources and health effects and the recently documented pollutant levels in the project vicinity.

3.2.1 Ozone (O_3)

The most severe air quality problem in the San Joaquin Valley is high concentrations of O_3. O_3 is not emitted directly into the atmosphere but is a secondary pollutant produced through photochemical reactions involving hydrocarbons and nitrogen oxides (NOx). Significant O_3 generation requires about one to three hours in a stable atmosphere with strong sunlight. For this reason, the months of April through October comprise the "ozone season." O_3 is a regional pollutant because O_3 precursors are transported and diffused by wind concurrently with the reaction process. The data contained in **Table 3-3** shows that the Bakersfield, Oildale, and Shafter area exceeded the 1-hour average ambient O_3 CAAQS and the 8-hour average ambient O_3 NAAQS and CAAQS for the 2019 through 2021 period.

3.2.1.1 Ozone Health Impacts

High levels of O_3 cause eye irritation and can impair respiratory functions. O_3 can cause chest pain, coughing, shortness of breath, and throat irritation; it can also worse chronic respiratory diseases such as asthma and compromise the ability of the body to fight respiratory infections. High levels of O_3 can also affect plants and materials. Grapes, lettuce, spinach and many types of garden flowers and shrubs are particularly vulnerable to O_3 damage.

3.2.2 Suspended Particulate Matter (PM_{10} and $PM_{2.5}$)

Both State and Federal particulate standards now apply to particulates under 10 microns (PM_{10}) rather than to total suspended particulate (TSP), which includes particulates up to 30 microns in diameter. Continuing studies have shown that the smaller-diameter fraction of TSP represents the greatest health hazard posed by the pollutant; therefore, EPA has recently established NAAQS for $PM_{2.5}$. The project area is classified as attainment for PM_{10} and non-attainment for particulates under 2.5 microns ($PM_{2.5}$) for NAAQS.

Particulate matter consists of particles in the atmosphere resulting from many kinds of dust and fume-producing industrial and agricultural operations, from combustion, and from atmospheric photochemical reactions. Natural activities also increase the level of particulates in the atmosphere; wind-raised dust and ocean spray are two sources of naturally occurring particulates. The largest sources of PM_{10} and $PM_{2.5}$ in Kern County are vehicle movement over paved and unpaved roads, demolition and construction activities, farming operations, and unplanned fires. PM_{10} and $PM_{2.5}$ are considered regional pollutants with elevated levels typically occurring over a wide geographic area. Concentrations tend to be highest in the winter, during periods of high atmospheric stability and low wind speed.

Table 3-3 shows that PM_{10} levels regularly exceeded the CAAQS but not the NAAQS at two monitoring stations over the three-year period of 2019 through 2021. **Table 3-3** shows that $PM_{2.5}$ NAAQS were exceeded from 2019 through 2021. Similar levels can be expected to occur in the vicinity of the Project site.

3.2.2.1 Suspended Particulate Matter Health Impacts

In the respiratory tract, very small particles of certain substances may produce injury by themselves or may contain absorbed gases that are injurious. Particulates of aerosol size suspended in the air can both scatter and absorb sunlight, producing haze and reducing visibility. They can also cause a wide range of damage to materials.

3.2.3 Carbon Monoxide (CO)

Ambient CO concentrations normally correspond closely to the spatial and temporal distributions of vehicular traffic. Relatively high concentrations of CO would be expected along heavily traveled roads and near busy intersections. Wind speed and atmospheric mixing also influence CO concentrations; however, under inversion conditions prevalent in the San Joaquin Valley, CO concentrations may be more uniformly distributed over a broad area.

Internal combustion engines, principally in vehicles, produce CO due to incomplete fuel combustion. Various industrial processes also produce CO emissions through incomplete combustion. Gasoline-powered motor vehicles are typically the major source of this contaminant. **Table 3-3** reports no CO data is available for the three-year period from 2019 through 2021; historically Bakersfield area data for CO has been below the CAAQS and NAAQS.

3.2.3.1 Carbon Monoxide Health Impacts

CO does not irritate the respiratory tract but passes through the lungs directly into the blood stream, and by interfering with the transfer of fresh oxygen to the blood, deprives sensitive tissues of oxygen, thereby aggravate cardiovascular disease, causing fatigue, headaches, and dizziness. CO is not known to have adverse effects on vegetation, visibility, or materials.

3.2.4 Nitrogen Dioxide (NO_2) and Hydrocarbons

Kern County has been designated as an attainment area for the NAAQS for NO_2. NO_2 is the "whiskey brown" colored gas readily visible during periods of heavy air pollution. Mobile sources and oil and gas production account for nearly all of the County's NOx emissions, most of which is emitted as NO_2. Combustion in motor vehicle engines, power plants, refineries and other industrial operations are the primary sources in the region. Railroads and aircraft are other potentially significant sources of combustion air contaminants. Oxides of nitrogen are direct participants in photochemical smog reactions. The emitted compound, nitric oxide, combines with oxygen in the atmosphere in the presence of hydrocarbons and sunlight to form NO_2 and O_3. NO_2, the most significant of these pollutants, can color the atmosphere at concentrations as low as 0.5 ppm on days of 10-mile visibility. NOx is an important air pollutant in the region because it is a primary receptor of ultraviolet light, which initiates the reactions producing photochemical smog. It also reacts in the air to form nitrate particulates.

Motor vehicles are the major source of reactive hydrocarbons in the basin. Other sources include evaporation of organic solvents and petroleum production and refining operations. **Table 3-3** shows that the Federal and State NO2 standards have not been exceeded at the monitoring stations over the three-year period of 2019 through 2021. Hydrocarbons are not currently monitored.

3.2.4.1 Nitrogen Dioxide and Hydrocarbons Health Impacts

Certain hydrocarbons can damage plants by inhibiting growth and by causing flowers and leaves to fall. Levels of hydrocarbons currently measured in urban areas are not known to cause adverse effects in humans. However, certain members of this contaminant group are important components in the reactions, which produce photochemical oxidants.

3.2.5 Sulfur Dioxide (SO_2)

Kern County has been designated as an attainment area for the NAAQS for SO_2. SO_2 is the primary combustion product of sulfur, or sulfur containing fuels. Fuel combustion is the major source of this pollutant, while chemical plants, sulfur recovery plants, and metal processing facilities are minor contributors. Gaseous fuels

(natural gas, propane, etc.) typically have lower percentages of sulfur containing compounds than liquid fuels such as diesel or crude oil. SO_2 levels are generally higher in the winter months. Decreasing levels of SO_2 in the atmosphere reflect the use of natural gas in power plants and boilers.

Table 3-3 shows no data has been reported over the three-year period in Kern County.

3.2.5.1 Sulfur Dioxide Health Impacts

At high concentrations, SO_2 irritates the upper respiratory tract. At lower concentrations, when respirated in combination with particulates, SO_2 can result in greater harm by injuring lung tissues. Sulfur oxides (SOx), in combination with moisture and oxygen, results in the formation of sulfuric acid, which can yellow the leaves of plants, dissolve marble, and oxidize iron and steel. SOx can also react to produce sulfates that reduce visibility and sunlight.

3.2.6 Lead (Pb) and Suspended Sulfate

Ambient Pb levels have dropped dramatically due to the increase in the percentage of motor vehicles that run exclusively on unleaded fuel. Ambient Pb levels in Bakersfield are well below the ambient standard and are expected to continue to decline; the data reported in **Table 3-3** only shows the highest concentration as the number of days exceeding standards are not reported. Suspended sulfate levels have stabilized to the point where no excesses of the State standard are expected in any given year.

3.2.6.1 Lead and Suspended Sulfate Health Impacts

Pb affects most organs in the body, and children are most susceptible to the effects of Pb. In children, Pb can cause behavior and learning problems, slowed growth, anemia, and hearing problems. In adults, Pb can lead to decreased kidney function, reproductive problems, and cardiovascular effects, such as increased blood pressure and incidence of hypertension. Suspended sulfates are part of $PM_{2.5}$ and therefore have similar health effects. These health effects include reduced lung function, aggravated asthmatic symptoms, and increased risk of emergency department visits, hospitalizations, and death in people who have chronic heart or lung disease.

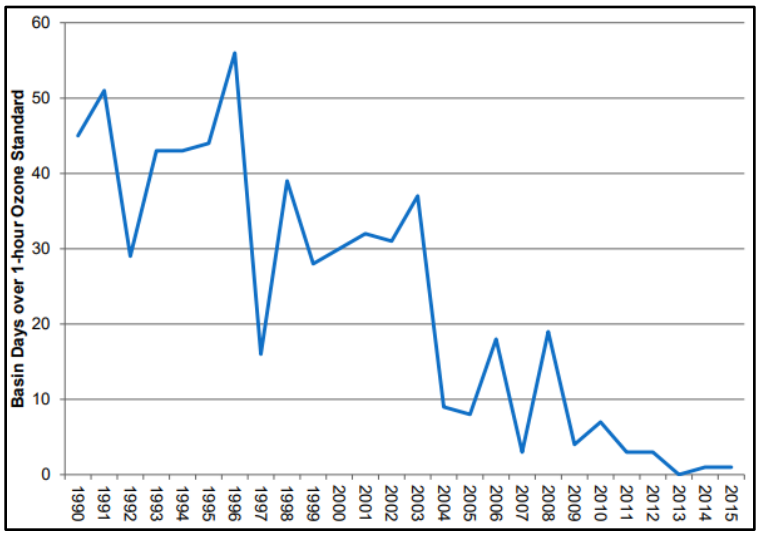
3.3 Regional Air Quality Trends

The Project is within the jurisdiction of the SJVAPCD. The SJVAPCD is made up of eight counties in California's Central Valley: San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings, Tulare, and the SJVAB portion of Kern. This region makes up the SJVAB. The SJVAPCD is responsible for developing comprehensive plans and regulatory programs for the region to attain federal standards by dates specified in federal law. The SJVAPCD is also responsible for meeting state standards by the earliest date achievable, using reasonably available control measures. The SJVAPCD's air programs began development in the 1980s and has greatly improved the air quality in the San Joaquin Valley (Valley) (SJVAPCD 2021d). Emissions in the Valley have reduced drastically through clean air technology and emission control measures for stationary sources and area sources, while vehicular emissions have been reduced by technologies implemented at the state level by CARB.

As discussed above, the SJVAPCD is the lead agency charged with regulating air quality emission reductions for the entire SJVAB. SJVAPCD created various Air Quality Attainment Plans (AQAPs) which represent a regional blueprint for achieving healthful air in the Valley. Emissions of O_3, NOx, PM_{10}, and $PM_{2.5}$ have been decreasing in the Valley since 1980 and are project to continue to decrease despite challenging geography and meteorology that exacerbate the formation and retention of high levels of air pollution. In addition, the Valley is one of the fastest growing regions in California, with increasing population resulting in increasing

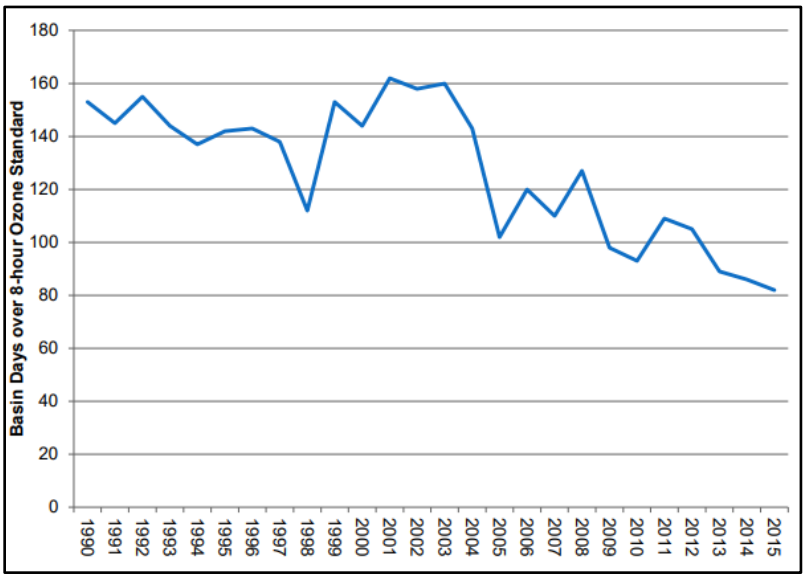
vehicle miles traveled (VMTs). Although vehicle miles traveled in the Valley continue to increase, NOx and VOC levels are decreasing because of the mandated controls on motor vehicles and the replacement of older polluting vehicles with lower-emitting vehicles. NOx emissions from electric utilities have also decreased due to use of cleaner fuels and renewable energy. As shown in **Figure 3-2** and **3-3**, the total number of days exceeding federal O_3 1-hour and 8-hour standards (respectively) has significantly decreased since 1990.

Figure 3-2. Basin Days Exceeding O_3 1-Hour Standard



SJVAPCD 2016

Figure 3-3. Basin Days Exceeding O_3 8-Hour Standard

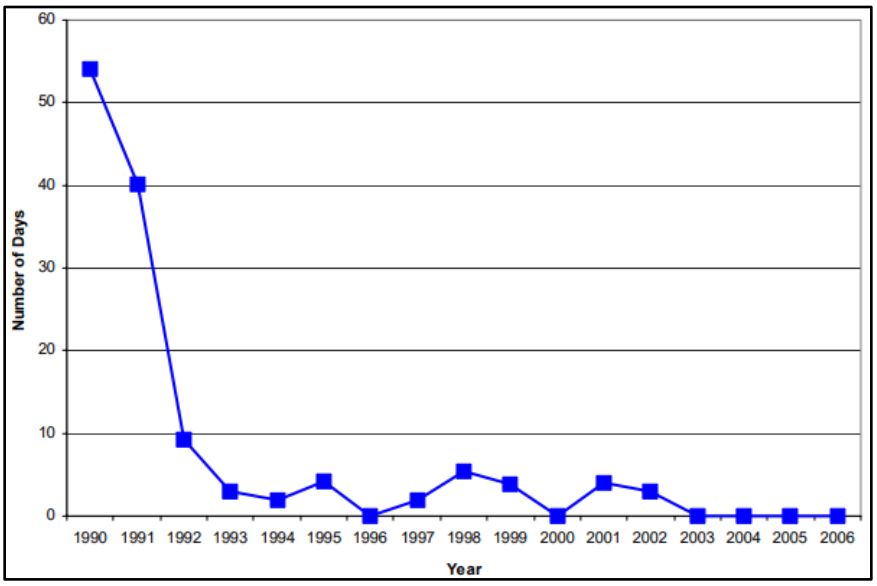


SJVAPCD 2016

The overall trends of PM_{10} and $PM_{2.5}$ levels in the air (not emissions) show an overall improvement since 1990. Area wide sources (fugitive dust from roads, consumer products, wood burning, and other sources) contribute the greatest amount of direct particulate matter emissions. PM_{10} levels in the Valley have improved greatly; San Joaquin Valley has not had a single 24-hour PM_{10} violation since 2003, as shown in **Figure 3-4** (SJVAPCD 2007b). $PM_{2.5}$ and NOx emissions have decreased significantly since 2000, as shown in **Figure 3-5** and **3-6**,

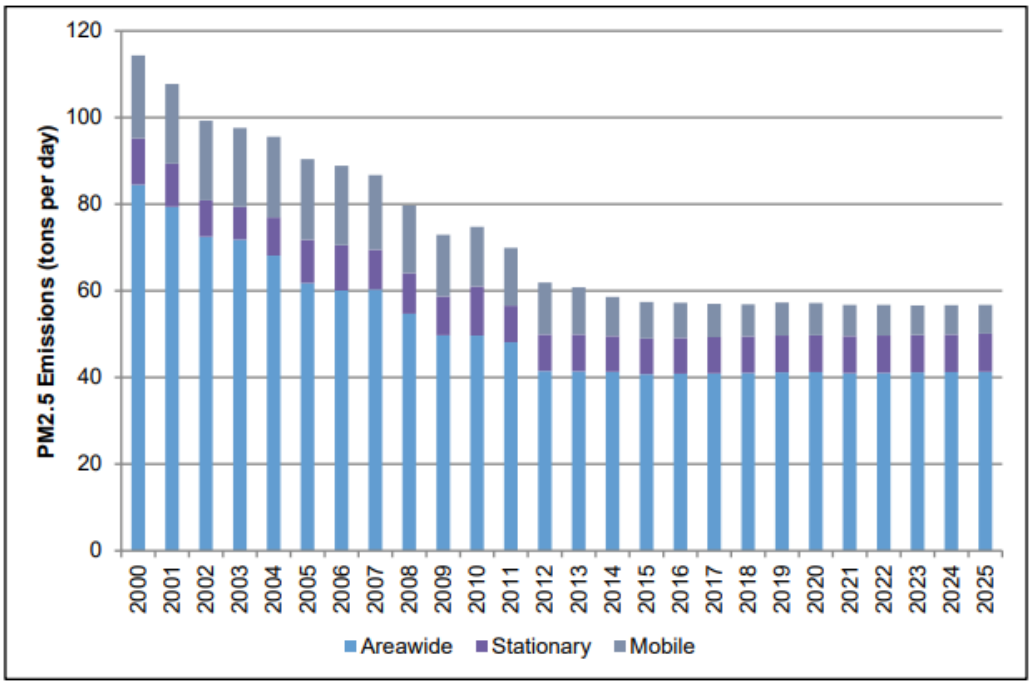
which also conservatively project emissions out to 2025. NOx is a significant $PM_{2.5}$ precursor, and the Valley is NOx-limited, so SJVAPCD relies heavily on NOx emissions to reduce $PM_{2.5}$ (SJVAPCD 2018). **Figure 3-7** shows that average $PM_{2.5}$ concentrations have also decreased since 2000, despite low precipitation totals and increase in atmospheric stability, which provides evidence that the SJVAPCD and CARB efforts have been achieving permanent emissions reductions.

Figure 3-4. Number of Days Exceeding PM_{10} NAAQS



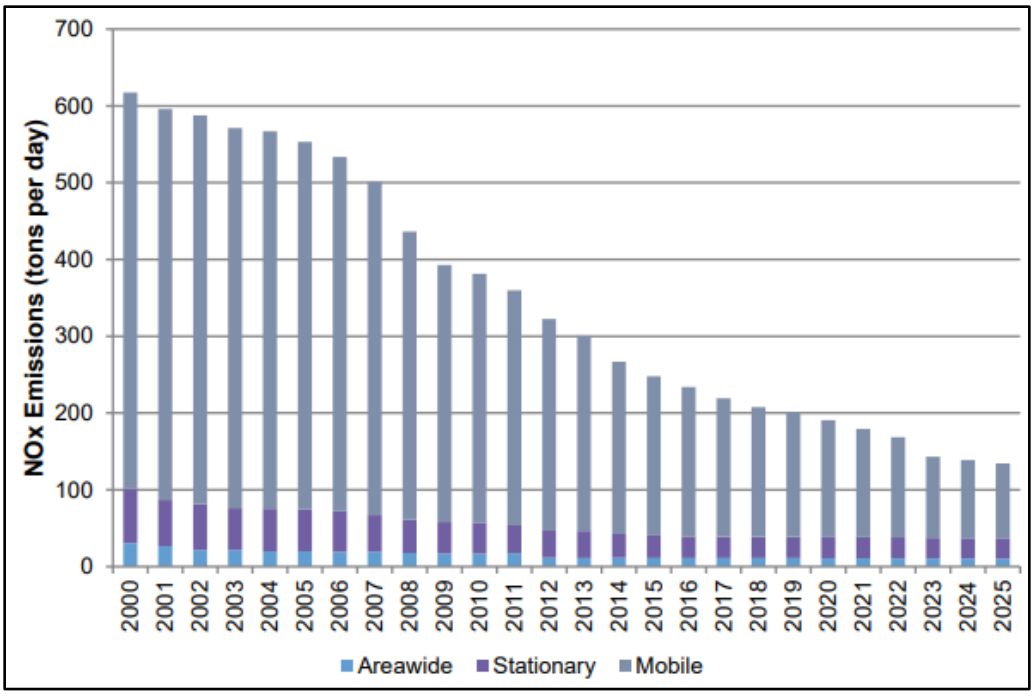
SJVAPCD 2018

Figure 3-5. Average Annual $PM_{2.5}$ Emissions



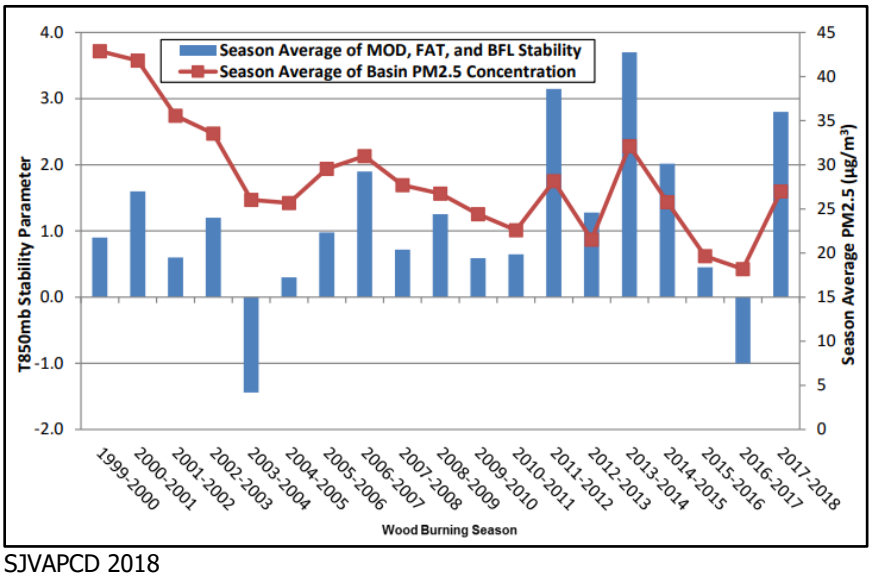
SJVAPCD 2018

Figure 3-6. Average Annual NOx Emissions



SJVAPCD 2018

Figure 3-7. Average $PM_{2.5}$ Concentrations

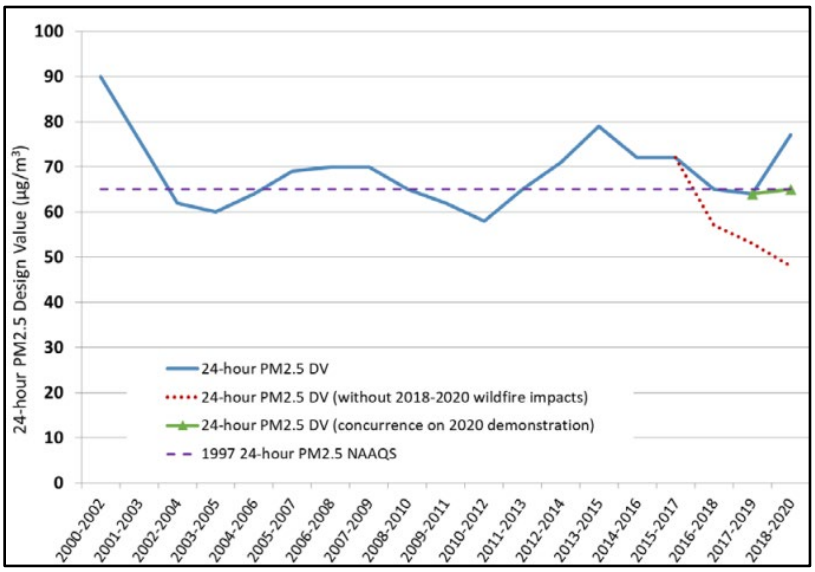


SJVAPCD 2018

California experienced its worst drought in over a century between 2011 and 2015. The lack of ample precipitation and extended periods of stagnation in the winter seasons overwhelmed the District's control measures and strategies, which contributed to higher than expected $PM_{2.5}$ concentrations in the Valley. In addition, the Valley experienced significant wildfire impacts as well as data collection issues at the Valley's peak air monitoring site in Bakersfield during the 2018-2020 period. Through the 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards (2018 $PM_{2.5}$ Plan), SJVAPCD submitted documentation to CARB and EPA to

demonstrate that the 1997 $PM_{2.5}$ 24-hour standard was met by the 2020 attainment target. The demonstration included documenting the severe wildfire impacts in 2020 as an "exceptional event". **Figure 3-8** shows the Valley's 24-hour $PM_{2.5}$ design value through 2020, with trend lines for the design value including and excluding the exceptional event impacts. EPA formally approved the exceptional event in July 2021, so the Valley was able to demonstrate that it meets the 1997 $PM_{2.5}$ 24-hour standard (SJVAPCD 2021c).

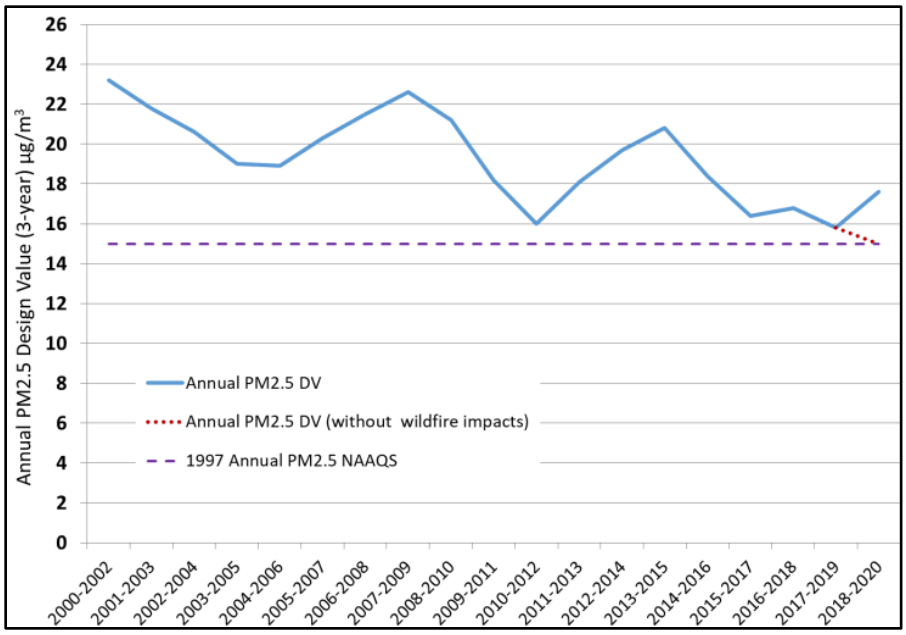
Figure 3-8. $PM_{2.5}$ 24-Hour Design Value Trend



SJVAPCD 2021c

Regarding the 1997 $PM_{2.5}$ annual standard, the Valley would have met the standard by 2020 if not for the significant wildfire impacts and the data collection issues. The annual $PM_{2.5}$ levels in the Valley have seen a continued steady decline, as shown in **Figure 3-9**. After excluding the exceptional event, only one Bakersfield monitoring site exceeded the annual standard due to the data collection issues. Due to this issue, SJVAPCD and CARB prepared an administrative revision to the 2018 $PM_{2.5}$ Plan to establish a new attainment target date for the 1997 annual $PM_{2.5}$ standard of December 31, 2023.

Figure 3-9. $PM_{2.5}$ Annual Average Design Value Trend



SJVAPCD 2021c

Through the combined efforts of SJVAPCD and CARB air programs, emissions of O_3, NOx, PM_{10}, and $PM_{2.5}$ in the Valley have decreased significantly. However, as the Valley is still in nonattainment for $PM_{2.5}$ and O_3, SJVAPCD continues to implement different strategies to meet the federal air quality standards.

3.4 Climate

The most significant single control on the weather pattern of the San Joaquin Valley is the semi-permanent subtropical high-pressure cell, referred to as the "Pacific High." During the summer, the Pacific High is positioned off the coast of northern California, diverting ocean-derived storms to the north. Hence, the summer months are virtually rainless. During the winter, the Pacific High moves southward allowing storms to pass through the San Joaquin Valley. Almost all of the precipitation expected during a given year occurs from December through April. During the summer, the predominant surface winds are out of the northwest. Air enters the Valley through the Carquinez strait and flows toward the Tehachapi Mountains. This up-valley (northwesterly) wind flow is interrupted in early fall by the emergence of nocturnal, down-valley (southeasterly) winds which become progressively more predominant as winter approaches. Wind speeds are generally highest during the spring and lightest in fall and winter. The relatively cool air flowing through the Carquinez strait is warmed on its journey south through the Valley. On reaching the southern end of the Valley, the average high temperature during the summer is nearly 100 degrees Fahrenheit (°F). Relative humidity during the summer is quite low, causing large diurnal temperature variations. Temperatures during the summer often drop into the upper 60s. In winter, the average high temperatures reach into the mid-50s and the average low drops to the mid-30s. In addition, another high-pressure cell, known as the "Great Basin High," develops east of the Sierra Nevada Mountain Range during winter. When this cell is weak, a layer of cool, damp air becomes trapped in the basin and extensive fog results. During inversions, vertical dispersion is restricted, and pollutant emissions are trapped beneath the inversion and pushed against the mountains, adversely affecting regional air quality. Surface-based inversions, while shallow and typically short-lived, are present most mornings. Elevated inversions, while less frequent than ground-based inversions, are typically longer lasting and create the more severe air stagnation problems. The winter season characteristically has the poorest conditions for vertical mixing of the entire year.

Meteorological data for various monitoring stations is maintained by the Western Regional Climate Center. Meteorological data for the Project site is expected to be similar to the data recorded at the Bakersfield AP monitoring station. This data is provided in **Table 3-4**, which contains average precipitation data recorded at the Bakersfield AP monitoring station. Over the 79-year period from October of 1937 through June of 2016 (the most recent data available), the average annual precipitation was 6.17 inches.

Table 3-4. Bakersfield AP Weather Data

Period of Record Monthly Climate Summary for the Period 10/01/1937 to 6/09/2016													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Avg. Maximum Temp (F)	57.4	63.3	69.0	75.7	84.2	92.1	98.6	96.7	91.0	80.5	67.3	57.8	77.8
Avg. Minimum Temp (F)	38.5	42.1	45.4	49.7	56.6	63.3	69.2	67.7	63.1	54.0	44.1	38.5	52.7
Average Total Precipitation (in.)	1.04	1.16	1.12	0.67	0.21	0.07	0.01	0.04	0.10	0.3	0.59	0.85	6.17
Average Snowfall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent of possible observations for period of record: Max. Temp.: 99.6% Min. Temp.: 99.6% Precipitation: 99.7% Snowfall: 92.4% Snow Depth: 92.2%													

Source: Western Regional Climate Center, 2023.

3.5 Climate Change and Greenhouse Gases

3.5.1 Global Climate Change

"Global climate change" refers to change in average meteorological conditions on the earth with respect to temperature, precipitation, and storms, lasting for decades or longer. The term "global climate change" is often used interchangeably with the term "global warming," but "global climate change" is preferred by some scientists and policy makers to "global warming" because it helps convey the notion that in addition to rising temperatures, other changes in global climate may occur. Climate change may result from the following influences:

- Natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- Natural processes within the climate system (e.g., changes in ocean circulation); and/or
- Human activities that change the atmosphere's composition (e.g., through burning fossil fuels) and the land surface (e.g., deforestation, reforestation, urbanization, and desertification).

As determined from worldwide meteorological measurements between 1990 and 2005, the primary observed effect of global climate change has been a rise in the average global tropospheric temperature of 0.36 degree Fahrenheit (°F) per decade. Climate change modeling shows that further warming could occur, which could induce additional changes in the global climate system during the current century. Changes to the global climate system, ecosystems, and the environment of California could include higher sea levels, drier or wetter weather, changes in ocean salinity, changes in wind patterns or more energetic aspects of extreme weather (e.g., droughts, heavy precipitation, heat waves, extreme cold, and increased intensity of tropical cyclones). Specific effects from climate change in California may include a decline in the Sierra Nevada snowpack, erosion of California's coastline, and seawater intrusion in the Sacramento-San Joaquin River Delta.

Natural earth systems and human activities, including fossil fuel combustion and land use changes, both release carbon dioxide (CO_2) and other compounds cumulatively termed greenhouse gases (GHGs). GHGs are effective at trapping radiation that would otherwise escape the atmosphere. This trapped radiation warms the atmosphere, the oceans, and the earth's surface (USGCRP, 2014). Many scientists believe "most of the warming observed over the last 50 years is attributable to human activities" (IPCC, 2017). The increased amount of CO_2 and other GHGs in the atmosphere is the alleged primary result of human-induced warming.

GHGs are present in the atmosphere naturally, released by natural sources, or formed from secondary reactions taking place in the atmosphere. They include CO_2, methane (CH_4), nitrous oxide (N_2O), and O_3. In the last 200 years, substantial quantities of GHGs have been released into the atmosphere, primarily from fossil fuel combustion. These human-induced emissions are increasing GHG concentrations in the atmosphere, therefore enhancing the natural greenhouse effect. The GHGs resulting from human activity are believed to be causing global climate change. While human-made GHGs include CO_2, CH_4, and N_2O, some (like chlorofluorocarbons [CFCs]) are completely new to the atmosphere. GHGs vary considerably in terms of Global Warming Potential (GWP), the comparative ability of each GHG to trap heat in the atmosphere. The GWP is based on several factors, including the relative effectiveness of a gas to absorb infrared radiation and the length of time that the gas remains in the atmosphere ("atmospheric lifetime"). The GWP of each gas is measured relative to CO_2, the most abundant GHG. The definition of GWP for a particular GHG is the ratio of heat trapped by one unit mass of the GHG to the ratio of heat trapped by one unit mass of CO_2 over a specified time period. GHG emissions are typically measured in terms of pounds or tons of "CO_2 equivalents" (CO_2e).

Methane is produced when organic matter decomposes in environments lacking sufficient oxygen. Natural sources of CH_4 production include wetlands, termites, and oceans. Human activity accounts for an estimated 50-65% of combined methane emissions of the approximately 500 million metric tons of CH_4 emitted annually (U.S. EPA, n.d.). These anthropogenic sources include the mining and burning of fossil fuels; digestive processes in ruminant livestock such as cattle; rice cultivation; and the decomposition of waste in landfills. The major removal process for atmospheric CH_4, the chemical breakdown in the atmosphere, cannot keep pace with source emissions; therefore, CH_4 concentrations in the atmosphere are rising.

Worldwide emissions of GHGs in 2008 were 30.1 billion metric tons of CO_2e and have increased considerably since that time (United Nations, 2011). It is important to note that the global emissions inventory data are not all from the same year and may vary depending on the source of the data (U.S. EPA, 2019). Emissions from the top five emitting countries and the European Union accounted for approximately 70% of total global anthropogenic GHG emissions in 2014. Of these anthropogenic emissions, the United States was the number two producer of GHG emissions behind China. The primary GHG emitted by human activities was CO_2, representing approximately 78.8% of total global anthropogenic GHG emissions (U.S. EPA, 2022).

In 2020, the United States emitted approximately 5,981.4 million metric tons of CO_2e. Of the six major sectors nationwide (transportation, electric power industry, industry, agriculture, commercial, and residential), the transportation and electric power industry sectors combined account for approximately 52% of the US anthropogenic GHG emissions; the majority of the electrical power industry and all of the transportation emissions are generated from direct fossil fuel combustion. Between 1990 and 2020, total United States GHG emissions have decreased by approximately 7.3% (U.S. EPA, 2022).

Worldwide, energy-related CO_2 emissions are expected to increase at an average rate of 0.6% annually between 2018 and 2050, compared with the average growth rate of 1.8% per year from 1990 to 2018. Much of the increase in these emissions is expected to occur in the developing world where emerging economies, such as China and India, fuel economic development and advance overall standard of living with fossil fuel energy. Developing countries' emissions are expected to grow above the world average at a rate of

approximately 1% annually between 2018 and 2050 and surpass emissions of industrialized countries by 2025 (U.S. EIA, 2019).

CARB is responsible for developing and maintaining the California GHG emissions inventory. This inventory estimates the amount of GHGs emitted into and removed from the atmosphere by human activities within the state of California and supports the Assembly Bill (AB) 32 Climate Change Program. CARB's current GHG emission inventory covers the years 2000 through 2017 and is based on fuel use, equipment activity, industrial processes, and other relevant data (e.g., housing, landfill activity, and agricultural lands).

In 2019, emissions from statewide emitting activities were 418.2 million metric tons of CO_2 equivalent (MMT CO_2e), which is 7 MMT CO_2e lower than 2018 levels. 2019 emissions have decreased since peak levels in 2004 and are 13 MMT CO_2e below the 1990 emissions level and the State's 2020 GHG limit. Per capita GHG emissions in California have dropped from a 2001 peak of 14.1 tonnes per person to 10.5 tonnes per person in 2019, a 25% decrease (CARB 2021).

CARB estimates that transportation was the source of approximately 40% of California's GHG emissions in 2017, followed by electricity generation at 15%. Other sources of GHG emissions were industrial sources at 21%, residential plus commercial activities at 11%, and agriculture at 8% (CARB 2021).

CARB has projected the estimated statewide GHG emissions for the year 2020, which represent the emissions that would be expected to occur with reductions anticipated from Pavley I and the Renewables Electricity Standard (30 MMT CO_2e total), will be 509 MMT of CO_2e (CARB, 2014). GHG emissions from the transportation and electricity sectors as a whole are expected to increase at approximately 36% and 20% of total CO_2e emissions, respectively, as compared to 2009. The industrial sector consists of large stationary sources of GHG emissions and the percentage of the total 2020 emissions is projected to be 18% of total CO_2e emissions. The remaining sources of GHG emissions in 2020 are high global warming potential gases at 6%, residential and commercial activities at 10%, agriculture at 7%, and recycling and waste at 2%.

3.5.2 Effects of Global Climate Change

Changes in the global climate are assessed using historical records of temperature changes that have occurred in the past. Climate change scientists use this temperature data to extrapolate a level of statistical significance specifically focusing on temperature records from the last 150 years (the Industrial Age) that differ from past climate changes in rate and magnitude.

The Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. In its Fifth Assessment Report, the IPCC predicted that the global mean temperature change from 1990 to 2100 could range from 1.1 degree Celsius (°C) to 6.4 °C (8 to 10.4 °Fahrenheit) (IPCC, 2013). Global average temperatures and sea levels are expected to rise under all scenarios (IPCC, 2014). The IPCC concluded that global climate change was largely the result of human activity, mainly the burning of fossil fuels. However, the scientific literature is not consistent regarding many of the aspects of climate change, the actual temperature changes during the 20th century, and contributions from human versus non-human activities.

Effects from global climate change may arise from temperature increases, climate sensitive diseases, extreme weather events, and degradation of air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems. Heat-related problems include heat rash and heat stroke, drought, etc. In addition, climate-sensitive diseases may increase, such as those spread by mosquitoes and other disease-carrying insects. Such diseases include malaria, dengue fever, yellow fever,

and encephalitis. Extreme events such as flooding and hurricanes can displace people and agriculture. Global warming may also contribute to air quality problems from increased frequency of smog and particulate air pollution.

According to the 2006 California Climate Action Team (CAT) Report, several climate change effects can be expected in California over the course of the next century (CalEPA, 2006). These are based on trends established by the IPCC and are summarized below.

- A diminishing Sierra snowpack declining by 70% to 90%, threatening the state's water supply.
- A rise in sea levels, resulting in the displacement of coastal businesses and residences. During the past century, sea levels along California's coast have risen about seven inches. If emissions continue unabated and temperatures rise into the higher anticipated warming range, sea level is expected to rise an additional 22 to 35 inches by the end of the century. Sea level rises of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats. (Note: This condition would not affect the Proposed Project area, as it is a significant distance away from coastal areas.)
- An increase in temperature and extreme weather events. Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in California. More heat waves can exacerbate chronic disease or heat-related illness.
- Increased risk of large wildfires if rain increases as temperatures rise. Wildfires in the grasslands and chaparral ecosystems of southern California are estimated to increase by approximately 30% toward the end of the 21st century because more winter rain will stimulate the growth of more plant fuel available to burn in the fall. In contrast, a hotter, drier climate could promote up to 90% more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.
- Increasing temperatures from 8 to 10.4 °F under the higher emission scenarios, leading to a 25% to 35% increase in the number of days that ozone pollution levels are exceeded in most urban areas (see below).
- Increased vulnerability of forests due to forest fires, pest infestation, and increased temperatures.
- Reductions in the quality and quantity of certain agricultural products. The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.
- Exacerbation of air quality problems. If temperatures rise to the medium warming range, there could be 75 to 85% more days with weather conducive to ozone formation in Los Angeles and the San Joaquin Valley, relative to today's conditions. This is more than twice the increase expected if rising temperatures remain in the lower warming range. This increase in air quality problems could result in an increase in asthma and other health-related problems.
- A decrease in the health and productivity of California's forests. Climate change can cause an increase in wildfires, an enhanced insect population, and establishment of non-native species.
- Increased electricity demand, particularly in the hot summer months.
- Increased ground-level ozone formation due to higher reaction rates of ozone precursors.

3.5.3 Global Climate Change Regulatory Issues

In 1988, the United Nations established the Intergovernmental Panel on Climate Change to evaluate the impacts of global warming and to develop strategies that nations could implement to curtail global climate change. In 1992, the United Nations Framework Convention on Climate Change established an agreement with the goal of controlling GHG emissions, including methane. As a result, the Climate Change Action Plan was developed to address the reduction of GHGs in the United States. The plan consists of more than 50 voluntary programs. Additionally, the Montreal Protocol was originally signed in 1987 and substantially amended in 1990 and 1992. The Montreal Protocol stipulates that the production and consumption of

compounds that deplete O_3 in the stratosphere (chlorofluorocarbons [CFCs], halons, carbon tetrachloride, and methyl chloroform) were phased out by 2000 (methyl chloroform was phased out by 2005).

On September 27, 2006, Assembly Bill 32 (AB32), the California Global Warming Solutions Act of 2006 (the Act) was enacted by the State of California. The legislature stated, "Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California." The Act caps California's GHG emissions at 1990 levels by 2020. The Act defines GHG emissions as all of the following gases: carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. This agreement represents the first enforceable statewide program in the U.S. to cap all GHG emissions from major industries that includes penalties for non-compliance. While acknowledging that national and international actions will be necessary to fully address the issue of global warming, AB32 lays out a program to inventory and reduce GHG emissions in California and from power generation facilities located outside the state that serve California residents and businesses.

AB32 charges CARB with responsibility to monitor and regulate sources of GHG emissions in order to reduce those emissions. CARB has adopted a list of discrete early action measures that can be implemented to reduce GHG emissions. CARB has defined the 1990 baseline emissions for California and has adopted that baseline as the 2020 statewide emissions cap. CARB is conducting rulemaking for reducing GHG emissions to achieve the emissions cap by 2020. In designing emission reduction measures, CARB must aim to minimize costs, maximize benefits, improve and modernize California's energy infrastructure, maintain electric system reliability, maximize additional environmental and economic co-benefits for California, and complement the state's efforts to improve air quality.

Subsequent legislation by the California legislature has included Senate Bill (SB) 32, which expanded upon AB32 to reduce GHG emissions to 40% below the 1990 levels by 2030; AB197 which increased the legislative oversight of the CARB by adding two legislatively appointed non-voting members to the CARB Board and provided additional protection to disadvantaged communities; SB350, which increased California's renewable energy electricity procurement goal and SB100, which established a landmark policy requiring renewable energy and zero-carbon resources to supply 100 percent of electrical retail sales to end use customers and 100 percent of electricity procured to serve state agencies by 2045.

Global warming and climate change have received substantial public attention for more than 20 years. For example, the United States Global Change Research Program was established by the Global Change Research Act of 1990 to enhance the understanding of natural and human-induced changes in the Earth's global environmental system, to monitor, understand, and predict global change, and to provide a sound scientific basis for national and international decision-making. Even so, the analytical tools have not been developed to determine the effect on worldwide global warming from a particular increase in GHG emissions, or the resulting effects on climate change in a particular locale. The scientific tools needed to evaluate the impacts that a specific project may have on the environment are even farther in the future.

The California Supreme Court's CEQA decision on the Newhall Ranch development case, Center for Biological v. California Department of Fish and Wildlife (November 30, 2015, Case No. 217763), determined that the project's Environmental Impact Report (EIR) did not substantiate the conclusion that the GHG cumulative impacts would be less than significant. The EIR determined that the Newhall Ranch development project would reduce GHG emissions by 31 percent from business as usual (BAU). This reduction was compared to the California's target of reducing GHG emissions statewide by 29 percent from business as usual. The Court determined that "the EIR's deficiency stems from taking a quantitative comparison method developed by the Scoping Plan as a measure of the greenhouse gas reduction effort required by the state as a whole, and attempting to use that method, without adjustments, for a purpose very different from its original design." In the Court's final ruling it offered suggestions that were deemed appropriate use of the BAU methodology:

1. Lead agencies can use the comparison to BAU methodology if they determine what reduction a particular project must achieve in order to comply with statewide goals,
2. Project design features that comply with regulations to reduce emissions may demonstrate that those components of emissions are less that significant, and
3. Lead agencies could also demonstrate compliance with locally adopted climate plans or could apply specific numerical thresholds developed by some local agencies.

Kern County, the Lead CEQA agency for this Project, has not developed specific thresholds for GHGs. As discussed in Section 4.1, the SJVAPCD, a CEQA Trustee Agency for this Project, has developed thresholds to determine significance of a proposed project – either implement Best Performance Standards or achieve a 29% reduction from BAU (a specific numerical threshold). However, the SJVAPCD has established their BAU and baseline emissions based on the years 2002-2004 and 2020, respectively. The 2020 projected baseline has passed, and at this time, no new guidance has been approved for determining BAU and projected baseline for the next target year. Therefore, the 29% reduction from BAU cannot be applied to the subject Project in order to determine significance. Additionally, a Best Performance Standards threshold has not been established. For this Project, compliance with locally adopted climate plans will be used to determine level of significance for GHG. Therefore, the GHG analysis for this Project follows the suggestions from the Court's ruling on the Newhall Ranch development project in order to determine significance using the project design features.

4. IMPACT ASSESSMENT

4.1 Significance Criteria

To determine whether a proposed Project could create a potential CEQA impact, local, State, and Federal agencies have developed various means by which a project's impacts may be measured and evaluated. Such means can generally be categorized as follows:

- Thresholds of significance adopted by air quality agencies to guide lead agencies in their evaluation of air quality impacts under the CEQA.
- Regulations established by air districts, CARB and EPA for the evaluation of stationary sources when applying for Authorities to Construct, Permits to Operate and other permit program requirements (e.g., New Source Review).
- Thresholds utilized to determine if a project would cause or contribute significantly to violations of the ambient air quality standards or other concentration-based limits.
- Regulations applied in areas where severe air quality problems exist.

Summary tables of these emission-based and concentration-based thresholds of significance for each pollutant are provided below along with a discussion of their applicability.

4.1.1 Thresholds Adopted for the Evaluation of Air Quality Impacts under CEQA

In order to maintain consistency with CEQA, the SJVAPCD (2015) adopted guidelines to assist applicants in complying with the various requirements. According to the SJVAPCD's GAMAQI, a project would have potentially significant air quality impacts when the project:

- Creates a conflict with or obstructs implementation of the applicable air quality plan;
- Causes a violation of any air quality standard or generates substantial contribution towards exceeding an existing or projected air quality standard;
- Results in a cumulatively considerable net increase of any criteria pollutant for which the project region is designated non-attainment under a NAAQS and CAAQS (including emissions which exceed quantitative thresholds for O_3 precursors);
- Exposes sensitive receptors to substantial pollutant concentrations; or
- Creates objectionable odors that affect a substantial number of people.

The SJVAPCD GAMAQI thresholds are designed to implement the general criteria for air quality emissions as required in the CEQA Guidelines, Appendix G, Paragraph III (Title 14 of the California Code of Regulations §15064.7) and CEQA (California Public Resources Code Sections 21000 et. al). SJVAPCD's specific CEQA air quality thresholds are presented in **Table 4-1**.

Table 4-1. SJVAPCD CEQA Thresholds of Significance

Criteria Pollutant	Significance Level	
	Construction	Operational
CO	100 tons/yr	100 tons/yr
NOx	10 tons/yr	10 tons/yr
ROG	10 tons/yr	10 tons/yr
SOx	27 tons/yr	27 tons/yr
PM_{10}	15 tons/yr	15 tons/yr
$PM_{2.5}$	15 tons/yr	15 tons/yr
Source: SJVAPCD 2015		

4.1.2 Thresholds for Ambient Air Quality Impacts

CEQA Guidelines – Appendix G (Environmental Checklist) states that a project that would "violate any air quality standard or contribute substantially to an existing or projected air quality violation" would be considered to create significant impacts on air quality. Therefore, an AQIA should determine whether the emissions from a project would cause or contribute significantly to violations of the NAAQS or CAAQS (presented above in **Table 3-1**) when added to existing ambient concentrations.

The EPA has established the Federal Prevention of Significant Deterioration (PSD) program to determine what comprises "significant impact levels" (SIL) to NAAQS attainment areas. A project's impacts are considered less than significant if emissions are below PSD SIL for a particular pollutant. When a SIL is exceeded, an additional "increment analysis" is required. As the Project would not include modification to the stationary source under NSR, it would not be subject to either PSD or NSR review. The PSD SIL thresholds are used with ambient air quality modeling for a CEQA project to address whether the Project would "violate any air quality standard or contribute substantially to an existing or projected air quality violation." Ambient air quality emissions estimates below the PSD SIL thresholds would result in less than significant ambient air quality impacts for both a project and cumulative CEQA impact analysis. The SJVAB is classified as non-attainment for the O_3 NAAQS and, as such, is subject to "non-attainment new source review" (NSR). PSD SILs and increments are more stringent than the CAAQS or NAAQS and represent the most stringent thresholds of significance.

4.1.3 Thresholds for Hazardous Air Pollutants

The SJVAPCD's GAMAQI states, "From a health risk perspective there are basically two types of land use projects that have the potential to cause long-term public health risk impacts:

- Type A Projects: Land use projects that will place new toxic sources in the vicinity of existing receptors.
- Type B Projects: Land use projects that will place new receptors in the vicinity of existing toxics sources" (SJVAPCD 2015).

Table 4-2 presents the thresholds of significance used with toxic air contaminants when evaluating hazardous air pollutants (HAPs).

Table 4-2. Measures of Significance - Toxic Air Contaminants

Agency	Level	Description
Significance Thresholds Adopted for the Evaluation of Impacts Under CEQA		
SJVAPCD	Carcinogens	Maximally Exposed Individual risk **equals or exceeds** 20 in one million.
	Non-Carcinogens	**Acute**: Hazard Index **equals or exceeds** 1 for the Maximally Exposed Individual.
		Chronic: Hazard Index **equals or exceeds** 1 for the Maximally Exposed Individual.
Source: SJVAPCD 2015		

4.1.4 Cumulative Impacts Threshold of Significance

Attachment A of Kern County's Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports states "the following threshold are defined for purposes of determining cumulative effects as the baseline for "considerable". "Projects in the San Joaquin Valley Air Pollution Control District…will be subject to the following significance thresholds". The thresholds outlined in the guidelines mirror the individual project significance thresholds of 15 tons per year for PM_{10} and 10 tons per year for NO_X and ROG. Therefore, owing to the inherently cumulative nature of air quality impacts, the threshold for whether a project would make a

cumulatively considerable contribution to a significant cumulative impact is simply whether the project would exceed project-level thresholds.

4.1.5 Global Climate Change Thresholds of Significance

On December 17, 2009, SJVAPCD adopted Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA (SJVAPCD 2009); which outlined the SJVAPCD's methodology for assessing a project's significance for GHGs under CEQA. The following criteria was outlined in the document to determine whether a project could have a significant impact:

- Projects determined to be exempt from the requirements of CEQA would be determined to have a less than significant individual and cumulative impact for GHG emissions and would not require further environmental review, including analysis of project specific GHG emissions. Projects exempt under CEQA would be evaluated consistent with established rules and regulations governing project approval and would not be required to implement BPS.
- Projects complying with an approved GHG emission reduction plan or GHG mitigation program which avoids or substantially reduces GHG emissions within the geographic area in which the project is located would be determined to have a less than significant individual and cumulative impact for GHG emissions. Such plans or programs must be specified in law or approved by the lead agency with jurisdiction over the affected resource and supported by a CEQA compliant environmental review document adopted by the lead agency. Projects complying with an approved GHG emission reduction plan or GHG mitigation program would not be required to implement BPS.
- Projects implementing Best Performance Standards would not require quantification of project specific GHG emissions. Consistent with CEQA Guidelines, such projects would be determined to have a less than significant individual and cumulative impact for GHG emissions.
- Projects not implementing Best Performance Standards would require quantification of project specific GHG emissions and demonstration that project specific GHG emissions would be reduced or mitigated by at least 29%, compared to Business-as-Usual (BAU), including GHG emission reductions achieved since the 2002-2004 baseline period. Projects achieving at least a 29% GHG emission reduction compared to BAU would be determined to have a less than significant individual and cumulative impact for GHG.
- Notwithstanding any of the above provisions, projects requiring preparation of an Environmental Impact Report for any other reason would require quantification of project specific GHG emissions. Projects implementing BPS or achieving at least a 29% GHG emission reduction compared to BAU would be determined to have a less than significant individual and cumulative impact for GHG.

Kern County, the Lead CEQA agency for this Project, has not developed specific thresholds for GHGs. As discussed in Section 4.1, the SJVAPCD, a CEQA Trustee Agency for this Project, has developed thresholds to determine significance of a proposed project – either implement Best Performance Standards or achieve a 29% reduction from BAU (a specific numerical threshold). However, the SJVAPCD has established their BAU and baseline emissions based on the years 2002-2004 and 2020, respectively. The 2020 projected baseline has passed, and at this time, no new guidance has been approved for determining BAU and projected baseline for the next target year. Therefore, the 29% reduction from BAU cannot be applied to the subject Project in order to determine significance. Additionally, a Best Performance Standards threshold has not been established. For this Project, compliance with locally adopted climate plans will be used to determine level of significance for GHG. Therefore, the GHG analysis for this Project follows the suggestions from the Court's ruling on the Newhall Ranch development project in order to determine significance using the project design features.

4.2 Project Related Emissions

This document was prepared pursuant to the SJVAPCD's GAMAQI. The GAMAQI identifies separate thresholds for a project's short-term (construction) and long-term (operational) emissions.

Project emissions were estimated for the following project development stages:

- Short-term (Construction and Demolition) – Construction emissions of the proposed Project were estimated in CalEEMod using the proposed construction schedule and defaults for construction equipment for the development of 8,907,446 square feet of distribution warehousing on 727 gross acres.
- Long-term (Operations) – Long term emissions were also estimated in CalEEMod using model defaults for operations of 8,907,446 square feet of distribution warehousing. Vehicle trip rates were revised per the Project Trip Generation data provided in the Traffic Impact Study (Ruettgers and Schuler 2022). The commercial-nonwork (C-NW) trip distance was revised to a standard 50-mile distance for the distribution warehouse.

4.2.1 Short-Term Emissions

The Project applicant did not provide a list of specific construction equipment but provided a construction schedule of approximately 290,000 sf per year; the construction emissions were, therefore, based on the default CalEEMod equipment list for the proposed Project's land use type and development intensity and applying model defaults as well as a conservative analysis approach. Construction emissions were estimated under the assumption that both phases will begin construction June 2025. The dates entered into the CalEEMod program represent the earliest construction timeline, which would estimate the worst-case emissions as construction equipment technology and emissions improve over time; therefore, all estimated emission totals are conservative and reflect a reasonable and legally sufficient estimate of potential impacts. All construction equipment activity levels assumed were based on the applicant-specified values for type and number of equipment and CalEEMod adjusted hours per day and horsepower.

SJVAPCD's required measures for all projects were also applied:

- Water exposed areas 3 times per day; and
- Reduce vehicle speed to less than 15 miles per hour.

Table 4-3 presents the Project's short-term emissions based on the anticipated construction period.

Table 4-3. Short-Term Project Emissions

Emissions Source	Pollutant (tons/year)					
	ROG	NOX	CO	SO_2	PM_{10}	$PM_{2.5}$
Unmitigated						
2025	0.81	3.53	4.56	0.01	1.13	0.50
2026	1.08	3.62	6.37	0.01	1.09	0.38
2027	2.16	3.02	5.33	0.01	0.82	0.28
2028	1.67	3.42	5.34	0.01	1.15	0.47
2029	1.59	2.83	4.88	0.01	0.84	0.30
2030	2.62	2.58	4.10	0.01	0.76	0.34
2031	1.18	1.47	2.51	0.00	0.32	0.13
2032	0.61	1.75	2.90	0.01	0.84	0.34
2033	0.23	1.56	3.17	0.01	0.69	0.19
2034	2.05	1.28	2.42	0.01	0.64	0.22
2035	0.24	1.64	3.07	0.01	0.84	0.28
2036	0.21	1.44	2.96	0.01	0.68	0.18
2037	2.01	0.99	1.89	0.00	0.38	0.13
2038	1.01	1.13	1.96	0.00	0.54	0.24
2039	0.16	1.23	2.50	0.01	0.52	0.15
2040	1.54	1.18	2.20	0.01	0.69	0.27
2041	0.18	1.31	2.70	0.01	0.68	0.19
2042	0.17	1.29	2.68	0.01	0.65	0.17
2043	1.95	1.15	2.19	0.01	0.79	0.31
2044	0.17	1.29	2.70	0.01	0.68	0.18
2045	2.01	1.02	2.11	0.01	0.53	0.15
2046	0.18	1.26	2.54	0.01	0.79	0.27
2047	0.15	1.17	2.43	0.01	0.55	0.15
2048	1.70	1.05	2.11	0.01	0.73	0.27
2049	0.15	1.17	2.46	0.01	0.57	0.15
2050	1.60	0.32	0.67	0.00	0.12	0.03
Maximum Annual Emissions	*2.62*	*3.62*	*6.37*	*0.01*	*1.15*	*0.50*
Mitigated						
2025	0.81	3.53	4.56	0.01	0.60	0.27
2026	1.08	3.62	6.37	0.01	0.97	0.32
2027	2.16	3.02	5.33	0.01	0.77	0.25
2028	1.67	3.42	5.34	0.01	0.74	0.29
2029	1.59	2.83	4.88	0.01	0.69	0.24
2030	2.62	2.58	4.10	0.01	0.45	0.19
2031	1.18	1.47	2.51	0.00	0.26	0.10
2032	0.61	1.75	2.90	0.01	0.50	0.18
2033	0.23	1.56	3.17	0.01	0.69	0.19
2034	2.05	1.28	2.42	0.01	0.51	0.16
2035	0.24	1.64	3.07	0.01	0.63	0.19
2036	0.21	1.44	2.96	0.01	0.68	0.18
2037	2.01	0.99	1.89	0.00	0.31	0.10
2038	1.01	1.13	1.96	0.00	0.24	0.10
2039	0.16	1.23	2.50	0.01	0.50	0.14
2040	1.54	1.18	2.20	0.01	0.41	0.14
2041	0.18	1.31	2.70	0.01	0.63	0.17
2042	0.17	1.29	2.68	0.01	0.65	0.17

2043	1.95	1.15	2.19	0.01	0.45	0.15
2044	0.17	1.29	2.70	0.01	0.68	0.18
2045	2.01	1.02	2.11	0.01	0.49	0.13
2046	0.18	1.26	2.54	0.01	0.55	0.17
2047	0.15	1.17	2.43	0.01	0.55	0.15
2048	1.70	1.05	2.11	0.01	0.44	0.14
2049	0.15	1.17	2.46	0.01	0.57	0.15
2050	1.60	0.32	0.67	0.00	0.12	0.03
Maximum Annual Emissions	*2.62*	*3.62*	*6.37*	*0.01*	*0.97*	*0.32*
Significance Threshold	**10**	**10**	**100**	**27**	**15**	**15**
Is Threshold Exceeded After Mitigation?	No	No	No	No	No	No

Source: Trinity Consultants 2024

As calculated with CalEEMod, the estimated short-term construction-related emissions for criteria pollutants would not exceed SJVAPCD significance threshold levels during any given year and would therefore be *less than significant*.

4.2.2 Long-Term Operations Emissions

Long-term emissions are caused by operational mobile, area, and energy sources. Long-term emissions would consist of the following components:

4.2.2.1 Fugitive Dust Emissions

Operation of the Project site at full build-out is not expected to present a substantial source of fugitive dust (PM_{10}) emissions. The main source of PM_{10} emissions would be from vehicular traffic associated with the Project site.

PM_{10}, on its own as well as in combination with other pollutants, creates a health hazard. The SJVAPCD's Regulation VIII establishes required controls to reduce and minimizing fugitive dust emissions. The following SJVAPCD Rules and Regulations apply to the proposed Project (and all projects):

- Rule 4102 – Nuisance – prohibits a facility from posing as a nuisance to surrounding receptors and can impose penalties for nuisance issues such as dust, smoke, excess emissions, etc. Compliance with this rule ensures that the area around the Project site will not be adversely impacted by such issues.
- Regulation VIII – Fugitive PM_{10} Prohibitions – a series of regulations to reduce and/or eliminate generation of particulate matter (PM) that can adversely impact visibility as well as the health and safety of people on-site or in the vicinity of the Project.
  - Rule 8011 - General Requirements – this rule is to reduce ambient concentrations of fine particulate matter (PM10) by requiring actions to prevent, reduce or mitigate anthropogenic (human-caused) fugitive dust emissions.
  - Rule 8021 - Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities – restricts generation of airborne dust and visibility impacts from these activities. Places limits on opacity and equipment operation under certain adverse weather conditions.
  - Rule 8041 - Carryout and Trackout – requires that equipment and vehicles leaving the construction site control the amount of dirt, soil or mud that is tracked offsite and onto public roadways. This helps eliminate or minimize dust generation and opacity degradation.
  - Rule 8051 - Open Areas – limits fugitive dust from open areas, i.e., areas on a construction site that are not actively being constructed upon but may generate wind-blown dust.

The Project would comply with applicable SJVAPCD Rules and Regulations, the local zoning codes, and additional emissions reduction measures recommended later in this analysis, in Section 7, Mitigation and Other Recommended Measures.

4.2.2.2 Exhaust Emissions

Project-related transportation activities from employees and consumers would generate mobile source ROG, NOx, SOx, CO, PM_{10}, and $PM_{2.5}$ exhaust emissions. Exhaust emissions would vary substantially from day to day but would average out over the course of an operational year. The variables factored into estimating total Project emissions include: level of activity, site characteristics, weather conditions, and number of visitors. As the Project is not expected to generate an adverse change in current activity levels, substantial emissions are not anticipated.

The fleet mix used in CalEEMod was adjusted to reflect Project-specific estimates. The traffic study (Ruettgers and Schuler, 2022) provided daily trip rates for trucks and passenger vehicles, broken down by phase. Based on traffic estimates, 62% of the truck trips are expected to be heavy heavy duty (HHD) trucks. HHD truck trips were entered into CalEEMod as 62%, with the remaining 38% of truck trips distributed across the remaining truck types. The fleet mix for the passenger vehicles was also adjusted in CalEEMod to use a weighted ratio across the three passenger vehicle types. The trip rate adjustment is provided in Appendix B.

4.2.2.3 Projected Emissions

The proposed Project is expected to have long-term air quality impacts as shown in **Table 4-4**. The output from the CalEEMod runs are available in Appendix B.

Table 4-4. Post-Project (Operational) Emissions

Emissions Source	Pollutant (tons/year)					
	ROG	NOX	CO	SOx	PM_{10}	$PM_{2.5}$
Unmitigated Operational Emissions						
Phase 1						
Mobile Emissions	2.53	48.39	46.54	0.53	35.67	9.84
Aera Emissions	6.47	0.24	28.35	0.00	0.05	0.04
Energy Emissions	0.10	1.89	1.59	0.01	0.14	0.14
Phase 1 Total	*9.11*	*50.52*	*76.48*	*0.54*	*35.87*	*10.03*
Phase 2						
Mobile Emissions	0.73	7.69	8.11	0.07	3.88	1.08
Aera Emissions	1.50	0.05	6.52	0.00	0.01	0.01
Energy Emissions	0.02	0.44	0.37	0.00	0.03	0.03
Phase 2 Total	*2.26*	*8.18*	*15.00*	*0.07*	*3.92*	*1.13*
Total	**11.36**	**58.70**	**91.48**	**0.62**	**39.79**	**11.15**
Mitigated Operational Emissions						
Phase 1						
Mobile Emissions	2.53	48.39	46.54	0.53	35.67	9.84
Aera Emissions	6.47	0.24	28.35	0.00	0.05	0.04
Energy Emissions	0.10	1.89	1.59	0.01	0.14	0.14
Phase 1 Total	*9.11*	*50.52*	*76.48*	*0.54*	*35.87*	*10.03*
Phase 2						
Mobile Emissions	0.73	7.69	8.11	0.07	3.88	1.08
Aera Emissions	1.50	0.05	6.52	0.00	0.01	0.01
Energy Emissions	0.02	0.44	0.37	0.00	0.03	0.03

Phase 2 Total	*2.26*	*8.18*	*15.00*	*0.07*	*3.92*	*1.13*
Total	**11.36**	**58.70**	**91.48**	**0.62**	**39.79**	**11.15**
Mitigated Operational Emissions (Mitigated with VERA[1])						
Final Operational Emissions	*0*	*0*	*91.48*	*0.62*	*0*	*0*
SJVAPCD Threshold	**10**	**10**	**100**	**27**	**15**	**15**
Is Threshold Exceeded After Mitigation?	No	No	No	No	No	No
Source: Trinity Consultants 2024 1. See Section 7.4 for discussion on VERA.						

As shown in **Table 4-4**, operation-related emissions, as calculated by CalEEMod (see Appendix B), would be less than the SJVAPCD significant threshold levels for CO, SOx, PM_{10}, and $PM_{2.5}$ but would exceed significant threshold levels for ROG, and NOx prior to additional mitigation. However, ROG and NOx emissions will be mitigated by implementation of a Voluntary Emissions Reduction Agreement (VERA). Therefore, the proposed Project would have a *less than significant impact* during Project operations.

4.3 Potential Impact on Sensitive Receptors

Sensitive receptors are defined as locations where young children, chronically ill individuals, the elderly, or people who are more sensitive than the general population reside, such as schools, hospitals, nursing homes, and daycare centers. There are no known non-residential sensitive receptors within 2 miles of the Project site.

4.4 Potential Impacts to Visibility to Nearby Areas

Visibility impact analyses are intended for stationary sources of emissions which are subject to the Prevention of Significant Deterioration (PSD) requirements in 40 CFR Part 60; they are not usually conducted for area sources. Because the Project's PM_{10} emissions increase is predicted to be less than the PSD threshold levels, an impact at any Class 1 area or military/airspace operation within 100 kilometers of the Project (including San Rafael Wilderness, Domeland Wilderness, Edwards Air Force Base, China Lake Naval Weapons Station, and the entire R-2508 Airspace Complex) is extremely unlikely. Therefore, based on the Project's predicted less-than significant PM_{10} emissions, the Project would be expected to have a less than significant impact to visibility at any Class 1 area or military/airspace operation.

4.5 Potential Impacts from Carbon Monoxide

Ambient CO concentrations normally correspond closely to the spatial and temporal distributions of vehicular traffic. Relatively high concentrations of CO would be expected along heavily traveled roads and near busy intersections. CO concentrations are also influenced by wind speed and atmospheric mixing. CO concentrations may be more uniformly distributed when inversion conditions are prevalent in the valley. Under certain meteorological conditions, CO concentrations along a congested roadway or intersection may reach unhealthful levels for sensitive receptors, e.g. children, the elderly, hospital patients, etc. This localized impact can result in elevated levels of CO, or "hotspots" even though concentrations at the closest air quality monitoring station may be below NAAQS and CAAQS.

The localized Project impacts depend on whether ambient CO levels in the Project vicinity would be above or below NAAQS. If ambient levels are below the standards, a project is considered to have significant impacts if a project's emissions would exceed of one or more of these standards. If ambient levels already exceed a state standard, a project's emissions are considered significant if they would increase one-hour CO concentrations by 10 ppm or more or eight-hour CO concentrations by 0.45 ppm or more. There are two criteria established by the SJVAPCD's GAMAQI by which CO "Hot Spot" modeling is required:

1. A traffic study for the project indicates that the Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity would be reduced to LOS E or F; or
2. A traffic study indicates that the project would substantially worsen an already existing LOS F on one or more streets or at one or more intersections in the project vicinity.

A traffic study was completed for this Project (Ruettgers & Schuler, 2022). According to the traffic study, impacted intersections and roadway segments are not anticipated to operate at a LOS of C or better, even with mitigation. However, CO "Hotspot" Modeling was not conducted for this Project because CO emissions for this Project are below significance thresholds. Therefore, no concentrated excessive CO emissions are expected to be caused once the proposed Project is completed.

4.6 Predicted Health Risk Impacts

GAMAQI recommends that Lead Agencies consider situations wherein a new or modified source of HAPs is proposed for a location near an existing residential area or other sensitive receptor when evaluating potential impacts related to HAPs.

The proposed Project would result in emissions of Hazardous Air Pollutants (HAPs) and would be located near existing residents; therefore, an assessment of the potential risk to the population attributable to emissions of hazardous air pollutants from the proposed Project is required.

To predict the potential health risk to the population attributable to emissions of HAPs from the proposed Project, ambient air concentrations were predicted with dispersion modeling to arrive at a conservative estimate of increased individual carcinogenic risk that might occur as a result of continuous exposure over a 70-year lifetime. Similarly, predicted concentrations were used to calculate non-cancer chronic and acute hazard indices (HIs), which are the ratio of expected exposure to acceptable exposure. The basis for evaluating potential health risk is the identification of sources with increased HAPs. HAP emissions from anticipated heavy heavy duty (HHD) trucks were evaluated.

Health risk is determined using the Hotspots Analysis and Reporting Program (HARP2) software distributed by the CARB; HARP2 requires peak 1-hour emission rates and annual-averaged emission rates for all pollutants for each modeling source (CARB 2015). Assumptions used to calculate the emission rates for the proposed Project are outlined below.

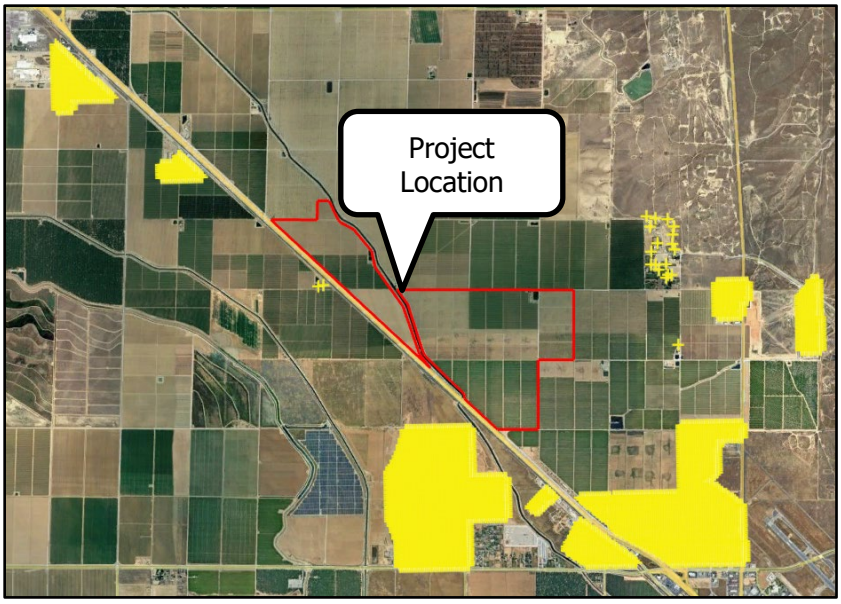
The most recent version of EPA's AMS/EPA Regulatory Model was used to predict the dispersion of emissions from the proposed Project (BREEZE AERMOD 2022). The analysis employed all of the regulatory default AERMOD model keyword parameters, including elevated terrain options.

For construction health impacts, diesel combustion emissions from diesel on-site construction equipment and HHD trucks from hauling and vendor trips were modeled as an area source for on-site construction activity on the property. Diesel particulate matter was calculated using CalEEMod for on-site construction equipment. A unit emission rate of 1 grams/second (g/sec) was input to AERMOD for the area source.

For operational health impacts, diesel combustion emissions from diesel HHD trucks making 14,378 trips per week were modeled as volume line sources for on-site travel following the most impactful route of travel. HHD truck idling emissions were modeled as a point source with fifteen minutes of idling per trip. Diesel particulate matter was calculated using EMFAC approved emission factors for HHD trucks traveling at 15 miles per hour (representative of on-site speed). EMFAC idling emissions were used for Kern County, year 2050, annual. EMFAC emission factors are provided by the California Air Resources Board (CARB 2023). A unit emission rate of 1 grams/second (g/sec) was input to AERMOD for each source.

Discrete receptors were placed on residences and businesses within close proximity of the Project site. A total of 6,447 discrete off-site receptors analyzed. The receptors are shown below in **Figure 4-1**. Elevated terrain options were employed even though there is not complex terrain in the Project area.

Figure 4-1. Receptors Analyzed for Health Risk



SJVAPCD-provided, AERMET UStar processed meteorological datasets for the Bakersfield monitoring station, calendar years 2013 through 2017 was input to AERMOD (SJVAPCD 2018). This was the most recent available dataset available at the time the modeling was conducted. Rural dispersion parameters were used because the operation and the majority of the land surrounding the facility is considered "rural" under the Auer land use classification method (Auer 1978).

Plot files generated by AERMOD were uploaded to the Air Dispersion Modeling and Risk Assessment Tool (ADMRT) program in the Hotspots Analysis and Reporting Program Version 2 (HARP 2) (CARB 2015). ADMRT post-processing was used to assess the potential for excess cancer risk and chronic non-cancer effects using the most recent health effects data from the California EPA Office of Environmental Health Hazard Assessment (OEHHA). Risk reports were generated using the derived OEHHA analysis method for carcinogenic risk and non-carcinogenic chronic and acute risk. Site parameters are included in the HARP2 output files. Total cancer risk was predicted for the inhalation pathway at each receptor. A hazard index was computed for chronic non-cancer health effects for each applicable endpoint and each receptor. There is currently no acute risk associated with DPM emissions, therefore, acute risk has not been calculated.

SJVAPCD has set the level of significance for carcinogenic risk at twenty in one million, which is understood as the possibility of causing twenty additional cancer cases in a population of one million people. The level of significance for chronic non-cancer risk is a hazard index of 1.0. All receptors were modeled as residential receptors with a 27-year exposure for construction and 70-year exposure for operation. This is conservative since all on-site receptors and business receptors would be exposed less than 70 years.

The carcinogenic risk and the health hazard index (HI) for chronic non-cancer risk at the point of maximum impact (PMI) do not exceed the significance levels of twenty in one million (20×10^{-6}) and 1.0, respectively

for the proposed Project. The PMIs are identified by receptor location and risk and are provided in **Table 4-6**. The electronic AERMOD and HARP2 output files are provided in **Attachment E**.

Table 4-5. Potential Maximum Impacts Predicted by HARP2

	Value	UTM East	UTM North
Excess Cancer Risk - Total	**1.57 in a million**	311667.9	3925652.6
Construction	1.56 in a million		
Operations	0.01 in a million		
Chronic Hazard Index - Total	**0.0034**		
Construction	0.0034		
Operations	2.17E-06		

As shown above in **Table 4-6**, the maximum predicted cancer risk for the proposed Project is 1.57 in a million. The maximum chronic non-cancer hazard index for the proposed Project is 0.0034. Since the PMI remained below the significance threshold for cancer and chronic risk, this Project would not have an adverse effect to any of the surrounding communities.

The potential health risk attributable to the proposed Project is determined to be *less than significant* based on the following conclusions:

1. Potential carcinogenic risk from the proposed Project is below the significance level of twenty in a million at each of the modeled receptors; and
2. The hazard index for the potential chronic non-cancer risk from the proposed Project is below the significance level of 1.0 at each of the modeled receptors.
3. The hazard index for the potential acute non-cancer risk was not calculated since there is no acute risk associated with DPM emission; therefore, the proposed Project is considered below the significance level.

Therefore, potential risk to the population attributable to emissions of HAPs from the proposed Project would be less than significant.

4.6.1 Health Impacts of Diesel Particulate Matter (DPM)

Short term exposure to high concentrations to DPM can cause headache, dizziness, and irritation of the eye, nose, and throat. Long term exposure can increase the risk of cardiovascular, cardiopulmonary and respiratory disease, and lung cancer.

4.7 Potential Impacts from Valley Fever

The proposed project has the potential to generate fugitive dust and suspend Valley Fever spores with the dust that could then reach nearby sensitive receptors. It is possible that onsite workers could be exposed to Valley Fever spores as fugitive dust is generated during construction. In order to mitigate potential risk, the proposed Project would provide training and personal protective respiratory equipment to construction workers and provide information to all construction personnel and visitors about Valley Fever. Therefore, the exposure to Valley Fever would be minimized. With the implementation of the mitigation measures, dust from the construction of the proposed project would not add significantly to the existing exposure level of people to this fungus, including construction workers, and impacts would be reduced to less-than-significant levels.

4.8 Potential Impacts from Asbestos

Naturally occurring asbestos can be released from serpentinite and ultramafic rocks when the rock is broken or crushed. At the point of release, the asbestos fibers may become airborne, causing air quality and human health hazards. These rocks have been commonly used for unpaved gravel roads, landscaping, fill projects, and other improvement projects in some localities. Asbestos may be released to the atmosphere due to vehicular traffic on unpaved roads, during grading of development projects, and at mining operations.

Serpentinite and/or ultramafic rock are known to be present in 44 of California's 58 counties. These rocks are particularly abundant in the counties associated with the Sierra Nevada foothills, the Klamath Mountains, and Coast Ranges. However, according to information provided by the Department of Conservation Division of Mines and Geology, the project site is not located in an area where naturally occurring asbestos is likely to be present (CDCDMG, 2000). Therefore, impacts associated with exposure of construction workers and nearby sensitive receptors to asbestos would be less than significant.

4.9 Odor Impacts and Mitigation

The SJVAPCD's GAMAQI states "An analysis of potential odor impacts should be conducted for both of the following two situations:

1. Generators – projects that would potentially generate odorous emissions proposed to locate near existing sensitive receptors or other land uses where people may congregate, and
2. Receivers – residential or other sensitive receptor projects or other projects built for the intent of attracting people locating near existing odor sources." (SJVAPCD 2015).

The GAMAQI also states, "The District has identified some common types of facilities that have been known to produce odors in the San Joaquin Valley Air Basin. These are presented in Table 6 (Screening Levels for Potential Odor Sources), along with a reasonable distance from the source within which, the degree of odors could possibly be significant. [Table 6] can be used as a screening tool to qualitatively assess a project's potential to adversely affect area receptors." (SJVAPCD, 2015). Because the Project is a warehouse and the anticipated activities for the Project site are not listed in Table 6 of the GAMAQI as a source that would create objectionable odors, the Project is not expected to be a source of objectionable odors.

Based on the provisions of the SJVAPCD's GAMAQI, the proposed Project would not exceed any screening trigger levels to be considered a source of objectionable odors or odorous compounds (SJVAPCD, 2015). Furthermore, there does not appear to be any significant source of objectionable odors in close proximity that may adversely impact the Project site when it is in operation. Additionally, the Project emissions estimates indicate that it would not be expected to adversely impact surrounding receptors. As such, the proposed Project would not be a source of any odorous compounds nor would it likely be impacted by any odorous source.

4.10 Impacts to Ambient Air Quality

An ambient air quality analysis was performed to determine if the proposed Project has the potential to impact ambient air quality through a violation of the ambient air quality standards or a substantial contribution to an existing or projected air quality standard. The basis for the analysis is dispersion modeling and the Project's long-term air quality impacts shown in **Table 4-4**.

The maximum off-site ground level concentration of each pollutant for the 1-hour, 3-hour, 8-hour, 24-hour, and annual periods was predicted using the most recent version of EPA's AMS/EPA Regulatory Model (AERMOD) dispersion software under the BREEZE AERMOD interface. SJVAPCD-approved, AERMET-processed

UStar meteorological datasets for calendar years 2013 through 2017 was input to AERMOD (SJVAPCD 2017). This was the most recent available dataset available at the time the modeling runs were conducted. All of the regulatory default AERMOD model keyword parameters were employed. Rural dispersion parameters were used for this project, which differs from the urban setting used in the CalEEMod model. The CalEEMod selection criteria is based on trip distances to the project site while the AERMOD selection criteria is based on the majority of the land use surrounding the facility. The majority of the land surrounding the project site is considered "rural" under the Auer land use classification method (Auer 1978).

Emissions were evaluated for each pollutant on a short-term (correlating to pollutant averaging period) and long-term (annual) basis, with the exception of CO that was evaluated only for short-term exposures since there are no long-term significance thresholds for CO.

Most mobile emissions predicted by CalEEMod will occur beyond the project boundary because of vehicle trips. In order to determine the on-site vehicle emissions, an estimated on-site trip distance was determined by calculating the average trip distance through the parking lot using the proposed Project site plan. The on-site estimated trip distance for the Project was determined to be 0.795 miles for Phase 1 and 0.670 miles for Phase 2. The on-site estimated trip distance was then multiplied by annual vehicle trips to calculate an on-site vehicle miles traveled (VMT). The on-site VMTs were then divided by the annual VMTs calculated in CalEEMod for each phase in order to determine the on-site to off-site mobile emissions ratio. The total mobile emissions calculated by CalEEMod for the Project were then reduced by the ratio to estimate the mobile on-site emissions used for ambient air quality modeling.

A fence-line coordinate grid of receptor points was constructed. The grid consisted of a 25-meter fence-line spacing and three receptor tiers. The first tier had 25-meter tier spacing extending a distance of 100 meters with initial receptors starting 25 meters from the facility boundary. The second tier had 50-meter tier spacing extending a distance of 150 meters. The third tier had 100-meter tier spacing extending a distance of 250 meters. The fourth tier had 250-meter tier spacing extending a distance of 500 meters. The fifth tier had 500-meter tier spacing extending a distance of 1000 meters. Elevated terrain options were employed even though there is not complex terrain in the Project area.

For each pollutant and averaging period modeled, a "total" concentration was estimated by adding the maximum measured background air concentration to the maximum predicted Project impacts. The maximum measured background air concentrations used in this analysis were calculated from measured concentrations at the nearest monitoring stations.

The results of the air dispersion modeling, presented in **Table 4-7**, demonstrate that the maximum impacts attributable to the Project, when considered in addition to the existing background concentrations, are below the applicable ambient air quality standard for NOx, SOx, and CO. The electronic AERMOD output files are provided in Appendix E.

Table 4-6. Predicted Ambient Air Quality Impacts

Pollutant	Averaging Period	Background ($\mu g/m^3$)	Project ($\mu g/m^3$)	Project + Background ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)
Operation						
NO_2	1-hour	115.10	47.63	162.73	188.68	338
	Annual	20.37	1.60	21.97	100	56
CO	1-hour	3,262.00	148.56	3411	40,000	23,000
	8-hour	1,514.50	42.36	1557	10,000	10,000
SO_2	1-hour	19.98	0.48	20.46	196	655

	3-hour	17.98	0.23	18.21	1,300	---
	24-hour	7.19	0.07	7.26	365	105
	Annual	1.15	0.02	1.17	---	---
PM_{10}	24-hour	437.00	4.59	441.59	150	50
	Annual	237.07	1.08	238.15	---	20
$PM_{2.5}$	24-hour	72.30	1.29	73.59	35	---
	Annual	7.10	0.30	7.40	12	12
*0.00 could represent less than 0.00						

Pre-Project concentrations of PM_{10} and $PM_{2.5}$ exceed their respective ambient air quality standards. Therefore, these averaging periods for $PM_{2.5}$ and PM_{10} are evaluated in accordance with the Prevention of Significant Deterioration (PSD) procedure in Title 40, Code of Federal Regulations (CFR), Part 52.21. It is EPA's policy to use significant impact levels (SIL) to determine whether a proposed new or modified source will cause or contribute significantly to an AAQS or PSD increment violation. The SJVAPCD has developed SILs for fugitive emissions of PM_{10} and $PM_{2.5}$.[1] Over 99% of the project's predicted PM_{10} and $PM_{2.5}$ concentrations are attributable to fugitive emissions; therefore, SJVAPCD SILs are applicable to this project. If a source's maximum impacts are below the SIL, the source is judged to not cause or contribute significantly to an AAQS or increment violation.

A comparison of the proposed impact from the Project to the District SIL values is provided in **Table 4-8**. Because the Project's modelled PM_{10} and $PM_{2.5}$ are below the SJVAPCD's significance levels for 24-hour and annual concentrations, the Project's contribution to potential violations of ambient air quality standards would be *less-than-significant*.

Table 4-7. Comparison of Maximum Modeled Project Impacts with Significance Thresholds

Pollutant	Averaging Period	Predicted Concentration ($\mu g/m^3$)	SIL ($\mu g/m^3$)
Operation Emissions			
PM_{10}	24-hour	4.59	10.4
	Annual	1.08	2.08
$PM_{2.5}$	24-hour	1.29	42.5
	Annual	0.30	0.63

4.11 Impacts to Greenhouse Gases and Climate Change

In the decade after South Coast AQMD adopted the Interim GHG Significance Threshold, several new laws and executive orders were adopted that require additional reductions in years after 2020. For instance, Senate Bill 32 (Lara, 2016) requires that GHG emissions be 40% less than 1990 levels by 2030. More drastic still, Senate Bill 100 (de Leon, 2018) which was signed by the Governor recently requires 100% zero-carbon electricity by 2045. On the day SB 100 was signed into law, the Governor also signed Executive Order B-55-18 which commits California to total, economy-wide carbon neutrality by 2045. Clearly, the 2008 Guidance may be somewhat inadequate in producing a meaningful comparison by today's standards which propose a grand vision that, if achieved, would fundamentally change how business is conducted and citizens live in the State. Thus, as discussed in the most recent updates to the Scoping Plan, objectives of the Scoping Plan affect entire sectors of the economy and it no longer makes sense to evaluate GHG emissions on a project-level.

For these reasons, Project GHG emissions levels presented in **Table 4-9** are primarily for disclosure purposes because impact analysis for the Project follows the approach certified by South Coast AQMD in the Final

[1] Personal Communication with Yu Vu, San Joaquin Valley Air Pollution Control District, August 15, 2012

Negative Declaration for the Phillips 66 Los Angeles Refinery Carson Plant – Crude Oil Storage Capacity Project on December 12, 2014 (South Coast AQMD, 2014). The approach used by South Coast AQMD to assess GHG impacts from that project recognizes that consumers of electricity and transportation fuels are, in effect, regulated by requiring providers and importers of electricity and fuel to participate in the GHG Cap-and-Trade Program and other Programs (e.g., low carbon fuel standard, renewable portfolio standard, etc.). Each such sector-wide program exists within the framework of AB 32 and its descendant laws the purpose of which is to achieve GHG emissions reductions consistent with the AB 32 Scoping Plan.

In summary, the Project would generate GHGs from electricity use and combustion of gasoline/diesel fuels, each of which is regulated near the top of the supply-chain. As such, each citizen of California (including the operator of the Project) will have no choice but to purchase electricity and fuels produced in a way that is acceptable to the California market. Thus, Project GHG emissions will be consistent with the relevant plan (i.e., AB 32 Scoping Plan). The Project would meet its fair share of the cost to mitigate the cumulative impact of global climate change because SHP is purchasing energy from the California market. Thus, the Project would have a less than significant impact on applicable GHG reduction plans.

Nonetheless, GHG emissions impacts from implementing the Project were calculated at the Project-specific level for construction and operations as explained in the previous paragraphs. Impact analysis for the Project follows the approach certified by South Coast AQMD in the Final Negative Declaration for the Phillips 66 Los Angeles Refinery Carson Plant – Crude Oil Storage Capacity Project on December 12, 2014 (South Coast AQMD, 2014). In summary, this approach takes into account the cumulative nature of the energy industry and recognizes that consumers of electricity and diesel fuel are in effect regulated by higher level emissions restrictions on the producers of these energy sources. Therefore, the Project's contribution to cumulative global climate change impacts would *not be cumulatively considerable*.

Table 4-8. Estimated Annual GHG Emissions (MT/Year)

Source	CO_2	CH_4	N_2O	CO_2e
Mitigated Construction Emissions				
Total	23,021	0.53	1.15	23,383
Mitigated Operational Emissions				
Mobile Emissions	56,919	0.43	6.51	58,880
Area Emissions	130	0.01	0.00	131
Energy Emissions	11,879	1.74	0.19	11,978
Water Emissions	1,435	67.13	1.61	3,592
Waste Emissions	747	74.67	-	2,614
Total Project Operational Emissions	*71,110*	*143.98*	*8.31*	*77,195*
Annualized Construction Emissions[1]	767	0.02	0.04	779
Project Emissions	**71,110**	**143.98**	**8.31**	**77,195**
*Note: 0.000 could represent <0.000 Per South Coast AQMD's Methodology				

The Project will not result in the emissions of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), or sulfur hexafluoride (SF_6), the other gases identified as GHG in AB32. The proposed Project will be subject to any regulations developed under AB32 as determined by CARB.

4.11.1 Feasible and Reasonable Mitigation Relative to Global Warming

CEQA requires that all feasible and reasonable mitigation be applied to the project to reduce the impacts from construction and operations on air quality. The SJVAPCD's "Non-Residential On-Site Mitigation Checklist" was utilized in preparing the mitigation measures presented in Section 7. These measures include using controls

that limit the exhaust from construction equipment and using alternatives to diesel when possible. Additional reductions would be achieved through the regulatory process of the air district and CARB as required changes to diesel engines are implemented which would affect the product delivery trucks and limits on idling.

Because climate change is a global issue, a development project like the proposed Project, in an individual basis does not have a reasonable potential to result in a measurable significant impact on global warming or climate change. However, the Project would contribute to cumulative GHG emissions that cumulatively result in environmental and health effects associated with climate change across California, the country, and the world. The Project's emissions would only be a very small fraction of the statewide GHG emissions. Regardless, given the position of the legislature in AB32 which states that global warming poses serious detrimental effects, and the requirements of CEQA for the lead agency to determine if a project would have a cumulatively considerable contribution, the effect of the Project's CO_2 contribution may be considered cumulatively considerable. This determination is "speculative," given the lack of clear scientific evidence or other criteria for determining the significance of the Project's contribution of GHG to the air quality in the SJVAB.

The strategies currently being implemented by CARB may help in reducing the Project's GHG emissions and are summarized in the table below.

Table 4-9. Select CARB GHG Emission Reduction Strategies

Strategy	Description of Strategy
Vehicle Climate Change Standards	AB 1493 (Pavley) required the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks. Regulations were adopted by CARB in Sept. 2004.
Diesel Anti-Idling	In July 2004, CARB adopted a measure to limit diesel-fueled retail motor vehicle idling to 5 minutes or less.
Other Light-Duty Vehicle Technology	New standards would be adopted to phase in beginning in the 2017 model year.
Alternative Fuels: Biodiesel Blends	CARB would develop regulations to require the use of 1% to 4% Biodiesel displacement of California diesel fuel.
Alternative Fuels: Ethanol	Increased use of ethanol fuel.
Heavy-Duty Vehicle Emission Reduction Measures	Increased efficiency in the design of heavy-duty vehicles and an educational program for the heavy-duty vehicle sector.

Not all of these measures are currently appropriate or applicable to the proposed Project. While future legislation could further reduce the Project's GHG footprint, the analysis of this is speculative and in accordance with CEQA Guidelines Section 15145, will not be further evaluated in this AQIA.

CEQA Guidelines Section 15130 notes that sometimes the only feasible mitigation for cumulative impacts may involve the adoption of ordinances or regulations rather than the imposition of conditions on a project-by-project basis. Global climate change is this type of issue. The causes and effects may not be just regional or statewide, they may also be worldwide. Given the uncertainties in identifying, let alone quantifying the impact of any single project on global warming and climate change, and the efforts made to reduce emissions of GHGs from the Project through design, in accordance with CEQA Section 15130, any further feasible emissions reductions would be accomplished through CARB regulations adopted pursuant to AB32.

5. CUMULATIVE IMPACTS

By its very nature, air pollution has a cumulative impact. The District's nonattainment status is a result of past and present development within the SJVAB. Furthermore, attainment of ambient air quality standards can be jeopardized by increasing emissions-generating activities in the region. No single project would be sufficient in size, by itself, to result in nonattainment of the regional air quality standards. Instead, a project's emissions may be individually limited, but cumulatively considerable when taken in combination with past, present, and future development within the San Joaquin Valley Air Basin. When assessing whether there is a new significant cumulative effect, the Lead Agency shall consider whether the incremental effects of the project are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects [CCR §15064(h)(1)]. Per CEQA Guidelines §15064(h)(3) a Lead Agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program, including, but not limited to an air quality attainment or maintenance plan that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located. (SJVAPCD 2015)

Attachment A of Kern County's *Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports* states "The following threshold are defined for purposes of determining cumulative effects as the baseline for "considerable". Projects in the San Joaquin Valley Air Pollution Control District…will be subject to the following significance thresholds". The thresholds outlined in the guidelines mirror the individual project significance thresholds of 15 tons per year for PM_{10} and 10 tons per year for NO_X and ROG. Therefore, owing to the inherently cumulative nature of air quality impacts, the threshold for whether a project would make a cumulatively considerable contribution to a significant cumulative impact is simply whether the project would exceed project-level thresholds. Based on the analysis conducted for this Project, it is individually *less than significant*. This AQIA, however, also considered impacts of the proposed Project in conjunction with the impacts of other projects previously proposed in the area. The following cumulative impacts were considered:

- Cumulative O_3 Impacts (ROG and NOx) from numerous sources within the region including transport from outside the region. O_3 is formed through chemical reactions of ROG and NOx in the presence of sunlight.
- Cumulative CO Impacts produced primarily by vehicular emissions.
- Cumulative PM_{10} Impacts from within the region and locally from the various projects. Such projects may cumulatively produce a significant amount of PM10 if several projects conduct grading or earthmoving activities at the same time.
- Hazardous Air Pollutant (HAP) Impacts on sensitive receptors.

5.1 Cumulative Regional Air Quality Impacts

The most recent, certified SJVAB Emission Inventory data available from the SJVAPCD is based on data gathered for the 2020 annual inventory[2]. This data will be used to assist the SJVAPCD in demonstrating attainment of Federal 1-hour O_3 Standards (SJVAPCD 2007a). **Table 5-1** provides a comparative look at the impacts proposed by the proposed Project to the SJVAB Emissions Inventory.

[2] SJVAPCD Emissions for Aggregated Stationary, Area-Wide, Mobile, and Natural Sources

Table 5-1. Comparative Analysis Based on SJV Air Basin 2020 Inventory - Tons per Year

	ROG	NOx	CO	SOx	PM_{10}	$PM_{2.5}$
Kern County - 2020	21,535	15,878	27,339	511	13,651	3,723
SJVAB - 2020	108,113	74,205	162,425	2,847	96,652	21,535
Proposed Project	11.36	58.70	91.48	0.62	39.79	11.15
Proposed Project's % of Kern	0.053%	0.370%	0.335%	0.121%	0.291%	0.300%
Proposed Project's % of SJVAB	0.011%	0.079%	0.056%	0.022%	0.041%	0.052%
Note: This is the latest inventory available as of December 2021 Source: CARB 2021b						

As shown in **Table 5-1** the proposed Project does not pose a substantial increase to basin emissions, as such basin emissions would be essentially the same if the Project is approved.

Table 5-1, **5-2**, and **5-3** provide CARB Emissions Inventory projections for the year 2025 for both the SJVAB and the Kern County portion of the air basin. Looking at the SJVAB Emissions predicted by the CARB year 2025 emissions inventory, the Kern County portion of the air basin is a moderate source of the emissions. The proposed Project produces a small portion of the total emissions in both Kern County and the entire SJVAB.

Table 5-2. Emission Inventory SJVAB 2025 Projection - Tons per Year

	ROG	NOx	CO	SOx	PM10	PM2.5
Total Emissions	107,346.5	52,450.5	145,963.5	2,920.0	95,922.0	21,279.5
Percent Stationary Sources	32.78%	19.28%	6.93%	85.00%	5.97%	15.44%
Percent Area-Wide Sources	52.70%	5.15%	13.30%	3.75%	89.38%	71.87%
Percent Mobile Sources	14.52%	75.57%	79.77%	11.25%	4.68%	12.86%
Total Stationary Source Emissions	35,186.0	10,110.5	10,110.5	2,482.0	5,730.5	3,285.0
Total Area-Wide Source Emissions	56,575.0	2,701.0	19,418.0	109.5	85,738.5	15,293.5
Total Mobile Source Emissions	15,585.5	39,639.0	116,435.0	328.5	4,489.5	2,737.5
Source: CARB 2021b Note: Total may not add due to rounding						

Table 5-3. Emission Inventory SJVAB - Kern County Portion 2025 Projection - Tons per Year

	ROG	NOx	CO	SOx	PM10	PM2.5
Total Emissions	21,352.5	10,804.0	24,674.0	474.5	13,651.0	3,686.5
Percent Stationary Sources	53.50%	25.68%	15.83%	84.62%	11.76%	31.68%
Percent Area-Wide Sources	34.70%	4.05%	7.69%	0.00%	82.62%	56.44%
Percent Mobile Sources	11.97%	70.27%	76.33%	15.38%	5.61%	10.89%
Total Stationary Source Emissions	11,424.5	2,774.0	3,905.5	401.5	1,606.0	1,168.0
Total Area-Wide Source Emissions	7,409.5	438.0	1,898.0	0.0	11,278.5	2,080.5
Total Mobile Source Emissions	2,555.0	7,592.0	18,834.0	73.0	766.5	401.5
Source: CARB 2021b Note: Total may not add due to rounding						

Table 5-4. 2025 Emissions Projections - Proposed Project, Kern County, and SJVAB

	ROG	NOx	PM_{10}
Proposed Project	11.36	58.70	39.79
Kern County	21,353	10,804	13,651
SJVAB	107,347	52,451	95,922
Proposed Project Percent of Kern County	0.053%	0.543%	0.291%
Proposed Project Percent of SJVAB	0.011%	0.112%	0.041%
Kern County Percent of SJVAB	19.89%	20.60%	14.23%
Source: CARB 2021b			

As shown above, the proposed Project would pose an inconsequential impact on regional O_3 and PM_{10} formation. The regional contribution to these cumulative impacts would be negligible and additionally, the Project would not exceed cumulatively considerable thresholds since the Project would be less than thresholds outlined in Kern County's *Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports*. Therefore, this Project would not be considered cumulatively considerable in its contribution to regional O_3 and PM_{10} impacts.

5.2 Cumulative Local Air Quality Impacts

SJVAPCD uses a single threshold for determination of significance for both project specific and cumulative impacts. Air quality in SJVAB has improved over the past decades as shown in Section 3.3, which indicates that the single threshold is sufficient for assessing cumulative impacts. The proposed Project would generate less than significant impacts to criteria air pollutants; therefore, the Project's incremental contribution to cumulative air quality impacts would not be cumulatively considerable. (CEQA Guidelines Section 15064(h)(3); (SJVAPCD 2015).

5.3 Cumulative Hazardous Air Pollutants

The GAMAQI also states that when evaluating potential impacts related to HAPs, "*impacts of local pollutants (CO, HAPs) are cumulatively significant when modeling shows that the combined emissions from the project and other existing and planned projects will exceed air quality standards*." Because the Project would not be a significant source of HAPs, the proposed Project would also *not be expected to pose a significant cumulative CO or HAPs impact*.

5.4 Cumulative Carbon Monoxide (CO) – Mobile Sources

The SJVAPCD's GAMAQI has identified CO impacts from impacted traffic intersections and roadway segments as being potentially cumulatively considerable. Traffic increases and added congestion caused by a project can combine to cause a violation of the SJVAPCD's CO standard also known as a "Hotspot". There are two criteria established by the GAMAQI by which CO "Hot Spot" modeling is required:

- A traffic study for the project indicates that the Level of Service (LOS) on one or more streets or at one or more intersections in the project vicinity will be reduced to LOS E or F; or
- A traffic study indicates that the project will substantially worsen an already existing LOS F on one or more streets or at one or more intersections in the project vicinity.

According to the Project proponent, at the time of this analysis no traffic generation assessment impact study was prepared for this Project. However, due to the location and traffic increase anticipated from this Project, impacted intersections and roadway segments are anticipated to operate at a LOS of C or better. Therefore,

CO "Hotspot" Modeling was not conducted for this Project and no concentrated excessive CO emissions are expected to be caused once the proposed Project is completed.

6. CONSISTENCY WITH THE AIR QUALITY ATTAINMENT PLAN

Air quality impacts from proposed projects within the City of Bakersfield are controlled through policies and provisions of the SJVAPCD and the Kern County General Plan (KCPD, 2009). In order to demonstrate that a proposed project would not cause further air quality degradation in either the SJVAPCD's plan to improve air quality within the air basin or the federal requirements to meet certain air quality compliance goals, each project should also demonstrate consistency with the SJVAPCD's adopted Air Quality Attainment Plans (AQAP) for O_3 and PM_{10}. The SJVAPCD is required to submit a "Rate of Progress" document to CARB that demonstrates past and planned progress toward reaching attainment for all criteria pollutants. The California Clean Air Act (CCAA) requires air pollution control districts with severe or extreme air quality problems to provide for a 5% reduction in non-attainment emissions per year. The AQAP prepared for the San Joaquin Valley by the SJVAPCD complies with this requirement. CARB reviews, approves or amends the document and forwards the plan to the EPA for final review and approval within the SIP.

Air pollution sources associated with stationary sources are regulated through the permitting authority of the SJVAPCD under the New and Modified Stationary Source Review Rule (SJVAPCD Rule 2201). Owners of any new or modified equipment that emits, reduces, or controls air contaminants, except those specifically exempted by the SJVAPCD, are required to apply for an Authority to Construct and Permit to Operate (SJVAPCD Rule 2010). Additionally, best available control technology (BACT) is required on specific types of stationary equipment and are required to offset both stationary source emission increases along with increases in cargo carrier emissions if the specified threshold levels are exceeded (SJVAPCD Rule 2201, 4.7.1). Through this mechanism, the SJVAPCD would ensure that all stationary sources within the project area would be subject to the standards of the SJVAPCD to ensure that new developments do not result in net increases in stationary sources of criteria air pollutants.

6.1 Required Evaluation Guidelines

State CEQA Guidelines and the Federal Clean Air Act (Sections 176 and 316) contain specific references on the need to evaluate consistencies between the proposed project and the applicable AQAP for the project site. To accomplish this, CARB has developed a three-step approach to determine project conformity with the applicable AQAP:

1. *Determination that an AQAP is being implemented in the area where the project is being proposed*. The SJVAPCD has implemented the current, modified AQAP as approved by CARB.
2. *The proposed project must be consistent with the growth assumptions of the applicable AQAP*. The proposed Project land use type was not anticipated in the current growth assumptions. Therefore, growth assumptions in the Kern County General Plans will be modified with the approval of the proposed Project.
3. *The project must contain in its design all reasonably available and feasible air quality control measures*. The proposed project incorporates various policy and rule-required implementation measures that will reduce related emissions.

The CCAA and AQAP identify transportation control measures as methods to further reduce emissions from mobile sources. Strategies identified to reduce vehicular emissions such as reductions in vehicle trips, vehicle use, vehicle miles traveled, vehicle idling, and traffic congestion, in order to reduce vehicular emissions, can be implemented as control measures under the CCAA as well. Additional measures may also be implemented through the building process such as providing electrical outlets on exterior walls of structures to encourage use of electrical landscape maintenance equipment or measures such as electrical outlets for electrical systems on diesel trucks to reduce or eliminate idling time.

As the growth represented by the proposed Project will be updated in the Bakersfield and Kern County General Plans and incorporated into the AQAP, conclusions may be drawn from the following criteria:

1. That, by definition, the proposed emissions from the Project are below the SJVAPCD's established emissions impact thresholds;
2. That the primary source of emissions from the Project will be motor vehicles that are licensed through the State of California and whose emissions are already incorporated into CARB's San Joaquin Valley Emissions Inventory.

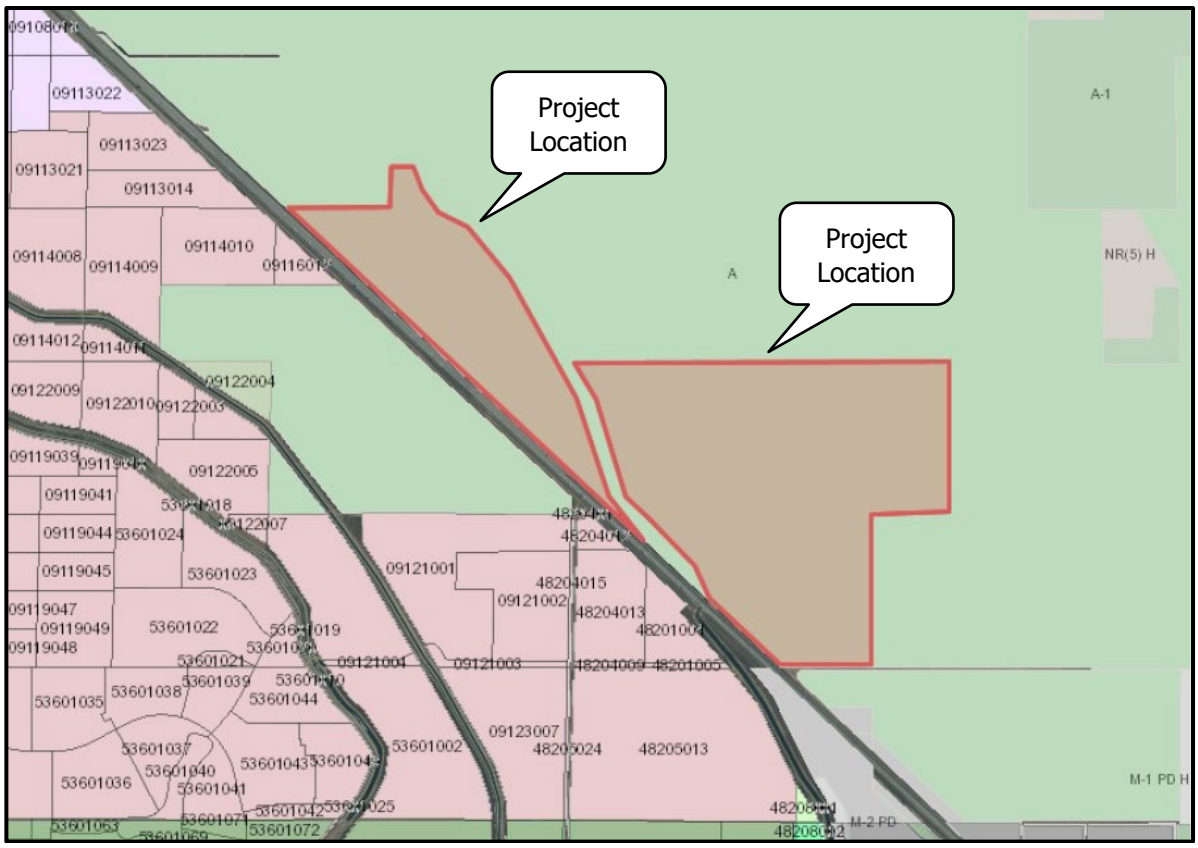
Based on these factors, the Project appears to be *consistent with the AQAP*.

6.2 Consistency with the Kern County Council of Government's Regional Conformity Analysis

The Kern Council of Governments (Kern COG) Regional Conformity Analysis (Kern COG 2018) Determination demonstrates that the regional transportation expenditure plans (Destination 2042 Regional Transportation Plan and Federal Transportation Improvement Program) in the Kern County portion of the San Joaquin Valley air quality attainment areas would not hinder the efforts set out in CARB's SIP for each area's non-attainment pollutants (CO, O_3, and PM_{10}). The analysis uses an adopted regional growth forecast, governed by both the adopted Kern COG Policy and Procedure Manual and a Memorandum of Understanding between the County of Kern and Kern COG (representing itself and outlying municipal member agencies).

The Kern COG Regional Conformity Analysis considers General Plan Amendments (GPA) and zone changes that were enacted at the time of the analysis as projected growth within the area based on land use designations incorporated within the Kern County General Plan. Land use designations that are altered based on subsequent GPAs that were not included in the Regional Conformity Analysis were not incorporated into the Kern COG analysis. Consequently, if a proposed project is not included in the regional growth forecast using the latest planning assumptions, it may not be said to conform to the regional growth forecast. Under the current City of Bakersfield Zoning, the Project site is designated as "C-2/P.C.D. Combining" and "C-2 Commercial" (see **Figure 6-1**).

Figure 6-1. Kern County Zoning



Item 2 under Section 3 – Model Maintenance Procedure, of the Kern COG Regional Transportation Modeling Policy and Procedure Manual states "*Land Use Data – General Plan land capacity data or "Build -out capacity" is used to distribute the forecasted County totals, and may be updated as new information becomes available, and is revised in regular consultation with local planning departments.*"

Under current policies, only after a General Plan Amendment (GPA) is approved, can housing and employment assumptions be updated to reflect the capacity changes. Since the proposed development does require a GPA and zone change, the existing growth forecast will be modified to reflect these changes. In order to determine whether the forecasted growth for the Project area is sufficient to account for the projected increases in employment, an analysis based on Kern COG regional forecast was conducted.

The adopted growth forecast for the project site is distributed to Traffic Analysis Zones (TAZ) (see **Figure 6-2**). In order to evaluate the impacts to the proposed Project area, a half-mile radius around each phase analysis was conducted that included TAZs 909, 941, 1391, 1681 and 1686. This places the Project site at the center of the analysis area and provides a conservative evaluation of the TAZ data. Kern COG has predicted an increase in growth in population (22%), an increase in growth in housing (25%) and an increase in employment (39%) between 2020 and 2030. Employment forecast for the TAZ analysis area appears to be sufficient to account for 100% of the planned employment growth attributed to the proposed Project. In order to be considered "consistent" and, therefore, in conformance with the AQAP, these increases would need to occur over the same time as the adopted growth forecast. From 2020 through 2030, 657 new jobs are forecast to be added to the analysis area.

Figure 6-2. TAZ Analysis Map

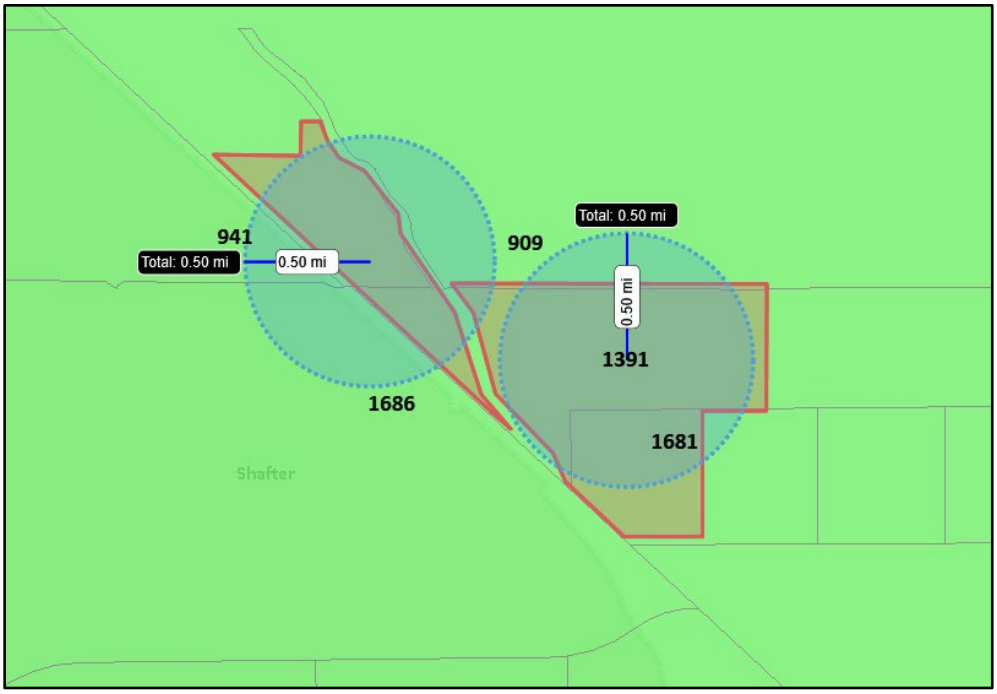


Table 6-1 provides the projected growth rates for the TAZ analysis area.

Table 6-1. TAZ Analysis Area Projected Growth Analysis[3]

Years	2017	2020	2030
Population	7,332	8,499	10,409
Households	2,256	2,658	3,315
Employment	2,781	3,134	4,371

Table 6-2 provides the percent increase/decrease for the analysis area population, households, and employment.

Table 6-2. Percent Increase/Decrease on TAZ Analysis Area

Years	Percent Increase / Decrease		
	Population	Households	Employment
2017*	0	0	0
2020	16%	18%	13%
2030	22%	25%	39%
*Baseline year of 2017 was valued at "0" to measure net percent increase/decrease.			

[3] Kern Council of Governments Regional Conformity Analysis Data, 2018

7. MITIGATION AND OTHER RECOMMENDED MEASURES

The estimated construction and operational emissions from the proposed Project would be less than significant, after specific mitigation measures listed below. However, to ensure that Project is in compliance with all applicable SJVAPCD rules and regulations and emissions are further reduced, the applicant should implement and comply with a number of measures that are either recommended as a "good operating practice" for environmental stewardship or they are required by regulation. Some of the listed measures are regulatory requirements or construction requirements that would result in further emission reductions through their inclusion in Project construction and long-term design. The following measures either have been applied to the Project through the CalEEMod model and would be incorporated into the Project by design or would be implemented in conjunction with SJVAPCD rules as conditions of approval.

7.1 SJVAPCD Required PM_{10} Reduction Measures

As the Project would be completed in compliance with SJVAPCD Regulation VIII, dust control measures would be taken to ensure compliance specifically during grading and construction phases. The required Regulation VIII measures are as follows:

- Water previously exposed surfaces (soil) whenever visible dust is capable of drifting from the site or approaches 20% opacity.
- Water all unpaved haul roads a minimum of three-times/day or whenever visible dust from such roads is capable of drifting from the site or approaches 20% opacity.
- Reduce speed on unpaved roads to less than 15 miles per hour.
- Install and maintain a track out control device that meets the specifications of SJVAPCD Rule 8041 if the site exceeds 150 vehicle trips per day or more than 20 vehicle trips per day by vehicles with three or more axles.
- Stabilize all disturbed areas, including storage piles, which are not being actively utilized for production purposes using water, chemical stabilizers or by covering with a tarp or other suitable cover.
- Control fugitive dust emissions during land clearing, grubbing, scraping, excavation, leveling, grading, or cut and fill operations with application of water or by presoaking.
- When transporting materials offsite, maintain a freeboard limit of at least 6 inches and cover or effectively wet to limit visible dust emissions.
- Limit and remove the accumulation of mud and/or dirt from adjacent public roadways at the end of each workday. (Use of dry rotary brushes is prohibited except when preceded or accompanied by sufficient wetting to limit visible dust emissions and use of blowers is expressly forbidden).
- Stabilize the surface of storage piles following the addition or removal of materials using water or chemical stabilizer/suppressants.
- Remove visible track-out from the site at the end of each workday.
- Cease grading or other activities that cause excessive (greater than 20% opacity) dust formation during periods of high winds (greater than 20 mph over a one-hour period).

7.2 Recommended Measures to Reduce Equipment Exhaust

In addition, the GAMAQI guidance document lists the following measures as approved and recommended for construction activities. These measures are recommended:

- Maintain all construction equipment as recommended by manufacturer manuals.
- Shut down heavy duty equipment when not in use for extended periods.
- Heavy duty construction equipment shall operate no longer than eight (8) cumulative hours per day.

- Use electric equipment for construction whenever possible in lieu of diesel or gasoline powered equipment.
- Curtail use of high-emitting construction equipment during periods of high or excessive ambient pollutant concentrations, which may include ceasing construction activity during the peak-hour of vehicle activity on adjacent roadways.
- All construction vehicles shall be equipped with proper emissions control equipment and kept in good and proper running order to substantially reduce NOx emissions.
- On-Road and Off-Road diesel equipment shall use diesel particulate filters if permitted under manufacturer's guidelines.
- On-Road and Off-Road diesel equipment shall use cooled exhaust gas recirculation (EGR) if permitted under manufacturer's guidelines.
- All construction workers shall be encouraged to shuttle (car-pool) to retail establishments or to remain on-site during lunch breaks.

7.3 Other Measures to Reduce Project Impacts

The following measures are recommended to further reduce the potential for long-term emissions from the Project. These measures are required as a matter of regulatory compliance:

- The Project design shall comply with applicable standards set forth in Title 24 of the Uniform Building Code to minimize total consumption of energy.
- The developer shall comply with the provisions of SJVAPCD Rule 4601 - Architectural Coatings, during the construction of all buildings and facilities. Application of architectural coatings shall be completed in a manner that poses the least emissions impacts whenever such application is deemed proficient.
- The applicant shall comply with the provisions of SJVAPCD Rule 4641 during the construction and pavement of all roads and parking areas within the project area. Specifically, the applicant shall not allow the use of:
  - Rapid cure cutback asphalt;
  - Medium cure cutback asphalt;
  - Slow cure cutback asphalt (as specified in SJVAPCD Rule 4641, Section 5.1.3); or Emulsified asphalt (as specified in SJVAPCD Rule 4641, Section 5.1.4).
  - The developer shall comply with applicable provisions of SJVAPCD Rule 9510 (Indirect Source Review).

7.4 Voluntary Emission Reduction Agreement

A Voluntary Emission Reduction Agreement (VERA) is an air quality mitigation measure by which a developer can voluntarily enter into a contractual agreement with the SJVAPCD to mitigate a development project's impact on air quality. Under the agreement, the developer provides funds to SJVAPCD to administer the implementation of the VERA. SJVAPCD then identifies emissions reductions projects, funds those projects, and verifies that the specified emission reductions have been successfully achieved. SJVAPCD considers implementation of a VERA to be a feasible mitigation measure under CEQA, effectively achieving emission reductions necessary to reduce impacts to a less than significant level. Under a VERA, a developer may reduce emissions either to less than significant levels or to net zero levels. (SJVAPCD 2020)

The Project proponent, at the time of this analysis, intends to enter into a VERA to reduce Project emissions (as summarized in **Table 4-4**). The Project proponent will engage in future discussions with SJVAPCD staff in order to determine the specific terms of the VERA.

8. LEVEL OF SIGNIFICANCE AFTER MITIGATION

The proposed Project would have short-term air quality impacts due to facility construction activities as well as vehicular emissions. Both of these impacts would be mitigated and *were found to be less than significant after mitigation*.

The proposed Project would result in long-term air quality impacts due to operational and related mobile source emissions. These impacts would be mitigated and *were found to be less than significant after mitigation*.

The proposed Project would result in impacts to greenhouse gases and climate change due to construction and operational emissions. These impacts *were found to be less than significant*.

The proposed Project, in conjunction with other past, present, and foreseeable future projects, would result in cumulative short-term and long-term impacts to air quality. The proposed Project's incremental contribution to these impacts would be mitigated, are below thresholds of significance, and would not be considered cumulatively considerable. Therefore, the Project's contribution to cumulative impacts *were found to be less than significant*.

The proposed Project, in conjunction with other past, present, and foreseeable future projects, would result in cumulative long-term impacts to global climate change. Given the cumulative nature of the energy industry and given consumers of electricity and diesel fuel are in effect regulated by higher level emissions restrictions on the producers of these energy sources, the proposed Project's incremental contribution to these impacts will be mitigated to the extent feasible and are considered *less than significant*.

9. REFERENCES

California Air Pollution Control Officers Association (CAPCOA). 2021. California Emissions Estimator Model™ (CalEEMod), version 2022.1, released April 2022.

California Air Resources Board (CARB). 2023a. website – Background Emissions Data. https://www.arb.ca.gov/adam, accessed February 2023.

--------. 2023b. Almanac Emission Projection Data. https://www.arb.ca.gov/app/emsinv/2017/emssumcat.php, accessed February 2023.

--------. 2021. California Greenhouse Gas Emissions for 2000 to 2019: Trends of Emissions and Other Indicators. 2021. https://ww2.arb.ca.gov/ghg-inventory-data

--------. 2016. "Ambient Air Quality Standards." May 4, 2016. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf

--------. 2015. Hotspots Analysis and Reporting Program (HARP2) User Guide. https://ww2.arb.ca.gov/sites/default/files/classic//toxics/harp/docs2/harp2admrtuserguide.pdf, accessed April 2021.

California Environmental Protection Agency (CalEPA). 2006. Climate Action Team (CAT) Report to Governor Schwarzenegger and the Legislature. http://www.climatechange.ca.gov/climate_action_team/reports/2006report/2006-04-03_FINAL_CAT_REPORT.PDF.

California Environmental Quality Act (CEQA) Statute and Guidelines. 2021. (Public Resources Code 21000 to 21177) and CEQA Guidelines (California Code of Regulations Title 14, Division 6, Chapter 3, Sections 15000 – 15387).

--------. 2018. Appendix G – Environmental Checklist Form, Final Text. December 28, 2018.

Enviropedia, 2019. Greenhouse Gas Emissions website, accessed September 2019. http://www.enviropedia.org.uk/Global_Warming/Emissions.php.

Intergovernmental Panel on Climate Change (IPCC). 2014. Climate Change 2014 Synthesis Report. https://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_FINAL_full_wcover.pdf

---------. 2013. Climate Change 2013: The Physical Science Basis. http://www.ipcc.ch/report/ar5/wg1/.

Kern Council of Governments (Kern COG). August 2018. Draft Air Quality Conformity Analysis.

Kern County Planning Department (KCPD). 2009. Kern County General Plan Recirculated Program Environmental Impact Report.

Ruettgers and Schuler. 2022. Traffic Study for a Proposed Industrial/Warehouse and Retail Commercial Land Development at South H Street and Hosking Avenue, Bakersfield, California.

San Joaquin Valley Air Pollution Control District (SJVAPCD). 2021a. Ambient Air Quality Standards & Valley Attainment Status. http://www.valleyair.org/aqinfo/attainment.htm, accessed April 2021.

----------. 2021b. Air Monitoring Location Map. http://valleyair.org/aqinfo/air-monitoring.htm, accessed April 2021.

----------. 2021c. Attainment Plant Revision for the 1998 Annual $PM_{2.5}$ Standard. August 19, 2021. https://ww2.valleyair.org/media/spjlsext/attainment-plan-revision.pdf

----------. 2021d. Annual Report to the Community 2020-2021. Accessed December 2021. https://www.valleyair.org/General_info/pubdocs/2020-21-Annual-Report.pdf

----------. 2020. 2020 Annual Report on the District's Indirect Source Review Program. September 17, 2020. https://www.valleyair.org/ISR/Documents/2020-ISR-Final-Annual-Report.pdf

----------. 2018. 2018 $PM_{2.5}$ Plan for the 1998, 2006, and 2012 $PM_{2.5}$ Standards. https://ww2.valleyair.org/plans/2018-pm-2-5-plan-for-the-san-joaquin-valley/

----------. 2017. UStar Meteorological Datasets for Bakersfield 2013-2017. https://www.valleyair.org/busind/pto/Tox_Resources/AirQualityMonitoring.htm#met_data

----------. 2016. 2016 Plan for the 2008 8-Hour Ozone Standard. June 16, 2016. http://valleyair.org/Air_Quality_Plans/Ozone-Plan-2016.htm

----------. 2015. Guidance for Assessing and Mitigating Air Quality Impacts. March 19, 2015.

----------. 2007a. SJVAB Emissions Inventory to Demonstrating Attainment of Federal 1-hour O_3 Standards, SJVAPCD. September 2007.

----------. 2007b. 2007 PM_{10} Maintenance Plan and Request for Redesignation. September 20, 2007. http://www.valleyair.org/Air_Quality_Plans/docs/Maintenance%20Plan10-25-07.pdf

United Nations, 2011. The Millennium Development Goals Report 2011. http://www.un.org/millenniumgoals/pdf/(2011_E)%20MDG%20Report%202011_Book%20LR.pdf

United States Energy Information Administration (U.S. EIA). 2019. International Energy Outlook 2019. https://www.eia.gov/outlooks/ieo/pdf/ieo2019.pdf

United States Environmental Protection Agency (U.S. EPA). 2019. Inventory of US Greenhouse Gas Emissions and Sinks 1990–2017. https://www.epa.gov/ghgemissions/us-greenhouse-gas-inventory-report-archive. April 11, 2019.

----------. 2022. Inventory of US Greenhouse Gas Emissions and Sinks 1990-2020. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks. April 15, 2022.

----------. (n.d.). Overview of Greenhouse Gases. EPA. Retrieved May 5, 2022, from https://www.epa.gov/ghgemissions/overview-greenhouse-gases#methane

United States Geological Survey's (USGS) National Map. 2021. Bakersfield, CA. 7.5 minute. https://viewer.nationalmap.gov/basic/?basemap=b1&category=ustopo&title=US%20Topo%20Download

United States Global Change Research Program (USGCRP). 2014. Climate Change Impacts in the United States: The Third National Climate Assessment. http://nca2014.globalchange.gov/, accessed September 2019.

Western Regional Climate Center, 2023. Bakersfield, California, Period of Record Monthly Climate Summary, 10/01/1937 to 6/09/2016. https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca0442, accessed February 2023.

APPENDIX A. EXISTING AIR QUALITY MONITORING DATA

Top 4 Summary: Highest 4 Daily 24-Hour PM2.5 Averages

at Bakersfield-Golden State Highway

iADAM

	2019		2020		2021	
	Date	24-Hr Average	Date	24-Hr Average	Date	24-Hr Average
National:						
First High:	Jan 27	66.1	Aug 22	150.2	Oct 4	78.5
Second High:	Jan 30	47.4	Sep 15	81.5	Dec 4	63.3
Third High:	Nov 8	44.3	Oct 3	76.9	Nov 19	59.1
Fourth High:	Nov 17	36.7	Aug 19	50.2	Nov 20	59.1
California:						
First High:	Jan 27	66.1	Aug 22	150.2	Oct 4	78.5
Second High:	Jan 30	47.4	Sep 15	81.5	Dec 4	63.3
Third High:	Nov 8	44.3	Oct 3	76.9	Nov 19	59.1
Fourth High:	Nov 17	36.7	Aug 19	50.2	Nov 20	59.1
National:						
'06 Estimated # Days > 24-Hr Std:		12.2		33.9		45.6
'06 Measured # Days > 24-Hr Std:		4		10		43
2006 24-Hr Std Design Value:		59		61		59
2006 24-Hr Std 98th Percentile:		44.3		76.9		54.3
2006 Annual Std Design Value:		15.5		16.6		16.6
2012 Annual Std Design Value:		15.5		16.6		16.6
'06 Annual Average:		12.3		19.4		17.8
California:						
Annual Std Designation Value:		18		18		*
Annual Average:		12.4		*		*
Year Coverage:		99		91		91

Notes:

Daily PM2.5 averages and related statistics are available at Bakersfield-Golden State Highway between 1999 and 2021. Some years in this range may not be represented.

All averages expressed in micrograms per cubic meter.

An exceedance of a standard is not necessarily related to a violation of the standard.

State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Top 4 Summary: Highest 4 Daily 24-Hour PM10 Averages

at Bakersfield-5558 California Avenue

iADAM

	2019		2020		2021	
	Date	24-Hr Average	Date	24-Hr Average	Date	24-Hr Average
National:						
First High:	Jan 5	116.3	Nov 5	193.8	Oct 11	437.5
Second High:	Nov 5	94.9	Oct 2	131.1	Oct 4	185.7
Third High:	Nov 11	75.9	Sep 12	118.6	Dec 13	164.7
Fourth High:	Oct 31	74.5	Aug 31	100.8	Aug 20	144.3
California:						
First High:	Jan 5	125.9	Nov 5	196.8	Oct 11	439.3
Second High:	Nov 5	96.5	Oct 2	128.2	Oct 4	183.1
Third High:	Nov 11	77.3	Sep 12	117.1	Dec 13	168.0
Fourth High:	Oct 31	76.4	Sep 18	97.7	Aug 20	140.8
National:						
Estimated # Days > 24-Hr Std:		0.0		*		*
Measured # Days > 24-Hr Std:		0		1		3
3-Yr Avg Est # Days > 24-Hr Std:		0.0		*		*
Annual Average:		*38.8*		*46.0*		*49.0*
3-Year Average:		*41*		*42*		*
California:						
Estimated # Days > 24-Hr Std:		108.1		*		*
Measured # Days > 24-Hr Std:		17		18		124
Annual Average:		39.0		*		*
3-Year Maximum Annual Average:		43		39		*
Year Coverage:		94		89		0

Notes:

- Daily PM10 averages and related statistics are available at Bakersfield-5558 California Avenue between 1994 and 2021. Some years in this range may not be represented.
- All averages expressed in micrograms per cubic meter.
- The national annual average PM10 standard was revoked in December 2006 and is no longer in effect. Statistics related to the revoked standard are shown in *italics* or *italics* .
- An exceedance of a standard is not necessarily related to a violation of the standard.
- All values listed above represent midnight-to-midnight 24-hour averages and may be related to an exceptional event.
- State and national statistics may differ for the following reasons:
  - State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers.
  - State statistics for 1998 and later are based on local conditions (except for sites in the South Coast Air Basin, where State statistics for 2002 and later are based on local conditions). National statistics are based on standard conditions.
  - State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
- Measurements are usually collected every six days. Measured days counts the days that a measurement was greater than the level of the standard; Estimated days mathematically estimates how many days concentrations would have been greater than the level of the standard had each day been monitored.
- 3-Year statistics represent the listed year and the 2 years before the listed year.
- Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.
- * means there was insufficient data available to determine the value.

Top 4 Summary: Highest 4 Daily Maximum Hourly Nitrogen Dioxide Measurements

at Shafter-Walker Street

iADAM

	2019		2020		2021	
	Date	Measurement	Date	Measurement	Date	Measurement
National:						
First High:	Nov 8	49.3	Dec 2	40.9	Dec 1	47.8
Second High:	Nov 1	45.8	Oct 30	39.7	Nov 30	46.0
Third High:	Nov 18	43.3	Nov 16	35.3	Dec 2	37.5
Fourth High:	Nov 9	40.8	Nov 28	34.2	Sep 30	36.7
California:						
First High:	Nov 8	49	Dec 2	40	Dec 1	47
Second High:	Nov 1	45	Oct 30	39	Nov 30	46
Third High:	Nov 18	43	Nov 16	35	Dec 2	37
Fourth High:	Nov 9	40	Nov 2	34	Sep 30	36
National:						
1-Hour Standard Design Value:		38		36		34
1-Hour Standard 98th Percentile:		36.9		32.5		32.9
# Days Above the Standard:		0		0		0
Annual Standard Design Value:		9		9		8
California:						
1-Hour Std Designation Value:		50		40		40
Expected Peak Day Concentration:		46		44		42
# Days Above the Standard:		0		0		0
Annual Std Designation Value:		9		9		8
Annual Average:		8		8		8
Year Coverage:		98		99		87

Notes:

Hourly nitrogen dioxide measurements and related statistics are available at Shafter-Walker Street between 1989 and 2021. Some years in this range may not be represented.

All concentrations expressed in parts per billion.

An exceedance of a standard is not necessarily related to a violation of the standard.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Top 4 Summary: Highest 4 Daily Maximum Hourly Nitrogen Dioxide Measurements

at Bakersfield-5558 California Avenue

iADAM

	2019		2020		2021	
	Date	Measurement	Date	Measurement	Date	Measurement
National:						
First High:	Nov 8	67.1	Nov 30	50.4	Oct 4	57.2
Second High:	Nov 12	63.8	Nov 5	50.3	Dec 1	56.2
Third High:	Nov 13	62.6	Dec 10	49.9	Dec 2	54.8
Fourth High:	Nov 4	60.4	Dec 2	47.8	Nov 30	54.6
California:						
First High:	Nov 8	67	Nov 5	50	Oct 4	57
Second High:	Nov 12	63	Nov 30	50	Dec 1	56
Third High:	Nov 13	62	Dec 10	49	Nov 30	54
Fourth High:	Nov 4	60	Dec 2	47	Dec 2	54
National:						
1-Hour Standard Design Value:		54		50		49
1-Hour Standard 98th Percentile:		53.9		44.9		48.4
# Days Above the Standard:		0		0		0
Annual Standard Design Value:		12		11		11
California:						
1-Hour Std Designation Value:		70		60		60
Expected Peak Day Concentration:		66		61		60
# Days Above the Standard:		0		0		0
Annual Std Designation Value:		12		12		11
Annual Average:		11		11		10
Year Coverage:		99		99		98

Notes:

Hourly nitrogen dioxide measurements and related statistics are available at Bakersfield-5558 California Avenue between 1994 and 2021. Some years in this range may not be represented.

All concentrations expressed in parts per billion.

An exceedance of a standard is not necessarily related to a violation of the standard.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Top 4 Summary: Highest 4 Daily 24-Hour PM2.5 Averages

at Bakersfield-5558 California Avenue

iADAM

	2019		2020		2021	
	Date	24-Hr Average	Date	24-Hr Average	Date	24-Hr Average
National:						
First High:	Jan 27	59.1	Aug 22	150.7	Oct 30	72.3
Second High:	Jan 29	57.6	Jul 4	141.9	Oct 4	69.4
Third High:	Jan 28	53.1	Aug 21	130.2	Oct 29	66.4
Fourth High:	Jan 26	52.3	Aug 20	82.7	Nov 19	59.5
California:						
First High:	Jan 27	59.1	Aug 22	159.7	Oct 30	72.3
Second High:	Jan 29	57.6	Jul 4	143.9	Oct 4	70.5
Third High:	Jan 28	53.1	Aug 21	136.8	Oct 29	66.4
Fourth High:	Jan 26	52.3	Aug 23	88.9	Nov 19	59.5
National:						
'06 Estimated # Days > 24-Hr Std:		12.3		46.4		43.2
'06 Measured # Days > 24-Hr Std:		12		44		40
2006 24-Hr Std Design Value:		61		64		60
2006 24-Hr Std 98th Percentile:		43.4		79.2		56.9
2006 Annual Std Design Value:		15.2		16.4		16.1
2012 Annual Std Design Value:		15.2		16.4		16.1
'06 Annual Average:		11.8		19.7		16.5
California:						
Annual Std Designation Value:		16		20		20
Annual Average:		11.5		19.7		16.6
Year Coverage:		98		97		95

Notes:

Daily PM2.5 averages and related statistics are available at Bakersfield-5558 California Avenue between 1999 and 2021. Some years in this range may not be represented.

All averages expressed in micrograms per cubic meter.

An exceedance of a standard is not necessarily related to a violation of the standard.

State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Top 4 Summary: Highest 4 Daily Maximum Hourly Ozone Measurements

at Bakersfield-5558 California Avenue

iADAM

	2019		2020		2021	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Jul 25	0.097	Aug 21	0.110	Jun 29	0.090
Second High:	Jun 4	0.095	Aug 19	0.107	Aug 28	0.087
Third High:	Jun 11	0.092	Aug 22	0.107	Jul 27	0.083
Fourth High:	Jun 18	0.092	Aug 24	0.091	Sep 7	0.083
California:						
# Days Above the Standard:		2		3		0
California Designation Value:		0.10		0.10		0.10
Expected Peak Day Concentration:		0.102		0.101		0.095
National:						
# Days Above the Standard:		*0*		*0*		*0*
3-Year Estimated Expected Number of Exceedance Days:		*0.0*		*0.0*		*0.0*
1-Year Estimated Expected Number of Exceedance Days:		*0.0*		*0.0*		*0.0*
Nat'l Standard Design Value:		*0.104*		*0.107*		*0.097*
Year Coverage:		99		99		99

Notes:

Hourly ozone measurements and related statistics are available at Bakersfield-5558 California Avenue between 1994 and 2021. Some years in this range may not be represented.

All concentrations expressed in parts per million.

The national 1-hour ozone standard was revoked in June 2005. Statistics related to the national 1-hour ozone standard are shown in or .

An exceedance of a standard is not necessarily related to a violation of the standard.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Top 4 Summary: Highest 4 Daily Maximum 8-Hour Ozone Averages

at Bakersfield-5558 California Avenue

iADAM

	2019		2020		2021	
	Date	8-Hr Average	Date	8-Hr Average	Date	8-Hr Average
National 2015 Std (0.070 ppm):						
First High:	Jul 25	0.088	Aug 21	0.098	Aug 28	0.080
Second High:	Jun 4	0.085	Aug 22	0.094	Jun 17	0.079
Third High:	Jun 5	0.081	Aug 19	0.085	Aug 29	0.079
Fourth High:	Jun 18	0.081	Sep 5	0.083	Jun 18	0.077
California Std (0.070 ppm):						
First High:	Jul 25	0.088	Aug 21	0.098	Aug 28	0.081
Second High:	Jun 4	0.086	Aug 22	0.094	Aug 29	0.080
Third High:	Jun 5	0.082	Aug 19	0.086	Jun 17	0.079
Fourth High:	Jun 18	0.082	Sep 5	0.083	Jun 18	0.077
National 2015 Std (0.070 ppm):						
# Days Above the Standard:		24		25		11
Nat'l Standard Design Value:		0.087		0.085		0.080
National Year Coverage:		99		99		100
California Std (0.070 ppm):						
# Days Above the Standard:		28		25		11
California Designation Value:		0.096		0.094		0.088
Expected Peak Day Concentration:		0.096		0.095		0.090
California Year Coverage:		97		97		99

Notes:

Eight-hour ozone averages and related statistics are available at Bakersfield-5558 California Avenue between 1994 and 2021. Some years in this range may not be represented.

All averages expressed in parts per million.

An exceedance of a standard is not necessarily related to a violation of the standard.

State and national statistics may differ for the following reasons:

National 8-hour averages are truncated to three decimal places; State 8-hour averages are rounded to three decimal places.

State criteria for ensuring that data are sufficiently complete for calculating 8-hour averages are more stringent than the national criteria.

Daily maximum 8-hour averages associated with the National 0.070 ppm standard exclude those 8-hour averages that have first hours between midnight and 6:00 am, Pacific Standard Time.

Daily maximum 8-hour averages associated with the National 0.070 ppm standard include only those 8-hour averages from days that have sufficient data for the day to be considered valid.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Top 4 Summary: Highest 4 Daily Maximum 8-Hour Ozone Averages

at Oildale-3311 Manor Street

iADAM

	2019		2020		2021	
	Date	8-Hr Average	Date	8-Hr Average	Date	8-Hr Average
National 2015 Std (0.070 ppm):						
First High:	Jul 25	0.086	Aug 21	0.096	Aug 29	0.095
Second High:	Aug 14	0.079	Aug 22	0.096	Aug 28	0.094
Third High:	Aug 6	0.077	Sep 5	0.085	Jul 27	0.087
Fourth High:	Aug 15	0.076	Aug 19	0.083	Aug 4	0.086
California Std (0.070 ppm):						
First High:	Jul 25	0.087	Aug 21	0.096	Aug 29	0.095
Second High:	Aug 14	0.080	Aug 22	0.096	Aug 28	0.094
Third High:	Aug 6	0.077	Sep 5	0.086	Jul 27	0.088
Fourth High:	Aug 15	0.077	Aug 19	0.083	Aug 4	0.086
National 2015 Std (0.070 ppm):						
# Days Above the Standard:		16		23		43
Nat'l Standard Design Value:		0.084		0.083		0.081
National Year Coverage:		99		99		99
California Std (0.070 ppm):						
# Days Above the Standard:		20		24		46
California Designation Value:		0.093		0.093		0.088
Expected Peak Day Concentration:		0.093		0.093		0.092
California Year Coverage:		98		99		97

Notes:

Eight-hour ozone averages and related statistics are available at Oildale-3311 Manor Street between 1983 and 2021. Some years in this range may not be represented.

All averages expressed in parts per million.

An exceedance of a standard is not necessarily related to a violation of the standard.

State and national statistics may differ for the following reasons:

National 8-hour averages are truncated to three decimal places; State 8-hour averages are rounded to three decimal places.

State criteria for ensuring that data are sufficiently complete for calculating 8-hour averages are more stringent than the national criteria.

Daily maximum 8-hour averages associated with the National 0.070 ppm standard exclude those 8-hour averages that have first hours between midnight and 6:00 am, Pacific Standard Time.

Daily maximum 8-hour averages associated with the National 0.070 ppm standard include only those 8-hour averages from days that have sufficient data for the day to be considered valid.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Top 4 Summary: Highest 4 Daily 24-Hour PM10 Averages

at Bakersfield-Golden State Highway

iADAM

	2019		2020		2021	
	Date	24-Hr Average	Date	24-Hr Average	Date	24-Hr Average
National:						
First High:	Oct 30	652.2	Oct 6	146.8	Oct 25	175.0
Second High:	Nov 5	116.4	Sep 12	143.1	Oct 1	134.9
Third High:	Nov 11	98.7	Aug 19	127.3	Aug 20	126.5
Fourth High:	Oct 24	90.3	Nov 5	127.2	Sep 25	112.4
California:						
First High:	Oct 30	664.2	Oct 6	144.0	Oct 25	176.3
Second High:	Nov 5	117.4	Sep 12	140.8	Oct 1	133.1
Third High:	Nov 11	99.5	Nov 5	128.4	Aug 20	122.8
Fourth High:	Nov 17	90.2	Oct 30	127.2	Sep 25	110.3
National:						
Estimated # Days > 24-Hr Std:		6.6		0.0		*
Measured # Days > 24-Hr Std:		1		0		1
3-Yr Avg Est # Days > 24-Hr Std:		6.0		4.0		*
Annual Average:		*55.6*		*60.8*		*51.0*
3-Year Average:		*52*		*56*		*56*
California:						
Estimated # Days > 24-Hr Std:		129.7		*		*
Measured # Days > 24-Hr Std:		21		26		25
Annual Average:		55.6		*		*
3-Year Maximum Annual Average:		56		56		56
Year Coverage:		98		94		95

Notes:

- Daily PM10 averages and related statistics are available at Bakersfield-Golden State Highway between 1994 and 2021. Some years in this range may not be represented.
- All averages expressed in micrograms per cubic meter.
- The national annual average PM10 standard was revoked in December 2006 and is no longer in effect. Statistics related to the revoked standard are shown in *italics* or *italics* .
- An exceedance of a standard is not necessarily related to a violation of the standard.
- All values listed above represent midnight-to-midnight 24-hour averages and may be related to an exceptional event.
- State and national statistics may differ for the following reasons:
  - State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers.
  - State statistics for 1998 and later are based on local conditions (except for sites in the South Coast Air Basin, where State statistics for 2002 and later are based on local conditions). National statistics are based on standard conditions.
  - State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.
- Measurements are usually collected every six days. Measured days counts the days that a measurement was greater than the level of the standard; Estimated days mathematically estimates how many days concentrations would have been greater than the level of the standard had each day been monitored.
- 3-Year statistics represent the listed year and the 2 years before the listed year.
- Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.
- * means there was insufficient data available to determine the value.

Top 4 Summary: Highest 4 Daily Maximum 8-Hour Ozone Averages

at Shafter-Walker Street

iADAM

	2019		2020		2021	
	Date	8-Hr Average	Date	8-Hr Average	Date	8-Hr Average
National 2015 Std (0.070 ppm):						
First High:	Oct 8	0.077	Aug 21	0.098	Aug 28	0.085
Second High:	Aug 14	0.076	Aug 22	0.091	Aug 29	0.082
Third High:	Aug 15	0.076	Aug 24	0.089	Jul 27	0.079
Fourth High:	Jun 4	0.075	Sep 5	0.087	Jun 17	0.076
California Std (0.070 ppm):						
First High:	Aug 14	0.077	Aug 21	0.098	Aug 28	0.086
Second High:	Oct 8	0.077	Aug 22	0.091	Aug 29	0.082
Third High:	Jun 4	0.076	Aug 24	0.089	Jul 27	0.079
Fourth High:	Aug 15	0.076	Sep 5	0.087	Aug 7	0.077
National 2015 Std (0.070 ppm):						
# Days Above the Standard:		14		34		15
Nat'l Standard Design Value:		0.079		0.082		0.079
National Year Coverage:		98		98		100
California Std (0.070 ppm):						
# Days Above the Standard:		15		34		16
California Designation Value:		0.086		0.091		0.089
Expected Peak Day Concentration:		0.086		0.091		0.089
California Year Coverage:		98		97		100

Notes:

Eight-hour ozone averages and related statistics are available at Shafter-Walker Street between 1989 and 2021. Some years in this range may not be represented.

All averages expressed in parts per million.

An exceedance of a standard is not necessarily related to a violation of the standard.

State and national statistics may differ for the following reasons:

National 8-hour averages are truncated to three decimal places; State 8-hour averages are rounded to three decimal places.

State criteria for ensuring that data are sufficiently complete for calculating 8-hour averages are more stringent than the national criteria.

Daily maximum 8-hour averages associated with the National 0.070 ppm standard exclude those 8-hour averages that have first hours between midnight and 6:00 am, Pacific Standard Time.

Daily maximum 8-hour averages associated with the National 0.070 ppm standard include only those 8-hour averages from days that have sufficient data for the day to be considered valid.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Top 4 Summary: Highest 4 Daily Maximum Hourly Ozone Measurements

at Oildale-3311 Manor Street

iADAM

	2019		2020		2021	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Jul 25	0.099	Aug 21	0.109	Aug 28	0.107
Second High:	Aug 6	0.091	Aug 22	0.107	Aug 29	0.102
Third High:	Aug 14	0.089	Aug 19	0.101	Aug 3	0.099
Fourth High:	Aug 31	0.086	Sep 5	0.093	Sep 9	0.099
California:						
# Days Above the Standard:		1		3		6
California Designation Value:		0.10		0.10		0.10
Expected Peak Day Concentration:		0.098		0.099		0.099
National:						
# Days Above the Standard:		*0*		*0*		*0*
3-Year Estimated Expected Number of Exceedance Days:		*0.0*		*0.0*		*0.0*
1-Year Estimated Expected Number of Exceedance Days:		*0.0*		*0.0*		*0.0*
Nat'l Standard Design Value:		*0.100*		*0.102*		*0.102*
Year Coverage:		99		99		98

Notes:

Hourly ozone measurements and related statistics are available at Oildale-3311 Manor Street between 1983 and 2021. Some years in this range may not be represented.

All concentrations expressed in parts per million.

The national 1-hour ozone standard was revoked in June 2005. Statistics related to the national 1-hour ozone standard are shown in or .

An exceedance of a standard is not necessarily related to a violation of the standard.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Top 4 Summary: Highest 4 Daily 24-Hour PM10 Averages

at Oildale-3311 Manor Street

iADAM

	2019		2020		2021	
	Date	24-Hr Average	Date	24-Hr Average	Date	24-Hr Average
National:						
First High:	Oct 30	389.3	Sep 8	517.2	Oct 11	421.4
Second High:	Oct 27	382.7	Nov 6	277.8	Oct 4	164.3
Third High:	Nov 25	339.6	Aug 22	230.4	Oct 25	150.2
Fourth High:	Oct 28	233.7	Sep 14	225.3	Oct 1	137.6
California:						
First High:	Oct 30	392.1	Nov 6	277.3	Oct 11	423.0
Second High:	Oct 27	384.2	Aug 22	221.0	Oct 4	161.1
Third High:	Nov 25	344.1	Sep 15	219.6	Oct 25	149.3
Fourth High:	Oct 28	238.0	Sep 14	219.3	Oct 1	135.2
National:						
Estimated # Days > 24-Hr Std:		8.1		17.4		2.2
Measured # Days > 24-Hr Std:		8		15		2
3-Yr Avg Est # Days > 24-Hr Std:		*		10.0		9.0
Annual Average:		*46.6*		*57.3*		*50.0*
3-Year Average:		*52*		*53*		*51*
California:						
Estimated # Days > 24-Hr Std:		*		*		135.6
Measured # Days > 24-Hr Std:		118		123		129
Annual Average:		*		*		49.4
3-Year Maximum Annual Average:		*		*		49
Year Coverage:		0		0		0

Notes:

Daily PM10 averages and related statistics are available at Oildale-3311 Manor Street between 1988 and 2021. Some years in this range may not be represented.

All averages expressed in micrograms per cubic meter.

The national annual average PM10 standard was revoked in December 2006 and is no longer in effect. Statistics related to the revoked standard are shown in *italics* or *italics* .

An exceedance of a standard is not necessarily related to a violation of the standard.

All values listed above represent midnight-to-midnight 24-hour averages and may be related to an exceptional event.

State and national statistics may differ for the following reasons:

State statistics are based on California approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. State and national statistics may therefore be based on different samplers.

State statistics for 1998 and later are based on local conditions (except for sites in the South Coast Air Basin, where State statistics for 2002 and later are based on local conditions). National statistics are based on standard conditions.

State criteria for ensuring that data are sufficiently complete for calculating valid annual averages are more stringent than the national criteria.

Measurements are usually collected every six days. Measured days counts the days that a measurement was greater than the level of the standard; Estimated days mathematically estimates how many days concentrations would have been greater than the level of the standard had each day been monitored.

3-Year statistics represent the listed year and the 2 years before the listed year.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Top 4 Summary: Highest 4 Daily Maximum Hourly Ozone Measurements

at Shafter-Walker Street

iADAM

	2019		2020		2021	
	Date	Measurement	Date	Measurement	Date	Measurement
First High:	Nov 9	0.087	Aug 21	0.116	Aug 28	0.104
Second High:	Jun 4	0.085	Aug 22	0.108	Aug 29	0.093
Third High:	Aug 14	0.085	Aug 24	0.102	Jun 27	0.092
Fourth High:	Aug 15	0.083	Aug 19	0.098	Jun 18	0.091
California:						
# Days Above the Standard:		0		6		1
California Designation Value:		0.09		0.10		0.10
Expected Peak Day Concentration:		0.093		0.097		0.096
National:						
# Days Above the Standard:		*0*		*0*		*0*
3-Year Estimated Expected Number of Exceedance Days:		*0.0*		*0.0*		*0.0*
1-Year Estimated Expected Number of Exceedance Days:		*0.0*		*0.0*		*0.0*
Nat'l Standard Design Value:		*0.095*		*0.098*		*0.102*
Year Coverage:		98		97		100

Notes:

Hourly ozone measurements and related statistics are available at Shafter-Walker Street between 1989 and 2021. Some years in this range may not be represented.

All concentrations expressed in parts per million.

The national 1-hour ozone standard was revoked in June 2005. Statistics related to the national 1-hour ozone standard are shown in or .

An exceedance of a standard is not necessarily related to a violation of the standard.

Year Coverage indicates the extent to which available monitoring data represent the time of the year when concentrations are expected to be highest. 0 means that data represent none of the high period; 100 means that data represent the entire high period. A high Year Coverage does not mean that there was sufficient data for annual statistics to be considered valid.

* means there was insufficient data available to determine the value.

Welcome to California

Air Resources Board

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Annual Toxics Summary

Bakersfield-5558 California Avenue

Lead

nanograms per cubic meter

iADAM FAQs

Read About Estimated Risk

Year	Months Present	Minimum	Median	Mean	90th Percentile	Maximum	Standard Deviation	Number of Observations	Detection Limit	Estimated Risk
2022	----------	0.65	3.6	*	5.4	6.1	1.80	15	1.3	*
2021	----------	0.65	2.8	*	5.8	9.9	2.28	24	1.3	*
2020	----------	1.5	*	*	*	5.7	1.38	9	1.3	*
2019	----------	0.65	3.5	3.70	6.3	8.5	1.91	34	1.3	0.1
2018	----------	0.65	3.6	3.92	7.0	11.7	2.38	37	1.3	0.1
2017	----------	0.65	3.5	*	7.5	12.6	2.60	29	1.3	*
2016	----------	0.65	4.3	*	6.9	19.8	3.57	33	1.3	*
2015	----------	0.65	3.2	3.34	7.6	9.5	2.50	33	1.3	0.1
2014	----------	0.85	3.6	*	8.8	14	3.78	16	1.7	*
2013	----------	0.5	2.9	*	5.3	6.7	1.71	21	1.0	*
2012	----------	1.7	3.4	4.02	8.2	14	2.74	32	1.5	0.1
2011	----------	0.75	4.0	*	9.1	11	2.90	20	1.5	*
2010	----------	0.75	2.5	*	5.7	8.2	2.07	18	1.5	*
2009	----------	1.5	4.5	5.27	11.2	14	3.22	29	1.5	0.2
2008	----------	*	*	*	*	*	*	0	*	*
2007	----------	0.75	7.1	*	11.7	13	3.23	24	1.5	*
2006	----------	*	*	*	*	*	*	0	*	*
2005	----------	*	*	*	*	*	*	0	*	*
2004	----------	*	*	*	*	*	*	0	*	*
2003	----------	4.0	*	*	*	7.0	1.64	5	3.0	*
2002	----------	1.5	7.0	6.78	10	17	3.34	36	3.0	0.2
2001	----------	2	5.0	5.83	9.2	26	4.41	39	4.0	0.2
2000	----------	2	5.0	5.92	14.1	22	4.76	40	4.0	0.2
1999	----------	2	5.0	5.70	11.2	25	4.55	39	4.0	0.2
1998	----------	2	7.0	9.43	14	78	11.8	42	4.0	0.3
1997	----------	2	7.0	7.92	14	20	4.40	34	4.0	0.3
1996	----------	2	7.0	7.69	14.5	35	6.10	36	4.0	0.3
1995	----------	2	8.0	8.68	15.1	21	5.14	30	4.0	0.3
1994	----------	2	10	*	16	39	7.11	25	4.0	*
1993	----------	*	*	*	*	*	*	0	*	*
1992	----------	*	*	*	*	*	*	0	*	*
1991	----------	*	*	*	*	*	*	0	*	*
1990	----------	*	*	*	*	*	*	0	*	*
1989	----------	*	*	*	*	*	*	0	*	*

Graph It!

Toxics Statistics Home

Notes: Values below the Limit of Detection (LoD) assumed to be ½ LoD.
Means and risks shown only for years with data in all 12 months.
"*" means there was insufficient or no data available to determine the value.

Data Descriptions Page

APPENDIX B. PROJECT EMISSION CALCULATIONS

CalEEMod 2022.1 files are provided electronically.

CalEEMod version 2022.1 was used. The CalEEMod input and output files are provided electronically.

Phase 1 Parcel Summary

Parcel	APN	Proposed Use	Net Parcel Size		Building		Landscape		Parking Stalls		Building Height
			(Sq. Ft.)	(Acres)	(Sq. Ft.)	Coverage	(Sq. Ft.)	Coverage	Standard	Truck	(20%)
1	482-010-01 482-040-01, 02, 03	M-2 PD / SI	1,956,014	44.9	646,800	33%	611,350	31%	556	174	Std. (52')
2	482-010-01	M-2 PD / SI	1,695,429	38.92	646,800	38%	342,487	20%	556	174	Std. (52')
3	482-010-01	M-2 PD / SI	2,108,574	48.41	771,600	37%	500,158	24%	486	424	High Cube (135')
4	482-010-01	M-2 PD / SI	1,979,060	45.43	738,000	37%	464,870	23%	346	406	Std. (52')
5	482-010-11	M-2 PD / SI	1,707,533	39.2	571,200	33%	503,896	30%	276	300	Std. (52')
6	482-010-01, 03 482-040-03	M-2 PD / SI	1,039,531	23.86	248,640	24%	450,917	43%	212	162	Std. (52')
7	482-010-01	M-2 PD / SI	619,511	14.22	147,000	24%	229,932	37%	160	300	Std. (52')
8	482-010-01, 02, 03	M-2 PD / SI	2,074,348	47.62	771,600	37%	508,028	24%	416	424	High Cube (135')
9	482-010-01,02	M-2 PD / SI	2,003,797	46	771,600	39%	437,477	22%	416	424	Std. (52')
10	482-010-11	M-2 PD / SI	734,208	16.86	174,720	24%	288,774	39%	260	52	Std. (52')
11	482-010-11	M-2 PD / SI	730,087	16.76	174,720	24%	231,523	32%	270	52	Std. (52')
12	482-010-01, 03	M-2 PD / SI	995,599	22.86	231,826	23%	398,050	40%	166	100	Std. (52')
13	482-010-02, 03	M-2 PD / SI	1,962,746	45.06	576,000	29%	859,247	44%	260	152	Std. (52')
14	482-010-02	M-2 PD / SI	2,233,629	51.28	771,600	35%	612,948	27%	416	424	High Cube (135')
Net Totals	**--**	**--**	**21,840,067**	**501.38**	**7,242,106**	**33%**	**6,439,657**	**29%**	**4,796**	**3,568**	--
Total Site Area (Acres)	533.84		**21,840,066**	**501**	**7,242,106**		**6,439,657**		**4,796**	**3,568**	
Street Area (Acres)	32.46										
Parking Estimate Acreage	107.39										
CalEEMod Building Acreage	393.99										

Phase 2 Parcel Summary

Parcel	APN	Proposed Use	Net Parcel Size		Building		Landscape		Parking Stalls		Building Height
			(Sq. Ft.)	(Acres)	(Sq. Ft.)	Coverage	(Sq. Ft.)	Coverage	Standard	Truck	(20%)
1	091-160-01, 02, 03	M-2 PD / SI	933,528	21.43	150,000	16%	370,467	40%	354	90	Std. (52')
2	091-160-02, 03, 09	M-2 PD / SI	973,004	22.34	262,500	27%	179,103	18%	352	158	Std. (52')
3	091-160-02, 03, 09, 13	M-2 PD / SI	1,070,513	24.58	220,000	21%	225,708	21%	273	244	High Cube (135')
4	091-150-03 091-160-03	M-2 PD / SI	380,304	8.73	100,000	26%	63,991	17%	154	54	Std. (52')
5	091-150-03 091-160-03, 13	M-2 PD / SI	229,790	5.28	74,725	33%	52,824	23%	21	-	Std. (52')
6	091-160-02, 09,13, 16	M-2 PD / SI	694,316	15.94	123,750	18%	235,569	34%	192	100	
7	091-160-09, 16 091-200-04, 05	M-2 PD / SI	1,048,631	24.07	231,826	22%	425,064	41%	166	92	High Cube (135')
8	091-200-04, 05, 14	M-2 PD / SI	940,688	21.6	231,826	25%	278,095	30%	324	92	Std. (52')
9	091-200-05, 07, 14	M-2 PD / SI	603,161	13.85	150,000	25%	63,525	11%	294	94	Std. (52')
10	091-160- 09, 13, 16, 091-200-05, 14	M-2 PD / SI	416,641	9.56	120,713	29%	75,325	18%	27	-	Std. (52')
Net Totals	--	--	**7,290,575**	**167.37**	**1,544,628**	**21%**	**1,969,669**	**27%**	**2,130**	**924**	--
Total Site Area (AC)	193.33		**7,290,576**	**167**	**1,665,340**		**1,969,671**		**2,157**	**924**	
Street Area (Sq. Ft.)	25.96				1665.34						
Parking Estimate Acreage	36.04										
CalEEMod Building Acreage	131.33										
Road Improvements											
Distance (ft)	14520										
Width (ft)	20										
Acres	6.67										

Short Term Project Emissions - Unmitigated

Year	ROG	NOx	CO	SO2	PM_{10} Total	$PM_{2.5}$ Total	Total CO_2	CH_4	N_2O	CO_2e
	tons/yr									
2025	0.81	3.53	4.56	0.01	1.13	0.50	1,016	0.03	0.04	1,029
2026	1.08	3.62	6.37	0.01	1.09	0.38	1,735	0.04	0.11	1,771
2027	2.16	3.02	5.33	0.01	0.82	0.28	1,428	0.03	0.09	1,457
2028	1.67	3.42	5.34	0.01	1.15	0.47	1,341	0.04	0.07	1,362
2029	1.59	2.83	4.88	0.01	0.84	0.30	1,297	0.03	0.07	1,320
2030	2.62	2.58	4.10	0.01	0.76	0.34	903	0.03	0.04	915
2031	1.18	1.47	2.51	0.00	0.32	0.13	579	0.02	0.02	586
2032	0.61	1.75	2.90	0.01	0.84	0.34	809	0.02	0.03	819
2033	0.23	1.56	3.17	0.01	0.69	0.19	1,081	0.02	0.06	1,101
2034	2.05	1.28	2.42	0.01	0.64	0.22	759	0.02	0.04	771
2035	0.24	1.64	3.07	0.01	0.84	0.28	992	0.02	0.05	1,007
2036	0.21	1.44	2.96	0.01	0.68	0.18	1,036	0.02	0.06	1,055
2037	2.01	0.99	1.89	0.00	0.38	0.13	524	0.01	0.02	531
2038	1.01	1.13	1.96	0.00	0.54	0.24	458	0.02	0.01	462
2039	0.16	1.23	2.50	0.01	0.52	0.15	809	0.02	0.04	822
2040	1.54	1.18	2.20	0.01	0.69	0.27	645	0.02	0.02	653
2041	0.18	1.31	2.70	0.01	0.68	0.19	941	0.02	0.05	956
2042	0.17	1.29	2.68	0.01	0.65	0.17	947	0.02	0.05	963
2043	1.95	1.15	2.19	0.01	0.79	0.31	674	0.02	0.02	681
2044	0.17	1.29	2.70	0.01	0.68	0.18	970	0.02	0.05	986
2045	2.01	1.02	2.11	0.01	0.53	0.15	709	0.01	0.04	721
2046	0.18	1.26	2.54	0.01	0.79	0.27	833	0.02	0.04	844
2047	0.15	1.17	2.43	0.01	0.55	0.15	822	0.01	0.04	836
2048	1.70	1.05	2.11	0.01	0.73	0.27	671	0.02	0.02	679
2049	0.15	1.17	2.46	0.01	0.57	0.15	843	0.01	0.04	856
2050	1.60	0.32	0.67	0.00	0.12	0.03	196	0.00	0.01	199
Maximum	**2.62**	**3.62**	**6.37**	**0.01**	**1.15**	**0.50**	**1,735**	**0.04**	**0.11**	**1,771**

Short Term Project Emissions - Mitigated

Year	ROG	NOx	CO	SO2	PM_{10} Total	$PM_{2.5}$ Total	Total CO_2	CH_4	N_2O	CO_2e
	tons/yr									
2025	0.81	3.53	4.56	0.01	0.60	0.27	1,016	0.03	0.04	1,029
2026	1.08	3.62	6.37	0.01	0.97	0.32	1,735	0.04	0.11	1,771
2027	2.16	3.02	5.33	0.01	0.77	0.25	1,428	0.03	0.09	1,457
2028	1.67	3.42	5.34	0.01	0.74	0.29	1,341	0.04	0.07	1,362
2029	1.59	2.83	4.88	0.01	0.69	0.24	1,297	0.03	0.07	1,320
2030	2.62	2.58	4.10	0.01	0.45	0.19	903	0.03	0.04	915
2031	1.18	1.47	2.51	0.00	0.26	0.10	579	0.02	0.02	586
2032	0.61	1.75	2.90	0.01	0.50	0.18	809	0.02	0.03	819
2033	0.23	1.56	3.17	0.01	0.69	0.19	1,081	0.02	0.06	1,101
2034	2.05	1.28	2.42	0.01	0.51	0.16	759	0.02	0.04	771
2035	0.24	1.64	3.07	0.01	0.63	0.19	992	0.02	0.05	1,007
2036	0.21	1.44	2.96	0.01	0.68	0.18	1,036	0.02	0.06	1,055
2037	2.01	0.99	1.89	0.00	0.31	0.10	524	0.01	0.02	531
2038	1.01	1.13	1.96	0.00	0.24	0.10	458	0.02	0.01	462
2039	0.16	1.23	2.50	0.01	0.50	0.14	809	0.02	0.04	822
2040	1.54	1.18	2.20	0.01	0.41	0.14	645	0.02	0.02	653
2041	0.18	1.31	2.70	0.01	0.63	0.17	941	0.02	0.05	956
2042	0.17	1.29	2.68	0.01	0.65	0.17	947	0.02	0.05	963
2043	1.95	1.15	2.19	0.01	0.45	0.15	674	0.02	0.02	681
2044	0.17	1.29	2.70	0.01	0.68	0.18	970	0.02	0.05	986
2045	2.01	1.02	2.11	0.01	0.49	0.13	709	0.01	0.04	721
2046	0.18	1.26	2.54	0.01	0.55	0.17	833	0.02	0.04	844
2047	0.15	1.17	2.43	0.01	0.55	0.15	822	0.01	0.04	836
2048	1.70	1.05	2.11	0.01	0.44	0.14	671	0.02	0.02	679
2049	0.15	1.17	2.46	0.01	0.57	0.15	843	0.01	0.04	856
2050	1.60	0.32	0.67	0.00	0.12	0.03	196	0.00	0.01	199
Maximum	**2.62**	**3.62**	**6.37**	**0.01**	**0.97**	**0.32**	**1,735**	**0.04**	**0.11**	**1,771**

Threshold	10	10	100	27	15	15
Exceeded?	No	No	No	No	No	No

Unmitigated Operational by Parcel

Phase	Parcel	ROG	NOx	CO	SO2	PM_{10} T	$PM_{2.5}$ T	Total CO_2	CH_4	N_2O	CO_2e
		tons/yr						MT/year			
1	1	0.81	4.51	6.83	0.05	3.20	0.90	5,516	10.45	0.64	5,969
1	2	0.81	4.53	6.85	0.05	3.20	0.90	5,531	10.45	0.64	5,985
1	3	0.98	5.46	8.24	0.06	3.82	1.07	6,651	12.47	0.77	7,194
1	4	0.95	5.27	7.94	0.06	3.66	1.02	6,401	11.93	0.75	6,922
1	5	0.75	4.18	6.24	0.04	2.84	0.79	5,031	9.24	0.59	5,437
1	6	0.36	2.11	3.05	0.02	1.24	0.35	2,456	4.03	0.29	2,644
1	7	0.14	0.04	0.61	0.00	0.61	0.16	241	2.37	0.03	309
1	8	1.06	6.13	8.96	0.06	3.84	1.08	7,221	12.49	0.85	7,789
1	9	1.03	5.85	8.63	0.06	3.83	1.08	6,963	12.48	0.81	7,520
1	10	0.23	1.31	1.94	0.01	0.87	0.24	1,565	2.83	0.18	1,691
1	11	0.23	1.31	1.94	0.01	0.87	0.24	1,566	2.83	0.18	1,691
1	12	0.33	2.01	2.91	0.02	1.16	0.33	2,331	3.76	0.28	2,509
1	13	0.83	5.00	7.22	0.05	2.87	0.81	5,780	9.33	0.68	6,222
1	14	1.16	7.09	10.21	0.07	3.85	1.09	8,081	12.51	0.96	8,687
2	1	0.22	1.27	1.84	0.01	0.75	0.21	1,488	2.43	0.17	1,602
2	2	0.38	2.28	3.29	0.02	1.31	0.37	2,647	4.26	0.31	2,848
2	3	0.33	1.96	2.83	0.02	1.10	0.31	2,270	3.57	0.27	2,441
2	4	0.15	0.87	1.25	0.01	0.50	0.14	1,008	1.62	0.12	1,085
2	5	0.11	0.67	0.96	0.01	0.37	0.11	764	1.21	0.09	821
2	6	0.19	1.17	1.69	0.01	0.62	0.18	1,329	2.01	0.16	1,428
2	7	0.35	2.20	3.17	0.02	1.16	0.33	2,478	3.76	0.29	2,662
2	8	0.36	2.27	3.28	0.02	1.16	0.33	2,531	3.76	0.30	2,717
2	9	0.24	1.52	2.21	0.02	0.75	0.21	1,671	2.44	0.20	1,793
2	10	0.18	1.11	1.60	0.01	0.60	0.17	1,259	1.96	0.15	1,353
Max		**1.16**	**7.09**	**10.21**	**0.07**	**3.85**	**1.09**	**8,081**	**12.51**	**0.96**	**8,687**

Mitigated Operational by Parcel

Phase	Parcel	ROG	NOx	CO	SO2	PM_{10} T	$PM_{2.5}$ T	Total CO_2	CH_4	N_2O	CO_2e
		tons/yr						MT/year			
1	1	0.81	4.51	6.83	0.05	3.20	0.90	5,516	10.45	0.64	5,969
1	2	0.81	4.53	6.85	0.05	3.20	0.90	5,531	10.45	0.64	5,985
1	3	0.98	5.46	8.24	0.06	3.82	1.07	6,651	12.47	0.77	7,194
1	4	0.95	5.27	7.94	0.06	3.66	1.02	6,401	11.93	0.75	6,922
1	5	0.75	4.18	6.24	0.04	2.84	0.79	5,031	9.24	0.59	5,437
1	6	0.36	2.11	3.05	0.02	1.24	0.35	2,456	4.03	0.29	2,644
1	7	0.14	0.04	0.61	0.00	0.61	0.16	241	2.37	0.03	309
1	8	1.06	6.13	8.96	0.06	3.84	1.08	7,221	12.49	0.85	7,789
1	9	1.03	5.85	8.63	0.06	3.83	1.08	6,963	12.48	0.81	7,520
1	10	0.23	1.31	1.94	0.01	0.87	0.24	1,565	2.83	0.18	1,691
1	11	0.23	1.31	1.94	0.01	0.87	0.24	1,566	2.83	0.18	1,691
1	12	0.33	2.01	2.91	0.02	1.16	0.33	2,331	3.76	0.28	2,509
1	13	0.83	5.00	7.22	0.05	2.87	0.81	5,780	9.33	0.68	6,222
1	14	1.16	7.09	10.21	0.07	3.85	1.09	8,081	12.51	0.96	8,687
2	1	0.22	1.27	1.84	0.01	0.75	0.21	1,488	2.43	0.17	1,602
2	2	0.38	2.28	3.29	0.02	1.31	0.37	2,647	4.26	0.31	2,848
2	3	0.33	1.96	2.83	0.02	1.10	0.31	2,270	3.57	0.27	2,441
2	4	0.15	0.87	1.25	0.01	0.50	0.14	1,008	1.62	0.12	1,085
2	5	0.11	0.67	0.96	0.01	0.37	0.11	764	1.21	0.09	821
2	6	0.19	1.17	1.69	0.01	0.62	0.18	1,329	2.01	0.16	1,428
2	7	0.35	2.20	3.17	0.02	1.16	0.33	2,478	3.76	0.29	2,662
2	8	0.36	2.27	3.28	0.02	1.16	0.33	2,531	3.76	0.30	2,717
2	9	0.24	1.52	2.21	0.02	0.75	0.21	1,671	2.44	0.20	1,793
2	10	0.18	1.11	1.60	0.01	0.60	0.17	1,259	1.96	0.15	1,353
Max		**1.16**	**7.09**	**10.21**	**0.07**	**3.85**	**1.09**	**8,081**	**12.51**	**0.96**	**8,687**

Unmitigated Operational - Phase 1

Category	ROG	NOx	CO	SO2	PM_{10} T	$PM_{2.5}$ T	Total CO_2	CH_4	N_2O	CO_2e
	tons/yr						MT/year			
Mobile	2.53	48.39	46.54	0.53	35.67	9.84	50,310.74	0.34	5.74	52,031.57
Area	6.47	0.24	28.35	0.00	0.05	0.04	105.75	0.00	0.00	106.13
Energy	0.10	1.89	1.59	0.01	0.14	0.14	9,625.39	1.41	0.15	9,705.98
Water	-	-	-	-	-	-	1,165.22	54.58	1.31	2,919.24
Waste	-	-	-	-	-	-	607.42	60.71	-	2,125.17
Total	9.11	50.52	76.48	0.54	35.87	10.03	61,815	117.04	7.20	66,888

Unmitigated Operational - Phase 2

Category	ROG	NOx	CO	SO2	PM_{10} T	$PM_{2.5}$ T	Total CO_2	CH_4	N_2O	CO_2e
	tons/yr						MT/year			
Mobile	0.73	7.69	8.11	0.07	3.88	1.08	6,608	0.09	0.78	6,848
Area	1.50	0.05	6.52	0.00	0.01	0.01	24	0.00	0.00	24
Energy	0.02	0.44	0.37	0.00	0.03	0.03	2,253	0.33	0.04	2,272
Water	-	-	-	-	-	-	270	12.55	0.30	673
Waste	-	-	-	-	-	-	140	13.96	0.00	489
Total	2.26	8.18	15.00	0.07	3.92	1.13	9,295	26.94	1.12	10,307

Mitigated Operational - Phase 1

Category	ROG	NOx	CO	SO2	PM_{10} T	$PM_{2.5}$ T	Total CO_2	CH_4	N_2O	CO_2e
	tons/yr						MT/year			
Mobile	2.53	48.39	46.54	0.53	35.67	9.84	50,310.74	0.34	5.74	52,031.57
Area	6.47	0.24	28.35	0.00	0.05	0.04	105.75	0.00	0.00	106.13
Energy	0.10	1.89	1.59	0.01	0.14	0.14	9,625.39	1.41	0.15	9,705.98
Water	-	-	-	-	-	-	1,165.22	54.58	1.31	2,919.24
Waste	-	-	-	-	-	-	607.42	60.71	-	2,125.17
Total	9.11	50.52	76.48	0.54	35.87	10.03	61,815	117.04	7.20	66,888

Mitigated Operational - Phase 2

Category	ROG	NOx	CO	SO2	PM_{10} T	$PM_{2.5}$ T	Total CO_2	CH_4	N_2O	CO_2e
	tons/yr						MT/year			
Mobile	0.73	7.69	8.11	0.07	3.88	1.08	6,608.22	0.09	0.78	6,848.19
Area	1.50	0.05	6.52	0.00	0.01	0.01	24.32	0.00	0.00	24.41
Energy	0.02	0.44	0.37	0.00	0.03	0.03	2,253.46	0.33	0.04	2,272.39
Water	-	-	-	-	-	-	269.73	12.55	0.30	673.09
Waste	-	-	-	-	-	-	139.68	13.96	-	488.69
Total	2.26	8.18	15.00	0.07	3.92	1.13	9,295	26.94	1.12	10,307

Unmitigated Operational Total

Category	ROG	NOx	CO	SO2	PM_{10} T	$PM_{2.5}$ T	Total CO_2	CH_4	N_2O	CO_2e
	tons/yr						MT/year			
Mobile	3.26	56.08	54.66	0.60	39.55	10.93	56,918.96	0.43	6.51	58,879.76
Area	7.97	0.29	34.87	0.00	0.06	0.05	130.07	0.01	0.00	130.54
Energy	0.13	2.33	1.96	0.01	0.18	0.18	11,878.85	1.74	0.19	11,978.37
Water	-	-	-	-	-	-	1,434.95	67.13	1.61	3,592.33
Waste	-	-	-	-	-	-	747.10	74.67	-	2,613.85
Total	11.36	58.70	91.48	0.62	39.79	11.15	71,110	143.98	8.31	77,195

Mitigated Operational Total

Category	ROG	NOx	CO	SO2	PM_{10} T	$PM_{2.5}$ T	Total CO_2	CH_4	N_2O	CO_2e
	tons/yr						MT/year			
Mobile	3.26	56.08	54.66	0.60	39.55	10.93	56,919	0.43	6.51	58,880
Area	7.97	0.29	34.87	0.00	0.06	0.05	130	0.01	0.00	131
Energy	0.13	2.33	1.96	0.01	0.18	0.18	11,879	1.74	0.19	11,978
Water	-	-	-	-	-	-	1,435	67.13	1.61	3,592
Waste	-	-	-	-	-	-	747	74.67	-	2,614
Total	11.36	58.70	91.48	0.62	39.79	11.15	71,110	143.98	8.31	77,195

VERA	0	0	91.48	0.62	0	0	-	-	-	-

Project: Malibu Vineyards AQIA
Phase: 1 & 2 Combined
Land Use Subtype: Distribution (Unrefrigerated Warehouse-No Rail)

Key

Data from CalEEMod or client	value
Data entered in CalEEMod	value

Weekly Trips

Weekday Trip Rate[1] (trips/size unit)	Saturday Trip Rate[1] (trips/size unit)	Sunday Trip Rate[1] (trips/size unit)	# of Size Unit	Total Weekly[2] Trips	Total Annual Trips
1.52	1.52	1.52	8908	95,025	4,941,300

1.Weekly trip rate provided by traffic engineer.
2. Total Weekly Trips = [(Trip Rate$_{weekday}$ x 5) + Trip Rate$_{Saturday}$ + Trip Rate$_{Sunday}$] * Land Use$_{i}$

Average Trip Length

Trip Length (miles)[1]			Trip Purpose[2]			Trip Percentage[2]		
W-O	H-W	O-O	Primary	Diverted	Passby	W-O	H-W	O-O
0.0	14.3	50.0	100%	0%	0%	0.0%	75.6%	24.4%

1. 50 mile trip distance per SJVAPCD and Traffic Engineer.
2. Trip percentages are based on the ratio of passenger vehicles to total trips (H-W) and trucks (2-4+ axel) to total trips (O-O).

Annual VMT

Annual Trips by Type			Average Trip Length[1]			Annual VMT[2]			Total Annual VMT
W-O	H-W	O-O	W-O	H-W	O-O	W-O	H-W	O-O	
0	3,735,368	1,205,932	0.00	14.28	50.00	0	53,348,208	60,296,600	113,644,808

1. Average Trip Length$_{i,m}$ = (Link %$_{primary}$ x Trip Length$_{primary}$) + (Link %$_{diverted}$ x 0.25 x Trip Length$_{primary}$) + (Link %$_{passby}$ x 0.1 miles)
2. VMT = (Number of Trips x Average Trip Length)

Default Vehicle Fleet Mix

Category	Vehicle Type													
	HHD	LDA	LDT1	LDT2	LHD1	LHD2	MCY	MDV	MH	MHD	OBUS	SBUS	UBUS	Total
Default Fleet Mix	3.8940%	43.4152%	3.5115%	22.1441%	3.3612%	1.0479%	2.0264%	18.3705%	0.3424%	1.6193%	0.0577%	0.1744%	0.0355%	1.000000
Annual VMT by Vehicle Type	4,425,327	49,339,064	3,990,681	25,165,674	3,819,858	1,190,847	2,302,848	20,877,079	389,109	1,840,219	65,596	198,191	40,314	113,644,808

Non-HHD Truck Trip Adjustment

Annual VMTs[1]	Truck Ratio[2]				Truck Annual VMTs[3]			
	LHD1	LHD2	MDV	MHD	LHD1	LHD2	MDV	MHD
22,913,800	0.1378	0.0429	0.7529	0.0664	3,156,645	984,090	17,252,349	1,520,716

1. 4-axle or greater makes up approximately 62% of truck trips. Conservatively assuming all 4-axle or greater are HHD trucks. Non-HHD trucks represent the remaining 38%.
2. Ratio of each type to non-HHD truck categories. Non-HHD truck trips will be divided into these categories.
3. Annual non-HHD truck VMTs multiplied by truck category ratio.

Project: Malibu Vineyards AQIA
Phase: 1 & 2 Combined
Land Use Subtype: Distribution (Unrefrigerated Warehouse-No Rail)

Key

Data from CalEEMod or client	value
Data entered in CalEEMod	value

Passenger Vehicle Fleet Mix Adjustment

Annual VMTs[1]	Vehicle Ratio			Annual VMTs		
	LDA	LDT1	LDT2	LDA	LDT1	LDT2
53,348,208	62.86%	5.08%	32.06%	33,532,538	2,712,205	17,103,465

1. All H-w trips are assumed to be passenger vehicles (LDA, LDT1, or LDT2).

Adjusted Vehicle Fleet Mix

Category	Vehicle Type													
	HHD	LDA	LDT1	LDT2	LHD1	LHD2	MCY	MDV	MH	MHD	OBUS	SBUS	UBUS	Total
Annual VMT by Vehicle Type	37,382,800	33,532,538	2,712,205	17,103,465	3,156,645	984,090	0	17,252,349	0	1,520,716	0	0	0	113,644,808
Fleet Mix	32.894%	29.506%	2.387%	15.050%	2.778%	0.866%	0.000%	15.181%	0.000000	0.013381	0.000000	0.000000	0.000000	1.000000

	Vehicle Type	ADT Rate	ADT	Breakdown
Warehouse	2-axle	0.096	342	16.00%
	3-axle	0.132	470	21.99%
	4-axle	0.372	1325	62.00%
High-Cube	2-axle	0.0352	188	15.99%
	3-axle	0.0484	259	22.02%
	4-axle	0.1364	729	61.99%
TOTAL	2-axle	--	530	16.00%
	3-axle	--	729	22.00%
	4-axle	--	2054	62.00%

Construction HHD Emissions

Off-Road Total Exhaust PM_{10}

Year	Exhaust PM_{10} (tpy)	Exhaust PM_{10} (lb/year)			Start Age (years)
		Total	PH01	PH02	
2025 (RI)	0.03	63			3rd Trimester
2025	0.11	214	157	57	3rd Trimester
2026	0.11	225	165	60	0
2027	0.09	183	134	49	1
2028	0.11	222	163	59	2
2029	0.08	165	121	44	3
2030	0.08	165	121	44	4
2031	0.04	86	63	23	5
2032	0.06	110	81	29	6
2033	0.03	61	45	16	7
2034	0.03	58	43	15	8
2035	0.04	79	58	21	9
2036	0.03	52	38	14	10
2037	0.02	41	30	11	11
2038	0.03	61	45	16	12
2039	0.02	45	33	12	13
2040	0.03	57	42	15	14
2041	0.02	46	34	12	15
2042	0.02	42	31	11	16
2043	0.03	54	40	14	17
2044	0.02	40	30	11	18
2045	0.02	32	23	8	19
2046	0.02	49	36	13	20
2047	0.02	36	26	9	21
2048	0.02	42	31	11	22
2049	0.02	35	26	9	23
2050	0.00	9	6	2	24
Maximum	**0.11**	**225**	**165**	**60**	

1. Emissions assigned based on phase acreage compared to total project acreage.
   Phase 1: 533.84 acres and 73.41% of total Project
   Phase 2: 193.33 acres and 26.59% of total Project

Operational HHD Emissions

On-Site Line Sources
Diesel Particulate Matter Emissions

Source Line	Source ID	On-site Distance[1] (meters)	Annual Emissions[2] (lb/year)	Daily Emissions[2] (lb/day)
PH1P01	P1P01TT	467.25	1.81E-01	4.95E-04
PH1P02	P1P02TT	195.28	7.55E-02	2.07E-04
PH1P03	P1P03TT	245.97	9.50E-02	2.60E-04
PH1P04	P1P04TT	281.37	1.09E-01	2.98E-04
PH1P05	P1P05TT	174.55	6.74E-02	1.85E-04
PH1P06	P1P06TT	337.58	1.30E-01	3.57E-04
PH1P07	P1P07TT	175.61	6.78E-02	1.86E-04
PH1P08	P1P08TT	269.73	1.04E-01	2.86E-04
PH1P09	P1P09TT	253.52	9.80E-02	2.68E-04
PH1P10	P1P10TT	151.64	5.86E-02	1.61E-04
PH1P11	P1P11TT	340.95	1.32E-01	3.61E-04
PH1P12	P1P12TT	159.18	6.15E-02	1.68E-04
PH1P13	P1P13TT	485.53	1.88E-01	5.14E-04
PH1P14	P1P14TT	550.55	2.13E-01	5.83E-04
PH2P01	P2P01TT	303.75	1.17E-01	3.22E-04
PH2P02	P2P02TT	370.37	1.43E-01	3.92E-04
PH2P03	P2P03TT	461.32	1.78E-01	4.88E-04
PH2P04	P2P04TT	246.72	9.53E-02	2.61E-04
PH2P05	P2P05TT	114.88	4.44E-02	1.22E-04
PH2P06	P2P06TT	298.96	1.16E-01	3.16E-04
PH2P07	P2P07TT	230.96	8.92E-02	2.44E-04
PH2P08	P2P08TT	203.72	7.87E-02	2.16E-04
PH2P09	P2P09TT	197.20	7.62E-02	2.09E-04
PH2P10	P2P10TT	105.88	4.09E-02	1.12E-04

1. On-site distance is one-way distance.
2. Emissons for each source based on ratio of length to total length for each phase.

On-Site Line Sources

Diesel Particulate Matter Emissions

Phase	HHD Trucks per[2] Week	Average On-site[1] Distance (meters)	On-site Distance[1] (miles)	Miles Traveled per year	Annual Emissions[3] (lb/year)	Daily Emissions[3] (lb/day)
Combined	14,378	275.935	0.171	256,383.1	2.56E+00	7.01E-03

1. Average On-site Distance is the distance of the average one-way trip from the site boundary to the building.
2. Total of 2,989 HHD trucks per week for Phase 1 and 19,306 HHD trucks per week for Phase 2.
3. Assume PM10 emissions equal DPM emissions.

Off-Site Truck Travel

Phase	Source ID	HHD Trips per Week	Off-site Distance[1] (miles)	Off-site Distance[1] (meters)	Miles Traveled per year	Annual Emissions[3] (lb/year)	Daily Emissions[3] (lb/day)
Phase 1	PH1OTT	11,697	0.25	402.336	152,061	1.52E+00	4.16E-03
Phase 2	PH2OTT	2,681	0.25	402.336	34,853	3.48E-01	9.53E-04

PM10 RUNEx Emission Factor

Operation Year	Emission Factor[1] (g/mile)	Emission Factor (lb/mile)
2050	4.53E-03	9.98E-06

1. EMFAC2021 PM10 RUNEX EF for T7 Single Other Class 8 at 15mph.

On-Site Truck Idling - Point Sources
Diesel Particulate Matter Emissions

Phase	HHD trucks[1] /week	Idle minutes/truck	Idle hours/year	Idle days/year	Annual Emissions[1] (lb/year)	Daily Emissions[1] (lb/day)
Combined	13,659	15	177,568	7,398.7	1.29E-01	3.55E-04

1. 95% of total HHD trucks. Project conservatively assumes 5% of HHD trucks are TRUs.

Source	Source ID	Annual Emissions[1] (lb/year)	Daily Emissions[1] (lb/day)
PH1P01	P1P01ID	5.39E-03	1.48E-05
PH1P02	P1P02ID	5.39E-03	1.48E-05
PH1P03	P1P03ID	5.39E-03	1.48E-05
PH1P04	P1P04ID	5.39E-03	1.48E-05
PH1P05	P1P05ID	5.39E-03	1.48E-05
PH1P06	P1P06ID	5.39E-03	1.48E-05
PH1P07	P1P07ID	5.39E-03	1.48E-05
PH1P08	P1P08ID	5.39E-03	1.48E-05
PH1P09	P1P09ID	5.39E-03	1.48E-05
PH1P10	P1P10ID	5.39E-03	1.48E-05
PH1P11	P1P11ID	5.39E-03	1.48E-05
PH1P12	P1P12ID	5.39E-03	1.48E-05
PH1P13	P1P13ID	5.39E-03	1.48E-05
PH1P14	P1P14ID	5.39E-03	1.48E-05
PH2P01	P2P01ID	5.39E-03	1.48E-05
PH2P02	P2P02ID	5.39E-03	1.48E-05
PH2P03	P2P03ID	5.39E-03	1.48E-05
PH2P04	P2P04ID	5.39E-03	1.48E-05
PH2P05	P2P05ID	5.39E-03	1.48E-05
PH2P06	P2P06ID	5.39E-03	1.48E-05
PH2P07	P2P07ID	5.39E-03	1.48E-05
PH2P08	P2P08ID	5.39E-03	1.48E-05
PH2P09	P2P09ID	5.39E-03	1.48E-05
PH2P10	P2P10ID	5.39E-03	1.48E-05

1. Assume PM10 emissions equal DPM emissions.

PM10 Idling Emission Factor

Operation Year	Emission Factor[1] (g/veh/day)	Emission Factor (lb/veh/day)
2050	7.94E-03	1.75E-05

1. EMFAC2021 PM10 IDLEX EF for T7 Single Other Class 8.

Area + Energy Operational Emissions

Device			Tons/Year					Pounds/Year					AAQA Emission Inputs (g/sec)										
ID	sqft	% of total	NOx	CO	SO2	PM10	PM2.5	NOx	CO	SO2	PM10	PM2.5	NOx 1 Hour	NOx Annual	CO 1 Hour	CO 8 Hour	SOx 1 Hour	SOx 3 Hour	SOx 24 Hour	SOx Annual	PM10 24 Hour	PM10 Annual	PM2.5 24 Hour	PM2.5 Annual
P1P01	646800	8.93%	0.19	2.67	0.00	0.02	0.02	380.86	5347.72	2.33	34.70	32.51	5.48E-03	5.48E-03	7.69E-02	7.69E-02	3.35E-05	3.35E-05	3.35E-05	3.35E-05	4.99E-04	4.99E-04	4.68E-04	4.68E-04
P1P02	646800	8.93%	0.19	2.67	0.00	0.02	0.02	380.86	5347.72	2.33	34.70	32.51	5.48E-03	5.48E-03	7.69E-02	7.69E-02	3.35E-05	3.35E-05	3.35E-05	3.35E-05	4.99E-04	4.99E-04	4.68E-04	4.68E-04
P1P03	771600	10.65%	0.23	3.19	0.00	0.02	0.02	454.34	6379.57	2.78	41.40	38.78	6.53E-03	6.53E-03	9.18E-02	9.18E-02	4.00E-05	4.00E-05	4.00E-05	4.00E-05	5.95E-04	5.95E-04	5.58E-04	5.58E-04
P1P04	738000	10.19%	0.22	3.05	0.00	0.02	0.02	434.56	6101.76	2.66	39.59	37.09	6.25E-03	6.25E-03	8.78E-02	8.78E-02	3.83E-05	3.83E-05	3.83E-05	3.83E-05	5.69E-04	5.69E-04	5.33E-04	5.33E-04
P1P05	571200	7.89%	0.17	2.36	0.00	0.02	0.01	336.34	4722.67	2.06	30.64	28.71	4.84E-03	4.84E-03	6.79E-02	6.79E-02	2.96E-05	2.96E-05	2.96E-05	2.96E-05	4.41E-04	4.41E-04	4.13E-04	4.13E-04
P1P06	248640	3.43%	0.07	1.03	0.00	0.01	0.01	146.41	2055.75	0.90	13.34	12.50	2.11E-03	2.11E-03	2.96E-02	2.96E-02	1.29E-05	1.29E-05	1.29E-05	1.29E-05	1.92E-04	1.92E-04	1.80E-04	1.80E-04
P1P07	147000	2.03%	0.04	0.61	0.00	0.00	0.00	86.56	1215.39	0.53	7.89	7.39	1.24E-03	1.24E-03	1.75E-02	1.75E-02	7.62E-06	7.62E-06	7.62E-06	7.62E-06	1.13E-04	1.13E-04	1.06E-04	1.06E-04
P1P08	771600	10.65%	0.23	3.19	0.00	0.02	0.02	454.34	6379.57	2.78	41.40	38.78	6.53E-03	6.53E-03	9.18E-02	9.18E-02	4.00E-05	4.00E-05	4.00E-05	4.00E-05	5.95E-04	5.95E-04	5.58E-04	5.58E-04
P1P09	771600	10.65%	0.23	3.19	0.00	0.02	0.02	454.34	6379.57	2.78	41.40	38.78	6.53E-03	6.53E-03	9.18E-02	9.18E-02	4.00E-05	4.00E-05	4.00E-05	4.00E-05	5.95E-04	5.95E-04	5.58E-04	5.58E-04
P1P10	174720	2.41%	0.05	0.72	0.00	0.00	0.00	102.88	1444.58	0.63	9.37	8.78	1.48E-03	1.48E-03	2.08E-02	2.08E-02	9.06E-06	9.06E-06	9.06E-06	9.06E-06	1.35E-04	1.35E-04	1.26E-04	1.26E-04
P1P11	174720	2.41%	0.05	0.72	0.00	0.00	0.00	102.88	1444.58	0.63	9.37	8.78	1.48E-03	1.48E-03	2.08E-02	2.08E-02	9.06E-06	9.06E-06	9.06E-06	9.06E-06	1.35E-04	1.35E-04	1.26E-04	1.26E-04
P1P12	231826	3.20%	0.07	0.96	0.00	0.01	0.01	136.51	1916.73	0.84	12.44	11.65	1.96E-03	1.96E-03	2.76E-02	2.76E-02	1.20E-05	1.20E-05	1.20E-05	1.20E-05	1.79E-04	1.79E-04	1.68E-04	1.68E-04
P1P13	576000	7.95%	0.17	2.38	0.00	0.02	0.01	339.17	4762.35	2.08	30.90	28.95	4.88E-03	4.88E-03	6.85E-02	6.85E-02	2.99E-05	2.99E-05	2.99E-05	2.99E-05	4.44E-04	4.44E-04	4.16E-04	4.16E-04
P1P14	771600	10.65%	0.23	3.19	0.00	0.02	0.02	454.34	6379.57	2.78	41.40	38.78	6.53E-03	6.53E-03	9.18E-02	9.18E-02	4.00E-05	4.00E-05	4.00E-05	4.00E-05	5.95E-04	5.95E-04	5.58E-04	5.58E-04
P2P01	150000	9.01%	0.04	0.62	0.00	0.00	0.00	88.32	1240.19	0.54	8.05	7.54	1.27E-03	1.27E-03	1.78E-02	1.78E-02	7.78E-06	7.78E-06	7.78E-06	7.78E-06	1.16E-04	1.16E-04	1.08E-04	1.08E-04
P2P02	262500	15.76%	0.08	1.09	0.00	0.01	0.01	154.57	2170.34	0.95	14.08	13.19	2.22E-03	2.22E-03	3.12E-02	3.12E-02	1.36E-05	1.36E-05	1.36E-05	1.36E-05	2.03E-04	2.03E-04	1.90E-04	1.90E-04
P2P03	220000	13.21%	0.06	0.91	0.00	0.01	0.01	129.54	1818.95	0.79	11.80	11.06	1.86E-03	1.86E-03	2.62E-02	2.62E-02	1.14E-05	1.14E-05	1.14E-05	1.14E-05	1.70E-04	1.70E-04	1.59E-04	1.59E-04
P2P04	100000	6.00%	0.03	0.41	0.00	0.00	0.00	58.88	826.80	0.36	5.36	5.03	8.47E-04	8.47E-04	1.19E-02	1.19E-02	5.18E-06	5.18E-06	5.18E-06	5.18E-06	7.72E-05	7.72E-05	7.23E-05	7.23E-05
P2P05a	12454	0.75%	0.00	0.05	0.00	0.00	0.00	7.33	102.97	0.04	0.67	0.63	1.05E-04	1.05E-04	1.48E-03	1.48E-03	6.46E-07	6.46E-07	6.46E-07	6.46E-07	9.61E-06	9.61E-06	9.00E-06	9.00E-06
P2P05b	12454	0.75%	0.00	0.05	0.00	0.00	0.00	7.33	102.97	0.04	0.67	0.63	1.05E-04	1.05E-04	1.48E-03	1.48E-03	6.46E-07	6.46E-07	6.46E-07	6.46E-07	9.61E-06	9.61E-06	9.00E-06	9.00E-06
P2P05c	12454	0.75%	0.00	0.05	0.00	0.00	0.00	7.33	102.97	0.04	0.67	0.63	1.05E-04	1.05E-04	1.48E-03	1.48E-03	6.46E-07	6.46E-07	6.46E-07	6.46E-07	9.61E-06	9.61E-06	9.00E-06	9.00E-06
P2P05d	12454	0.75%	0.00	0.05	0.00	0.00	0.00	7.33	102.97	0.04	0.67	0.63	1.05E-04	1.05E-04	1.48E-03	1.48E-03	6.46E-07	6.46E-07	6.46E-07	6.46E-07	9.61E-06	9.61E-06	9.00E-06	9.00E-06
P2P05e	12454	0.75%	0.00	0.05	0.00	0.00	0.00	7.33	102.97	0.04	0.67	0.63	1.05E-04	1.05E-04	1.48E-03	1.48E-03	6.46E-07	6.46E-07	6.46E-07	6.46E-07	9.61E-06	9.61E-06	9.00E-06	9.00E-06
P2P05f	12454	0.75%	0.00	0.05	0.00	0.00	0.00	7.33	102.97	0.04	0.67	0.63	1.05E-04	1.05E-04	1.48E-03	1.48E-03	6.46E-07	6.46E-07	6.46E-07	6.46E-07	9.61E-06	9.61E-06	9.00E-06	9.00E-06
P2P06	123750	7.43%	0.04	0.51	0.00	0.00	0.00	72.87	1023.16	0.45	6.64	6.22	1.05E-03	1.05E-03	1.47E-02	1.47E-02	6.42E-06	6.42E-06	6.42E-06	6.42E-06	9.55E-05	9.55E-05	8.95E-05	8.95E-05
P2P07	231826	13.92%	0.07	0.96	0.00	0.01	0.01	136.51	1916.73	0.84	12.44	11.65	1.96E-03	1.96E-03	2.76E-02	2.76E-02	1.20E-05	1.20E-05	1.20E-05	1.20E-05	1.79E-04	1.79E-04	1.68E-04	1.68E-04
P2P08	231826	13.92%	0.07	0.96	0.00	0.01	0.01	136.51	1916.73	0.84	12.44	11.65	1.96E-03	1.96E-03	2.76E-02	2.76E-02	1.20E-05	1.20E-05	1.20E-05	1.20E-05	1.79E-04	1.79E-04	1.68E-04	1.68E-04
P2P09	150000	9.01%	0.04	0.62	0.00	0.00	0.00	88.32	1240.19	0.54	8.05	7.54	1.27E-03	1.27E-03	1.78E-02	1.78E-02	7.78E-06	7.78E-06	7.78E-06	7.78E-06	1.16E-04	1.16E-04	1.08E-04	1.08E-04
P2P10a	20119	1.21%	0.01	0.08	0.00	0.00	0.00	11.85	166.34	0.07	1.08	1.01	1.70E-04	1.70E-04	2.39E-03	2.39E-03	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.55E-05	1.55E-05	1.45E-05	1.45E-05
P2P10b	20119	1.21%	0.01	0.08	0.00	0.00	0.00	11.85	166.34	0.07	1.08	1.01	1.70E-04	1.70E-04	2.39E-03	2.39E-03	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.55E-05	1.55E-05	1.45E-05	1.45E-05
P2P10c	20119	1.21%	0.01	0.08	0.00	0.00	0.00	11.85	166.34	0.07	1.08	1.01	1.70E-04	1.70E-04	2.39E-03	2.39E-03	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.55E-05	1.55E-05	1.45E-05	1.45E-05
P2P10d	20119	1.21%	0.01	0.08	0.00	0.00	0.00	11.85	166.34	0.07	1.08	1.01	1.70E-04	1.70E-04	2.39E-03	2.39E-03	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.55E-05	1.55E-05	1.45E-05	1.45E-05
P2P10e	20119	1.21%	0.01	0.08	0.00	0.00	0.00	11.85	166.34	0.07	1.08	1.01	1.70E-04	1.70E-04	2.39E-03	2.39E-03	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.55E-05	1.55E-05	1.45E-05	1.45E-05
P2P10f	20119	1.21%	0.01	0.08	0.00	0.00	0.00	11.85	166.34	0.07	1.08	1.01	1.70E-04	1.70E-04	2.39E-03	2.39E-03	1.04E-06	1.04E-06	1.04E-06	1.04E-06	1.55E-05	1.55E-05	1.45E-05	1.45E-05

On-Site Emissions - Mobile Reduction	
Total Annual Trips	4,941,300
On-Site VMT[1]	3,621,292
Total VMT[2]	113,648,380
On-Site/Off-Site Ratio	0.0319

1. On-Site Length (mi): 0.73

2. Total CalEEMod VMTs

Mobile (Passenger + HHD) Operational Emissions

Device			Tons/Year					Pounds/Year					AAQA Emission Inputs (g/sec)										
ID	meters	% of Total	NOx	CO	SO2	PM10	PM2.5	NOx	CO	SO2	PM10	PM2.5	NOx 1 Hour	NOx Annual	CO 1 Hour	CO 8 Hour	SOx 1 Hour	SOx 3 Hour	SOx 24 Hour	SOx Annual	PM10 24 Hour	PM10 Annual	PM2.5 24 Hour	PM2.5 Annual
PrkP1P01	467	11.43%	0.19	0.18	0.00	0.14	0.04	382.51	367.91	4.19	282.01	77.82	5.50E-03	5.50E-03	5.29E-03	5.29E-03	6.03E-05	6.03E-05	6.03E-05	6.03E-05	4.06E-03	4.06E-03	1.12E-03	1.12E-03
PrkP1P02	195	4.78%	0.08	0.08	0.00	0.06	0.02	159.87	153.77	1.75	117.86	32.52	2.30E-03	2.30E-03	2.21E-03	2.21E-03	2.52E-05	2.52E-05	2.52E-05	2.52E-05	1.70E-03	1.70E-03	4.68E-04	4.68E-04
PrkP1P03	246	6.02%	0.10	0.10	0.00	0.07	0.02	201.36	193.68	2.21	148.45	40.96	2.90E-03	2.90E-03	2.79E-03	2.79E-03	3.17E-05	3.17E-05	3.17E-05	3.17E-05	2.14E-03	2.14E-03	5.89E-04	5.89E-04
PrkP1P04	281	6.88%	0.12	0.11	0.00	0.08	0.02	230.34	221.55	2.52	169.82	46.86	3.31E-03	3.31E-03	3.19E-03	3.19E-03	3.63E-05	3.63E-05	3.63E-05	3.63E-05	2.44E-03	2.44E-03	6.74E-04	6.74E-04
PrkP1P05	175	4.27%	0.07	0.07	0.00	0.05	0.01	142.89	137.44	1.57	105.35	29.07	2.06E-03	2.06E-03	1.98E-03	1.98E-03	2.25E-05	2.25E-05	2.25E-05	2.25E-05	1.52E-03	1.52E-03	4.18E-04	4.18E-04
PrkP1P06	338	8.26%	0.14	0.13	0.00	0.10	0.03	276.36	265.82	3.03	203.75	56.22	3.97E-03	3.97E-03	3.82E-03	3.82E-03	4.36E-05	4.36E-05	4.36E-05	4.36E-05	2.93E-03	2.93E-03	8.09E-04	8.09E-04
PrkP1P07	176	4.29%	0.07	0.07	0.00	0.05	0.01	143.76	138.27	1.58	105.99	29.25	2.07E-03	2.07E-03	1.99E-03	1.99E-03	2.27E-05	2.27E-05	2.27E-05	2.27E-05	1.52E-03	1.52E-03	4.21E-04	4.21E-04
PrkP1P08	270	6.60%	0.11	0.11	0.00	0.08	0.02	220.81	212.38	2.42	162.79	44.92	3.18E-03	3.18E-03	3.05E-03	3.05E-03	3.48E-05	3.48E-05	3.48E-05	3.48E-05	2.34E-03	2.34E-03	6.46E-04	6.46E-04
PrkP1P09	254	6.20%	0.10	0.10	0.00	0.08	0.02	207.54	199.62	2.27	153.01	42.22	2.99E-03	2.99E-03	2.87E-03	2.87E-03	3.27E-05	3.27E-05	3.27E-05	3.27E-05	2.20E-03	2.20E-03	6.07E-04	6.07E-04
PrkP1P10	152	3.71%	0.06	0.06	0.00	0.05	0.01	124.14	119.40	1.36	91.52	25.25	1.79E-03	1.79E-03	1.72E-03	1.72E-03	1.96E-05	1.96E-05	1.96E-05	1.96E-05	1.32E-03	1.32E-03	3.63E-04	3.63E-04
PrkP1P11	341	8.34%	0.14	0.13	0.00	0.10	0.03	279.11	268.46	3.06	205.78	56.78	4.01E-03	4.01E-03	3.86E-03	3.86E-03	4.40E-05	4.40E-05	4.40E-05	4.40E-05	2.96E-03	2.96E-03	8.17E-04	8.17E-04
PrkP1P12	159	3.89%	0.07	0.06	0.00	0.05	0.01	130.31	125.34	1.43	96.07	26.51	1.87E-03	1.87E-03	1.80E-03	1.80E-03	2.05E-05	2.05E-05	2.05E-05	2.05E-05	1.38E-03	1.38E-03	3.81E-04	3.81E-04
PrkP1P13	486	11.87%	0.20	0.19	0.00	0.15	0.04	397.48	382.31	4.36	293.04	80.86	5.72E-03	5.72E-03	5.50E-03	5.50E-03	6.26E-05	6.26E-05	6.26E-05	6.26E-05	4.21E-03	4.21E-03	1.16E-03	1.16E-03
PrkP1P14	551	13.47%	0.23	0.22	0.00	0.17	0.05	450.70	433.50	4.94	332.28	91.69	6.48E-03	6.48E-03	6.24E-03	6.24E-03	7.10E-05	7.10E-05	7.10E-05	7.10E-05	4.78E-03	4.78E-03	1.32E-03	1.32E-03
PrkP2P01	304	13.13%	0.03	0.03	0.00	0.01	0.00	58.87	62.11	0.53	29.68	8.29	8.47E-04	8.47E-04	8.93E-04	8.93E-04	7.65E-06	7.65E-06	7.65E-06	7.65E-06	4.27E-04	4.27E-04	1.19E-04	1.19E-04
PrkP2P02	370	16.01%	0.04	0.04	0.00	0.02	0.01	71.78	75.73	0.65	36.19	10.11	1.03E-03	1.03E-03	1.09E-03	1.09E-03	9.33E-06	9.33E-06	9.33E-06	9.33E-06	5.20E-04	5.20E-04	1.45E-04	1.45E-04
PrkP2P03	461	19.94%	0.04	0.05	0.00	0.02	0.01	89.40	94.33	0.81	45.07	12.59	1.29E-03	1.29E-03	1.36E-03	1.36E-03	1.16E-05	1.16E-05	1.16E-05	1.16E-05	6.48E-04	6.48E-04	1.81E-04	1.81E-04
PrkP2P04	247	10.67%	0.02	0.03	0.00	0.01	0.00	47.81	50.45	0.43	24.11	6.73	6.88E-04	6.88E-04	7.26E-04	7.26E-04	6.21E-06	6.21E-06	6.21E-06	6.21E-06	3.47E-04	3.47E-04	9.69E-05	9.69E-05
PrkP2P06	299	12.93%	0.03	0.03	0.00	0.01	0.00	57.94	61.13	0.52	29.21	8.16	8.33E-04	8.33E-04	8.79E-04	8.79E-04	7.53E-06	7.53E-06	7.53E-06	7.53E-06	4.20E-04	4.20E-04	1.17E-04	1.17E-04
PrkP2P07	231	9.99%	0.02	0.02	0.00	0.01	0.00	44.76	47.23	0.40	22.57	6.30	6.44E-04	6.44E-04	6.79E-04	6.79E-04	5.82E-06	5.82E-06	5.82E-06	5.82E-06	3.25E-04	3.25E-04	9.07E-05	9.07E-05
PrkP2P08	204	8.81%	0.02	0.02	0.00	0.01	0.00	39.48	41.66	0.36	19.90	5.56	5.68E-04	5.68E-04	5.99E-04	5.99E-04	5.13E-06	5.13E-06	5.13E-06	5.13E-06	2.86E-04	2.86E-04	8.00E-05	8.00E-05
PrkP2P09	197	8.53%	0.02	0.02	0.00	0.01	0.00	38.22	40.32	0.35	19.27	5.38	5.50E-04	5.50E-04	5.80E-04	5.80E-04	4.97E-06	4.97E-06	4.97E-06	4.97E-06	2.77E-04	2.77E-04	7.74E-05	7.74E-05

AAQA for Malibu Vineyards Light Industrial
All values are in µg/m^3

Device	NOx 1 Hour	NOx Annual	CO 1 Hour	CO 8 Hour	SOx 1 Hour	SOx 3 Hour	SOx 24 Hour	SOx Annual	PM10 24 Hour	PM10 Annual	PM2.5 24 Hour	PM2.5 Annual
Malibu	47.63	1.60	148.56	42.36	0.48	0.23	0.07	0.02	4.59	1.08	1.29	0.30
Background	115.10	20.37	3262.00	1514.50	19.98	17.98	7.19	1.15	437.00	237.07	72.30	7.10
Facility Totals	**162.73**	**21.97**	**3411**	**1557**	**20.46**	**18.21**	**7.26**	**1.17**	**441.59**	**238.15**	**73.59**	**7.40**
AAQS	*188.68*	*57*	*23000*	*10000*	*196*	*1300*	*105*	*80*	*50*	*20*	*35*	*12*
	Pass	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**	**Pass***	**Pass***	**Pass***	**Pass**

Project Significance Level (µg/m^3)

Category	NOx 1 Hour	NOx Annual	CO 1 Hour	CO 8 Hour	SOx 1 Hour	SOx 3 Hour	SOx 24 Hour	SOx Annual	PM10 24 Hour	PM10 Annual	PM2.5 24 Hour	PM2.5 Annual
Project									4.59	1.08	1.29	
SIL	*7.5*	*1*	*2000*	*500*	*7.8*	*25*	*5*	*1*	*10.4*	*2.08*	*2.5*	*0.63*
									Pass	**Pass**	**Pass**	

APPENDIX C. CARB 2020 AND 2025 ESTIMATED EMISSION INVENTORIES

2016 SIP Emission Projection Data

2020 Estimated Annual Average Emissions

KERN COUNTY

All emissions are represented in Tons per Day and reflect the most current data provided to ARB.

See detailed information.

Start a new query.

KERN COUNTY COUNTY - MOJAVE DESERT AIR BASIN

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5	NH3
FUEL COMBUSTION	0.5	0.1	0.8	2.4	0.2	0.4	0.4	0.4	0.0
WASTE DISPOSAL	8.4	0.1	0.0	-	0.0	0.0	0.0	0.0	0.1
CLEANING AND SURFACE COATINGS	0.9	0.8	-	-	-	0.0	0.0	0.0	-
PETROLEUM PRODUCTION AND MARKETING	0.1	0.1	-	-	-	-	-	-	-
INDUSTRIAL PROCESSES	0.1	0.1	10.2	18.4	8.1	3.7	2.9	1.7	0.1
*** TOTAL STATIONARY SOURCES**	**10.2**	**1.3**	**11.0**	**20.8**	**8.3**	**4.1**	**3.3**	**2.1**	**0.1**
AREAWIDE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
SOLVENT EVAPORATION	1.6	1.4	-	-	-	-	-	-	1.3
MISCELLANEOUS PROCESSES	3.5	1.2	11.0	0.6	0.0	18.6	9.7	2.6	0.7
*** TOTAL AREAWIDE SOURCES**	**5.0**	**2.6**	**11.0**	**0.6**	**0.0**	**18.6**	**9.7**	**2.6**	**2.0**
MOBILE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
ON-ROAD MOTOR VEHICLES	1.1	1.1	7.2	4.1	0.0	0.3	0.3	0.1	0.1
OTHER MOBILE SOURCES	5.0	4.9	23.8	5.5	0.3	3.0	2.9	2.9	0.0
*** TOTAL MOBILE SOURCES**	**6.2**	**5.9**	**31.0**	**9.6**	**0.3**	**3.3**	**3.2**	**3.0**	**0.1**
TOTAL KERN COUNTY IN MOJAVE DESERT	**21.4**	**9.8**	**53.0**	**31.0**	**8.6**	**26.0**	**16.2**	**7.7**	**2.3**

KERN COUNTY COUNTY - SAN JOAQUIN VALLEY AIR BASIN

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5	NH3
FUEL COMBUSTION	12.6	1.8	9.9	7.6	0.7	2.7	2.6	2.5	1.6
WASTE DISPOSAL	224.6	12.2	0.2	0.1	0.0	0.1	0.0	0.0	5.4
CLEANING AND SURFACE COATINGS	3.0	2.7	-	-	-	0.0	0.0	0.0	
PETROLEUM PRODUCTION AND MARKETING	46.2	11.8	0.9	0.3	0.4	0.2	0.1	0.1	0.0
INDUSTRIAL PROCESSES	2.4	2.3	0.1	0.1	0.1	3.7	1.6	0.6	0.2

* TOTAL STATIONARY SOURCES	288.8	30.7	11.1	8.0	1.1	6.7	4.4	3.3	7.2
AREAWIDE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
SOLVENT EVAPORATION	10.9	10.0	-	-	-	-	-	-	26.5
MISCELLANEOUS PROCESSES	63.6	9.9	5.2	1.2	0.0	61.8	30.9	5.7	17.1
* TOTAL AREAWIDE SOURCES	74.5	19.9	5.2	1.2	0.0	61.8	30.9	5.7	43.6
MOBILE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
ON-ROAD MOTOR VEHICLES	5.4	4.9	31.4	23.5	0.1	1.7	1.6	0.7	0.8
OTHER MOBILE SOURCES	4.0	3.5	27.2	10.8	0.0	0.6	0.5	0.5	0.0
* TOTAL MOBILE SOURCES	9.4	8.4	58.6	34.2	0.2	2.2	2.2	1.2	0.8
TOTAL KERN COUNTY IN SAN JOAQUIN VALLEY	372.7	59.0	74.9	43.5	1.4	70.7	37.4	10.2	51.7
GRAND TOTAL FOR KERN COUNTY	394.0	68.8	127.9	74.4	10.0	96.7	53.6	17.9	54.0

Start a new query.

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2016 SIP Emission Projection Data

2020 Estimated Annual Average Emissions

SAN JOAQUIN VALLEY AIR BASIN

All emissions are represented in Tons per Day and reflect the most current data provided to ARB.

See detailed information.

Start a new query.

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5	NH3
FUEL COMBUSTION	17.9	3.2	24.7	24.1	2.4	4.8	4.7	4.6	2.2
WASTE DISPOSAL	527.3	26.9	0.6	0.3	0.2	0.9	0.3	0.2	11.2
CLEANING AND SURFACE COATINGS	27.8	25.2	-	-	-	0.3	0.3	0.3	0.0
PETROLEUM PRODUCTION AND MARKETING	111.0	16.6	1.0	0.4	0.4	0.2	0.1	0.1	0.0
INDUSTRIAL PROCESSES	20.6	19.5	1.4	3.9	3.6	20.9	9.5	3.6	1.7
*** TOTAL STATIONARY SOURCES**	**704.7**	**91.3**	**27.7**	**28.6**	**6.5**	**27.2**	**14.9**	**8.7**	**15.2**
AREAWIDE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
SOLVENT EVAPORATION	55.0	49.9	-	-	-	-	-	-	113.1
MISCELLANEOUS PROCESSES	761.8	103.0	53.2	7.9	0.3	473.4	236.8	41.8	193.9
*** TOTAL AREAWIDE SOURCES**	**816.8**	**152.8**	**53.2**	**7.9**	**0.3**	**473.4**	**236.8**	**41.8**	**307.0**
MOBILE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
ON-ROAD MOTOR VEHICLES	27.3	24.9	167.9	96.9	0.6	7.8	7.6	3.4	3.6
OTHER MOBILE SOURCES	30.6	27.2	196.2	69.8	0.3	5.6	5.5	5.0	0.0
*** TOTAL MOBILE SOURCES**	**57.9**	**52.0**	**364.1**	**166.8**	**1.0**	**13.4**	**13.1**	**8.5**	**3.6**
GRAND TOTAL FOR SAN JOAQUIN VALLEY AIR BASIN	**1579.4**	**296.2**	**445.0**	**203.3**	**7.8**	**514.0**	**264.8**	**59.0**	**325.9**

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2016 SIP Emission Projection Data

2025 Estimated Annual Average Emissions

KERN COUNTY

All emissions are represented in Tons per Day and reflect the most current data provided to ARB.

See detailed information.

Start a new query.

KERN COUNTY COUNTY - MOJAVE DESERT AIR BASIN

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5	NH3
FUEL COMBUSTION	0.5	0.1	0.8	2.5	0.2	0.4	0.4	0.4	0.0
WASTE DISPOSAL	9.3	0.1	0.0	-	0.0	0.0	0.0	0.0	0.1
CLEANING AND SURFACE COATINGS	1.0	0.9	-	-	-	0.0	0.0	0.0	-
PETROLEUM PRODUCTION AND MARKETING	0.1	0.1	-	-	-	-	-	-	-
INDUSTRIAL PROCESSES	0.1	0.1	11.0	19.7	8.6	3.9	3.2	1.9	0.1
*** TOTAL STATIONARY SOURCES**	**11.1**	**1.4**	**11.8**	**22.2**	**8.8**	**4.4**	**3.5**	**2.2**	**0.1**
AREAWIDE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
SOLVENT EVAPORATION	1.7	1.5	-	-	-	-	-	-	
MISCELLANEOUS PROCESSES	3.5	1.2	11.1	0.6	0.0	18.5	9.7	2.6	0.7
*** TOTAL AREAWIDE SOURCES**	**5.2**	**2.7**	**11.1**	**0.6**	**0.0**	**18.5**	**9.7**	**2.6**	**2.0**
MOBILE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
ON-ROAD MOTOR VEHICLES	0.9	0.8	5.0	2.3	0.0	0.3	0.3	0.1	0.1
OTHER MOBILE SOURCES	5.0	4.8	24.2	4.6	0.3	3.0	2.9	2.9	0.0
*** TOTAL MOBILE SOURCES**	**5.8**	**5.6**	**29.2**	**6.9**	**0.3**	**3.3**	**3.2**	**3.0**	**0.1**
TOTAL KERN COUNTY IN MOJAVE DESERT	**22.1**	**9.7**	**52.1**	**29.7**	**9.2**	**26.1**	**16.4**	**7.8**	**2.3**

KERN COUNTY COUNTY - SAN JOAQUIN VALLEY AIR BASIN

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5	NH3
FUEL COMBUSTION	12.4	1.7	9.6	7.2	0.6	2.6	2.5	2.4	1.7
WASTE DISPOSAL	247.0	13.4	0.2	0.1	0.0	0.1	0.0	0.0	6.0
CLEANING AND SURFACE COATINGS	3.3	3.0	-	-	-	0.0	0.0	0.0	-
PETROLEUM PRODUCTION AND MARKETING	45.0	10.8	0.8	0.3	0.4	0.2	0.1	0.1	0.0
INDUSTRIAL PROCESSES	2.6	2.4	0.1	0.1	0.1	4.0	1.7	0.6	0.2

* TOTAL STATIONARY SOURCES	310.3	31.3	10.7	7.6	1.1	6.9	4.4	3.2	7.8
AREAWIDE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
SOLVENT EVAPORATION	11.4	10.3	-	-	-	-	-	-	25.1
MISCELLANEOUS PROCESSES	63.7	9.9	5.2	1.2	0.0	61.8	30.9	5.7	17.2
* TOTAL AREAWIDE SOURCES	75.0	20.3	5.2	1.2	0.0	61.8	30.9	5.7	42.3
MOBILE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
ON-ROAD MOTOR VEHICLES	4.3	3.9	23.7	12.7	0.1	1.7	1.7	0.7	0.8
OTHER MOBILE SOURCES	3.5	3.1	28.0	8.1	0.0	0.4	0.4	0.4	0.0
* TOTAL MOBILE SOURCES	7.8	7.0	51.6	20.8	0.2	2.1	2.1	1.1	0.8
TOTAL KERN COUNTY IN SAN JOAQUIN VALLEY	393.1	58.5	67.6	29.6	1.3	70.8	37.4	10.1	51.0
GRAND TOTAL FOR KERN COUNTY	415.2	68.2	119.7	59.3	10.5	97.0	53.8	17.8	53.2

Start a new query.

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2016 SIP Emission Projection Data

2025 Estimated Annual Average Emissions

SAN JOAQUIN VALLEY AIR BASIN

All emissions are represented in Tons per Day and reflect the most current data provided to ARB.

See detailed information.

Start a new query.

STATIONARY SOURCES	TOG	ROG	CO	NOX	SOX	PM	PM10	PM2.5	NH3
FUEL COMBUSTION	17.7	3.0	24.6	23.0	2.4	4.7	4.6	4.5	2.3
WASTE DISPOSAL	572.3	29.2	0.6	0.3	0.2	1.0	0.3	0.2	12.2
CLEANING AND SURFACE COATINGS	30.8	27.9	-	-	-	0.4	0.4	0.3	0.0
PETROLEUM PRODUCTION AND MARKETING	109.5	15.1	0.9	0.3	0.4	0.2	0.1	0.1	0.0
INDUSTRIAL PROCESSES	22.4	21.1	1.6	4.2	3.8	22.6	10.3	3.9	1.9
*** TOTAL STATIONARY SOURCES**	**752.7**	**96.4**	**27.7**	**27.7**	**6.8**	**28.9**	**15.7**	**9.0**	**16.4**
AREAWIDE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
SOLVENT EVAPORATION	57.5	52.0	-	-	-	-	-	-	109.9
MISCELLANEOUS PROCESSES	761.9	103.0	53.2	7.4	0.3	469.2	234.9	41.9	194.5
*** TOTAL AREAWIDE SOURCES**	**819.4**	**155.0**	**53.2**	**7.4**	**0.3**	**469.2**	**234.9**	**41.9**	**304.4**
MOBILE SOURCES	**TOG**	**ROG**	**CO**	**NOX**	**SOX**	**PM**	**PM10**	**PM2.5**	**NH3**
ON-ROAD MOTOR VEHICLES	20.5	18.8	118.9	54.2	0.6	7.9	7.7	3.2	3.4
OTHER MOBILE SOURCES	26.8	23.9	200.1	54.4	0.3	4.7	4.6	4.2	0.0
*** TOTAL MOBILE SOURCES**	**47.3**	**42.7**	**319.0**	**108.6**	**0.9**	**12.6**	**12.3**	**7.5**	**3.5**
GRAND TOTAL FOR SAN JOAQUIN VALLEY AIR BASIN	**1619.4**	**294.1**	**399.9**	**143.7**	**8.0**	**510.7**	**262.8**	**58.3**	**324.3**

Start a new query.

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APPENDIX D. HEALTH RISK ASSESSMENT MODELING FILES

(Electronic Files)

APPENDIX E. AMBIENT AIR QUALITY ASSESSMENT MODELING FILES

(Electronic Files)

Appendix E

San Joaquin Valley Air Pollution Control District Supporting Documents

B-2: San Joaquin Valley Air Pollution Control District Supporting Documents

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THE CARL MOYER PROGRAM GUIDELINES

2017 Revisions

VOLUME I: PROGRAM OVERVIEW, PROGRAM ADMINISTRATION AND PROJECT CRITERIA









Approved by the Board: APRIL 27, 2017

California Environmental Protection Agency

Air Resources Board



In Memory of Dr. Carl Moyer

(1937 - 1997)

This program is named in honor of the late Dr. Carl Moyer, whose extraordinary dedication, hard work, vision and leadership made this program possible. He created and masterminded this program, in a noble effort to unite business and government in the name of public interest to improve California's air quality.

This update was a collaborative effort and has benefited from the valuable contributions of the participating air quality management districts and air pollution control districts, and all other stakeholders. The Air Resources Board appreciates the considerable efforts of air district staff both in the development of these guidelines as well as the day-to-day implementation of the Carl Moyer Memorial Air Quality Standards Attainment Program.

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EXECUTIVE SUMMARY

Since 1998, the Carl Moyer Memorial Air Quality Standards Attainment Program (Moyer Program or Program) has cost-effectively reduced smog-forming and toxic emissions. Approximately $1 billion has been allocated to date and the Program continues to provide over $60 million in grant funding each year to clean up older polluting engines throughout California. The regulatory, technological and incentives landscape has changed significantly since the creation of the Moyer Program and to address evolving needs, the Legislature has periodically modified the Program to better serve California. Most recently, Senate Bill (SB) 513 (Beall, 2015) has provided new opportunities for the Program to contribute significant emission reductions alongside implemented regulations, advance zero and near-zero technologies, and combine program funds with those of other incentive programs.

This report addresses the implementation of SB 513 by the Air Resources Board (ARB or Board) and California's air pollution control and air quality management districts (air districts) through new guidelines to serve California's air quality goals. SB 513 requires the Board to adopt updated guidelines by July 1, 2017.

California's strategic plans for air quality and mobility, including the State Implementation Plan (SIP) and the Sustainable Freight Action Plan, point to the need for combustion engines to transition to zero and near-zero emission alternatives. This move is critical to California's clean air mission, to the attainment of health-based air quality standards, and to meeting future transportation goals without harm to public health and the environment. Public incentive funds are an increasingly important part of this transition. Incentives both encourage customers to purchase cleaner technologies and stimulate the marketplace to manufacture cleaner technologies.

Collaboration is paramount to the Moyer Program's ongoing success. The changes made through SB 513 were supported and informed by a coalition that included air districts, environmental organizations, industry stakeholders, equipment dealers, and consumers. Many different alternatives and approaches were considered. The result was a working group consensus on new program objectives and improvements essential to continuing program value. In turn, ARB staff developed and conducted public workshops on a proposal to implement those program improvements. Three key changes to the program are described below.

Cost-effectiveness. SB 513 specified that the Board consider the cost of technology and the cost of regulations in establishing a new limit. Staff proposes a tiered cost-effectiveness approach that will allow the Program to more effectively incentivize deployment of cleaner technologies. This two-step approach would support both conventional diesel clean-up projects and emerging technologies at appropriate funding levels. First, staff proposes to increase the general cost-effectiveness limit from the current $18,260 up to $30,000 per weighted ton of emission reductions. This reflects the cost-effectiveness of more recent regulations and will enable more meaningful grants for cleaner engines at the required standard. For advanced technology projects that are zero-emission, or alternatively meet the cleanest certified optional standard applicable

by source category, staff proposes that air districts be given the option to apply a cost-effectiveness limit of up to $100,000 per weighted ton, limited to the increment of emissions reductions beyond those achieved at the required standard. This higher limit would provide additional incentive to turn engines and fleets over to the cleanest certified technologies now emerging in the marketplace.

Infrastructure. SB 513 provides broader opportunity for air districts to support infrastructure projects. The staff proposes to provide air districts with the ability to fund infrastructure projects where the greatest penetration of commercially available advanced technology vehicles and equipment exists. These categories include commercial battery charging and alternative fueling stations for on-road and off-road vehicles and equipment, and continued support for marine shore power electrification and stationary agricultural projects. To provide project selection transparency for publicly accessible projects staff proposes requiring a competitive bid process when the project includes public access. Air districts would retain the flexibility to select projects that meet their local needs and priorities. Per SB 513, infrastructure projects would not be required to meet a cost-effectiveness limit.

Project Co-Funding. As envisioned in SB 513, leveraging of funds allows air districts to work with grant applicants to co-fund projects with other incentive programs up to the cost of the project, without penalizing project cost-effectiveness. Project cost sharing supports the deployment of the cleanest technologies statewide by providing opportunities to co-fund private, local, State and federal funding to cover technology costs. Staff proposes the following safeguards consistent with SB 513: the requirements of all contributing programs must be met, incentives must not exceed the total project costs, there can be no double counting of emission reductions for SIP credit, and the applicant should provide a 15 percent cost share for private sector projects.

Even as the 2017 Guidelines would implement the program improvements directed by SB 513, they retain the Moyer Program's longstanding core objectives. The proposed Guidelines are intended to:

- Ensure continued program accountability and good stewardship of public funds;
- Ensure Moyer projects provide emission reductions that the U.S. Environmental Protection Agency (EPA) will find creditable in the SIP;
- Emphasize reduction in communities with higher pollutant exposure, including communities of minority and low-income populations;
- Provide sufficient incentive to encourage California businesses to participate in and benefit from the program, getting surplus emission reductions within cost-effectiveness limits.

This report describes Moyer Program context and background, and explains how a renewed Moyer Program can support the changing landscape of clean air technology in

and beyond California. Staff's proposed changes will ensure that Moyer can assist the technology shifts that bring California closer to the clean air future called for in our State's strategies.

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THE CARL MOYER PROGRAM GUIDELINES

PROGRAM OVERVIEW, PROGRAM ADMINISTRATION AND PROJECT CRITERIA

VOLUME I

(The Carl Moyer 2017 Guidelines are comprised of two Volumes. Volume I includes the program overview, program administration, source category chapters and appendices. Volume II includes the On-Road and Off-Road Voucher Incentive Programs, and the Agricultural Assistance Program.)

THE CARL MOYER PROGRAM GUIDELINES

PART 1 of 3

PROGRAM OVERVIEW, PROGRAM ADMINISTRATION AND PROJECT CRITERIA

CHAPTER 1: PROGRAM OVERVIEW

The Carl Moyer Memorial Air Quality Standards Attainment Program (Moyer Program or program) is a grant program that funds the incremental cost of cleaner-than-required engines, equipment, and other sources of air pollution. Since 1998, the Moyer Program has been successful in reducing smog-forming and toxic emissions cost-effectively. Although air pollution regulations have significantly reduced emissions and improved air quality across the State, many areas of California continue to experience unhealthy air. The Moyer Program complements California's regulatory program by providing incentives to obtain early or extra emission reductions, especially from emission sources in minority and low-income communities and areas disproportionately impacted by air pollution. Incentives encourage customers to purchase cleaner technologies, and stimulate the marketplace to manufacture cleaner technologies. Although the Moyer Program has grown in scope, it retains its primary objective of obtaining cost-effective and surplus emission reductions to be credited toward California's legally-enforceable obligations in the State Implementation Plan (SIP) – California's road map for attaining health-based national ambient air quality standards.

The 2017 Moyer Program Guidelines (Guidelines) update the program to meet new opportunities provided by Senate Bill 513 (SB 513, Beall, 2015). These changes – cost-effectiveness limits that recognize technology and regulatory costs, the ability to leverage Moyer dollars with project co-funding, added eligibility for infrastructure projects – enable the Moyer Program to fully support emission reductions within the changing landscape of clean air technology.

This program update arrives in time to support the multiple strategic planning efforts that are relying on emission reductions from incentive programs. California's strategic plans for air quality and mobility, including both the Proposed 2016 State Strategy for the SIP and the Sustainable Freight Action Plan, point to the need for combustion engines to transition to zero and near-zero emission alternatives. This move is critical to the State's clean air mission, to the attainment of air quality standards, and to meeting future transportation goals without harm to public health and the environment. The Moyer Program is particularly important among mobile source strategies identified for the SIP, contributing reductions needed toward ozone attainment milestones in the South Coast Air Basin in 2023 and 2031.

The Guideline updates were developed in close and continuing consultation with air quality management districts and air pollution control districts (air districts), who ultimately implement Moyer Program projects. This includes the formation of several teams with specific responsibilities in re-crafting the guidelines, and input from larger group and rural sections meetings. A total of five public workshops were held to collect input from the public, including initial workshops in the San Joaquin Valley and South Coast air basins.

A. Background

The Moyer Program has been a successful and popular air pollution reduction program. Since 1998, Moyer Program grants have enabled the owners of diesel engines to go beyond regulatory requirements by retrofitting, repowering, or replacing their engines to gain early or extra emission reductions. Over the past 18 years more than $900 million in program grants have cleaned up over 50,000 engines, reducing oxides of nitrogen (NOx) and reactive organic gases (ROG) by 178,000 tons and toxic diesel particulate matter (PM) by 6,500 tons. Moyer incentive funds have not only removed old, dirty equipment that would have otherwise remained in operation for years to come, but have benefited the economy by increasing consumer demand for newer and cleaner technologies.

The Moyer Program has been successfully implemented through the cooperative efforts of the Air Resources Board (ARB) and California's air pollution control and air quality management districts (air districts). The Health and Safety Code (H&SC) directs ARB to oversee the program by managing and distributing funds; developing and revising guidelines, protocols, and criteria for covered vehicle projects; and determining methodologies to evaluate project cost-effectiveness. Air districts follow the Board-approved Guidelines to select, fund, and monitor specific clean air projects in their areas, providing grants to public and private entities for the incremental cost of cleaner-than-required engines and/or equipment.

Air districts enjoy considerable flexibility in implementing the Moyer Program. Each air district may focus its funds on specific source categories, to tailor projects to meet local air quality objectives while still ensuring the proper and responsible use of State funds.

Emission reductions funded through the Moyer Program must be permanent, surplus, quantifiable, and enforceable in order to meet the underlying statutory provisions and be SIP-creditable. To ensure that projects are surplus to regulations, funded projects must not be required by any federal, State or local rule or regulation. In most cases project life – the period in which surplus emission reductions are delivered – must be at least three years, so that the program does not fund actions that would otherwise be taken to comply with regulatory deadlines, as well as to help ensure cost-effectiveness. A maximum project life is also established to ensure that the emission reductions remain real for a specified period.

The Guidelines require that emission control technologies be certified or verified by ARB or by U.S. EPA when ARB does not have an applicable certification or verification program. Robust administrative requirements also help ensure emission reductions are enforceable and are achieved for the life of a project. Grantees sign contracts or agreements enforceable for the life of a project. Their replaced engines must be scrapped. Incentive program review by ARB and fiscal audits by Department of Finance help ensure Moyer funds are serving the purpose of achieving expected emission reductions.

1. **Project Types**. The Moyer Program funds clean air projects involving a wide variety of vehicles and equipment. Typical project types include:

   (A) **Replacement.** An older vehicle or piece of equipment that includes an engine with remaining useful life is replaced with a newer, cleaner vehicle or piece of equipment. On-road trucks and buses may be replaced through a fleet modernization contract or through a voucher incentive program (VIP). Off-road equipment also may be replaced under contract or through off-road VIP. In all cases, the older vehicles and equipment are scrapped.

   (B) **Repower.** A newer, cleaner engine is installed in place of a higher-polluting engine in an existing vehicle or piece of equipment.

   (C) **Retrofit**. An emission control system is added to an in-use engine, vehicle or piece of equipment.

   (D) **Vehicle Retirement (car scrap).** Light duty scrap programs pay the owners of older, more polluting vehicles that still have remaining useful life to voluntarily retire those vehicles earlier than they would have otherwise.

   (E) **Infrastructure.** Moyer funds provide for the installation of fueling or energy infrastructure to fuel or power covered sources. Though infrastructure does not directly deliver emission reductions, it enables the advanced clean vehicles and equipment that do.

More details on eligible project types can be found in the source category chapters of the Guidelines. Other projects may be eligible; interested applicants should reference the details in each section and consult with their local air district for additional solicitation material, program brochures, and to discuss potential Moyer Program projects.

2. **Funding Sources**. The Moyer Program has been funded through a variety of mechanisms since its inception in 1998. In the program's first four years, the California Legislature funded the Moyer Program through annual budget appropriations. Voter approval of *Proposition 40: The California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act of 2002* provided program funding for the fifth and sixth years.

   Bills enacted in 2004 (SB 1107 and Assembly Bill (AB) 923) provided for continuous funding of the Moyer Program thereafter. The program is currently authorized at $69 million per year from these sources:

   (A) **Smog Abatement Fee.** SB 1107 adjusted the smog abatement fee collected for new vehicles registered by the Department of Motor Vehicles (DMV) from $6 to $12, while extending the new vehicle Smog Check exemption period. This additional fee is directed to fund the Moyer Program (H&SC § 44091.1). SB 1107 funds do not have a sunset date.

(B) **Tire Fee.** AB 923 adjusted the tire fee that is assessed on purchasers of new tires from $1 per tire to $1.75 per tire (Public Resources Code section 42885). This legislation was due to sunset in 2015; AB 8 extended that date through 2023.

ARB receives from DMV the funds from the additional $6 portion of smog abatement fees, and from the Board of Equalization the funds from the additional $0.75 portion of tire fees. ARB distributes these funds, currently about $65 million per year to air districts following a statutory formula (H&SC § 44299.2).

In addition, AB 923 gave air district governing boards the authority to increase the vehicle registration surcharge by $2 to pay for specific clean air incentive programs, including projects eligible for grants under the Moyer Program. AB 923 $2 DMV funds have become the primary source of the 15 percent Moyer match required of air districts receiving more than the minimum allocation. Nineteen air districts have adopted the $2 Motor Vehicle Registration fee, providing these air districts about $50 million per year for incentive projects. The $2 DMV surcharge fees are sent directly by DMV to the air districts.

B. Program Legislative History

The Moyer Program was created in 1998 when $25 million was included in the fiscal year 1998-1999 State budget to fund a lower-emission heavy-duty engine incentive program. ARB adopted the first set of Moyer Program Guidelines in early 1999, and legislation (AB 1571) enacted in 1999 formally established the statutory framework for the program (H&SC § 44275 et seq.). The program initially focused on reducing NOx emissions from heavy-duty diesel engines in order to implement a strategy in the 1994 California SIP for ozone that called for the early introduction of cleaner engines. The scope of the program has expanded over the years with statutory changes adding both new covered pollutants and new source categories.

Legislation enacted in 2001 (AB 1390) required air districts with a population of over 1 million to expend 50 percent of Moyer Program funds for projects that operate or are based in environmental justice areas (H&SC § 43023.5).

Legislation enacted in 2004 (AB 923 and Senate Bill (SB) 1107) provided increased and continued funding through 2015 while significantly expanding the Moyer Program. AB 923 expanded the Moyer Program to include light-duty vehicle projects and agricultural sources of air pollution as defined in Health and Safety Code section 39011.5(a). AB 923 also expanded the Moyer Program from a NOx focused incentive program to include projects that also reduce reactive organic gases and fine particulate matter (PM_{10}). This change allowed the Moyer Program to more comprehensively address California's air pollution challenges, including the air toxic risk associated with emissions from diesel engines. Additional legislation enacted in 2004 (AB 1394) directed ARB to include in the Moyer Program heavy-duty fleet modernization projects that reduce NOx and/or PM_{10} emissions through the replacement of old trucks.

Legislation enacted in 2005 (SB 467) required ARB to revise the Moyer Program Guidelines to include projects in which an applicant turns in off-road equipment powered by internal combustion engines and replaces that equipment with new zero-emission technologies.

Legislation enacted in 2006 (SB 225) provided additional resources for program administration to address the expansion of the program. This legislation increased allowable expenditures for air districts' program administration from 2 percent of program funds for outreach to 5 percent for air districts with one million or more inhabitants and to 10 percent for those with less than one million inhabitants. ARB was provided 4 percent of program funds for outreach, oversight, and administration. These additional resources enabled ARB and the air districts to improve program accessibility, efficiency and accountability.

Legislation enacted in 2009 (SBx2 3) allows a maximum project life of 10 years for off-road farm equipment projects. This legislation also allows for funding of these off-road farm equipment projects up to the compliance date as determined by statute, regulation or rule.

Legislation enacted in 2010 (AB 1507) required ARB to revise the Guidelines by July 1, 2011, to allow for the combination of Moyer Program funds with funds designed to reduce greenhouse gas emissions from federal programs or the Alternative and Renewable Fuel and Vehicle Technology Program without including them in the cost-effectiveness calculation for the Moyer Program funds.

Legislation enacted in 2013 (AB 8) extended funding of AB 923 tire fees ($1.75 per tire) through year 2023, effectively reauthorizing the Moyer Program and associated local funds through that year. AB 8 also directed ARB to convene a working group and work with local air districts to evaluate the Moyer Program and provide recommendations for program changes. The efforts of this working group led to SB 513.

Signed by the Governor in 2015, SB 513 provided new flexibilities that allow the Moyer Program to continue to make a viable contribution to emission reductions in California into the future. SB 513 was implemented in two phases; the early revisions became effective January 1, 2016, following a public meeting and 45-day public comment period, under authority delegated to the Executive Officer. Remaining updates are scheduled for consideration by the Board in April 2017. The most noteworthy changes enabled by SB 513 included:

1. Updating cost-effectiveness criteria, authorizing the Board, in collaboration with the air districts, to establish and revise cost-effectiveness limits to account for the costs of technology and regulation;

2. Allowing for a separate school bus cost-effectiveness limit to allow the Program to fund at the levels equivalent to the Lower-Emission School Bus Program. This change has already been implemented through the amendment of the 2011 Guidelines that became effective January 1, 2016.

3. Expanded opportunities for infrastructure projects; and

4. Allowing project co-funding without penalizing cost-effectiveness.

C. Summary of Changes for the 2017 Guidelines

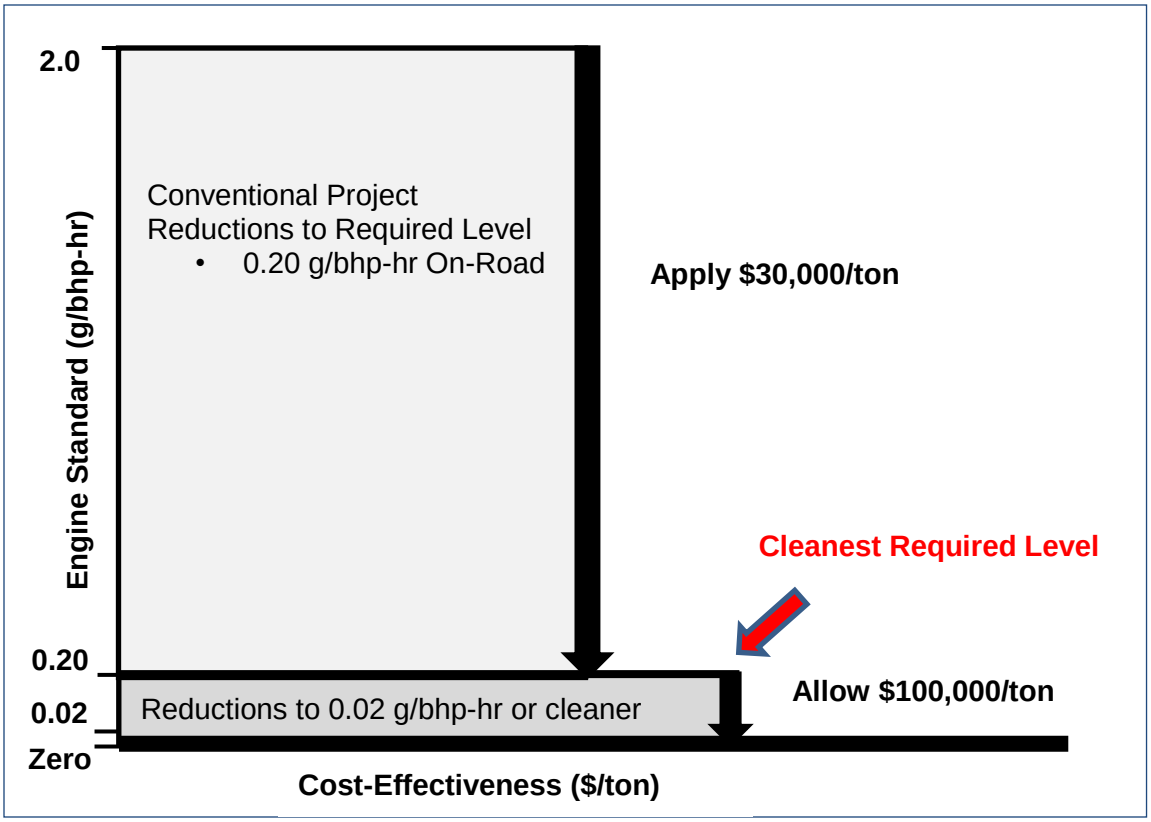
The 2017 Guidelines are proposed as an update to the Moyer Program to reflect the opportunity and flexibility provided by SB 513. The key program changes to be implemented through these Guidelines include the following. (Additional detail is included in the Staff Report issued to accompany Board consideration of these Guidelines.)

1. **Establish New Cost-Effectiveness Limits.** SB 513 specified that the Board, in collaboration with the air districts, should consider the cost of technology and the cost of regulations in establishing cost-effectiveness values. The proposed Guidelines include a tiered cost-effectiveness approach that will allow the program to meet dual needs – supporting both conventional projects and emerging technologies. The general cost-effectiveness limit would be increased from the current $18,260 up to $30,000 per weighted ton of emission reductions (particulate matter (PM) reductions would still be weighted by a factor of 20 due to diesel PM toxicity). The increase in the base limit reflects more recent regulatory costs and will enable more meaningful grants for cleaner engines at the required standard.

   For advanced technology engines that are zero-emission or, alternatively, meet the cleanest optional standard level certified, the proposal allows air districts to choose to apply a cost-effectiveness limit of up to $100,000 per weighted ton. This higher limit would provide additional incentive to turn engines and fleets over to the cleanest certified technologies now emerging in the marketplace.

   Figure 1 below illustrates how the dual cost-effectiveness limits would be implemented under the proposed change for an on-road engine meeting the 0.02 g/bhp-hr Optional Low NOx standard.

Figure 1: Illustration of Dual Cost-Effectiveness Limit for On-Road Projects



2. **School Buses**: Note that a separate cost-effectiveness limit of $276,230 per weighted ton will continue to apply to school bus projects, to enable consistency with the funding levels used in California's Lower-Emission School Bus program as directed by SB 513. This program change has already been made, through a revision to the Moyer Program 2011 Guidelines effective January 1, 2016.

3. **Expansion of Infrastructure Program**. SB513 provided new opportunities to fund installation of fueling or energy infrastructure for zero and near zero alternative vehicles and equipment and other projects that enable clean air technologies. Under SB 513, infrastructure projects are not subject to the cost-effectiveness limit. Infrastructure categories included in the chapter are commercial battery charging and alternative fueling stations for on-road and off-road vehicles and equipment, and continued support for marine shore power electrification and stationary agricultural electrification projects. Proposed funding limits for infrastructure projects are as follows:

   (A) Up to 50 percent of eligible costs for all projects;

   (B) Up to an additional 10 percent (total of 60 percent) for publicly accessible stations;

(C) Up to an additional 15 percent (total of 65 percent) for projects including on-site solar or wind power generation;

(D) Up to 100 percent for electric charging stations and alternative fueling stations for school buses. This is consistent with recent Board direction to consider opportunities for funding to assist public school buses.

To provide project selection transparency for public accessible projects staff proposes requiring a competitive bid process when the project includes access to the public. The proposal also provides flexibility for air districts to select projects that meet their local needs and priorities.

4. **Opportunity to Co-Fund Moyer Projects with Other Public Funds.** Proposed Guideline changes would provide now opportunities for Moyer Program funds to co-fund projects with other incentive programs without a cost-effectiveness penalty, as provided for in SB 513. Co-funding would allow projects to be approved with support from multiple program grants up to the total eligible cost of the project. Moyer Program and AB 923 funds would continue to be subject to cost-effectiveness limits (except in the case of infrastructure), regardless of whether such thresholds apply in other contributing programs. There is no limit on the number of co-funding sources that can be used to fund a project, as long as the total project costs are not exceeded and a 15 percent applicant cost share requirement is met for private sector projects. Provisions in the General Criteria and Program Administration Chapters would safeguard against double counting of emission reductions, and the Moyer Program will account for all emission reductions for SIP purposes. Projects would still be required to meet the individual requirements of each funding source.

5. **Changes to Program Administration**. Program administration affects air district implementation of all Moyer projects, and ARB staff has worked with air districts to streamline and reorganize the administrative requirements that ensure program accountability. A major reporting update made in SB 513 was changing the two year expenditure deadline for grant funds to a four year liquidation deadline. Guideline changes to reflect this provide additional time to complete more complex projects, while contract execution will serve as an interim milestone for progress tracking. Another key change to the chapter is the phase-in of accounting principles, as recommended by California Department of Finance, to improve fiscal transparency and lower the cost of program audits. The updated Guidelines also provide air districts procedures for redirection of unallocated grant funds to districts with ready projects.

6. **Changes to the On-Road Sections**. This version of the Guidelines would merge previous 2011 Guideline chapters 4, 5 and 6 into one comprehensive chapter for heavy-duty trucks and buses. The On-Road Voucher Incentive Program (VIP) program would remain separate in Part II of the Guidelines. A significant change in the on-road section is the addition of funding caps for new technologies such as Optional NOx and zero emission engines. Staff also

modified VIP funding caps for conventional project types. The fleet size limit of ten or less vehicles was removed; however, fleets larger than ten would have to use cleaner engine technology.

7. **Changes to the Off-Road Sections**. The proposed 2017 Guidelines would combine previous chapters 7, 8, 9 and 10 into one off-road equipment chapter, while Off-Road VIP remains separate. Staff proposes to extend the eligibility for large fleets (more than 5,000 horsepower) to one additional opportunity after January 1, 2017. This will provide large fleets a path to add Tier 4 final equipment while retaining broader opportunity for medium fleets within this time frame. Program changes also allow equipment with Tier 3 engines and portable equipment to be eligible for equipment replacement.

8. **Changes to the Locomotive Section**. Program guidelines would be updated for locomotive projects to require all new equipment be Tier 4 or cleaner. Staff also proposes to allow the reuse and/or the recycling of the baseline chassis while still requiring the baseline engine to be destroyed. Idle limiting devices and retrofit projects would no longer be eligible for funding.

9. **Changes to the Marine Section**. For marine projects, proposed changes would include allowing the cleanest technologies to be eligible for the highest maximum percentage of eligible cost, and allowing compliant Tier 2 engines to be repowered. Vessels that are compliant with the Commercial Harbor Craft replacement schedule would become eligible for the same funding amounts as unregulated vessels. Provisions would also be added for hybrid system vessel retrofits.

10. **Emissions Estimates and Deterioration**. Staff proposes that project evaluation consider the emissions that occur due to deterioration of vehicles and equipment emission controls over time. Deterioration rates used in ARB emissions inventories are available for on-road trucks and off-road equipment. Including these factors in Moyer Program emissions and cost-effectiveness calculations for both old and new equipment will better reflect real-world engine emissions over project lives, and align Moyer calculation methods with those used in ARB planning inventories and SIP air quality modeling.

11. **Other Changes**.

    (A) New purchase projects that expand fleets would no longer be eligible projects, due to SIP creditability concerns.

    (B) The baseline vehicle for Light Duty Vehicle projects must have an engine model year of 2003 or older.

    (C) Only minor changes are proposed for the Agricultural Assistance Program (Part III).

(D) Appendices have been re-worked. Calculations in Appendix C are updated to improve the flow of calculations; formulas have been added to account for engine deterioration and calculate the new dual cost-effectiveness limits. Emission factors have been updated in Appendix D and now include deterioration. The appendices for acronyms, definitions and references have been updated. Previous appendices E and G have been removed, with cost-effectiveness information moved to Appendix C and capital recovery tables moved to Appendix D.

CHAPTER 2: GENERAL CRITERIA

The criteria listed below apply to all Carl Moyer Memorial Air Quality Standards Attainment Program (Moyer Program) projects. In addition to the criteria below, Moyer Program projects must also meet the additional project criteria found in the applicable source category chapter and the Program Administration Chapter. In cases where there is a conflict between the Guidelines and statute, the Moyer Program statutory provisions take precedence over the Guidelines. In cases where the source category requirements conflict with either the criteria listed below or Program Administration requirements, the source category requirements take precedence.

A. Covered emission reductions obtained through Moyer Program projects must not be required by any federal, State or local rule or regulation, memorandum of agreement, memorandum of understanding, settlement agreement, mitigation requirement, or other legal mandate.

B. If a Moyer Program project contract has not been fully executed prior to the approval date of an air quality management district or air pollution control district (air district) governing board or Air Resources Board (ARB) rule or regulation (or the promulgation date of a federal regulation) the air district must consider the rule or regulation when evaluating a project's eligibility. If a Moyer Program project contract has been fully executed prior to that date, the air district does not need to consider the rule in evaluating whether the project's emission reductions are surplus.

C. An air district must consider all applicable rules or regulations when determining eligibility for a project. If an existing contract is amended to increase the total Moyer Program funding of the project, then the air district must reevaluate eligibility and consider all applicable rules or regulations. If the total dollars do not increase, then the air district does not need to reevaluate eligibility.

D. A grant applicant subject to an in-use regulation may be eligible to receive funding through the Moyer Program if the applicant has met all compliance requirements of applicable regulations. Documentation of regulatory compliance must be provided by applicants to air districts prior to funding.

E. Participating air districts retain the authority to impose additional more stringent requirements in order to address local concerns.

F. No project funded by the Moyer Program may be used for credit under any federal or State emission averaging, banking or trading program throughout the contract term. No covered emission reductions generated by the Moyer Program may be used as marketable emission reduction credits, or to offset any emission reduction obligation of any person or entity throughout the contract term (Health and Safety Code (H&SC) § 44281(b)).

G. The new engine, vehicle, or equipment must remain in service for the entire contract term, which must extend to the end of the project life. Throughout the contract term, the emission reductions funded by the Moyer Program must not be used to generate credits or compliance extensions and must be excluded when determining regulatory compliance (H&SC § 44281(b)).

H. The State Board and the air districts shall take all appropriate and necessary actions to ensure that all covered emission reductions achieved from a Moyer Program project are creditable in the State Implementation Plans (SIP) and are enforceable, surplus, quantifiable and permanent (H&SC § 44286(g)).

I. When Moyer funds are used for co-funded projects, the Moyer Program will account for all covered emission reductions for SIP purposes (H&SC § 44287.2(a)(4)).

J. ARB will provide protocols for calculating surplus covered emission reductions over the life of representative project types (H&SC § 44283(c)).

K. Engines operating under flexibility provided by an enforcement discretion advisory, mail-out or other advisory issued by ARB, an air district, or the United States Environmental Protection Agency (U.S. EPA) are not eligible for funding.

L. Projects funded by the Moyer Program must be included when determining the size of the fleet for regulatory compliance.

M. Projects selected for funding must meet cost-effectiveness limits per weighted ton of oxides of nitrogen (NOx), reactive organic gases, and particulate matter reduced, as calculated in accordance with Appendix C, except in the case of infrastructure projects.

N. Moyer funds, all local air district AB 923 funds, and match funds must be included in the project cost-effectiveness calculation and are subject to cost-effectiveness limits (H&SC § 44283(d)). Funds from sources other than those listed here are not required to be included in the project cost-effectiveness calculation (H&SC § 44287.2(a)).

O. Applicants must report to air districts all private or public financial incentives applied for or used to co-fund Moyer projects (H&SC § 44283(g)). The air district must ensure that the sum of the other incentive funds and the Moyer funds does not exceed the total project cost (H&SC § 44287.2(b)). Appendix C contains an example of the calculation methodology.

P. Projects co-funded with Moyer and other public funds must meet all requirements of the contributing programs. Grantees from non-public entities must provide at least 15 percent of the Moyer eligible cost from non-public sources.

Q. Moyer Program grants can be no greater than a project's incremental cost. Incremental cost is defined in Appendix B, and some source category chapters provide additional guidance.

R. Moyer Program funds cannot be used to pay for energy or fuel costs. However, local funds under an air district's budget authority or fiduciary control (i.e., match or other local funds) may be used to fund energy or fuel costs other than standard gasoline or diesel fuel, when those costs are integral to a project receiving grant funding under the Moyer Program (H&SC § 44283(f)).

S. Projects must have at least 75 percent of their total activity for the project life in California, unless otherwise stated in the source category chapters. Activity outside of California is excluded from the covered emission reductions used to determine grant funding and SIP emissions benefits.

T. Project engines and retrofits must use only the fuel allowed by the engine certification or retrofit device verification during the project life. Fuel additives are prohibited unless specifically allowed in the engine certification or retrofit device verification.

U. Emission reduction technologies must be certified or verified by ARB. If an ARB certification or verification process does not exist or if engines or retrofits are preempted from ARB certification/verification, then an engine or retrofit must be certified/verified to Federal standards as applicable. For the purposes of the Moyer Program, a technology granted a conditional certification/verification by ARB is considered certified/verified. An ARB certification process may not exist for some zero-emission technologies. See the relevant source category chapter for specific requirements for zero-emission technologies.

V. In circumstances where an eligible vehicle or piece of equipment has more than one engine, the air district may choose to base the cost-effectiveness calculation on overall vehicle/equipment emission reductions rather than on a per engine basis. The project must meet the current project cost-effectiveness limit.

W. Prior to destruction, an engine that is required to be dismantled may be used as a test engine for purposes of retrofit or fuel verification. This can occur as long as the engine complies with the requirements of the guidelines, and the old engine must be destroyed before a payment to the grantee is issued for the new engine.

X. Funding is not available for projects where a spark-ignition engine (i.e., natural gas, gasoline, etc.) is replaced with a diesel engine.

Y. For repower and replacement projects the replacement engine must achieve an annual NOx emissions benefit of at least 15 percent to receive any funding for NOx reductions.

Z. For a repower project, the installation of the engine must be completed in a manner that does not void the engine warranty provided by the manufacturer or any remaining warranty provided by the equipment/vehicle manufacturer.

AA. No public monies are allowed for the support of any sectarian or denominational school, or any school not under the exclusive control of the officers of the public schools. (Cal. Const. Art. 16 § 5 and Art. 9 § 8).

BB. The revised cost-effectiveness limit and capital recovery factors may be used by air districts once the Board adopts the updated Moyer Program Guidelines, but must be used by July 1 following its adoption. ARB will update the cost-effectiveness limit and capital recovery factors annually through a Mail-Out.

CC. ARB may approve, on a case-by-case basis, projects that vary from the requirements of these Guidelines or that do not meet all eligibility criteria in the Guidelines. Projects with case-by-case approvals must provide permanent, surplus, quantifiable, enforceable, cost-effective emission reduction benefits in California for the full contract term. Additional information regarding approval of case-by-case projects is found in the Program Administration chapter.

CHAPTER 3: PROGRAM ADMINISTRATION

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CHAPTER 3: PROGRAM ADMINISTRATION

This chapter describes the administrative requirements that the Air Resources Board (ARB), air quality management districts or air pollution control districts (air districts), and interested parties must follow to ensure that Carl Moyer Memorial Air Quality Standards Attainment Program (Moyer Program) projects achieve State Implementation Plan (SIP)-creditable emission reductions.

A. Background

An air district may choose to require more stringent administrative procedures in implementing its local program. Some source category chapters of the Moyer Program Guidelines (Guidelines) give additional administrative requirements. In a case where the source category requirements conflict with requirements specified in this chapter, the source category requirements take precedence.

These Guidelines must be used for all projects funded with fiscal year 2017-18 (Moyer Program Year 20) and subsequent years' funds. The 2017 Guidelines may be utilized for previous year funds after the Board approval date, and applied to projects for which contracts are fully executed after the Board approval date. When an air district begins applying the 2017 Guidelines to projects, it must continue to apply only the 2017 Guidelines to all subsequently funded projects. ARB will follow these 2017 Guidelines for administration of the Moyer Program following Board approval.

For projects funded using fiscal year 2016-17 (Year 19) and previously awarded funds, an air district may use either the 2011 Guidelines or these 2017 Guidelines, with any applicable program advisories and mail-outs. An air district may not apply elements of both Guidelines to a project.

B. Grant Fund Allocation and Solicitation

1. **Grant Funds Notification**. During each fiscal year, ARB will send a solicitation letter to each air district's Air Pollution Control Officer (APCO) with notification that Moyer Program funds for that year are available. Enclosures with the letter will include the application for funds, a tentative allocation of regular program funds (not including State Reserve funds) for all air districts showing a breakdown of project and administrative funds, and any associated match funds requirement.

2. **Tentative and Final Funds Allocation**. After a review of projected revenues for the current fiscal year, a tentative funds allocation for all air districts will be determined by ARB under the requirements of Health and Safety Code (H&SC) section 44299.2(a); it may include funds returned or reverted to ARB under section 44287(j). Following receipt and review of air district applications, ARB will determine a final funds allocation that (a) considers any update in projected revenues and (b) redistributes any funds declined by air districts to other air districts that have requested additional funds. This redistribution will also follow

the allocation requirements of Health and Safety Code section 44299.2(a). The typical timeline for the initial allocation, air district application, final allocation, disbursement and subsequent expenditure of a fiscal year's grant funds is provided in Table 3-1.

Table 3-1
Moyer Program Regular Funds Timeline

Date	Action
By end of January	ARB sends application packet to air districts
By end of March	Air districts apply to ARB for funds
By end of April	ARB notifies air districts of final awards
By end of May	Air districts return signed grant agreements
June 30 of Following Year	Target date for contracts to be executed
June 30 of Second Year	Deadline for air districts to receive fund disbursements.
June 30 of Fourth Year	Deadline for air districts to liquidate funds

3. **State Reserve Funds**. ARB may direct up to ten percent of Moyer Program funds available each fiscal year to eligible projects selected in accordance with Health and Safety Code section 44286(d). ARB shall annually post on its website a solicitation packet for State Reserve projects. The solicitation packet will include the application requirements and due date, project eligibility criteria, and project selection criteria.

C. Air District Applications for Grant Funds

1. **Air District Options**. An air district may consider the following options upon receiving the solicitation:

   (A) Accept the tentative allocation in full without change, and commit to the associated match funds amount;

   (B) Accept the tentative allocation but request additional funds, and commit to the associated match funds amount;

   (C) Accept the minimum allocation of $200,000, with no match requirement;

   (D) Accept the minimum allocation and authorize the funds be designated to the Rural Assistance Program, for the current year and up to four additional years unless rescinded in a future year;

   (E) Accept the tentative allocation and authorize the funds be designated to a lead air district for Moyer Program funding in the region, for the current year and up to four additional years unless rescinded in a future year;

   (F) Decline an allocation. In this case the air district's share of funds will be redistributed with the final funds allocation.

2. **Application and Resolution**. Within 60 calendar days of the date of the solicitation letter, an air district accepting or designating funds will provide ARB a completed application indicating the option chosen above and signed by the APCO. The application will include a board resolution or minute order that supports the option chosen, and will indicate the district is maintaining a Moyer Program Policies and Procedures manual that meet the requirements of this section. For air districts accepting funds the resolution or minute order will commit the district to participate in the Moyer Program, comply with Program requirements, and commit to providing matching funds if requesting funds above the minimum allocation. If the air district board is unable to consider the Moyer Program application within the 60 days following the solicitation letter, the application will indicate when a resolution or minute order will be considered by the board.

3. **Match Funds**. An air district requesting the tentative allocation or a greater amount must make a match funds commitment equal to 15 percent of State funds requested. The district will indicate on its application the source of match funds. An air district may account for up to 15 percent of its match requirement with in-kind contributions. Sources and requirements for match funds are described in Section I of this chapter.

4. **Policies and Procedures**. To remain eligible for continued funding, an air district will maintain a Moyer Program Policies and Procedures Manual. The manual will focus on the district's local implementation of the Moyer Program Guidelines, including roles and responsibilities within the district and local application of Moyer Program policies. Air district staff will review the manual at least once a year and make it available when requested by ARB staff or a member of the public. The manual will include at least the following elements:

    (A) Roles and responsibilities within the air district for program implementation, including staff or positions responsible for: responding to ARB funding solicitations; evaluation, selection and inspection of projects; and obtaining governing board approval for program participation and projects to be funded;

    (B) Identification of the project source categories supported by the air district Moyer Program, and the schedule for solicitation and review of applications to be submitted under these source categories;

    (C) Procedures for project selection, including cost-effectiveness or other criteria applied to rank projects, or whether projects are selected in order of application receipt (first-come, first-serve); and any procedures that vary by source category;

    (D) Procedures for notifying successful applicants of their grant awards, and for notifying applicants who have not been awarded grants;

(E) Where applicable, project selection procedures that ensure priority for funding projects that will reduce air pollution in communities with the most significant exposure to air pollution (H&SC § 43023.5);

(F) Where applicable, the procedures for selecting projects to be funded with Moyer Program match funds;

(G) The method for calculating interest earned on Moyer Program funds held by the air district;

(H) Procedures for grantees to submit program invoices and receive payment, including itemization required to limit reimbursement to eligible costs, conditions for progress or partial payment, and practices for withheld payments pending grantee reporting;

(I) Methods the air district will use to verify the destruction of engines and equipment when required, consistent with minimum standards specified in these Guidelines by source category;

(J) Methods the air district will use to store and retrieve digital photographs documenting project inspections along with associated project-specific information;

(K) Procedures, schedules and required content for grantee reports;

(L) The types of acceptable documentation for establishing historical annual usage, and procedures for considering and granting usage waiver requests, including supporting information to be provided by the grantee;

(M) Procedures for working with nonperforming grantees to gain full compliance with contracts and program requirements;

(N) Any air district program requirements that are more stringent than those specified in Moyer Program Guidelines and Mail-Outs;

(O) Any ARB approvals of air district program elements that vary from those required by Moyer Program Guidelines and Mail-Outs, e.g., methods of ensuring engine or equipment destruction that vary from those specified in the source category chapters.

D. Grant Application Review and Grant Award

1. **Review Period**. ARB will review an application immediately upon receipt and, when necessary, provide the air district with a written explanation of what is missing from the application within ten working days of its receipt. ARB will approve completed applications that fulfill all criteria no later than 60 working days after receipt, including time for ARB review and comment on air district Policies and Procedures if desired (H&SC § 44287(m)).

2. **Conditional Approval**. ARB may elect to approve an application that is missing a particular item and make the submittal of that item a Special Term and Condition of the Grant Agreement. For example, sometimes air district staff is unable to obtain a board resolution or minute order before the application

deadline. In such a case, ARB may allow a board resolution or minute order to be submitted with the signed Grant Agreement or prior to the air district's initial disbursement.

3. **Policies and Procedures Review**. The grant application includes the air district's statement that it is maintaining a manual of current policies and procedures consistent with the requirements above. ARB may choose to review an air district's Policies and Procedures Manual, and an air district may request ARB's review of its manual's completeness and consistency with these Guidelines. ARB comments on an air district's Policies and Procedures Manual will be provided by email or in other written format. An air district's policies and procedures as implemented can only be fully evaluated during a program review process.

4. **Grant Award Notification and Signature**. ARB will prepare and submit to qualifying air districts each year a notification of final grant awards, accompanied by a Grant Agreement for review and signature. A deadline for air district acceptance of the grant award will be specified in a cover letter sent with the Grant Agreement. The Grant Agreement package will include two copies of a cover sheet indicating the amounts of funds granted for projects and for administration, the required amount of match funds if applicable, any Special Terms and Conditions, and General Terms and Conditions for the grant. The district APCO will sign both copies of the cover sheet and return them with original signatures to ARB. Following signature by ARB Budgets Chief, ARB will return one original copy to the air district for its records.

E. Fund Disbursement

1. **Procedure**. ARB may disburse funds following signature of the Grant Agreement by both parties. To obtain funds the air district will submit a completed current Grant Disbursement Request Form, available on the Moyer Program website. The Grant Disbursement Request Form must include an original signature by a party authorized and designated by the air district's Governing Board. Any Special Terms and Conditions in the Grant Agreement must be met before ARB will disburse funds associated with the grant award. Disbursement requests must be received by ARB by May 15 each year to ensure payment within the fiscal year. Any funds not disbursed by June 30 two years following the award will be reallocated to all districts in the subsequent grant cycle.

2. **Initial and Additional Disbursements**. An air district may request an initial disbursement of $200,000 or 10 percent of its project funds, whichever is greater. The air district may request additional disbursements when the criteria below have been met.

    (A) The preceding Yearly Report demonstrates on-time liquidation consistent with Health and Safety Code section 44287(j); or if not, any funds not

liquidated on time have been received by ARB. ARB will not require a return of funds under executed contract. ARB may require an air district to change the funding years from which funds are assigned to projects in the statewide database (Clean Air Reporting Log or CARL) to facilitate on-time liquidation.

(B) The Grant Disbursement Request Form is accompanied by a list of projects under executed contract with invoices pending, approved by an air district governing board, or under air district staff review for eligibility and funding. The total cost of the projects listed should equal or exceed the amount of the disbursement request.

3. **Administration Funds**. An air district may also request some or all of its administrative funds with an initial disbursement. The air district will receive one check for both program administration and project funds, but must account for the expenditure of administration and project funds separately.

F. Redirection of Funds

1. **Procedure**. An air district may redirect funds to another air district or the Rural Assistance Program by submitting to ARB the items below. For funds already disbursed by ARB and due for liquidation by June 30 of the current fiscal year, the air district must submit these items no later than March 31 to allow time for processing new grant agreements. For funds not yet disbursed by ARB and due for disbursement by June 30 of the current fiscal year, the air district must submit these items no later than March 15 to allow time for processing new grant agreements and subsequent processing of a disbursement request for the air district receiving the redirected funds. A redirection request includes:

   (A) The Moyer Program Redirection of Funds form, with the appropriate portions completed in consultation with ARB staff and indicating the sums of project and administrative funds to be redirected, which may include interest or other earned funds due for liquidation;

   (B) Resolutions or minute orders adopted by the boards of the air districts transferring and receiving funds that authorize the redirection;

   (C) A memorandum of understanding (MOU) or equivalent signed by the air pollution control officers of the affected air districts. The MOU must:

      (1) Specify the details and conditions of the redirection of funds;

      (2) Identify which air district is responsible for any required match associated with the redirected funds;

      (3) Identify the funding year and the associated liquidation deadline for the redirected funds;

      (4) Specify how and when payment will be made to the air district receiving the funds, including one of the following:

a. If the transferring air district has not submitted a disbursement request to ARB, the MOU will specify that the air district that is receiving the funds will submit the request to ARB following ARB approval of revised grant agreements.
b. If the transferring air district has the funds already, the MOU will specify that it will pay the receiving air district directly, following ARB approval of revised grant agreements.

2. **Amended Grant Agreements**. After receiving the items above from the transferring air district, ARB staff will develop new or amended grant agreements. District APCOs must sign and return the grant agreement cover sheets for signature by the ARB Budgets Chief. After ARB signature of both revised grant agreements, the receiving air district may request either a disbursement of funds from ARB or payment from the transferring air district. An air district receiving funds from another district will submit a copy of the check to Moyer Program staff.

3. **Retention of Administrative Funds**. Air districts redirecting project funds but retaining, with approval of the receiving air district, associated administrative funds must provide to ARB by the close of the fiscal year in which the funds were transferred a description of how administrative funds were utilized for the period since the grant award, including but not limited to the following:

   (A) A summary of air district activities to solicit project applications, including copies of any written grant solicitations and lists of potential applicants to which outreach was directed;

   (B) A list of project applications submitted and reviewed;

   (C) A breakdown of staff time devoted to Moyer Program activities;

   (D) A summary of any Moyer Program training activities for air district staff.

G. Rural Assistance Program

1. **Purpose**. The Rural Assistance Program (RAP) is a partnership among rural air districts, the California Air Pollution Control Officers Association (CAPCOA), and ARB to enhance rural air district participation in the Moyer Program. RAP facilitates air district participation by streamlining the grant administrative process and by encouraging the pooling of financial and technical resources. The reduction in cost and staff resources lowers the threshold for participation in the Moyer Program and maximizes project funding in rural areas.

2. **Designation or Redirection to RAP**. An air district may designate funds to RAP in its application for Moyer Program funds (see Section C.1.(D)). An air district may also redirect funds to RAP after it has executed a grant with ARB, but must do so by March 1 of the year by which funds must be disbursed, as shown in the example timeline below. RAP funds that have been disbursed to air districts and

subsequently returned to ARB will be reallocated to other RAP projects whenever possible.

Table 3-2
Example RAP Funds Calendar:
Moyer Program Year 18 (Fiscal Year 2015-2016)

January–April 2016	Air district applies for funds and executes Year 18 Grant Agreement; funds are designated to RAP.
March 1, 2018	Deadline to redirect air district's grant funds to RAP
June 30, 2018	Deadline for air districts to receive fund disbursements. Target date to expend Year 18 grant award.
June 30, 2020	Deadline to liquidate Year 18 grant award

3. Roles and Responsibilities among RAP Program partners are as follows:

(A) ARB notifies CAPCOA of funds designated or redirected to RAP, and develops and administers grant agreements between ARB and recipient air districts.

(B) CAPCOA selects a program administrator, which may be CAPCOA staff, an air district, or a third party. CAPCOA also establishes criteria for project selection and approves projects selected by the Program Administrator.

(C) The RAP Program Administrator provides outreach for RAP, prepares the application and project solicitation, performs initial application screening, ensures project eligibility, ranks projects based on CAPCOA criteria, selects projects, and determines recipient air districts.

(D) Donor air districts designate all or a portion of their Moyer allocations to RAP on their Moyer grant award application, or redirect grant funds already accepted to RAP using the procedure in Section F of these Guidelines. Air district boards approve designation or redirection of RAP funds via resolution or minute order.

(E) Recipient air districts sign grant agreements with ARB to accept funds for RAP projects, maintain a Policies and Procedures Manual, and are responsible for grant obligations, including contracts with grantees for project implementation, project inspections, monitoring and reporting. Air district boards approve receipt of RAP funds via resolution or minute order.

H. AB 923 - $2 Motor Vehicle Fee

1. **Project Eligibility**. State law allows air districts to collect an additional $2 motor vehicle registration surcharge (MV Fee) (H&SC § 44223) which must be used to fund the following project categories (summarized) (H&SC § 44229(b)):

   (A) Projects eligible for grants under the Moyer Program.

   (B) The new purchase, retrofit, repower or add-on equipment for previously unregulated agricultural sources of air pollution (Agricultural Assistance Program, H&SC § 39011.5).

   (C) Purchase of new school buses or the repower or retrofit of emissions control equipment for existing school buses pursuant to the Lower-Emission School Bus Program adopted by the Board.

   (D) An accelerated vehicle retirement or repair program that is adopted by ARB.

   (E) Onboard natural gas tank replacements in existing school buses 14 years or older or the enhancement of deteriorating natural gas fueling dispensers of fueling infrastructure pursuant to the Lower-Emission School Bus Program adopted by the Board.

   (F) Alternative fuel and electric infrastructure projects solicited and selected through a competitive bid process.

2. **Match**. $2 MV Fees used to meet the Moyer Program match fund requirement (See Section I) are subject to the same eligibility, reporting, review and auditing requirements as State-provided Moyer Program funds. $2 MV Fee funds used to meet the match requirement are not required to be expended within two years from the date of their collection. However, air districts must expend sufficient match funds to meet the obligations for the Moyer Program funds received each year.

3. **Reporting and Oversight**. Reporting and oversight of the $2 MV Fee depends upon whether the fee is used to meet the Moyer Program's match requirement and whether the air district takes SIP credit for $2 MV Fee projects. Table 3-3 summarizes the various scenarios for treatment of $2 MV Fee funds and projects. Sections M and R of this chapter further describe $2 DMV fee reporting and oversight.

Table 3-3
Summary of $2 MV Fee Requirements and Oversight

Requirement	$2 MV Fee Used as Match	$2 MV Fee Used for SIP Credit	$2 MV Fee Not Match/ not SIP
Liquidation of funds within four years	[a]	--	--
Meet full and complete Moyer Program Guideline criteria	√	--	--
Subject to ARB Incentive Program Review	√	--	[b]
Subject to ARB project eligibility evaluation (e.g., cost-effective and surplus)	√	√	√
Fiscal reporting to ARB (list total funds expended in seven basic categories)	√	√	√
Detailed reporting to ARB (project specifics submitted in current database)	√	√	--

[a] Sufficient funds must be liquidated, regardless of their year of origin or source, to provide the required match by that year's liquidation deadline. For example, for Year 18, air districts must complete liquidation of applicable Year 18 match funds by June 30, 2020. When those funds were received is not a factor in determining this deadline.

[b] Non-match projects funded with AB 923 $2 MV Fee may be evaluated by ARB in conjunction with Incentive Program Review. Evaluation of these projects will be limited to project eligibility. Any irregularities regarding non-match AB 923 $2 MV Fee project eligibility must be reported separately from Incentive Program Review findings.

I. Air District Match Funds

1. **Requirement**. Air districts participating in the Moyer Program are required to provide match funding. Air districts implementing the Moyer Program must commit match funds equaling 15 percent of the regular Moyer Program funds received. An air district receiving the minimum grant award of $200,000 is exempt from this match requirement.

2. **Federal Funds**. Air districts may use federal funds as Moyer Program match if written confirmation is received from the administering federal agency (for example, the United States Environmental Protection Agency) that (1) the administering agency has no objection to the air district using those funds as match, and (2) the emission benefits obtained from those funds will not be used by the administering agency in a State Implementation Plan. The air district must also ensure that it will not use such funds as match for any other program and that the use of the funds as Moyer Program match does not conflict with any State or local requirements regarding the funds. If this option is used, supporting documentation must be included in all relevant project files.

3. **Program Basis**. Air districts may meet their matching fund requirement on an overall program basis rather than a project-by-project basis. In other words, air

districts do not need to provide match funds towards each project funded, but must fund enough projects (in total or in part) with match funds in order to meet the match requirement. Match funds are included in cost-effectiveness calculations and subject to the same cost-effectiveness limits as other Moyer program funds.

4. **Match Fund Sources**. Match funds may be any funds under an air district's budget authority or fiduciary control that are committed to be expended in accordance with Moyer program requirements. Match funds may also be provided by a port authority, or a local government teamed with an air district. Match funds provided by a port authority or a local government shall not exceed 30 percent of the total required matching funds in any air district that applies for more than $300,000 of the state board funds (H&SC § 44287(e)). Port authorities may participate through projects involving their own equipment, or by soliciting port tenants to apply for project funding.

5. **In-Kind Contributions**. Up to 15 percent of an air district's match requirement may be fulfilled through in-kind contributions (H&SC § 44287(h)). Air districts may use any funds under their budget authority, except for Moyer Program administrative funds and interest or other funds earned on Moyer Program funds, to cover their in-kind contributions. When using air district funds for in-kind match, air districts must follow all relevant statute, guidelines, and other legal requirements for expending such funds. In-kind contributions have the same expenditure timeline as match funds. Air district in-kind match funds spent on program administration and outreach must meet the documentation requirements in Section J.

6. **Eligible Projects**. Match funds may be used to pay for any project that meets all Moyer Program criteria. Match funds may also be used to pay for the incremental cost of electricity or alternative fuels serving a Moyer program eligible source category.

J. Air District Administration Funds

1. **Air District Funding**. Air districts with one million or more inhabitants may use up to 6.25 percent of their Moyer Program funds on program outreach and administration, while air districts with under one million inhabitants may use up to 12.5 percent of their Moyer Program funds (H&SC § 44299.1(c)-(d)). Air districts shall maintain an outreach program consistent with Health and Safety Code section 44290.

2. **Allowable Costs**. Table 3-4 lists allowable administration costs and documentation that the air district is required to maintain for Moyer Program administrative funds. Air districts will make available the documentation shown in the table for review during ARB or other State agency monitoring visits, reviews and audits. Such administrative records for a given funding year must be retained for a minimum of five years following the applicable funding year

liquidation deadline. For example, for Year 16 (fiscal year 2013-2014) funds, the funding year liquidation deadline is June 30, 2018, and administrative records would be retained through June 30, 2023.

Table 3-4
Administration and Outreach Costs and Documentation

Allowable Cost	Required Documentation
Air district staff time	Personnel documentation that may include timesheets or output of labor tracking software; duty statements or job descriptions indicating percentage of staff time; or written summaries of Moyer Program staff activities with time estimates by activity or task.
Consultant fees	Consultant contracts and invoices
Printing and mailing costs	Receipts and invoices. Copies of solicitations and outreach materials indicating availability of grants
Travel expenses	Receipts and invoices. Travel cost criteria must be consistent with written air district travel policies for other air district programs, cited in the Policies and Procedures Manual or local administrative manual.
Indirect costs	Indirect cost calculation methodologies must be described or cited in the Policies and Procedures Manual or local administrative manual, and calculated costs must be documented.

3. **Mitigation for Unallowable Costs**. An air district that charges unallowable costs for program administration or outreach must substitute eligible administration and outreach expenses equal to the dollar amount found ineligible, or return the funds for the unallowable cost to ARB.

K. Accounting Principles

Air districts must establish accounting practices for Moyer Program funds consistent with the requirements below, as early as practicable and no later than July 1, 2019.

1. **Moyer Funds Account**. Moyer Program funds (Moyer funds) must be accounted for as separate funds within the air district's general ledger following generally accepted accounting principles (GAAP). An air district receiving a total allocation of one percent or more of all Fiscal Year 2016-17 Moyer Program funds must use a Special Revenue Fund for Moyer funds accounting. Other air districts may use a Trust Fund.

2. **Timing of Recognition in Financial Statements**. Moyer Program grants are voluntary non-exchange transactions to the air district. As such the air district should recognize revenues in the fiscal period when all eligibility requirements have been met and the resources are available. For reference see Governmental Accounting Standards Board (GASB) Statements 33 and 34.

3. **Required Financial Statements**. Financial statements containing at minimum the following account balances and transaction classes, as applicable, will be prepared at least annually.

   (A) Balance Sheet:

      (1) Cash and Cash Equivalents (cash, investment pools, petty cash)

      (2) Moyer Program Fund Revenue Receivable (grant funding from ARB)

      (3) Recapture Revenue Receivable (recapture funds receivable from grant participants for unmet contractual obligations)

      (4) Salvage Revenue Receivable (revenue receivable from retired equipment sold or auctioned for scrap metal)

      (5) Accounts Payable (vendor invoices pending for Moyer projects)

      (6) Fund Balance

         a. Restricted for Air District Projects
         b. Restricted for State Reserve, Multi-District, RAP Projects
         c. Restricted for Administration and Operating Costs

   (B) **Statement of Revenues, Expenditures, and Changes in Fund Balance:**

      (1) Revenue Subsidiary Ledgers

         a. Regular Moyer Funds Project Revenue
         b. State Reserve and Multi-District Project Revenue
         c. Rural Assistance Program Project Revenue
         d. Administration and Operating Revenue
         e. Recapture Revenue
         f. Salvage Revenue
         g. Interest Revenue

      (2) Expenditure Subsidiary Ledgers:

         a. Project Expenditures (from regular Moyer grant, recapture, salvage, interest)
         b. State Reserve and Multi-District Project Expenditures
         c. Rural Assistance Program Project Expenditures
         d. Administration and Operating Expenditures including indirect costs

      (3) Awards Returned: Moyer Program air district money returned to ARB for reallocation

      (4) Transfers In/Out

4. **Interest Revenue**. Any interest earned on investment of Moyer fund cash balances must be deposited in the Moyer funds account and used to fund

Moyer-eligible projects, or to fund administration up to the portion provided for in Health and Safety Code section 44299.1(c)-(d), or be remitted to ARB.

(A) An air district electing not to invest Moyer Program fund cash balances but investing other cash balances should deposit the Moyer Program funds in a separate checking account to clearly indicate that no such moneys were invested.

(B) When invested, Moyer Program funds should receive equitable pro-rated interest earned on the total funds invested. As State funds, Moyer Program funds may be invested only in accounts or instruments that reflect the risk appetite of the State. For reference see Office of the State Treasurer Local Agency Investment Guidelines. Any loss from investments not made in accordance with standards set forth in California Government Codes must be covered by the air district.

5. **Recapture and Salvage Revenue**. Revenues earned or collected by the air district through Moyer Program resources, including revenues obtained through salvage and sale of scrapped equipment, must be reported and either retained as a supplemental source of funds for Moyer projects or forwarded to ARB for deposit to the Air Pollution Control Fund. If recaptured funds or salvage revenues are invested, such revenues must meet the requirements of Section K.4.(B) above. Air districts are not required to earn funds through program actions, or expected to base business decisions on their ability to generate returns or collect funds through program activity.

6. **Expenditures for Moyer Program Projects**. All project expenditures out of the Moyer funds account must meet the Moyer Program Guidelines current at the time of contract execution, including any revisions to those Guidelines in effect at the time of contract execution.

7. **Reporting Requirements**. No later than six months after the air district fiscal year end, the district will append to its Yearly Report a Balance Sheet and a Statement of Revenues, Expenditures and Changes in Fund Balance, in formats consistent with GAAP.

8. **Records Retention**. Grant receipts and expenditure documents including invoices, contracts, vouchers, personnel and payroll records should be retained for five years after the grant liquidation period or the last recorded grant transaction, whichever is later.

L. Co-funding Moyer Program Projects with Other Funding Sources

1. **Purpose**. Senate Bill 513 (Beall, 2015) provides new opportunities to co-fund Moyer Program projects with other funding sources. These Guidelines specify requirements that apply when multiple funding sources are proposed to support a Moyer Program eligible project. All co-funded projects must adhere to the Moyer Program objective to achieve cost-effective and surplus emission reductions to

be credited toward California's legally enforceable obligations in the SIP (H&SC § 44286(g)). There is no limit on the number of co-funding sources to fund a project as long as total project costs are not exceeded and the applicant cost share requirement is met.

2. **Designation of Non-Moyer Funds**: Funds other than Moyer Program grant funds may be used to co-fund Moyer Program eligible projects, when all program criteria associated with each funding source are met. Funding sources are grouped into the following categories. Definitions of these categories can be found in Appendix B.

   (A) Federal funds;

   (B) State funds;

   (C) Local funds;

   (D) Penalty funds;

   (E) Other applied funds.

3. **Mitigation Funds**. Mitigation funds may be used to co-fund a Moyer project if an air district submits a request for a case-by-case determination in accordance with Section U and receives ARB approval.

4. **Cost-effectiveness Calculation**. The non-Moyer funds described above are not required to be included in Moyer project cost-effectiveness calculations (H&SC § 44287.2(a)). Match funds and all AB 923 $2 DMV Fees are required to be included in project cost-effectiveness calculations.

5. **Applicant Cost Share**. An applicant that is not a public entity must provide at least 15 percent of a project's Moyer eligible cost from non-public sources. The applicant cost share cannot be covered through in-kind contributions. An air district may request a case-by-case determination from ARB to waive all or part of an applicant's cost share, in accordance with Section U. In its waiver request, an air district must identify the source(s) and amount(s) of the proposed project's funding and explain the reasons for the cost share waiver, discussing at a minimum either or both of the following factors:

   (A) The public benefit of the project that is above and beyond the emission reductions achieved;

   (B) How the project will advance newer and cleaner technology.

6. **Applicant Disclosure and Payment**. The sum of project funding from all sources may not exceed the total project cost (H&SC § 44287.2(b)). Applicants must disclose all sources of funding applied for at the time of the Moyer project application, and again when submitting each invoice to the air district, prior to payment of Moyer Program grant funds (H&SC § 44283(g)). An air district may not issue payment of Moyer Program grant funds until all funding sources have

been identified and verified and the air district can ensure that the sum of the grants awarded to the project, including both Moyer and non-Moyer funds, does not exceed the total project cost.

7. **Emission Reductions**. All covered emission reductions achieved from a project with multiple funding sources will be credited as reductions from the Moyer Program to ensure proper SIP accounting, improve the likelihood of federal credit, and avoid risk of double-counted reductions. Other emission reductions, such as greenhouse gases, may be claimed by other programs that co-fund a project.

8. **Reporting of Project Data**. For co-funded projects an air district will report in CARL consistent with the reporting requirements of Section M. The air district will also report other co-funding sources and funding amounts. When reporting project funding sources to CARL, air districts will categorize certain co-funding sources as specified below.

   (A) Funding from investor owned utilities will be reported as “other applied funds,” and funding from publicly owned utilities as “local funds.”

   (B) Supplemental environmental project funds will be reported as “other applied funds.”

   (C) Funds from local transit agencies will be reported as “local funds.”

M. Yearly Report

1. **Reporting Requirement**. Each year by June 30, ARB will prepare and make available to air districts a certification form with instructions for completion of the Yearly Report. Air districts will complete, certify and submit the Yearly Report by August 29. An air district that has designated to another air district or the Rural Assistance Program all grant funds for all years covered in the Yearly Report is not required to complete a report.

2. **Reporting in CARL**. Air districts will report project information in the Clean Air Reporting Log (CARL) database, either via CARL forms or batch import, sufficient to populate the required data fields and to calculate covered emission reductions and cost-effectiveness for source categories where required. The air district will ensure the information in CARL is complete, correct, and supported by documentation. The air district will report on projects funded in whole or part with these funds:

   (A) Granted Moyer Program funds;

   (B) Match funds;

   (C) Interest and other non-grant revenues earned to support the Moyer Program;

   (D) Multi-district and State Reserve funds;

(E) Rural Assistance Program funds;

(F) Non-Moyer funds as specified in Section L;

(G) AB 923 $2 DMV fees used for projects claimed for SIP credit;

(H) Other funds that ARB oversees relative to the Moyer Program.

3. **Report Content**. The Yearly Report will include the following information as of June 30, the end of the past fiscal year:

(A) Output generated by the Required Reports utility of CARL for the default years specified in the utility.

(B) Contract execution and liquidation status of Moyer Program funds, including match funds, earned interest funds, multi-district and State Reserve funds, RAP funds, and other funds for which the air district has a Moyer Program obligation during the fiscal years covered by the report. Funds will be reported relative to the progress milestones identified in Sections N and O below.

(C) A funding summary by project type of non-match projects funded with AB 923 $2 MV fees when no SIP credit is claimed. Projects funded with AB 923 $2 DMV fee funds not used as match and not claimed for SIP credit need not be entered into CARL, but the air district will summarize in the Yearly Report the amounts of such funds expended for each of the project categories identified in Section H.1.

(D) For the most recent fiscal year, additional funds available to the Moyer Program from the following sources. These funds will be included in the target for the funding year due for liquidation in four years unless the air district directs ARB staff to include them in an earlier year target.

(1) The amount of any interest accrued on Moyer Program funds held in local accounts. An air district may choose to designate in the Yearly Report all or a portion of this interest for remittance to ARB.

(2) Funds recaptured from liquidated projects, including funds provided back to the air district following ARB enforcement actions, identified by project name and funding year.

(3) Non-grant revenue earned for the Moyer Program by the air district, such as from the sale of scrapped engines or equipment.

(E) A list of any projects identified as non-performing and a brief narrative of any related enforcement actions.

(F) The portion of match funds to be met through in-kind contributions, as provided in Section I.5.

4. **Report Certification and Documentation.** The air district APCO, Chief Financial Officer (CFO), and Moyer Program administrator must sign and certify that the project and fiscal information contained within the Yearly Report is, to the

best of their knowledge, accurate and complete. The APCO may also serve as the Moyer Program Administrator. The APCO may designate an alternate to the CFO if the designated alternate is someone other than the APCO or Program Administrator. The air district will maintain documents in support of the report at the air district office, and make them available to ARB staff upon request.

5. **Project Eligibility**. Receipt of a Yearly Report by ARB does not imply ARB approval of project eligibility. Air district staff is responsible for project approval and funding eligibility determinations. Air districts that are found to have funded ineligible projects will be required to substitute eligible projects equal to the amount found ineligible or return the ineligible amount to ARB.

N. Progress Tracking

1. **Progress Milestones**. To support timely emission reductions and track progress toward statutory fund liquidation requirements, air districts and ARB will work together to meet recommended progress milestones as follows. After execution of a grant agreement with ARB for Moyer Program funds, air districts will make every effort to have 50 percent of the project funds awarded under executed contract by June 30 of the next calendar year, and 100 percent of the project funds under executed contract by June 30 of the second calendar year after the agreement. Air districts will also make every effort to have 50 percent of project funds liquidated within two years, and 75 percent of project funds liquidated within three years. Similar progress milestones apply to any match funds associated with granted project funds. Progress will be reported in Yearly Reports. Table 3-5 shows an example of progress milestones for the 2018 Yearly Report.

Table 3-5
Example Progress Milestones: 2018 Yearly Report

Timeline	Fiscal Year	Funding Year	Milestone
1 year	2016-17	19	50% of project funds under executed contract
2 years	2015-16	18	100% of projects funds under executed contract
			50% of project funds liquidated
3 years	2014-15	17	75% of project funds liquidated
4 years	2013-14	16	100% of grant funds liquidated (Section O)

2. **Cumulative Tracking**. ARB will provide tools in CARL to track district progress toward milestones. Except in the case of a four-year funds liquidation deadline, districts may track progress on a cumulative basis. In the table above, for

example, an air district demonstrating the portion of funding year 17 project funds liquidated would count any funds liquidated from funding years 18 to 20.

3. **Funding Targets**. To assist cumulative tracking and reporting, ARB will maintain in CARL appropriate progress tracking targets for each funding year. These funding targets will include the total funds required to meet contract execution and liquidation progress milestones. ARB will adjust progress tracking targets to account for the movement of funds into and out of an air district's account, including redirected funds, RAP grants, adjustments for in-kind match, and other changes agreed to in consultation with districts.

4. **Execution Progress for Vouchers**. For Moyer voucher programs, the voucher issue date is used in lieu of executed contract date to gauge progress in contract execution.

5. **Cancelled Contracts**. Any funds associated with an engine, vehicle, or equipment cancelled from a contract prior to the liquidation of the contract as a whole will no longer be considered executed beginning at the time of the cancellation.

6. **Follow-up Actions**. Progress milestones are advisory in nature. ARB liaisons and management will work with air districts that do not demonstrate sufficient progress toward contract execution and project liquidation targets in the Yearly Report. When an air district cannot demonstrate at least one-half of funds are under contract after two years, and one-half of funds liquidated after three years, the district will append to the Yearly Report a progress statement. The statement will address the reasons for delays in executing contracts or completing payment for projects, and the schedule for follow-up actions. Such actions may include specific steps to improve progress or the redirection of funds to air districts better equipped to meet statutory liquidation deadlines.

O. Funding Year Liquidation

1. **Liquidation Requirement**. By June 30 of each year, air districts must have liquidated all Moyer Program funds associated with the funding year four calendar years prior, as well as interest, recaptured funds, and other funds added to the funding target for that year. For example, funds awarded for Year 18 (fiscal year 2015-2016) must be fully liquidated by June 30, 2020. Before submitting the Yearly Report an air district may attempt to resolve an apparent liquidation shortfall by modifying in the CARL database the funding years from which funds are assigned to projects.

2. **Match Liquidation**. Match funds must be liquidated by the same liquidation deadline as the Moyer Program funds with which they are associated regardless of the date such funds were collected by the air district.

3. **Liquidation Terms**. Air districts are advised of the distinction between project liquidation used for cumulative progress tracking in Section N and funding year

liquidation as required in this section. Project liquidation is demonstrated when all funded equipment in a project are paid-in-full and post-inspected; liquidated projects are credited in cumulative progress tracking. Funding year liquidation is demonstrated when all funds assigned to a funding year have been paid out in full, with the exception of any withheld payments. Liquidated projects are credited in cumulative progress tracking.

4. **Data Completion**. A funding year that has been liquidated by an air district and all associated projects will be removed from cumulative tracking. Projects associated with liquidated funding years may not be revised in or removed from the CARL database after the funding year is liquidated, except in unusual circumstances following consultation with and written approval by ARB staff.

5. **Withheld Payments**. For completed projects for which all invoices have been paid except for a small amount withheld pending grantee reporting, both the paid funds and the withheld funds will be considered liquidated for the purpose of funding year liquidation. Withheld payment practices must be addressed in the project's contract and in the air district's Policies and Procedures Manual. Withheld progress payments considered to be liquidated per this section that are not ultimately paid to the grantee due to non-performance will be reported as recaptured funds.

P. Return and Reallocation of Funds

1. **Return of Unliquidated Funds**. If the Yearly Report identifies a liquidation shortfall that cannot be resolved through reassignment of liquidated funds from more recent years, and the remaining unliquidated funds are not under executed contract, the air district must submit and ARB must receive a check for the shortfall amount by September 28 (i.e., 90 days after the June 30 liquidation deadline and 30 days after the Yearly Report deadline). ARB will provide Instructions for the return of funds in the Yearly Report certification form. No additional disbursements will be made to the air district until funds subject to return have been received by ARB.

2. **Return of Other Funds**. An air district choosing to remit to ARB all or a portion of earned interest, or to return other funds following consultation with ARB, may do so following instructions in the Yearly Report certification form.

3. **Reallocation**. ARB will add funds returned by air districts to the subsequent cycle of Moyer Program funding, following the allocation requirements of Health and Safety Code section 44299.2.

Q. Program Nonperformance

1. **Monitoring Nonperformance**. As directed by Health and Safety Code section 44291(d), ARB monitors air district programs to ensure that participating air districts conduct their programs consistent with the criteria and guidelines established by the Board. Program non-performance is an air district's

non-compliance with program Guidelines or statute that is not corrected by the air district in a timely or satisfactory fashion. ARB may become aware of possible air district non-performance through Yearly Reports, Incentive Program Review, district self-reporting or other means. Examples of program non-compliance with program guidelines or statute include, but are not limited to, the following:

(A) Failure to return unliquidated funds within 90 days of the liquidation deadline (H&SC § 44287(j));

(B) Misuse of Moyer Program funds, including funding of ineligible projects;

(C) Insufficient or improper program oversight and enforcement, including widespread deficiencies in project contracting, inspections, reviews or audits;

(D) Insufficient, incomplete, or inaccurate project documentation;

(E) Failure to submit timely and accurate reports to ARB;

(F) Other non-compliance with program guidelines or statute.

2. **Nonperformance Procedures**. When ARB determines that an air district program is not complying with program guidelines, the ARB liaison and manager will work with air district staff to understand the issues, and develop a plan and timeline to resolve them. If the ARB Branch Chief determines that the issues related to program nonperformance have not been resolved, ARB will send by email to the air district program contact a program nonperformance notification, that contains the following:

(A) Description of the unresolved issues, including pertinent details such as names of involved persons and projects, dates, dollar amounts, and citations of relevant program guidelines sections, Health and Safety Code sections, and regulations; and

(B) Possible solutions to the problem, if some have been identified, and/or an offer ARB assistance; and

(C) Arrangements for a possible meeting between the ARB Branch Chief and the air district APCO to agree on a plan and timeline for resolving the problem. The plan and timeline shall be recorded by the ARB air district liaison and emailed to the air district APCO within five business days of the meeting.

3. **Withholding of Funds by ARB**. Lacking satisfactory resolution of the issues that have resulted in the nonperformance notification, the ARB Executive Officer will determine if the nonperformance warrants withholding funds that have been granted to the air district and not yet awarded to approved projects. If so, ARB will send a letter of program non-performance to the district APCO. The letter will set a public meeting to be held at the air district's offices (or other appropriate

facility within the air district). The purpose of the meeting will be to consider public comments prior to withholding any funds.

R. Incentive Program Review

1. **Purpose**. ARB conducts Incentive Program Reviews to help ensure that air district programs achieve expected emission reductions and are implemented in a manner consistent with these Guidelines and State law (H&SC § 44291, 39500). ARB Incentive Program Reviews place emphasis on collaboration with the affected air district in the review process. Features of this approach include a joint initial review of project files, ongoing and regular communication with air district staff throughout the file review process, and where possible an opportunity for districts to correct problems prior to their inclusion as findings in the final report.

2. **Scale of Review**. ARB uses a risk-based approach to select specific air district programs and projects to review, and to select fiscal years within the scope of each review. Air districts are selected for Incentive Program Review based on identified need or with consideration of program funding amount. ARB's objective is to review over a five-year period air district programs receiving at least 80 percent of Moyer Program funds. Air district implementation of other State incentive programs will be selected as appropriate for review at the same time as the Moyer Program review.

3. **Fiscal Compliance Audits**. ARB may also contract with independent auditors including the California Department of Finance Office of State Audits and Evaluations, to conduct audits of incentive program fiscal compliance. The independent auditors will conduct these audits in accordance with Generally Accepted Government Auditing Standards, and will prepare reports on the results of the audits including any findings. ARB retains final authority with respect to corrective measures and follow-up, in consultation with the air district.

4. **ARB Responsibilities**. ARB will conduct Incentive Program Reviews in a manner that reflects its entrusted accountability and responsibilities.

    (A) ARB will generally define the scope of a Moyer Program review to cover a period of up to five fiscal years not covered in the previous review. The scope of years within review may vary for other incentive programs. Once a funding year is reviewed, ARB will not review it again unless warranted. ARB may investigate possible fraud or misuse of funds in any program year.

    (B) ARB will maintain open channels of communication with the air district during the review. ARB will fully explain the review's scope and procedure at the beginning of the process, discuss preferred channels of communication with the air district, inform the air district of potential issues as they unfold, provide full and ongoing opportunity for air district input, provide the air district opportunities to correct problems that arise during

the review process, thoroughly discuss any findings and recommendations with the air district before and during the exit interview, and provide the air district an opportunity to formally respond to the Incentive Program Review report.

(C) To ensure objectivity and predictability, ARB will base its findings and recommendations on State law, applicable guidelines and Mail-Outs, grant agreements, email communications between ARB and the air district, the air district's Policies and Procedures Manual, case-by-case determinations, and the air district's local requirements.

(D) All Incentive Program Review reports, air district responses, and related documents shall be made available to the public via posting on ARB's Moyer Program website.

(E) ARB will conduct follow-up activities to ensure any deficiencies remaining following review are promptly and effectively mitigated. ARB will offer its assistance to air districts working to correct deficiencies.

5. **Air District Responsibilities**. Air district staff and management will participate in entrance and exit interviews, support collaborative review and open communication with ARB staff, ensure that program files and other requested information are available to reviewing staff of ARB and the Department of Finance, work to fully and promptly mitigate deficiencies identified during the review, work to resolve any disagreements, and request assistance from ARB as necessary.

6. **DMV Fee Project Evaluation**. AB 923 $2 MV Fee projects are subject to Incentive Program Review or evaluation as follows:

(A) A Moyer Program match project funded with the AB 923 $2 MV Fees will be subject to the same review and oversight requirements and protocols as other Moyer Program match projects.

(B) A non-match project funded with the AB 923 $2 MV Fee may be evaluated by ARB in conjunction with an Incentive Program Review. Evaluation of these projects will be limited to project eligibility. Any irregularities regarding non-match AB 923 $2 MV Fee project eligibility will be reported separately from other Incentive Program Review findings.

S. Requirements for Project Applications

1. **Data Required for CARL**. Project applications must include the information needed for calculation of project cost-effectiveness in the CARL database.

2. **Existing Engine Usage**. Project applications must include documentation of existing engine usage, such as miles traveled, hours operated, or fuel consumed per year, for 24 months or as specified in these guidelines by source category.

This information will be used to evaluate project cost-effectiveness and the maximum grant award amount.

3. **Active Duty Military Applicants**. If an applicant has been on active military duty at any time during the previous 24 months, documentation prior to deployment and covering the same length of time as the deployment period may be used to meet the title, registration, usage, and operation in California requirements as applicable for each source category. The applicant must submit a copy of DD Form 214, Certificate of Release or Discharge from Active Duty to verify military service during the deployment period.

4. **Third Party Signature**. Applications must include a signature and date section for third parties. A third party may complete an application or part of an application on an owner's behalf if the vehicle, engine, or equipment owner signs and dates the application.

5. **Applicant Certification**. Project applications must include language informing the applicant that by signing and submitting the application, the applicant certifies under penalty of perjury that the information in the application is accurate and true. In addition, the application must include the following statements that the applicant or the applicant's designee must certify as accurate and true:

   (A) A disclosure statement consistent with Section L.6. of this chapter, specifying whether the applicant has submitted an application for incentive funds to any other entity or program for the same equipment (for example, repowering of the same engine). The applicant must disclose to whom other applications were submitted, whether funds have been awarded or may be awarded, and the amount or potential amount of other funding.

   (B) A regulatory compliance statement certifying that the applicant is currently in compliance with all federal, State, and local air quality rules and regulations at time of application submittal, and is not aware of any outstanding or pending enforcement actions.

6. **Applicant Non-Disclosure**. An applicant who is found to have applied for or received incentive funds from another entity or program for the same project without disclosing that information as required by these Guidelines shall be disqualified from funding for that project from all sources within the control of an air district or ARB. The air district or ARB may also seek civil penalties for such non-disclosure.

7. **Subsequent Applications**. An applicant may re-apply for project funding if a previous application for the same project has been rejected by the air district and is no longer being considered for funding.

T. Application Evaluation and Project Selection

1. **Review for Completeness**. Air districts must review all applications for completeness upon receipt, and notify an applicant within 30 working days of receipt if the application is not complete (H&SC § 44288(a)). The air district must make every effort to clearly state to the applicant what is required to make the application complete. The application and all correspondence with the applicant should be kept in the applicant's project file. Additionally, the record of each project's rating and ranking as applicable, receipt date, and other project selection criteria must be maintained with the project file.

2. **Credibility**. Air districts are responsible for determining that project applications are credible, made in good faith, and in compliance with the Moyer Program and its objectives.

3. **Eligibility**. Air districts must ensure that the emission reductions provided by selected projects are eligible and surplus to adopted regulations and other legal requirements. This should include checking to ensure the project meets the minimum requirements in the appropriate source category chapter, including:

   (A) Documentation of historical vehicle, equipment, or engine usage;

   (B) Documentation of project costs;

   (C) Engine or retrofit device Executive Orders, if applicable;

   (D) Proof of a vehicle compliance check as needed for on-road projects;

   (E) Other documentation identified in the source category chapter.

4. **Application Tracking**. Air districts must have a system for tracking applications. CARL may be used to satisfy this requirement if an air district enters the data from all applications received into this database, whether the application is provided funding or not. Air districts not using CARL will track the information needed to populate required CARL data fields. A tracking system is not required for air districts receiving under one-half percent of the current fiscal year total Moyer Program Funds, or $450,000, whichever is less.

5. **Project Selection**. After reviewing applications for project eligibility, the air district must follow its Policies and Procedures Manual in selecting projects to fund. Projects approved for funding must meet all applicable requirements of these guidelines.

6. **Communities with Most Significant Exposure**. Air districts with a population of one million or more residents must select projects from their applicant pools in a way that ensures that 50 percent or more of their Moyer Program funds are expended to reduce air pollution in communities with the most significant exposure to air pollution, including communities of minority and low-income populations (H&SC § 43023.5). Air districts may track this on a cumulative basis.

7. **Project Evaluation**. An air district must evaluate projects to ensure each project selected for funding meets the emission reduction and cost-effectiveness

requirements of the Moyer Program as applicable. Projects may not be funded when CARL indicates these requirements are not met. In such cases, an air district representative believing a project should qualify may contact his or her ARB liaison to further evaluate project eligibility.

8. **Recordkeeping**. The air district must maintain a file for each project selected for funding. Files may be retained in an electronic format if complete and easily accessible. Unless otherwise specified by source category or in Section K.8., project files must be retained three years following the end of the contract term. In the event final payment has not been issued prior to the end of the contract term, the three-year clock is re-started upon final payment. Applications for unfunded projects must be kept a minimum of two years following the solicitation period, or two years from receipt if there is not a specified solicitation period.

9. **Subsequent Application and Double-Counting**. Moyer Program participants that received funding and are still under contract may not apply for funding for the same project from the Moyer Program (including a Voucher Incentive Program), from the Proposition 1B Goods Movement Emission Reduction Program, or any other program.

    (A) If an air district chooses to amend a contract to reduce the term, the amended project must be cost-effective during the reduced contract term, based on the cost-effectiveness values and limit that applied when the original contract was executed. If an air district agrees to accept a prorated repayment of the Moyer Program grant, the repayment and amended contract execution must both occur prior to the execution of any new contract for funding.

    (B) Emissions reductions from previously funded projects must not be included as emissions benefits of any subsequent project for the Moyer Program (including a Voucher Incentive Program) or the Proposition 1B Goods Movement Emission Reduction Program.

U. Case-by-Case Determination Process

1. **Limitations**. ARB Moyer Program staff may approve on a case-by-case basis a project that varies from specific requirements of these Guidelines only if such approval will not adversely affect achievement of surplus, quantifiable, enforceable and permanent emission reductions. Case-by-case approvals also may not result in an exceedance of the applicable cost-effectiveness limit, or reduce program transparency, or cause a violation of law or regulation. Air districts are required to request a case-by-case determination even if they believe a project is similar to previously-approved case-by-case projects.

2. **Procedure**. An air district may request ARB review of the project for a case-by-case determination using the procedure below. After receipt of all

information needed, ARB will respond to the air district within 15 business days with a determination or estimated date of determination.

(A) The air district will submit the following to the Moyer Program air district liaison:

(1) A summary of the request, with reference(s) to the pertinent area(s) of the Guidelines for which the air district is asking for additional guidance and approval;

(2) Documents providing information essential to the determination, including but not limited to: baseline and new engine information; the associated ARB engine Executive Orders and/or U.S. EPA Certificates of Conformity for baseline and new engines; other related applicant information from a completed application;

(3) Other information and documents as requested by Moyer Program staff.

(B) ARB will make one of the following determinations:

(1) Approved. Approval of a project does not imply or equate to "blanket approval" of other similar projects.

(2) Not Approved. Non-approval of a project does not imply or equate to "blanket non-approval" of other similar projects.

(3) No Action / Case-by-Case Approval Not Required: ARB evaluation concludes that a case-by-case determination is not required as the request already conforms to the requirements or intent of the Guidelines.

3. **Public Availability and Recordkeeping**. ARB will post on the Moyer Program website all case-by-case determinations submitted for review. Air districts will keep a copy of the determination, either approved or not approved, in the project file.

4. **After Contract Execution.** Air Districts should always attempt to request a case-by-case determination prior to contract execution. ARB will consider requests for case-by-case determination subsequent to contract execution only when an unforeseen event leads to a project or program element that varies from the requirements of these Guidelines.

V. Minimum Contract Requirements

1. **General Requirements**. Except as specified for on-road and off-road voucher incentive programs, air districts participating in the Moyer Program must execute contracts with prospective grantees who will receive funds under the Moyer Program. All Moyer Program project contracts must include the elements described in this section. Projects funded by the Moyer Program may not be used to generate a compliance extension or credit for regulatory compliance. All

executed project contracts and contract amendments must be kept in the air district's project files.

2. **Party Names and Date**. All contracts must state the name of the air district and the grantee as parties to the contract. Contracts must include signature blocks with an area for the dates the contract is signed, or the execution date must otherwise be clearly indicated in the contract. In any case where digital signature is used in lieu of original signature, the digital signature must comply with California Government Code section 16.5 and Title 2, California Code of Regulations, sections 22000 – 22005.

3. **Notices**. All contracts must include contact information for both parties to the contract, including how to send and receive notices.

4. **Funds from Other Sources**.

   (A) Grantees must certify that they have disclosed all funding sources that they have applied for or received for a project, and that the grantee will notify the air district of additional sources of funding received for the total cost of the project, including any sources that become available after contract execution (H&SC § 44283(g)).

   (B) Grantees that co-fund a project must meet all criteria associated with each funding source used to fund the project (H&SC § 44287(a)).

   (C) A grantee that is not a public entity must provide at least 15 percent of a project's Moyer eligible costs from non-public sources (see Section L). The contract must prohibit the grantee from receiving grants and other funds that exceed the total project cost.

   (D) A grantee may receive Moyer Program funding from multiple air districts for the same project if these entities are coordinating to jointly fund portions of the project. The contract must list the entities involved and funding provided.

5. **Contract Term**. All contracts must specify the term of the contract. The contract term shall include two time frames – "project completion" and "project implementation" – to ensure that the air district and ARB can fully enforce the contract during the life of the Moyer Program-funded project.

   (A) Project Completion. Project completion is the time frame starting with the date of execution of the contract to the date the project post-inspection confirms that the project has become operational. This includes the time period when an engine, equipment, or vehicle is ordered, delivered and installed. The contract must include a specified time frame in which project completion will occur so that the contract is liquidated within four years from the original date of contract execution. Under no circumstance may the liquidation date be extended beyond four years from the original date of contract execution.

(B) Project Implementation. The project implementation time frame is the second part of the contract term, and must equal the project life used in the project cost-effectiveness calculation. The contract must specify that the grantee is required to operate and maintain their Moyer Program funded project according to the terms of the contract for the full project implementation period.

6. **Project Specifications**. All contracts must include detailed information on the baseline and new vehicles, equipment, and/or engines that were used in the project cost-effectiveness calculation. This requirement may be met by including the project application as an attachment to the contract as long as the application is accurate and complete.

   (A) A program-eligible replacement vehicle, equipment and/or engine that is verified or certified to achieve equivalent or greater reductions than the original project replacement vehicle, equipment and/or engine may be substituted with prior approval of the air district.

   (B) At least 24 months of documented and verified historic usage is required for the baseline engine, such as miles traveled, hours operated, or fuel consumed, and in this case usage is not required to be in the contract. If this information is not available, the air district may estimate the usage for the old engine and the estimated usage must be included in the contract.

      (1) The types of acceptable documentation for establishing historical annual usage will be clearly defined in each air district's Policies and Procedures Manual and will be subject to ARB approval.

      (2) Additional forms of documentation to verify historical annual usage that are not included in an air district's Policies and Procedures Manual can be evaluated and approved by ARB on a case-by-case basis.

   (C) Contracts must also contain a statement that the project complies with the Moyer Program Guidelines and that the grantee will meet the following requirements:

      (1) Certify that the grantee's fleet, engine(s), or equipment/vehicle is in compliance with all applicable federal, State, and local air quality rules and regulations at time of contract execution.

      (2) Maintain compliance with all applicable federal, State, and local air quality rules and regulations for the full contract term.

      (3) For repower projects, the installation of the engine must be completed in a manner such that it does not void the engine warranty provided by the manufacturer and any remaining warranty provided by the equipment/vehicle manufacturer.

   (D) Contracts must specify the following:

(1) Projects funded by the Moyer Program must be included when defining the size of the fleet for determining regulatory requirements.

(2) Throughout the contract term, projects funded by the Moyer Program must not be used to generate credits or compliance extensions, and must be excluded when determining regulatory compliance.

7. **Maintenance**. All contracts must require the grantee to maintain the vehicle, equipment, engine, and/or funded infrastructure according to the manufacturer's specifications for the life of the project, and include a prohibition on engine tampering. The grantee must maintain a working hour meter for projects that use hours of operation as a means of calculating emission reductions and cost-effectiveness. If the hour meter fails, the grantee must immediately notify the air district, and remain responsible for validating any hours not recorded by the hour meter. The grantee must either repair or replace the non-operating meter or provide other documentation of equipment operating hours acceptable to the air district.

8. **Payment**. Before a Moyer Program payment may be made to a project participant, the project contract must be executed, an eligible invoice must be received by the air district, and the project post-inspection must be successfully completed to document the completion of the work specified in the invoice. The equipment must be operational before the final payment is issued. All contracts must include the following payment terms:

   (A) **Maximum Contract Amount**. The maximum contract amount must not exceed the maximum funding level corresponding to the current program cost-effectiveness limit, nor may the maximum contract amount exceed the project incremental cost. The maximum contract amount must also comply with any funding caps and other criteria for the specific project category as identified in these Guidelines.

   (B) **Itemized Invoices**. Payment terms must require itemized invoices from the engine or equipment supplier for repowers and infrastructure projects, paid invoices from the vehicle owner for new vehicles, and satisfactory post-inspection by the air district prior to payment of the owner's invoice. An invoice payment for a specific vehicle, engine, or equipment may not exceed the amount indicated on the project contract for that vehicle, engine, or equipment. The contract should be clear that the air district will pay the lower of the contract amount or the final invoice amount. Invoices must meet the minimum requirements of Section Y to be eligible for Moyer Program funding.

9. **Reporting**. All contracts must include a provision for grantees to submit annual reports commencing no later than 18 months after project post-inspection and continuing annually thereafter throughout the project implementation phase of the

contract. The air district must include the dates the grantee Annual Report is due.

(A) During the project implementation phase, the air district is responsible for monitoring the project to assure the project is operational and the project emissions reductions are realized.

(B) The contract must inform the grantee that noncompliance with the reporting requirements will require on-site monitoring or inspection(s).

10. **On-Site Inspections, Audits and Records**. All contracts must include language that allows the air district, ARB, or their designee to conduct an inspection or audit of the project, including the engine, vehicle or equipment and associated records, during the contract term. Contracts must also require the owner to maintain and retain usage and other records associated with the project for at least three years after the end of the contract term.

11. **Repercussions for Nonperformance**. Air districts must include repercussions for non-compliance with the obligations of the contract.

(A) The contract must specify that by executing the contract, the grantee understands and agrees to operate the vehicle, equipment, and/or engine according to the terms of the contract and to cooperate with the air district and ARB in implementation, monitoring, enforcement, and other efforts to assure the emission benefits are real, quantifiable, surplus, and enforceable.

(B) The contract must describe the repercussions to the grantee for noncompliance with contract requirements, including but not limited to cancelling the contract and recapturing project funds in proportion to any loss of emission reductions or underutilization as agreed to in the contract (H&SC § 44291(c)).

(C) The contract must inform the grantee that ARB and the air district have the authority to seek any remedies available under the law for noncompliance with Moyer Program requirements and nonperformance with the contract.

(D) The contract must state that ARB, as an intended third party beneficiary, reserves the right to enforce the terms of the contract at any time during the contract term to ensure emission reductions are obtained.

W. Project Pre-Inspection

1. **Requirements**. Upon confirming a project's eligibility the air district must complete a pre-inspection prior to contract execution, except as specified in this section.

(A) All projects must be pre-inspected personally by air district staff, except that air districts may choose to allow public agencies (e.g., public works departments, transit organizations, and school districts) to provide

documentation of the engine(s), equipment, and usage in lieu of a pre-inspection.

(B) Air districts receiving less than one-half of one percent of the current fiscal year total Moyer Program Funds, or $450,000, whichever is less, may reduce their required project pre-inspections to a minimum of 25 percent of the total number of projects associated with the current fiscal year funds. At least one project must be selected from each source category funded, however.

2. **Documentation**. The pre-inspection form and information to be documented must include, at a minimum, the following:

(A) Information regarding the baseline engine, vehicle, or equipment as needed to uniquely identify, establish eligibility, provide a basis for emission calculations, populate the CARL database, and ensure contract enforceability. Such information includes (as applicable) make, model, year, horsepower, fuel type, engine family, engine tier, serial number, vehicle identification number (VIN), and any additional information pertinent to the project. Engines without a visible and legible serial number must be uniquely identified by having the engine block stamped with a Moyer Program number or alternative permanent marking such as an engine tag.

(B) The project usage (hours or miles) meter reading if used in the project cost-effectiveness calculation. The inspector must verify that stated project usage is reasonable given the usage meter reading.

(C) Verification that the engine is operational (with a start-up) and that the engine is working as described in the application (document function and use).

(D) Photo documentation of the engine, vehicle, or equipment information. The photos must include the legible serial number of the engine (if available) and/or any other identifying markings.

(E) Other relevant information including, but not limited to:

(1) Name of inspector;

(2) Date of inspection;

(3) Name and contact information of engine or equipment owner; and

(4) Location of the engine or equipment.

3. **Compliance Certification**. No later than the time of pre-inspection the air district must obtain certification and submission of supporting documentation from the applicant that their engine(s), vehicle/equipment, or project fleet is currently in compliance with the applicable rules or regulations affecting the engine(s), vehicle/equipment for which they are requesting funding.

4. **Recordkeeping**. The air district must maintain a hard copy of the completed pre-inspection form in the air district's project file.

5. **Inspection after Contract Execution**. The project pre-inspection must be completed prior to a project contract execution and the information in the contract must be consistent with the information gathered during the pre-inspection. An air district may apply to ARB for approval to conduct pre-inspections after contract execution only on a case-by-case basis. Case-by-case approval of such a procedure will depend upon the following conditions being met:

   (A) The air district describes the program benefits it would achieve by conducting pre-inspections after contract signature.

   (B) The project contract includes language to indicate contract terms may be adjusted or the contract may be deemed void based upon information collected during the pre-inspection. The air district must also include a process for informing the prospective grantee of such.

   (C) The air district's Policies and Procedures Manual clearly specifies the process for conducting pre-inspections after contract execution and any additional procedures enacted to ensure the project achieves real, surplus, enforceable, and quantifiable emission reductions. Work on the project engine, vehicle, or equipment may not commence until after the pre-inspection.

X. Project Post-Inspection

1. **Requirement**. An air district must gather and document post-inspection information on all projects funded under the Moyer Program. For post-inspection of infrastructure projects, see Chapter 10 for further guidance.

   (A) The air district will conduct a post-inspection after it receives an invoice for a project from the grantee or otherwise receives notice the project is complete. Information on the invoice must be consistent with the information gathered at the post-inspection. If the post-inspection occurs before the air district receives the project invoice, the invoice must be reviewed for consistency with the new engine, vehicle, or equipment information from the post-inspection form.

   (B) When 20 or more vehicles are included in a vehicle replacement project for a public fleet or transit agency, the air district is not required to post-inspect each replacement vehicle, but must inspect no fewer than five percent of the vehicles included in the project.

   (C) The inspector must record, at a minimum, information regarding the new project engines, vehicles/equipment, and retrofit devices as needed to uniquely identify, establish eligibility, provide a basis for emission calculations, and ensure contract enforceability. Information sufficient to populate all required fields in CARL must be recorded. Submersible pump

inspections may have the applicant take a picture of the motor name plate information including, make, model, and serial number prior to installation inside the irrigation well. The air district will verify the make, model and horsepower rating information with the project invoice.

(D) The engine must be operational in the equipment or vehicle as stated in the contract. The inspector must visually witness all engine startups and operation of all mobile projects.

(E) The engine, vehicle/equipment, and retrofit information must be documented with photos. The photos must include the serial number of the engine or retrofit (if legible) and/or any other identifying markings. Photos of the scrapped or destroyed engine must be included.

(F) The post-inspection form must also contain other relevant information including, but not limited to:

(1) Name of inspector;

(2) Date of inspection;

(3) Name and contact information of engine or equipment owner; and

(4) Location of the engine or equipment.

(G) The air district must maintain a hard copy of the completed post-inspection form in the air district's project file.

2. Equipment Labels. Post-inspection of a retrofit device requires the collection of additional information from the labels affixed on both the retrofit device and the engine. If the proper labels are missing, payment may not be made until this is corrected. Potential scenarios are summarized below, which air district staff must address prior to payment:

(A) The retrofit device is properly labeled but the engine lacks a label: An engine label should be readily obtainable from the retrofit manufacturer by reference to the serial number. The air district may make payment once the grantee has been informed that the engine must also be labeled.

(B) The retrofit device is labeled but the label does not have the required items: The air district may make payment once it gets approval from ARB regarding an approved alternate label or a compliant label has been installed on the retrofit device.

(C) The engine is properly labeled but the retrofit device lacks a label: The air district may make payment once a compliant label has been installed on the retrofit device.

(D) No label is found on either the engine or the retrofit device: The air district may make payment once a compliant label has been installed on both the engine and the retrofit device.

3. **Electric Motors**. Post-inspection of a new electric motor on an agricultural pump must also include recording of the serial number of the variable frequency device if the project includes one.

4. **Verification of Destruction**. The air district must verify that the existing (old) engine is destroyed and rendered permanently unusable and irreparable, consistent with requirements in the source category chapters of these guidelines and with the air district Policies and Procedures Manual.

   (A) Air district staff must verify and document through photographic or video evidence that the destroyed engine serial number matches that on the project contract.

   (B) Air district staff must verify that engines without a visible and legible serial number are uniquely identified by the correct air district stamp or other permanent marking prior to engine destruction.

5. **Consistency with Contract**. The air district must verify that the information collected in the post-inspection is consistent with the project contract.

Y. Project Invoice and Payment

1. **Prior to Payment**. Except as specified below, an air district will make payment for a project or equipment only after air district post-inspection finds the project or equipment in place and operational, and the district receives an invoice itemized in sufficient detail to ensure that only completed and eligible project costs are reimbursed, and other sources and amounts of funding for the project are reviewed to ensure the sum of all project funds does not exceed the total project cost (per Section L). Exceptions are limited to progress or partial payments in cases where the grantee provides the air district with sufficient evidence of completing milestones specified in the contract, consistent with conditions specified in air district Policies and Procedures. The air district must maintain a clear record of progress payments in the project file and in records of the district administration or fiscal unit. Progress payments include final payments that are withheld until all reporting requirements are met (also known as “withheld payments”).

2. **Eligible Costs**. Equipment and parts on engine repower or retrofit projects are eligible for funding only if they are required to ensure the effective installation and functioning of the new engine or retrofit, and are not part of typical vehicle or equipment maintenance or repair. Taxes and the installation and transport costs for eligible hardware are eligible for funding at the air district’s discretion. For labor expenses paid, the invoice must detail the number of hours charged and the hourly wage. See source category chapters for additional specification of eligible costs.

3. **Ineligible Costs**. Ineligible repower costs include tires, axles, paint, brakes, and mufflers. See source category chapters for additional specification of ineligible costs.

4. **Limitations on Applicant Action before Air District Approval**. An applicant may not order or make a down payment on a new engine, piece of equipment, or vehicle prior to contract execution or approval by the air district governing board or board designee. Dealers ordering engines, equipment, or vehicles prior to air district approval of grant applications assume all financial risk and are in no way ensured program funds. A grantee may not receive engines, equipment, or vehicles, nor may work begin on a repower or retrofit project, until the project contract is fully executed, unless the air district has provided the potential grantee with written notification that any work performed is not guaranteed funding until a contract is executed. For infrastructure projects, discretionary costs may be accrued by an applicant prior to contract execution, but such costs are not reimbursable until after contract execution.

5. **Invoice Procedures**. The air district will maintain copies of all invoices and documentation of payment in the project file or otherwise keep copies on-site at the air district office and be readily available. Invoices received after the project post-inspection has been complete must be evaluated for consistency with the information gathered during the project post-inspection. Additional project invoicing requirements may also be included in the source category chapters of these guidelines.

6. **On-Road Compliance Checks**. For all on-road and emergency vehicle projects, should a compliance check indicate that there is an outstanding violation with any vehicle in the applicant's fleet, no payment may be made until the applicant provides proof to the air district that each violation has been corrected and each fine has been paid.

7. **Regulatory Compliance**. Where a contract requires a grantee to demonstrate that specific regulatory compliance requirements have been met in order to receive funding (such as engines subject to the Portable Equipment Airborne Toxic Control Measure), air districts may not pay invoices until the grantee has provided documentation that the requirements have been met. A project participant may demonstrate this via a detailed letter signed by the vehicle or equipment owner or legal representative or, if the regulation requires ARB (or the air district) to certify compliance, through ARB (or air district) certification. For more information, see the associated source category chapter. Air districts are not to be held liable if a grantee falsifies this documentation.

8. **Payment Recipients**. Payments typically will be made directly to the grantee. Payments may be made directly to a dealer or distributor only if such payment arrangements are specified in the contract.

Z. Grantee Annual Reporting

1. **Requirement**. Air districts will require all grantees to submit annual reports within 18 months of the project post-inspection and annually thereafter for the term of the contract.

2. **Report Format**. The air district will prescribe a format for the project annual report, to include the following information:

   (A) Grantee name, address, and telephone number.

   (B) Information needed to uniquely identify the project engine, vehicle, or equipment, such as engine make, model, horsepower, and serial number.

   (C) Estimated percentage of time the vehicle or equipment has been operated in California since the previous annual report.

   (D) Readings of the usage device (e.g., hour meter, odometer, or electronic monitoring unit).

   (E) Except for projects in which usage is not required to be specified in the contract (as allowed per Section V.6.(B)(1) above), if usage is more than 30 percent below that identified in the project application, the grantee must describe any conditions that are likely to have affected project usage, such as weather, permits, or major maintenance. In instances where annual usage is significantly lower than the contracted level due to unforeseen circumstances beyond the control of the grantee, the grantee may request a waiver from the air district per Section BB(4).

3. **Air District Review**. The air district will review the annual report for completeness, accuracy, and reported usage, and will maintain in the project file a copy of the report that is initialed and dated by the reviewing staff. An air district choosing an alternative method to indicate its review and approval of annual reports will specify the method in its Policies and Procedures Manual.

4. **Unsatisfactory Reporting**. If an annual report is incomplete, inaccurate or not received from the grantee on schedule, the air district will make a reasonable attempt to obtain a complete and accurate report from the grantee. If the air district is unable to obtain the report, the air district will identify the project for audit as described in Section AA below.

5. **Subsequent Grants**. Grantees that have not submitted complete required reports will not be granted funds for new Moyer Program projects until all reports are satisfactorily submitted.

AA. Air District Audit of Projects

1. **Requirement**. The air district will conduct audits of projects funded with Moyer Program funds. On an annual basis these audits will include five percent of

active projects or 20 active projects (whichever is less), including any audits conducted following unsatisfactory annual reporting as described in Section Z.4.

2. **Project Inspection**. Audits must be completed by air district staff and will at a minimum include an inspection that verifies that the engines, equipment, and emission control devices paid for are still owned by the grantee named in the contract, are still operational in the same equipment, and meet the mileage, fuel usage, or hours of operation indicated in the executed contract. This must be performed by checking the serial number of the engine; witnessing the operation of the engine; and checking the usage meter or fuel receipts.

3. **Multiple Equipment**. Audits of multiple equipment or engine projects of up to 25 pieces must include inspection of at least two pieces or equipment, and for projects of over 25 pieces must include inspection of at least five pieces.

BB. Nonperforming Projects

1. **Requirement**. The air district will work with nonperforming project grantees to ensure Moyer Program project requirements are met and emission reductions are achieved, consistent with procedures outlined in the district Policies and Procedures Manual. Air districts may consider unforeseen circumstances beyond the grantee's control in determining repercussions for nonperformance.

2. **Off-Road Contract Extension**. Off-road contracts for which usage requirements are not being met may be extended to capture the required usage, even if the contract extension overlaps the required compliance date. This revision only applies to off-road contracts that have been executed prior to August 15, 2008, and does not modify similar Moyer policy for other eligible categories.

3. **Recapturing Funds**. When an air district is not successful in gaining grantee compliance with the usage and program requirements specified in a contract, the district will make all reasonable efforts to recapture Moyer Program funds from the grantee. Recaptured funds will be reassigned to projects that achieve the shortfall in emission reductions or usage. The air district's efforts to recapture funds may be guided by circumstances such as suspected or actual fraud or misuse of funds, the amount of Moyer Program funding involved, or the ability of the grantee to repay the funds.

4. **Usage Threshold and Waiver Procedure**. The air district must take appropriate action to ensure emission reductions are realized for engines, equipment, vehicles or fleets, as well as usage for infrastructure projects. Except for projects in which usage is not required to be specified in the contract (as allowed per Section V.6.(B)), when average usage over a three year period for a contracted engine, equipment, vehicle or fleet is less than 70 percent of the activity required in the contract, the air district may choose, but is not limited to, the options below to address the underutilization. (In cases of projects which

may have a contracted project life of less than three years, the same activity threshold of less than 70 percent applies, averaged over the project life.)

(A) Extend the project contract for additional years (precluding overlap with an applicable rule implementation requirement).

(B) Return funds in proportion to the loss in emission reductions.

(C) Transfer ownership of the engine, vehicle, or equipment to another entity committed to complying with the contract terms.

(D) Recalculate a project's cost-effectiveness based on the reported decrease in usage. Based on this recalculation, if the project is still below the cost-effectiveness limit, consistent with the limit and methodology in effect on the date of contract execution and prior to the end of the contract, the air district must continue to monitor the project over the next year to determine if additional actions are necessary. (This option does not apply to infrastructure projects not subject to a cost-effectiveness limit.)

(E) Grant a usage waiver, without penalty, to the grantee for a defined time period. The grantee must demonstrate to the air district's satisfaction that the engine, vehicle, or equipment is not being underutilized in favor of operating other, higher-polluting equipment, and that the underutilization was due to unforeseen conditions beyond the grantee's control.

(1) The conditions under which a waiver may be issued include, but are not limited to, the following:

a. A decrease in usage due to economic recession;
b. Unforeseen fluctuations in water allocations or pumping needs for agricultural irrigation pump engines; or
c. Significant land fallowing for off-road agricultural equipment and agricultural irrigation pump engines.

(2) To be considered for a waiver, the grantee must provide a written request to the air district along with documentation that substantiates the need for the waiver and verifies that higher-polluting equipment is not consequently receiving more use.

a. The air district will specify the length of time for which the waiver is valid. The waiver will not exempt the grantee from any contract requirement to provide annual usage reports.
b. The waiver will be documented in writing, approved by the Air Pollution Control Officer or designee, and included in the project file.

(3) For projects that include multiple pieces of equipment or engines the air district may review and recalculate the funded equipment collectively to see if the project as a whole has performed as expected. A waiver is not required in this event.

5. **Funds Recaptured Following ARB Enforcement**. Program funds recaptured from a project grantee as a result of a settlement agreement executed by ARB shall be returned to the air district that granted the funds. Any penalties resulting from a settlement agreement executed by ARB or the Attorney General shall be deposited in the Air Pollution Control Fund (H&SC § 44291(e)).

CHAPTER 4: ON-ROAD HEAVY-DUTY VEHICLES

This chapter describes the minimum criteria and requirements for Carl Moyer Memorial Air Quality Standards Attainment Program (Moyer Program) on-road heavy-duty vehicles. All projects must also conform to the requirements in Chapter 2: General Criteria and in Chapter 3: Program Administration. Participating air quality management districts or air pollution control districts (air districts) retain the authority to impose additional requirements in order to address local concerns.

A. Projects Eligible for Funding

The Air Resources Board (ARB) has adopted many fleet rules that affect on-road heavy-duty vehicles. Various types of projects can be incentivized to provide surplus emission reductions from on-road heavy-duty vehicles. Table 4-1 summarizes project types and categories eligible for funding as well as whether those projects may be executed through contracts or the Voucher Incentive Program (VIP or Voucher). For more information on VIP, please see the VIP Guidelines at: https://www.arb.ca.gov/msprog/moyer/voucher/voucher.htm.

Table 4-1
Summary of On-Road Heavy-Duty Projects

Project Category	Project Type[(a)]		Execution Path
	Replacement	Repower/Conversion	
Heavy-Duty Trucks and Buses	✓	✓	Voucher or Contract
School Bus	✓	✓	Contract
Transit Fleet Vehicles	✓	✓	Contract
Drayage Trucks	✓	✓	Voucher or Contract
Solid Waste Vehicles	✓	✓	Contract
Public Agency/Utility Vehicles	✓	✓	Contract
Emergency Vehicles	✓		Contract

[(a)] Retrofit projects may also be eligible for funding on a case-by-case basis.

1. **Vehicle Project Types**. Projects must include commercially available technologies certified by ARB to be cleaner than the baseline engine (unless otherwise noted). Project types and applications include:

(A) Vehicle Replacements: The replacement of an older, dirtier vehicle with a newer, cleaner one. These projects may be funded through contracts or the VIP.

(B) Repowers: Repowers involve the replacement of an older, dirtier engine with a newer, cleaner one. Repowers may be funded in various applications. However, due to technological constraints presented with the limited feasibility of newer engines with advanced emissions control equipment fitting into older chassis and maintaining durability, repowers with diesel engines are rare project types for trucks. Repowers with alternative fuel engines may not have the same technological constraints and may become more prevalent. To ensure durability, certain projects may require prototype testing. However, if the project has been previously completed by the manufacturer, prototype testing is not required. Air districts that wish to fund repowers must receive prototype testing results. The testing must comply with the engine manufacturer quality assurance process that is equivalent to an Original Equipment Manufacturer (OEM) package. In these cases, a prototype vehicle (or vehicles) is thoroughly reviewed and tested to ensure that the installation meets OEM requirements, and the successful prototype installation is then replicated in other vehicles with the same chassis and engine combination. Air districts may approve repower projects that meet the OEM quality assurance process described above, subject to the following:

(1) Moyer Program funding may not be used for any costs associated with the prototype vehicle or vehicles.

(2) Repower contracts may not be executed until the prototype testing specified by the engine manufacturer is successfully completed.

(3) Written documentation from the engine manufacturer confirming that the prototype was successful must be maintained in the project file.

(4) If the proposed repower has been done previously by the manufacturer on the same chassis/engine configuration, prototype testing is not required. The manufacturer must provide written confirmation that the previous work was performed successfully and met OEM requirements.

(C) Conversions: Conversions involve the replacement or modification of the original engine or vehicle to include either a cleaner engine or other system that provides motive power and change of the fuel type used. Hybrid conversion systems using internal combustion engines must be certified according to “California Certification and Installation Procedures for Medium- and Heavy-Duty Vehicle Hybrid Conversion Systems.” The baseline engine model year for hybrid conversions must be 2010 or

newer. Tier 1 and Tier 2 certified conversion systems are certified to sell a limited number of units in California. The conversion system manufacturer must provide written confirmation that the funded vehicle would not exceed the certified allowable limit. All-electric conversion systems must receive an exemption Executive Order per Vehicle Code section 27156. The conversion system manufacturer must certify that the converted vehicle adheres to all applicable local, State, and federal requirements including safety standards issued by National Highway Traffic Safety Administration and California Highway Patrol (CHP).

2. **Project Categories**. Taking the above project types into consideration, the following categories may be eligible for funding:

   (A) Heavy-Duty Trucks and Buses: Heavy-duty diesel trucks and buses with gross vehicle weight ratings (GVWR) greater than 14,000 pounds (lbs.) are subject to the Statewide Truck and Bus Regulation. Replacement engines certified to the 2010 emissions standards or cleaner are eligible. For more information, see section C.2.(A).

   (B) School Buses: School buses as defined in Vehicle Code section 545 are subject to the Statewide Truck and Bus Regulation. They are required to be filtered unless operating under an ARB-issued extension up to January 1, 2018. Project types include replacements, repowers, and conversions. Replacement engines certified to the 2010 emissions standards or cleaner are eligible. For more information, see Section C.2.(B).

   (C) Transit Vehicles: Transit vehicles are subject to the Fleet Rule for Transit Agencies and must be compliant with final regulatory requirements. Project types for surplus reductions include replacements and repowers. All transit projects must use engines certified to optional low oxides of nitrogen (NOx) standards or cleaner. For more information, see Section C.2.(C).

   (D) Drayage Trucks: Drayage trucks are subject to the Statewide Drayage Truck Regulation. As of January 1, 2014, drayage trucks are required to be equipped with 2007 model year or newer engines. Therefore, engines older than model year 2007 are not eligible. Replacement engines certified to the 2010 emissions standards or cleaner are eligible. Cleaner technologies are currently being demonstrated, and may become available in the near future to enable opportunities for more funding. For more information on drayage truck funding opportunities, see Section C.2.(D)

   (E) Solid Waste Collection Vehicles (SWCV): Vehicles equipped with 2006 and older engines are subject to the SWCV Regulation and must meet final regulatory requirements. Vehicles equipped with 2007 and newer

engines are subject to the Statewide Truck and Bus Regulation. All solid waste collection vehicle projects must use engines certified to optional low NOx standards or cleaner. For more information, see Section C.2.(E).

(F) Public Agency and Utility Vehicles: Vehicles with GVWR over 14,000 lbs. owned by a municipality or utility that are equipped with engines certified to Particulate Matter (PM) emission standards greater than 0.01 grams per brake horsepower-hour (g/bhp-hr) are subject to the Fleet Regulation for Public Agencies and Utilities, except fleets that do not include any diesel engines. Engines are required to use the Best Available Control Technology as defined in the California Code of Regulations, title 13, section 2022.1(b). Private utilities become subject to the Statewide Truck and Bus Regulation starting January 1, 2021. Replacement engines certified to the 2010 emissions standards or cleaner are eligible.

(G) Emergency Vehicles: Emergency vehicles are not subject to in-use emissions regulations. Eligible vehicles also include prisoner transport buses. Project types mainly include replacements. Replacement engines certified to the 2010 emissions standards or cleaner are eligible. For more information, see Section C.2.(F).

(H) Case-by-Case Projects: These projects do not fall under any previously described category or do not meet all of the requirements of the Guidelines but otherwise provide real, surplus, quantifiable, enforceable, cost-effective emission reduction benefits in California for the entire project life. These may include transport refrigeration units (TRU), auxiliary power units (APU), and vehicles with 8,501-14,000 lbs. GVWR. For more information, see Section C.2.(G).

3. **Infrastructure Projects**. See Chapter 10 for details regarding applicant eligibility and project types for infrastructure projects in support of on-road applications. This includes infrastructure such as electrical charging (and solar-generated electricity) and alternative fuel stations for light, medium and heavy heavy-duty trucks. It also includes infrastructure for truck stop electrification, TRUs, transit vehicles, emergency vehicles, and school buses.

B. Determining Funding Amounts

The information contained in this section shall be used to determine the funding amount for which any given heavy-duty on-road project is eligible.

1. **State Funding Limits**. Funding for an on-road heavy-duty project includes funds from all State sources including the Moyer Program. The maximum dollar amount or maximum percentage of eligible cost (Tables 4-2 through 4-7), as applicable, represents a funding cap, or the maximum funding available for the project. If the project is co-funded with other State funds, the funding cap represents the maximum amount of funds from all State sources that can be

applied to the project. Federal, local, or other non-State grant funds can be used in addition to the funding caps stated in this chapter if the criteria for co-funded projects in Chapter 3, Section L are satisfied.

2. **Cost-Effectiveness**. The maximum amount of funding available to a project is limited by a cost-effectiveness limit (see Appendix C), in addition to the funding caps specified below.

3. **Maximum Funding Percentage**. For fleets with ten or fewer vehicles over 14,000 lbs. GVWR, the State funding amount cannot exceed 80 percent of the vehicle cost (excluding taxes and fees). For fleets with more than ten vehicles, the funding amount cannot exceed 50 percent of the vehicle cost (excluding taxes and fees). School buses, repowers, and emergency vehicles are not limited by maximum funding percentages based on fleet size. The funding caps that apply from these maximum percentages of eligible cost and maximum dollar amounts, as applicable, are summarized in Tables 4-2 through 4-7.

Table 4-2
State Funding Caps for Moyer School Bus Projects

Project Type	Funding Cap
School Bus Diesel or Alternative Fuel Replacements	$165,000
School Bus Optional Low-NOx or Hybrid Replacements	$220,000
School Bus Zero-Emission Replacements	$400,000
School Bus Repowers	$70,000
School Bus Electric Conversions	$400,000

Table 4-3
State Funding Caps for Conventional Diesel or Alternative Fuel or Hybrid Replacements (2013+ engine model year; 0.20 g/bhp-hr NOx or cleaner standard)

Weight Class	Funding Cap [(a)]
Heavy Heavy-Duty (HHD) GVWR > 33,000 lbs.	$60,000
Medium Heavy-Duty (MHD) GVWR 19,501-33,000 lbs.	$40,000
Light Heavy-Duty (LHD) GVWR 14,001-19,500 lbs.	$30,000
Emergency Vehicles GVWR > 14,000 lbs.	80% of Cost

[(a)] No more than 80 percent of vehicle cost for fleets with ten or fewer vehicles, no more than 50 percent of vehicle cost for larger fleets except for emergency vehicles.

Table 4-4
State Funding Caps for Optional Low NOx Replacements[a]

Optional Low NOx standard (g/bhp-hr)	HHD	MHD	LHD
0.02	$100,000	$80,000	$70,000
0.05	$80,000	$60,000	$50,000
0.10	$70,000	$50,000	$40,000
Transit Buses			$25,000

[a] No more than 80 percent of vehicle cost for fleets with 10 or less vehicles, no more than 50 percent of vehicle cost for larger fleets except for emergency vehicles.

Table 4-5
State Funding Caps for Optional Low NOx Repowers

Vocation Type	Funding Caps
Transit Bus	$20,000
Other Trucks and Buses	$40,000

Table 4-6
State Funding Caps for Zero Emission Replacements or Conversions

Weight Class/Vocation Type	Funding Caps[a]
Transit Bus	$80,000
HHD Truck or Bus	$200,000
MHD Truck or Bus	$150,000
LHD Truck or Bus	$80,000

[a] No more than 80 percent of vehicle cost for fleets with 10 or less vehicles, no more than 50 percent of vehicle cost for larger fleets except for emergency vehicles.

Table 4-7
State Funding Caps for Hybrid Conversions

Weight Class	Funding Caps[(a)]
LHD	$7,500
MHD	$10,000
HHD	$15,000

[(a)] No more than 80 percent of system cost for fleets with 10 or less vehicles, no more than 50 percent of system cost for larger fleets except for emergency vehicles.

4. **Project Life**. The minimum eligible project life for all projects is one year. The maximum eligible project life for each project type is summarized in Table 4-8.

Table 4-8
Maximum Project Lives for On-Road Vehicle Projects

Project Type	Maximum Project Life
Replacements	7 Years
Transit Bus Replacements	12 Years
Repowers	7 Years
School Bus Replacements	10 Years
Electric Conversions	5 Years
Emergency Vehicles	14 Years
Other On-Road Projects	3 Years

A longer project life may be approved on a case-by-case basis if applicants provide justifying documentation. The maximum project life does not consider regulatory requirements that may reduce the actual project life.

5. **Annual Usage**. Grant amounts will be based on the minimum of two 12-month periods of California usage during the previous twenty-four months. Fleet averages cannot be used. If a fleet has reported the existing vehicle in the Truck Regulations Upload and Compliance Reporting System (TRUCRS) under a limited-usage compliance option (such as the Low-Mileage Work Truck Option, the NOx Exempt Area Extension, etc.) and the historical usage exceeds the limit, the usage limit for that compliance option must be used to determine the State grant amount instead. On-road calculations shall be based on historical annual mileage instead of fuel usage or engine hours due to the fact that the mileage-based exhaust emission factors are more robust. Applicants must submit conclusive documentation of the existing engine or vehicle's mileage such

as logbooks, and maintenance records maintained for individual vehicles, or CHP inspection reports. In cases where only fuel use records are available, a case-by-case request must be submitted. The applicant must provide two years of historical fuel usage documentation to the air district. Documentation must show specific usage of the existing vehicle and may include fuel logs, International Fuel Tax Association reports for single fleets, purchase receipts or ledger entries. If the case-by-case is approved, fuel use will be converted to mileage according to the vocation.

6. **Calculating emissions**. Emission factors and deterioration rates in Appendix D, Tables D-1 through D-6 must be used to determine the emissions of the baseline and reduced engines; consequently, the engine model year and applicable emission standard will determine the relevant emission factors. Emission reductions for hybrid conversion systems must be based on the projected reduced usage of the baseline engine in the converted vehicle compared to the original vehicle. This can be based on estimated usage reductions for the specific application or vocation type provided by the dealer, installer, or manufacturer. Calculations for new hybrid vehicles will incorporate the certified emission standard and may also include projected reduced engine usage relative to a non-hybrid equivalent provided by the dealer, installer, or manufacturer. The emission factors and deterioration rates contained in Appendix D are based on ARB mobile source emissions inventory model (EMFAC2014) values. Information on EMFAC2014 is available at: http://www.arb.ca.gov/msei/modeling.htm.

7. **Two-for-One Replacement Calculations**. Projects in which two old vehicles of similar design and function are replaced with one vehicle are eligible for Moyer Program grant funding. The two baseline vehicles must be in the same weight class (LHD, MHD, or HHD) but may be in different weight classes if there is a ten percent or less variation in GVWR. If the two baseline engines are not the same model year, the newest engine model year must be used when calculating emission reductions. The maximum State funding amount must also be funded according to the lighter weight class of the two vehicles. The replacement vehicle's annual usage must be determined by adding the annual usage of both baseline vehicles together. The maximum annual usage that can count toward grant determinations for the two baseline vehicles is 30,000 miles each for a maximum total annual usage of 60,000 miles for the replacement vehicle. The replacement vehicle is eligible for only one grant based on the combined usage of the baseline vehicles.

8. **Expenses Eligible for Funding**. Moyer grant funding can only be used to pay for items essential to the operation of the vehicle. Electronic monitoring units – while they are not required by ARB – are an eligible expense if they are required by an air district. For replacements, eligible project costs include the cost of the cab and chassis including parts that are integrated into the vehicle. The cab and chassis cost may include but is not limited to the following:

(A) The capital cost of the cab.

(B) The capital cost of the chassis which may include but is not limited to:

(1) Engine

(2) Transmission

(3) Suspension system

(4) Steering system

(5) Frame

(6) Electrical system

(7) Cooling System

(8) Fuel system

(9) Emission system

C. Project Criteria

1. General Criteria

(A) Fleet Size: All fleet sizes are eligible for funding. The following criteria must be followed for each group:

(1) Fleet Size 1-10: To ensure smaller fleets have significant funding opportunities, air districts must reserve or prioritize funding for smaller fleets and should do so in a manner that works best with their programs. For example, air districts that issue on-road solicitations may review applications from smaller fleets first and award those fleets that are eligible prior to awarding fleets with more than ten vehicles. Air districts that fund projects on a first-come, first-served basis may modify or remove the reserve to meet liquidation deadlines and demand after smaller fleets have had a certain amount of time to apply for funding as specified in the air district's Policies and Procedures. Reserve funds may be used for school bus projects at any time.

(2) Fleet Size > 10: Fleets with more than ten vehicles must select optional low NOx or zero emission technologies except for certain operating vocations and locations defined in the Statewide Truck and Bus Regulation (i.e., school buses, log trucks, low mileage work trucks, agricultural vehicles, and NOx Exempt Areas).

(B) Weight Class Range:

(1) The replacement vehicle must be in the same weight class as the existing vehicle (either LHD, MHD, or HHD as defined in Appendix

B). An MHD vehicle can replace an HHD vehicle if they both have the same axle configuration (e.g. an existing HHD vehicle with two axles can be replaced with an MHD vehicle with two axles) but the funding amount must be at the MHD funding level.

(2) On-road heavy-duty vehicles (with GVWR over 14,000 lbs.) must be powered by an engine certified to the applicable heavy-duty intended service class as shown on the engine certification Executive Order. However, the following cases may be allowed:

a. MHD engines may be installed in HHD vehicles with GVWR up to 36,300 lbs. (ten percent higher than 33,000 lbs. GVWR) with written warranty verification by the engine and chassis manufacturer. A copy of the written warranty verification must be maintained in the air district project file.

b. HHD engines may be installed in MHD vehicles if necessary for vocational purposes but only if the GVWR are within ten percent of the HHD intended service class (i.e., GVWR of 29,701 lbs. or greater).

(C) At least 51 percent total annual usage must occur in California. Only usage in California can be used for on-road calculations.

(D) Compliance Check:

(1) Before contract execution, participants must be pre-screened for regulatory compliance, outstanding violations, open cases, and previous project funding by supplying to the air district the registered owner's name, company name or Doing Business As (DBA), address, Vehicle Identification Number (VIN) of the vehicle being replaced/repowered/converted, and TRUCRS ID or Drayage Truck Registry (DTR) number, if applicable. VINs of vehicles not subject to in-use diesel rules, such as CNG vehicles, need not be submitted, but every vehicle in the fleet needs to be in compliance and have no outstanding violations in order to receive funding. The air district need not validate this information and will not be held liable if participants falsify this information. The air district shall email this information to its ARB Moyer Program liaison.

a. The fleet owner will report in TRUCRS vehicles Subject to the Statewide Truck and Bus Regulation. The fleet owner must also provide the air district with the following:

i. A copy of the TRUCRS Fleet List located on the Vehicle Info tab showing the compliance option each vehicle in the fleet is using, and

ii. A copy of the TRUCRS General Fleet and Compliance Information Summary showing compliance located on Compliance Status tab ("Meets Small Fleet Option" will specify "yes" if the fleet is using the Small Fleet option), and

iii. A copy of the Compliance Certificate printed from TRUCRS, if applicable.

b. For Vehicles subject to the Drayage Truck Regulation, a copy of the DTR Compliance Search Page printout showing VIN and compliance status.

c. Vehicles Subject to Other On-Road Regulations:

i. Fleet information must be submitted by the air district to the ARB Moyer Program district liaison to check compliance with other regulations such as the Public Agency and Utility Regulation, when applicable. The fleet information needed for the compliance check may change with time.

ii. To receive funding, a fleet owner/operator must be compliant with all federal, State, and local air quality rules and regulations including the Periodic Smoke Inspection Program (PSIP). The application must include a statement of compliance in which the applicant must certify that they are in compliance at the time of application submittal. Air districts must also include the following language with a checkbox for the fleet owner/operator to indicate compliance:

I have read and understand that I am responsible for meeting the requirements of the PSIP. I am either currently in compliance with PSIP requirements or I have paid all penalties for non-compliance and continue to meet requirements since payment.

d. A regulation index for statewide on-road regulations is available at http://www.arb.ca.gov/msprog/truckstop/azregs/azregs.htm

(2) The liaison will email the air district the result of the compliance check within ten business days. All compliance check documentation must be kept in the project file.

(3) If the vehicle has already received funding and is still under contract, the air district will be notified and the project must be rejected.

(4) If there is an open case or outstanding violation, or if the fleet is not in compliance, the air district shall inform the participant in writing

that no disbursement may be made until the owner provides proof that the fleet has been brought into compliance and all fines have been paid. If the outstanding violation is based on problems with the baseline engine (e.g., gross polluter), then the violation must be cleared. The engine owner must pay the fine for each violation and submit documentation of violation correction with, or before submitting, the invoice.

(5) *Compliance Check Tool*: A compliance check tool for the Truck and Bus Regulation is available on ARB's website located at: https://www.arb.ca.gov/msprog/onrdiesel/tblookup.php. To help with the initial review, air districts may check current compliance status by entering any part of the company name, TRUCRS ID, or Motor Carrier Number in the search field. Only fleets that have confirmed compliance requirements and printed their certificate will be listed. Applicants must still meet the requirements in Section C.1.(D)(1)a.

(6) Other compliance tools issued by ARB may be used to meet the requirements of Section C.1.(D)(1) as they become available and are approved for use for the Moyer Program.

(E) Emission Reduction Technologies: Emission reduction technologies must be certified or verified by ARB and must comply with durability and warranty requirements. A technology granted a conditional certification or verification by ARB is considered certified or verified.

(F) Obtaining Financing: The participant may obtain financing to assist in the purchase of the emission reduction technology.

(G) Equipment Leasing is Not Allowed: If financing is necessary, the equipment purchase must be financed with a conventional purchase loan.

(H) Surplus requirements are determined by the regulation to which a project is subject. Any vehicle with an off-road engine that is subject to an on-road regulation must also comply with the on-road surplus requirements described in this chapter. For example, a yard truck with an off-road engine that is subject to the Statewide Truck and Bus Regulation must comply with all off-road eligibility and funding criteria described in Chapters 5, as well as all on-road surplus criteria described in this chapter.

(I) Engines operating under an extension not included in the applicable regulation, such as the Statewide Truck and Bus Regulation, or under program advisory are not eligible. This includes extensions received under enforcement settlement agreements. Fleets with PM filter availability extensions and economic hardship extensions are eligible but

PM reductions will not be funded. Fleet owners must submit documentation confirming extensions.

(J) The existing vehicle must be based in California as shown through vehicle registration. Air districts have the option to limit eligibility to applicants that reside within the district's air basin or operate their vehicles within specified air basins.

2. Project Categories and Applicable Project Types

(A) Heavy-Duty Trucks and Buses (Non-drayage)

(1) Eligibility: Heavy-duty vehicles following the Engine Model Year Schedule or taking one of the Statewide Truck and Bus Regulation compliance options below as defined in the Statewide Truck and Bus Regulation, California Code of Regulations, title 13, section 2025(f), (g), (h), (i), (m), and (p) may apply for funding:

a. Small Fleet option
b. Low Mileage Work Truck option
c. PM Filter Phase-In option
d. Log Truck Phase-In option
e. NOx Exempt Area extension
f. Agricultural Vehicle extension

Other vehicles subject to the Statewide Truck and Bus Regulation such as heavy cranes and sweepers or other vehicles approved to use credits or extensions specified in the regulation may also be eligible.

(2) Replacement Projects: Most replacement projects using engines certified to the 0.20 g/bhp-hr NOx and 0.01 g/bhp-hr PM standard are executed through the Voucher Incentive Program, including two-for-one replacements. This includes on-road vehicles subject to the Truck and Bus Regulation that are replaced with newer vehicles equipped with diesel or alternative fueled engines meeting the current standards with a surplus funding period of one to three years. Voucher replacement projects are not eligible for case-by-case requests. All requirements must be met. If the air district wishes to fund a replacement using criteria that does not meet voucher requirements such as having a longer project life or a minimum California usage of 51 percent, the project must be executed under this chapter through a contract.

(3) Repower and Conversion Projects: If the proposed repower has been done previously by the manufacturer on the same chassis/engine configuration, prototype testing is not necessary. The manufacturer must provide written confirmation that the

previous work was performed successfully and met OEM requirements. If it has not been done previously, prototype testing as described in Section A.1.(B) must be completed. Conversion systems must meet certification or aftermarket exemption requirements described in Section A.1.(C).

(4) Other Project Types: Other project types may be eligible if approved through case-by-case and must be funded through contract.

(5) Surplus: Vehicles can have a filter compliance deadline that is less than one year from the post-inspection date as long as PM emission reductions are not funded. The 2010 standard compliance deadline must be at least one full year from when the replacement vehicle is delivered and post-inspected.

(6) Maximum State Funding Amounts: The maximum amount of State funding that can go toward the purchase of a replacement vehicle equipped with either a diesel or alternative fuel engine meeting 0.20 g/bhp-hr NOx and 0.01 g/bhp-hr PM standards is shown in Table 4-3. Maximum funding for Optional Low NOx and Zero-Emission replacements are shown in Tables 4-4 and 4-6.

(7) Log Truck Requirements: Log trucks using the Log Truck Phase-In option must have log bunks permanently attached at pre- and post-inspection. Vehicles taking the Log Truck Phase-In option are not eligible for two-for-one replacements as described in Section B.7.

(B) School Buses

(1) General Eligibility: School buses are eligible for Moyer Program funding if they meet the general program criteria in Section C.1., as well as additional criteria in this subsection.

(2) Eligible Applicants: Public school districts in California that own their own school buses are eligible for funding. Where a Joint Power Authority (JPA) has been formed by several public school districts and the JPA holds ownership of the school buses, then the JPA is also eligible for funding. School transportation contractors, non-profit agencies, private schools, and other private companies are not eligible to receive funding for school bus projects.

(3) Truck and Bus Regulation Compliance: School buses subject to the Truck and Bus Regulation are only eligible if they meet one of the following requirements:

a. The existing school bus must have an OEM diesel particulate filter (DPF) installed.

b. The existing school bus must be retrofitted with a DPF that reduces diesel PM emissions by at least 85 percent.

c. The existing school bus must be reported in TRUCRS under the Low-Use exemption.

d. The existing school bus must be reported in TRUCRS under the Extension for the Unavailability of Verified Diesel Emission Control Strategy (VDECS). This extension expires on January 1, 2018, at which point such school buses will no longer be eligible for Moyer Program funding.

(4) Used Vehicle Eligibility: Used school buses are not eligible as replacements. The replacement vehicle for any project must be new.

(5) Maximum State Funding Amounts: School bus projects have unique maximum grant amounts as summarized in Table 4-2, and also a unique cost-effectiveness limit of $276,230/ton. This cost-effectiveness limit allows for funding amounts consistent with the Lower-Emission School Bus Program funding caps based on average school bus operating usage as determined by a limited number of previously-funded Moyer Program school bus projects. Individual vehicle usage that falls below the average may result in lower funding amounts.

(6) Calculating Emissions: Zero-emission school bus projects (including replacements, repowers, and electric conversions) are eligible for NOx, reactive organic gases (ROG), and PM emission reductions. All other school bus projects are eligible only for NOx and ROG emission reductions.

(7) Engine Intended Service Class: The weight class range for school buses is determined as in Section C.1.(B), but in cases where the Executive Order of the baseline school bus engine does not list an intended service class, the intended service class of the engine shall be assumed to be MHD.

(8) CHP Safety Certification. All existing school buses must have a current CHP safety certification (CHP Form 292) at the time funding is awarded for the project (i.e., the school bus may not have a lapsed CHP safety certification), and it must be currently registered with the Department of Motor Vehicles (DMV).

(9) School Bus Electric Conversion Projects. The baseline vehicle chassis must be ten years old or newer. CHP requires engineering plans, certified by a California licensed engineer, to be able to safety certify the school bus.

(C) Transit Vehicles (Urban Buses and Transit Fleet Vehicles)

(1) Eligibility: Transit vehicles that have achieved compliance with all applicable regulatory requirements are eligible for surplus emission reduction funding. New regulation requirements may affect surplus and funding amounts in the future.

(2) Replacement Projects: A replacement engine for a replacement vehicle project must be an ARB certified engine meeting emissions levels of 0.10 g/bhp-hr NOx or cleaner.

(3) Repower and Conversion Projects: A replacement engine for a repower project must be an ARB certified engine meeting emissions levels of 0.10 g/bhp-hr NOx or cleaner. If the proposed repower has been done previously by the manufacturer on the same chassis/engine configuration, prototype testing is not required. The manufacturer must provide written confirmation that the previous work was performed successfully and met OEM requirements. If it has not been done previously, prototype testing must be completed as described in Section A.1.(B). Conversion systems must meet certification or aftermarket exemption requirements described in Section A.1.(C).

(4) Maximum State Funding Amounts: The Federal Transit Administration (FTA) provides up to an 80 percent grant (Federal funding) for new urban bus purchases and repowers. Maximum State funding for transit projects has been specified to account for greater access to other funding resources. Funding caps for various project types are shown in Tables 4-4 through 4-6. If the Moyer Program grant is used to co-fund an eligible project, the sum of all grant funds received cannot exceed the total project cost. Additional criteria on co-funding projects with a Moyer Program grant can be found in Chapter 3, Section L.

(5) Applicable Emission Factors: Emission factor tables for urban transit buses are included in Appendix D as Tables D-3 and D-4. Other transit fleet vehicles such as shuttle buses must use the MHD or HHD emission factor tables, Tables D-1 and D-2. Cost-effectiveness calculations for transit urban buses do not include deterioration since those fleets are generally well-maintained per EMFAC 2014. Deterioration must also not be

included in the cost-effectiveness calculations for other transit vehicles.

(6) Calculating Emission Reductions: Cost-effectiveness calculations can only include emission reductions from the 2007 engine model year for a 12-year maximum project life. No other additional emission reductions may be included. Only NOx and ROG surplus emission reductions can be funded. PM emission reductions may also be funded for zero emission projects.

(D) Drayage Trucks

(1) Eligibility: Drayage trucks as defined in California Code of Regulations, title 13, section 2027(c)(15), are eligible for Moyer Program funding for up to one year before the applicable compliance deadline.

(2) Existing Engine: The baseline engine must be 2007 or newer. Beginning on January 1, 2023, drayage trucks will be subject to the Statewide Truck and Bus Regulation and must be compliant to the regulation to be eligible for funding (i.e., baseline engine must be model year 2010 or newer). If the baseline truck is not currently used for drayage activities and the engine is older than 2007, the replacement truck will be added to the DTR as non-compliant for the contract term.

(3) Replacement Projects: Replacements may be funded through voucher or contract.

(4) Repower and Conversion Projects: If the proposed repower has been done previously by the manufacturer on the same chassis/engine configuration, prototype testing is not necessary. The manufacturer must provide written confirmation that the previous work was performed successfully and met OEM requirements. If it has not been done previously, prototype testing as described in Section A.1.(B) must be completed. Conversion systems must meet certification or aftermarket exemption requirements described in Section A.1.(C).

(5) Calculating Emission Reductions: Only NOx and ROG emission reductions can be funded. PM emission reductions may be funded for zero-emission projects.

(E) Solid Waste Collection Vehicles (SWCV such as Transfer Trucks and Refuse Trucks)

(1) Eligibility: SWCV fleets that have achieved compliance with the final SWCV Regulation (CCR, title 13, sections 2020-2021.2)

deadline are eligible for funding. Solid waste transfer trucks and vehicles equipped with 2007 and newer engines are subject to the Statewide Truck and Bus Regulation and surplus will be determined according to that regulation.

(2) Replacement Projects: A replacement engine for a replacement project must be an ARB certified engine meeting emissions levels of 0.10 g/bhp-hr NOx or cleaner.

(3) Repower and Conversion Projects: A replacement engine for a repower project must be an ARB certified engine meeting emissions levels of 0.10 g/bhp-hr NOx or cleaner. If the proposed repower has been done previously by the manufacturer on the same chassis/engine configuration, prototype testing is not necessary. The manufacturer must provide written confirmation that the previous work was performed successfully and met OEM requirements. If it has not been done previously, prototype testing as described in Section A.1.(B) must be completed. Conversion systems must meet certification or aftermarket exemption requirements described in Section A.1.(C).

(4) Applicable Emission Factors: Emission factor tables for refuse trucks are included in Appendix D as Tables D-5 and D-6. Transfer trucks use Tables D-1 and D-2.

(5) Calculating Emission Reductions: Only NOx and ROG emission reductions can be funded. PM emission reductions may be funded for zero emission projects.

(F) Emergency Vehicles

(1) Eligible Vehicles: Authorized emergency vehicles as described in the California Vehicle Code 165 including, but not limited to fire apparatus, pumpers, ladder trucks, and water tenders. Other MHD HHD diesel authorized emergency vehicles, such as prisoner buses, are also eligible for funding under this chapter.

(2) Replacement Projects: Eligible projects are those in which a new or used replacement vehicle with an engine meeting the current model year California emission standard replaces an older, more polluting equipment or vehicle. The older, replaced vehicle must be destroyed. A fire truck reuse option is also available on a case-by-case basis. The fire truck reuse option allows fire departments to give away the existing old vehicle and destroy another older vehicle in its place.

(3) Eligible Costs: Eligible project costs include those parts specified in Section B.8. but excludes parts that are not bolted on and

movable, such as the tank on the water tender. In addition, the following costs are eligible:

a. Tax and transport for eligible parts or costs.

b. Labor for installation of or modification to parts eligible for funding.

(G) Case-By-Case Projects

(1) On-road heavy-duty diesel vehicles with GVWR of 8,501-14,000 lbs. may be considered for Moyer Program funding on a case-by-case basis.

(2) Retrofits

a. Only projects that reduce NOx emissions, including alternative fuel retrofit systems, are eligible for funding. The retrofit must be certified or verified by ARB to reduce NOx by at least 15 percent and reduce emissions to the 0.02 g/bhp-hr optional low NOx standard or cleaner. If the baseline engine does not meet 0.01 g/bhp-hr PM standards, the retrofit must also reduce emissions by at least 85 percent (verified Level 3).

b. The maximum State funding amount for retrofit projects is $20,000.

(3) Transport Refrigeration Units (TRUs): TRU projects are eligible for limited funding opportunities, but emission benefits are generally low because many older TRUs have already been replaced to meet regulatory requirements.

a. Funding opportunities may exist for zero emission replacement projects only.

b. Alternative technologies such as pure cryogenic systems are not required to be verified, but ARB must review and approve such systems in writing on a case-by-case basis.

c. The participant shall install an hour-meter or other means to measure usage on the TRU to track operating hours, and shall provide this information to ARB or the air district upon request.

d. The maximum State funding percentage is 50 percent.

(4) Auxiliary Power Units (APUs): Limited funding will be available for APUs, and only for projects approved through case-by-case. APUs are subject to the Airborne Toxic Control Measure to Limit

Diesel-Fueled Commercial Motor Vehicle Idling, California Code of Regulations, title 13, section 2485.

(5) Cost-effectiveness calculations for projects with power take-off (PTO) will be considered by ARB on a case-by-case basis. Hours of PTO operation must be documented through hour meter records or data from the emission control module.

(6) Case-by-case projects must receive approval from ARB prior to contract execution. These projects must follow the requirements as described in Chapter 3, Section U.

3. Participant Requirements

(A) Ownership: The participant must currently be the sole owner of the existing vehicle, documented through a copy of the existing vehicle title. The title must show no active lienholders. The title need not be a California title. In addition, the participant must have owned and operated the vehicle the previous 24 months. If the title does not show sole ownership for the previous 24 months, the applicant must be listed as one of the owners or shown as a registered owner on registration documentation for the previous 24 months. If the existing vehicle title is not available, then all three of the following must be used as alternative documentation until a duplicate title is received from the California DMV: 1) a copy of the current and valid vehicle registration, 2) a copy of the DMV Vehicle Registration Record (printout), and 3) a copy of the DMV receipt for duplicate title request. A copy of the duplicate title must be received by the air district before contract execution. If it is unclear whether a vehicle is owned or leased by a participant, the air district will determine whether the vehicle is eligible.

(B) Usage Documentation and Self-Certification for California Minimum Usage: Covering each 12-month period for the previous 24 months, the participant must:

(1) Submit conclusive documentation (logbooks, maintenance records, tax records, etc.) of annual miles traveled in California, and

(2) Certify that at least 51 percent of total usage has been in California.

(C) Military Service Provision: If an applicant has been on active military duty at any time during the previous 24 months, documentation prior to deployment and covering the same length of time as the deployment period may be used to meet the title, registration, usage, and operation in California requirements as described in Sections C.3.(A)-(B) and C.4.(C). The applicant must submit a copy of DD Form 214, Certificate of Release or Discharge from Active Duty to verify military service during the deployment period.

(D) Participants may only apply to one air district at a time for each project.

(E) Participants must submit an application for funding consideration.

(F) Participants must provide the air district with the full contact information of the seller/dealer of the replacement vehicle, or the business that performs the conversion or repower.

(G) The participant must be the sole registered owner of the replacement engine or vehicle for the duration of the contract term. Throughout the contract term (project life), the participant must annually:

(1) Provide registration and proof of insurance to the air district.

(2) Provide reports that include items specified by the air district which may include miles driven in the air district and in California, and details regarding maintenance and servicing.

(3) Operate the engine/vehicle within California for at least the percentage of time specified in the contract.

(H) Report accident or loss of vehicle: If the replacement engine/vehicle is in an accident or is stolen, the accident or theft must be reported to the air district within 10 business days. The participant must provide the police report, a letter from the insurance company regarding the accident or theft, and other information requested by the air district. The participant must repair the vehicle and return it to operation, if possible. If the vehicle is totaled, the participant and the air district staff must come to an agreement regarding any requirements that still need to be met. If the participant will continue the business, efforts should be made to obtain a substitute vehicle that can take over the terms of the contract. The substitute vehicle must be at least as clean as the original Moyer Program funded vehicle, be in the same weight class, and cannot have more miles than would have been accumulated based on the mileage used to determine the funding amount, or no more than 600,000 miles for HHD vehicles, 350,000 miles for MHD vehicles, and 250,000 miles for LHD vehicles.

(I) Any change of ownership, change in registration status, or change of mailing address during the contract term must be reported to the air district within 10 business days.

4. Existing Engine and Vehicle Requirements

(A) The existing vehicle must currently operate on diesel fuel or alternative fuel such as compressed natural gas.

(B) The existing vehicle must have an engine of model year 2010 or older, except if it is a school bus or log truck which may be powered by an

engine of any model year. The maximum chassis age for all-electric conversions must be no more than ten years old.

(C) The existing vehicle must either be: 1) currently registered and have been registered in California for the past 24 months supported by documentation showing no lapses (except for seasonal vehicles and those eligible under the military service provision); or 2) must have been registered in California for the previous eight consecutive months with supporting documentation supplemented by alternate documentation showing California operation for the past 24 months. California International Registration Plan (IRP) documents are acceptable. Out of State IRP or registration is not eligible. The existing vehicle must be based in California.

(D) If the existing vehicle operates seasonally, then the existing vehicle may be eligible to participate if it has been registered in California for three to six continuous months per 12 month period for the previous 24 months. DMV partial year registration documentation for each period the vehicle was registered must be included with the application.

(E) The participant must provide proof of insurance for the old vehicle for the previous 24 months.

(F) The existing vehicle must meet the criteria for either an LHD vehicle, MHD vehicle, or an HHD vehicle, as defined below:

(1) LHD vehicles must have a manufacturer GVWR of 14,001-19,500 lbs.

(2) MHD vehicles must have a manufacturer GVWR of 19,501-33,000 lbs.

(3) HHD vehicles must have a manufacturer GVWR of 33,001 lbs. or greater.

(4) GVWR may be documented with a photo of the vehicle manufacturer tag or a copy of the manufacturer build sheet. Air districts may request ARB approval of alternate GVWR documentation on a case-by-case basis.

(G) Engine Verification:

(1) The air district file must include a copy of the existing engine Executive Order. If an Executive Order is not available, the air district may request approval of alternative documentation on a case-by-case basis.

(2) If the old vehicle engine tag is missing, then verification of the engine information can be satisfied with the engine serial number. The participant must provide verification of the engine make, model, model year, engine serial number, and horsepower from the manufacturer. The participant may also verify the horsepower with the results of a dynamometer test. The dynamometer test will take into account a 15 percent loss in actual horsepower, accounting for transmission loss. Verification can include a letter or a printout from an engine manufacturer or dealership. On a case-by-case basis, ARB may approve other means of obtaining the information.

(H) The existing vehicle must be in operational or roadworthy condition, as determined through a CHP Biennial Inspection of Terminals (BIT) or equivalent air district-approved inspection. If the air district does not conduct a pre-inspection, the following methods may be used:

(1) The vehicle owner may submit a completed CHP 90-Day Safety Inspection Form documenting an inspection that occurred within 90 days of the application date; or

(2) An air district approved contractor may conduct the inspection of the old vehicle and provide pictures verifying that the vehicle is in operational condition.

(I) Glider Kits: Glider kits are replacement chassis and cabs for on-road heavy-duty vehicles. Glider kits are generally identified with a VIN starting with the letters “GL”. In situations where the model years of the glider kit vehicle’s chassis and engine differ, approval determination shall be made using the model year of the engine. Existing glider kit vehicles are eligible to participate but the replacement vehicle has to be a complete Original Equipment Manufacturer vehicle; i.e., the replacement vehicle cannot be a glider kit.

(J) Existing Vehicle Body Components: The body of the existing vehicle does not play a part in the participation in the program. Program funds can only be used to purchase the new vehicle, not external body components or parts used for a particular vocation (e.g., dump body). The common practice for vehicle owners to remove non-emission related body components from the existing vehicle and place them on the replacement vehicle is still permissible as long as the components do not exist on the replacement vehicle and are not a part of the paid components for the replacement vehicle.

(K) Operation of Existing Vehicle After Approval: If the existing vehicle is in an accident or has an engine failure after receiving approval from the air district but prior to replacement, then the existing vehicle will still be

eligible for receiving funds from the program as long as all other on-road requirements have been met.

5. Replacement Engine and Vehicle Requirements

(A) Emission Standards: Replacement vehicles with a 2013 model year or newer engine certified to a PM emission standard of 0.01 g/bhp-hr and a NOx family emission limit or NOx standard level of 0.20 g/bhp-hr or lower are eligible for funding (unless noted otherwise). New electric vehicles and non-combustion hybrid vehicles (e.g., electric vehicles powered by a hydrogen fuel cell) must have an ARB approval letter confirming the vehicle does not emit any vehicle exhaust emissions or fuel-based evaporative emissions. If the baseline engine model year is 2010, the replacement engine must be certified to a NOx standard level of 0.10 g/bhp-hr NOx or lower.

(B) Engine class: The engine's primary intended service class must match the replacement vehicle's weight class (i.e., an MHD diesel engine is used in a vehicle with a GVWR of 19,501- 33,000 lbs. and an HHD diesel engine is used in a vehicle with a GVWR greater than 33,000 lbs.). As an exception, an HHD engine may be installed in an MHD vehicle if necessary for vocational purposes, but only if the GVWR is within 10 percent of the engine's intended service class (i.e., GVWR of 29,701 lbs. or greater). Also, an MHD engine may be installed in an HHD vehicle, but only if the GVWR is within 10 percent of the engine's intended service class (i.e., GVWR of 36,300 lbs. or less).

(C) Mileage: A used HHD replacement vehicle must have less than 500,000 miles, a used MHD replacement vehicle must have less than 250,000 miles, and a used LHD replacement vehicle must have less than 150,000 miles with odometer verification to occur at the post-inspection.

(D) All-Electric Range: Electric vehicles and hybrid vehicles (new or converted) must demonstrate an all-electric range of at least 35 miles. Those with fast charge capability must demonstrate an all-electric range of at least 20 miles. If a vehicle is not certified to meet this range, it may only be approved for funding following ARB evaluation of demonstration test data verifying that minimum all-electric range requirements are met. If demonstration data has already been submitted to another ARB funding program and approved, demonstration requirements may be waived.

(E) Horsepower: The replacement engine horsepower must be no more than 25 percent greater than the existing engine horsepower. In limited situations, such as the non-availability of the original horsepower range for the specific application, the air district may approve a greater than 25 percent increase in horsepower.

(F) Weight Class: The replacement vehicle must be in the same weight class as the existing vehicle (either LHD, MHD, or HHD). An MHD vehicle can replace an HHD vehicle if they both have the same axle configuration (e.g. an existing HHD vehicle with two axles can be replaced with an MHD vehicle with two axles) but the funding amount must be at the MHD funding level.

(G) Body and Axle Configuration: The replacement vehicle must have the same axle and body configuration as the old vehicle. The air district may allow slight changes based on the latest technology. Changes must be requested and approved prior to the purchase of the replacement vehicle.

(H) Title: The replacement vehicle must have a clean title prior to purchase. The replacement vehicle must not have a salvage title and must not have been in an accident, repaired, and became available for resale.

(I) California Registration: The replacement vehicle must be registered in California or in the California IRP.

(J) The participant must maintain insurance coverage for the replaced/repowered/converted vehicle as required by law for the duration of the project life. The participant is encouraged to have replacement value insurance coverage to ensure complete repair or replacement in the event of major damage to the vehicle. If the vehicle is not repaired and replaced during the project life, the applicant must return prorated funds. See Section C.6.(I)(3).

(K) Warranty requirements: The following warranty requirements apply:

(1) Except for school buses, hybrids, and zero-emission vehicles, all participants must purchase a minimum of a one-year or 100,000 mile major component engine warranty for the replacement new or used vehicle or repowered engine. The warranty must cover parts and labor. If the purchase of a new or used replacement vehicle already includes a minimum one year or 100,000 mile warranty as specified above, a separate supplemental warranty is not required. However, it is recommended that the highest grade warranty be purchased in order to avoid expensive repairs in the future.

(2) Electric vehicles, hybrid vehicles, and conversion systems must have a minimum warranty period of 3 years or 50,000 miles. The warranty must cover the engine (if applicable) or motor, drivetrain, battery or energy storage, and parts and labor (including any part on the converted vehicle or engine that is damaged by the hybrid conversion system).

(3) For school buses, the vendor warranty must provide protection for a minimum of 60 months or 75,000 miles, whichever comes first, and provide full warranty coverage of, at a minimum, zero-emission or all-electric motor, drive train, batteries/energy storage system(s), parts and labor. Warranties must be fully transferrable to subsequent school bus purchasers for the full warranty coverage period. Warranties must cover the following for the full warranty period (unless otherwise denoted):

a. Extended Motor, Drivetrain (including Battery), and Zero-Emission Components: Provide warranty coverage against defects in material and workmanship for the motor, transmission, rear axle, and electric or zero-emission system components including the battery. Gaskets and seals are not required to be included under the warranty coverage.

b. Frame Rails, Cross Members, and Cab: For new school buses, coverage extends to structural cracks in the frame caused by defects in material workmanship and against corrosion perforation of the cab. For school bus conversions, the all-electric school bus vendor is only responsible for damage or corrosion tied to, or resulting from, their workmanship on, or handling of, these parts.

c. Battery Degradation Warranty: Provide warranty coverage against battery degradation below 80 percent of capacity.

(4) No Moyer Program funds will be issued for maintenance or repairs related to the operation of the vehicle. The participant takes sole responsibility for ensuring that the vehicle is in operational condition throughout the agreement period.

(L) Engine and Emission Control Modifications: Emission controls on the replacement vehicle engine cannot be modified except as permitted by law. Unauthorized modification to engine performance including, but not limited to, changes in horsepower, emission characteristics, engine emission components (not including repairs with like-original equipment manufacturers replacement parts), and modifications to the engine's emission control function or the electronic monitoring unit are not allowed.

(M) Service: At least one California service provider approved by the manufacturer must be available to repair and service the engine/vehicle.

6. Air District Requirements

(A) Requirements described in Chapter 3: Program Administration must be met unless otherwise stated in this chapter.

(B) Air districts must include the on-road category as a funding option in the air district's Moyer Program Policies and Procedures Manual before funding on-road projects. The Policies and Procedures must include the administrative tools that are needed to manage on-road projects, including memoranda of understanding (MOU) or agreements with vehicle dealerships/providers (if applicable) and dismantlers, reimbursement procedures, inspections, monitoring and enforcement, contract development, etc. Air districts are not required to submit the initial Policies and Procedures to ARB for approval, but it must be available upon request.

(C) Air districts may fund on-road projects through a regional program administered by one designated air district. The designated air district may be located within the region, or may be a large air district located outside the region.

(D) Air districts are responsible for ensuring all Moyer Program requirements are met. Air districts are encouraged but not required to have agreements or MOUs with vehicle dealerships. However, agreements or MOUs with participating dismantlers are required. Agreements or MOUs, should contain, at a minimum, the program requirements (including, but not limited to, the requirement that the dealer delivers the existing vehicle to a qualified dismantler within 60 calendar days of the date that the old vehicle was turned in to the dealer by the applicant) that are expected of each entity and the repercussions for noncompliance with the terms of the agreement or MOU for each entity. Air districts that fund projects through both VIP and this chapter can have one agreement with each dealer and dismantler for both programs as long as the dealer and dismantler agree to follow requirements of each program. State funds must not be provided by the air district for any dismantler or material costs, including hazardous waste abatement fees, labor costs, fines, permits, or other charges resulting from destruction or disposal.

(E) Reimbursement: To ensure that an application package is complete, the following items must be included and complete prior to reimbursement:

(1) Signed and complete application and fully executed contract.

(2) Documentation showing that the existing vehicle is roadworthy. This includes documentation showing that the old vehicle has passed a CHP BIT inspection in the past 90 days or conduct an equivalent vehicle inspection and sign as appropriate. If documentation is provided by a dealership, the air district reserves the right to audit the dealership's record of inspection.

(3) Invoices of the purchase and all work performed. If work was performed on the replacement vehicle, the invoices must include all

engine, transmission, engine horsepower derating, body and other work performed on the replacement vehicle.

(4) Digital photographs of the existing vehicle and the replacement vehicle or engine. If a contractor conducts any inspections, the air district will specify the required digital format. Reimbursement will not be processed until all photographs are received and verified by the air district. All photographs must be clear, and all VIN and engine serial numbers must be legible.

a. Photographs of the old vehicle must include the following views:

i. Right Side - hood down.
ii. Front - hood down.
iii. Left Side - hood down.
iv. Rear.
v. VIN Tag - inside vehicle or on frame rail.
vi. Engine serial number and engine information, if available (make, model year, engine family) - either tag or stamp on block.
vii. License plate.
viii. Left and right side of engine.

b. Photographs of the replacement engine or vehicle must include the following views:

i. At least one side of the vehicle.
ii. VIN Tag - inside vehicle or on frame rail.
iii. Engine serial number and engine information – tag (or primary motive power components).
iv. License plate.
v. Odometer reading.
vi. Left and right side of engine.
vii. Modifications (if any).

(5) Dealer/Provider/Installer certification that the old engine and/or vehicle will be delivered to a qualified dismantler within 60 calendar days of receipt of the old engine or vehicle. The certification must include the make, model, year, VIN, engine make, engine serial number, and the date the engine or vehicle is expected to be delivered to the dismantler. The location of the dismantler yard where the engine/vehicle will be destroyed must also be provided.

(6) Documentation of replacement vehicle warranty and registration (if applicable).

(7) Proof of Project Financing: The financing package will enable the air district to determine the reimbursement costs that may be

accrued in case the participant defaults on the contracted performance requirements. Proof of project financing can be a document showing the lender and the amount loaned, which at a minimum is a copy of the check given to the dealer equal to the portion of the project that was not Moyer Program funded. Proof of project financing is always required unless the grantee paid cash for the portion of the project that was not Moyer Program funded.

(8) For replacements, dealerships must possess pre-inspection documentation of the existing and replacement vehicles prior to releasing the replacement vehicle to the participant. If the air district conducts the inspections, the dealership must receive approval from the district before releasing the replacement vehicle. Upon request of the air district, ARB may waive inspection requirements.

(9) Proof of sale after the application and all required documentation have been approved by the air district.

(10) Copy of Title of Existing Vehicle. For replacement projects, the title must be signed and dated by the applicant.

(F) A third party (e.g., engine dealer or distributor) may complete an application or part of an application on an owner's behalf only if the vehicle owner signs and agrees to the application. Applications must include a signature section for third parties. The third party signature section must include signature and date lines, and sections for the third party to disclose how much they are being paid, if anything, to complete the application and the source of funds used to pay them. To make the Moyer Program accessible to all potential applicants, including those that cannot afford to hire third party assistance, air districts are encouraged to provide assistance to applicants.

(G) Air districts must ensure the vehicle and engine are scrapped within 60 calendar days of the dismantler's receipt of the vehicle. This must be confirmed through post-inspection by the air district or an air district approved contractor. The destruction of the old vehicle and engine must be properly documented in accordance with the Moyer Program requirements.

(H) Inspections: The following inspections must be performed for each funded engine/vehicle (exceptions are allowed for public fleets and transit agencies as specified in Chapter 3) as shown in Table 4-9:

Table 4-9
Required Inspections for On-Road Projects

Inspection Type	Purpose(s)	Timing
Pre-inspection	• Verify existing vehicle is in operational condition. • Verify existing vehicle application information.	After application is submitted to air district but prior to approving the application.
Post-inspection	• Verify replacement vehicle meets emission standard. • Verify application information.	Before replacement engine/vehicle is delivered, and prior to payment being issued.
Pre-dismantle inspection (Replacements Only)	• Verify existing vehicle is in operational condition and has not been stripped of parts (except those allowed in Section C.4.(J)) per Section C.7.(F). • Verify existing vehicle application information.	• After existing truck is delivered to dealership before payment is issued. • Existing truck is at dealership location and must be delivered to dismantler within 60 days.
Dismantle inspection	• Verify engine destruction (see Section C. 8.(C)(4)). • Verify that frame rails are completely severed. • Obtain copy of REG 42 form filed with DMV.	• After engine and frame rail destruction. • Within 60 days after dismantler receipt. • If dismantler takes photos, they must be provided to the air district within 10 business days of dismantling.

Documentation requirements are specified in Chapter 3, Section W. and X. Air districts may enter into a contract, written agreement, or memorandum of understanding with a contractor to perform project inspections (pre-inspections, post-inspections, pre-dismantle, or dismantle inspections). If an air district chooses to use contractors to perform inspections, air district staff must conduct and document at least one inspection on each project without the use of a contractor. Air districts must ensure all inspection requirements are met and shall retain legal responsibility for full compliance with the inspection provisions of these

Guidelines, regardless of the use of contractors. Air districts that do not conduct 100 percent of required inspections themselves must audit 5 percent of each type of inspection (pre, post, pre-dismantle, and dismantle). Audits should be done randomly and occur throughout the implementation timeline of the air district.

(I) Recovery of Moyer Program Grant Funds: The air district must establish a mechanism to assure the participants fulfill all contractual obligations, including owning and operating the funded vehicle for the project life. The air district will determine noticing requirements and the method to achieve fund recovery. Air districts may consider the following options:

(1) List the air district as co-lien holder on the title of the funded vehicle for the term of the agreement. The participant must submit a completed Uniform Commercial Code-1 Financing Statement Form to the California Secretary of State, with a copy sent to the air district, within 30 days of the project sale. The financing statement must have the air district as the secured party and the vehicle should be listed as collateral.

(2) If the funded vehicle is sold during the project life, the new owner must assume the obligations under the participant's contract with the air district and comply with the terms and conditions of the contract. The air district must approve the change in ownership prior to the sale.

(3) The grant recipient may return funds according to the following prorated formula:

$$Recapture\ Amount\ (\$) =$$

$$Funding\ Amount(\$) - \frac{Elapsed\ Portion\ of\ Project\ Life(Yrs) * Funding\ Amount(\$)}{Project\ Life(Yrs)}$$

(J) Air districts and ARB reserve the right to deny funding to applicants that have previously received funds and did not meet the terms and conditions of the funding agreement.

(K) Projects may be reviewed through a solicitation process or first-come, first-served as described in the air district's Policies and Procedures.

(L) Air districts must perform compliance checks (see section C.1.(D)).

(M) Air districts must provide training, as described in Section C.7.(A)(3) and C.8.(B)(2), and additional training in a timely manner whenever there have been substantive Moyer Program revisions.

7. Dealership/Installer Requirements

(A) Dealerships and installers must warrant that they meet the following minimum qualifications and will continue to meet these qualifications throughout participation in the Program:

(1) Dealership/Installer has had a valid business license issued in California for a minimum of the last two years.

(2) Dealership has had a valid vehicle dealership license with DMV for a minimum of the last two years. The installer is authorized by the manufacturer.

(3) Dealership/Installer maintains a minimum of one employee that has successfully completed the training by the air district regarding terms, conditions and requirements of the Program. If a participating dealership maintains more than one location for truck sales, then each location must have at least one employee trained.

(4) Dealership/Installer agrees to allow the air district or ARB to inspect vehicles or audit program records covered under the Moyer Program Guidelines during normal business hours.

(B) Vehicle dealers must:

(1) Provide basic information to vehicle owners about the Moyer Program.

(2) Help participants complete the application, if necessary. It is important to make sure that all information is filled out correctly and that the participant understands the meaning of the program and the contract. Once complete, the dealer may submit the application package to the air district according to the agreement or MOU, if applicable.

(C) Dealerships and installers must adhere to agreements or MOUs established with the air district, if applicable.

(D) Dealerships and installers must submit all supporting documentation required under the Guidelines and if applicable, air district agreement for each project. Once all dealership/installer requirements have been met, reimbursement will be issued to the dealer/installer according to the agreement or MOU, when applicable.

(E) Dealerships and installers must possess pre-inspection documentation of the existing and replacement engines/vehicles prior to releasing the replacement engine/vehicle to the participant. If the agreement or MOU specifies that the air district or other third party will perform any inspections, the dealership/installer must receive air district approval

before releasing the replacement engine/vehicle. Upon request of the air district, ARB may waive inspection requirements.

(F) For replacements, the dealership must ensure the existing vehicle is in similar condition as found in the pre-inspection. The dealer should reject the condition of the existing vehicle if it is deemed unroadworthy or if parts were stripped from the existing vehicle (except for parts essential to vocation that will be installed on the replacement vehicle). Reimbursement to the dealer or release of funds to the grantee will be withheld until the dealer (or air district) approves of the condition of the existing vehicle and it is delivered to the dealership.

(G) The dealer or installer must deliver the existing engine/vehicle to a qualified dismantler within 60 calendar days of delivering the replacement engine/vehicle to the grantee. The dealer or installer must immediately notify the air district of the location and date of delivery of the existing engine/vehicle to the dismantler. The participating dismantler may also pick up the existing engine/vehicle.

(H) Use of Engine or Vehicle Pending Destruction: The dealer/installer may not use or permit the use of, the engines or vehicles, except use necessary to move it for destruction or storage.

(I) For electric or hybrid vehicles (new or converted), the dealership/installer/manufacturer must provide the air district with a copy of the owner's manual and other materials that will be provided to the purchaser/participant. The owner's manual and other materials must at least include the following information:

(1) A brief description of the vehicle/conversion system, including major components and their theory of operation and proper operating procedures;

(2) Battery maintenance best practices and charging procedures and protocols, if applicable;

(3) A listing of necessary service intervals and service requirements that differ from the base vehicle's or engine's original manufacturer's, if applicable;

(4) A statement that the hybrid converted vehicle is subject to all in-use vehicle inspection and maintenance programs applicable to its size, type, and class;

(5) The name, physical address, e-mail address, phone number, and website, if available, of the manufacturer and authorized installer, as well as a list of the names, addresses, and phone numbers of the major dealers who supply parts for, or service the vehicle;

(6) All information necessary for the proper and safe operation of the vehicle, including information on safe handling of the battery or energy storage system, and emergency procedures to follow in the event of battery leakage or other malfunctions that may affect the safety of the vehicle operator, emergency personnel, or laboratory personnel;

(7) The product warranty statement.

8. Dismantler Requirements

(A) If the existing engine or vehicle is replaced or removed, it must be dismantled. This requirement has been established to ensure that emission reductions are real, preventing the engine from continuing to emit high levels of pollutants. Destruction of the existing vehicle chassis and engine permanently removes the old, high emitting vehicle from service. The existing vehicle and engine specified in the application (or engine only for repower and conversion projects) must be dismantled, and may not be substituted with a different vehicle.

(B) To participate in the Program, dismantlers must:

(1) Enter into an agreement with the air district.

(2) Have at least one active employee who received training by the air district on the requirements of the Moyer Program. If a dismantler has more than one location, then the dismantler must have at least one active employee trained by the air district at each location that will be accepting engines/vehicles for the Moyer Program.

(3) Be licensed by DMV as an dismantler for at least the previous two years.

(4) Have had a valid business license issued in California for a minimum of the last two years.

(5) Possess a current, valid California Environmental Protection Agency Hazardous Materials Generators Permit.

(6) Be in compliance with all local, State, and federal laws and regulations.

(C) The dismantler must do the following for each engine/vehicle:

(1) Dismantle the old vehicle in accordance with Moyer Program Guidelines within 60 calendar days of receipt. Upon dismantler request, the air district may approve an extension.

(2) Destroy and render useless the existing vehicle and/or engine. At a minimum, the destruction must include the following:

a. Both frame rails must be completely severed between the front and rear axles.

b. A hole must be put in the engine block with a diameter of at least three inches at the narrowest point. The hole must be irregularly shaped (i.e. no symmetrical squares or circles). A section of the oil pan flange must be removed as part of the hole or have a line cut through it that connects to the hole.

(3) If the vehicle is to be scrapped, the dismantler must completely sever the frame rails of the old vehicle to ensure that the vehicle will not be used again.

(4) Air district staff or the dismantler must take photographs of the destroyed engine and severed frame rails. Dismantler photographs of the destroyed engine block and severed frame rails must be provided to the air district within ten (10) business days of dismantling the vehicle. The following picture views must be taken:

a. Front, right, and left side of vehicle with hood down including license plate if available (vehicle scrap).

b. VIN tag (vehicle scrap).

c. Engine serial number either stamped on the block or on the tag (engine or vehicle scrap).

d. Left and right side of destroyed engine block either in-frame or out of frame (engine or vehicle scrap).

e. Hole in engine block (engine or vehicle scrap).

f. Completely severed frame rails (vehicle scrap).

g. Odometer Reading (vehicle scrap).

(5) Prepare and submit to DMV either a “Non-Repairable Vehicle Certificate” using an “Application for Salvage Certificate or Non-Repairable Vehicle Certificate” (REG 488C), or a Notice of Acquisition/Report of Vehicle To Be Dismantled (REG 42) ensuring the VIN can never be registered again in California. Within 90 calendar days of the dismantle inspection date, the dismantler must provide verification to the air district that the existing vehicle has been registered with DMV as non-revivable with a type transaction code (TTC) L10 or C26 on the DMV Reconciliation

transaction receipt or other DMV documentation that satisfies this requirement.

(6) Upon request of the air district, ARB may approve an alternative disposition for the old engine/vehicle.

(D) As specified in California Code of Regulations, title 13, section 2706(i)(3)(G), no party shall advertise, sell , lease, or offer for sale or lease, a used verified diesel emission control strategy.

(E) Dismantler Inspection: Once the air district is notified, a dismantler inspection will be scheduled and photos documenting the destruction of the engine will be taken in accordance with the Guidelines. The dismantler shall not move the vehicle off of their property or part out a vehicle until a dismantler inspection by the air district or a designated contractor has been performed and given approval by the air district.

(F) Use of Engine or Vehicle Pending Destruction: The dismantler may not use or permit the use of, the engines or vehicles, except use necessary to move it for destruction or storage.

CHAPTER 5: OFF-ROAD EQUIPMENT

This chapter describes the minimum criteria and requirements for Carl Moyer Memorial Air Quality Standards Attainment Program (Moyer Program) mobile, portable and stationary, off-road compression-ignition (CI or diesel), and large spark-ignition (LSI) projects such as construction, agricultural, and industrial equipment. Air quality management districts or air pollution control districts (air districts) may set more stringent requirements based upon local priorities.

A. Projects Eligible for Funding

The following off-road equipment projects may be eligible for funding.

1. **Repower of Existing Equipment**. The replacement of the existing engine with a newer emission-certified engine instead of rebuilding the existing engine to its original specifications.

2. **Retrofit Purchase**. The installation of an Air Resources Board (ARB) verified emission control system on an existing engine. Examples include, but are not limited to particulate filters and diesel oxidation catalysts.

3. **Equipment Replacement**. The purchase of new or used equipment with an engine certified to the current emission standard or Tier to replace an older, fully functional piece of equipment that is to be scrapped.

4. **Infrastructure**. See the infrastructure chapter (Chapter 10) for details regarding applicant eligibility and project types for infrastructure in support of off-road equipment. This includes infrastructure such as alternative fuel and charging stations for construction, cargo handling, and ground support equipment, as well as agricultural pump electrification.

Please see Sections C and D for determining maximum grant amounts and minimum eligibility requirements for all off-road project categories.

B. Engine Emission Standards

ARB and the United States Environmental Protection Agency (U.S. EPA) have adopted regulations for exhaust emission standards for new off-road CI and LSI engines and equipment. For reference, Tables 5-1 and 5-2 below summarize the hydrocarbon (HC), oxides of nitrogen (NOx), and particulate matter (PM) standards in grams per brake-horsepower-hour (g/bhp-hr) for off-road CI Tier 1, 2, 3, and 4 engines. The actual standards, in grams per kilowatt-hour (g/kW-hr), may be found in the California Code of Regulations (CCR), title 13, sections 2449, et seq. Table 5-3 summarizes the exhaust emission standards for LSI engines. The complete emission standards for LSI engines may be found in the CCR, title 13, sections 2430, et seq.

Table 5-1
ARB and U.S. EPA Tier 1, 2, and 3 Exhaust Emission Standards for New Off-Road Diesel Engines ≥ 25 Horsepower (hp)
grams per brake horsepower-hour (g/bhp-hr)

Maximum Rated Power hp (kW)	Tier	Model Year	NOx	HC	NOx + NMHC	PM
25≤hp<50 (19≤kW<37)	Tier 1	1999-2003[a]	—	—	7.1	0.60
	Tier 2	2004-2007	—	—	5.6	0.45
50≤hp<75 (37≤kW<56)	Tier 1	1998-2003[a]	6.9	—	—	—
	Tier 2	2004-2007	—	—	5.6	0.30
	Tier 3[b]	2008-2011	—	—	3.5	0.30
75≤hp<100 (56≤kW<75)	Tier 1	1998-2003[a]	6.9	—	—	—
	Tier 2	2004-2007	—	—	5.6	0.30
	Tier 3	2008-2011	—	—	3.5	0.30
100≤hp<175 (75≤kW<130)	Tier 1	1997-2002[a]	6.9	—	—	—
	Tier 2	2003-2006	—	—	4.9	0.22
	Tier 3	2007-2011	—	—	3.0	0.22
175≤hp<300 (130≤kW<225)	Tier 1	1996-2002	6.9	1.0	—	0.40
	Tier 2	2003-2005	—	—	4.9	0.15
	Tier 3[c]	2006-2010	—	—	3.0	0.15
300≤hp<600 (225≤kW<450)	Tier 1	1996-2000	6.9	1.0	—	0.40
	Tier 2	2001-2005	—	—	4.8	0.15
	Tier 3[c]	2006-2010	—	—	3.0	0.15
600≤hp≤750 (450≤kW≤560)	Tier 1	1996-2001	6.9	1.0	—	0.40
	Tier 2	2002-2005	—	—	4.8	0.15
	Tier 3[c]	2006-2010	—	—	3.0	0.15
hp>750 (kW>560)	Tier 1	2000-2005	6.9	1.0	—	0.40
	Tier 2	2006-2010	—	—	4.8	0.15

[a] EPA model year. ARB model year for Tier 1 starts at 2000 for 25 hp ≤ to <175 hp.
[b] Engine families in this power category may meet the Tier 3 PM standard instead of the Tier 4 interim PM standard in exchange for introducing the final Tier 4 PM standard in 2012.
[c] Caterpillar, Cummins, Detroit Diesel Corporation, and Volvo Truck Corporation agreed to comply with these standards by 2005.

Table 5-2
ARB and U.S. EPA Tier 4 Exhaust Emission Standards for New Off-Road Diesel Engines ≥ 25 hp (g/bhp-hr)

Maximum Rated Power hp (kW)	Tier	Model Year	NOx	HC	NOx + NMHC	PM
25≤hp<50 (19≤kW<37)	Tier 4 Interim	2008-2012	—	—	5.6	0.22
	Tier 4 Final	2013 and later	—	—	3.5	0.02
50≤hp<75 (37≤kW<56)	Tier 4 Interim[(a)]	2008-2012	—	—	3.5	0.22
	Tier 4 Final	2013 and later	—	—	3.5	0.02
75≤hp<100 (56≤kW<75)	Tier 4 Phase-In	2012-2014	0.30	0.14	—	0.01
	Tier 4 Phase-Out		—	—	3.5	0.01
	Tier 4 Alternate NOx[(b)]		2.50	0.14	—	0.01
	Tier 4 Final	2015 and later	0.30	0.14	—	0.01
100≤hp<175 (75≤kW<130)	Tier 4 Phase-In	2012-2014	0.30	0.14	—	0.01
	Tier 4 Phase-Out		—	—	3.0	0.01
	Tier 4 Alternate NOx[(b)]		2.50	0.14	—	0.01
	Tier 4 Final	2015 and later	0.30	0.14	—	0.01
175≤hp<750 (130≤kW<560)	Tier 4 Phase-In	2011-2013	0.30	0.14	—	0.01
	Tier 4 Phase-Out		—	—	3.0	0.01
	Tier 4 Alternate NOx[(b)]		1.50	0.14	—	0.01
	Tier 4 Final	2014 and later	0.30	0.14	—	0.01
hp>750 (kW>560)	Tier 4 Interim	2011-2014	2.60	0.30	—	0.07
	Tier 4 Final	2015 and later	2.60	0.14	—	0.03

[(a)] Engine families in this power category may meet the Tier 3 PM standard instead of the Tier 4 interim PM standard in exchange for introducing the final Tier 4 PM standard in 2012.
[(b)] The implementation schedule shown is the three-year alternate NOx approach. Other schedules are available.

Table 5-3
Exhaust Emission Standards for
New Off-Road LSI Engines >1.0 liter
(g/bhp-hr)

Model Year	NOx+ Non-Methane Hydrocarbons (NMHC)
2001-2006[(a)]	3.0
2007-2009	2.0
2010 and later	0.6

[(a)] Standards phased in from 2001 – 2004

C. Maximum Eligible Funding Amounts (Determining Grant Amounts)

1. Table 5-4 summarizes the maximum eligible funding for each project type as a percentage. All projects are also subject to the cost-effectiveness limits specified in Appendix C.

Table 5-4
Maximum Percentage Eligible for
Moyer Program Off-Road Projects

Project	Maximum Percentage Eligible
Diesel repower	85**%**
LSI repower	85%
Repower to zero-emission	85%
Mobile equipment replacement	80%
Portable equipment replacement (excludes stationary)	80%
Retrofit	100**%**

The ARB has adopted in-use fleet rules affecting equipment with off-road CI and off-road LSI engines. For equipment subject to these rules, additional limitations may apply according to Sections E through I.

2. Project Life:

(A) Maximum project life

Table 5-5
Maximum Project Life

Type		Project Life
Repower only (no retrofit)		7 years
Farm equipment[1] (all projects)		10 years[a]
Replacement and repower to zero-emission		10 years[b]
Retrofit only		5 years
Replacement	Excavators Skid steer loaders Rough terrain forklifts	3 years
	All other non-farm (existing diesel only)	5 years
	All other non-farm (existing LSI only)	3 years

[a] Air districts are required to offer a ten year project life for farm equipment; however, applicants may request a project life fewer than ten years. Farm equipment is defined in Appendix B and does not include stationary agricultural equipment.

[b] Section C.2.(E) allows a maximum project life of ten years for zero-emission replacements.

(B) The maximum project life does not consider regulatory requirements that may shorten the eligible project life. Regulatory requirements may reduce actual project lives below these maximum values.

(C) Unless otherwise stated in this chapter (see Sections D.2.(I) and E.2.(H)(1)), the minimum project life allowed is three years.

(D) In accordance with SBx2 3 (Health and Safety Code (H&SC) § 44282.5(a)), mobile and portable farm equipment may be eligible for funding up to the compliance date of an applicable in-use regulation and a 10-year project life. In order to be eligible, farm equipment projects must be under a fully executed contract, and must be installed in the equipment and in operation prior to the applicable compliance date.

(E) For zero-emission replacement equipment, Senate Bill 467 (H&SC § 44287.1) allows the replacement of off-road internal combustion equipment with zero-emission off-road equipment to incorporate the maximum life allowed of the equipment being scrapped (three to five years, as applicable per Section C.2.(A)) and the remaining useful life up to ten years of the equipment the applicant would have bought at the time

of normal attrition (five to seven years, as applicable). For zero-emission replacement of off-road equipment, the emission benefits from two separate transactions may be included in the cost-effectiveness calculations:

(1) Emission reductions from existing older equipment, as applicable, to zero-emission equipment.

(2) Emission reductions from a new piece of equipment meeting the emission standards at the time of purchase to zero emission.

2. **Usage**. Cost-effectiveness calculations must be hour-based. Calculation of funding amounts must be based on the average of at least the two most recent years of documented equipment usage. For projects in which the two most recent years of documented usage are not available, the minimum annual usage is required to be specified in the contract (Chapter 3, Section V.6.(B)). Fleet averages cannot be used. All project engines or equipment must have a fully operational hour meter for the project life. If during the project life the hour meter fails for any reason, the hour meter must be repaired or replaced as soon as possible at the owner's expense.

D. Project Criteria

The minimum qualifications for off-road projects are listed below. All projects must also conform to the requirements in Chapter 2: General Criteria and in Chapter 3: Program Administration. Participating air districts retain the authority to impose additional requirements in order to address local concerns.

1. General Criteria:

(A) New and existing CI and LSI engines greater than or equal to 25 horsepower on mobile or portable off-road equipment and stationary agricultural equipment are eligible for funding. LSI engines above 25 horsepower but with a displacement of less than or equal to one liter may be eligible for funding on a case by case basis.

(B) Air districts have discretion to use good engineering judgment to determine project horsepower for an existing or new engine or equipment based on the engine label, manual, engine records, or other verifiable records.

(C) For existing equipment in which the actual engine horsepower cannot be determined based upon the engine label, manual, and engine records, air districts may determine existing engine horsepower by the following formula: Engine horsepower = Power Take Off (PTO) x 120 percent.

(D) Future annual hours of equipment operation for determining emission reductions must be based upon readings from an installed and fully operational hour meter.

(E) The certification emission standard and/or Tier designation for the existing engine (if applicable) and the new engine must be determined from the ARB Executive Order or U.S. EPA Certificate of Conformity (for federally preempted engines) issued for that engine. ARB Executive Orders for off-road engines may be found at http://www.arb.ca.gov/msprog/offroad/cert/cert.php.

(F) For existing equipment with engines manufactured under the flexibility provision, detailed in CCR, title 13, section 2423(d), the baseline emission rates shall be determined by using the previous applicable Tier emission standard for the existing engine model year and horsepower rating. Alternatively, the baseline emission rates may be determined based upon the standard or Tier associated with the actual reference family listed on the emission control information label of the existing equipment. The ARB Executive Order for these engines indicates that the engines are certified under the flexibility provision. Air districts must retain this documentation in the project file.

(G) New engines that are participating in the "Tier 4 Early Introduction Incentive for Engine Manufacturers" program, as detailed in CCR, title 13, section 2423(b)(6), are eligible for funding provided that they are certified to the Tier 4 Final emission standards. The ARB Executive Order for these engines indicates that the engines are certified under this provision. The emission rates for these engines used to determine cost-effectiveness shall be equivalent to the emission factors associated with Tier 3 engines. Air districts must retain this documentation in the project file.

(H) Notwithstanding Section D.1.(J) below, new engines certified to the interim Tier 4 (interim Tier 4, Tier 4 Phase-Out, Tier 4 Phase-in/Alternate NOx) and Tier 4 Final emission standards participating in the averaging, banking, and trading program that are certified to FEL higher than the applicable emission standards are eligible for funding. The appropriate emission factor for calculating emission reductions and cost-effectiveness shall be equivalent to the emission factors associated with the Tier 3 for engines 50 to 750 horsepower and Tier 2 for engines less than 50 horsepower or greater than 750 horsepower.

(I) Notwithstanding section D.1.(J) below, new engines certified to the interim Tier 4 and Tier 4 Final emission standards participating in the averaging, banking, and trading program that are certified to a FEL below the applicable emission standards are eligible for funding. The appropriate emission factor for calculating emission reductions and cost-effectiveness

shall be the emission factor associated with the applicable interim Tier 4 (interim Tier 4, Tier 4 Phase-Out, Tier 4 Phase-in/Alternate NOx) or Tier 4 Final emission standard.

(J) New engines eligible for off-road projects must meet the current applicable standard or Tier. If repowering or replacing with an engine meeting the current applicable standard is technically infeasible, unsafe, or not available when the air district commits to the proposed project, the new engine must meet the most practicable previously applicable emission standard. For purposes of this section, the air district's commitment (as defined in Appendix B) to a proposed project shall be consistent with that stated in their Policies and Procedures Manual. The air district shall determine eligibility of repower and replacement projects using an engine certified to a previous emission standard using the criteria listed below:

(1) At the applicant's request, confirmation of availability of an engine meeting the most recent emission standards or Tier may be limited to the same manufacturer as the existing engine.

(2) If the air district and the applicant do not execute a contract for the project within six months of project commitment, then the air district must recheck for the availability of engines meeting the current standard.

(3) Documentation that engines meeting the current applicable standards are unavailable must be included in the air district's project file. Acceptable documentation that engines meeting the most recent emission standards are unavailable include:

a. Verifiable information from the engine manufacturer, engine distributor, and/or engine dealer regarding the unavailability of engines meeting the current emission standards or Tier.

b. Confirmation (a written declaration by the air district is acceptable) that engines from a specific manufacturer meeting the current emission standards or Tier are not certified (Executive Order is not available on ARB website). Executive Orders for off-road engines may be found at http://www.arb.ca.gov/msprog/offroad/cert/cert.php.

c. For repower projects, a written statement of reason(s) provided by the engine manufacturer verifying that a particular piece of equipment cannot accommodate an engine meeting current standards without major modifications or safety risks. The letter must include information on the equipment being repowered, the engine being replaced, the reason why an engine meeting the currently applicable standard cannot be used (including

applicable supporting documentation), and the proposed replacement engine. Air districts must retain the written statement of reasons in the project files.

d. For repower projects, the engine manufacturer has provided ARB with sufficient information on engine and/or equipment models for which repowers are available, and engine and/or equipment models for which repowers are not available or feasible. Engine manufacturers who are interested in pursuing this option should contact ARB. ARB staff will maintain a list of such engines and/or equipment models and make that list available to air district staff.

(K) Existing zero- or low-emission equipment are required for worker safety in the following industries, and therefore these projects are not eligible for funding: food retail stores, cold storage, and confined space operations (such as freezers).

(L) The horsepower rating for the replacement engine must not be greater than 125 percent of the original manufacturer rated horsepower (baseline horsepower) for the existing engine. In limited situations, such as where equipment in the original horsepower range is not available or the higher horsepower equipment will result in equal or lower annual emissions, the air district may approve a greater than 25 percent increase in horsepower.

(M) Notwithstanding D.1.(L), at an air district's discretion, new engines or equipment may be funded with horsepower greater than 125 percent of existing equipment. However, the eligible funding amount must be based upon the cost of an engine or equipment whose horsepower is no higher than 125 percent of the existing engine horsepower. The applicant must pay the additional costs associated with the higher horsepower engine, and the emission reduction calculation must be based upon the funded (higher horsepower) engine. The air district's project file must include documentation of the cost of the funded (higher horsepower) equipment as well as the method used to determine the basis for the project grant amount (e.g. dealership cost estimate of lower horsepower equipment).

(N) New electric motors and equipment that are rated less than 19 kW are eligible for funding provided it can serve the same function and perform the same work as equipment with a 25 horsepower or greater engine that it is replacing.

(O) No funds will be issued for maintenance or repairs related to the operation of the existing or new equipment. The participant takes sole responsibility for ensuring that the engine and/or equipment is/are in operational condition throughout the agreement period.

(P) Existing engines replaced as part of an off-road project must be destroyed and rendered useless. At a minimum, the destruction of an engine must include:

(1) A hole in the engine block with a diameter of at least three inches at the narrowest point. The hole must be irregularly shaped (i.e. no symmetrical squares or circles) and

(2) A section of the oil pan flange must be removed as part of the hole or have a line cut through it that connects the hole.

(Q) For portable/stationary agricultural projects, State and air district rules impacting agricultural sources must be considered when determining whether projects provide emission reductions surplus to regulatory requirements. Moyer eligibility may be based on the requirements of the local rule if the local rule meets the requirements of Health and Safety Code section 39666(d). An air district requesting to have eligibility based on local rules must have its Air Pollution Control Officer self-certify via email or letter to their ARB Moyer liaison that the local rule is equally as effective as or more stringent than the Airborne Toxic Control Measure for Stationary Compression Ignition Engines (CCR, title 17, section 93115 et. seq.). Note: The self-certification described in this section applies solely to the Moyer Program and does not relieve the air district of their responsibilities under Health and Safety Code section 39666 or any other ARB program or requirement.

2. Repower

(A) New engines manufactured under the “Flexibility Provisions for Equipment Manufacturers” as detailed in CCR, title 13, section 2423(d), are ineligible for funding to repower equipment.

(B) New engines manufactured under the “replacement engine” provisions of CCR, title 13, section 2423(j) and/or the provisions of 40 Code of Federal Regulations (CFR) 1068.240 which are used to repower equipment are eligible for funding.

(C) For repower plus retrofit projects, the cost of data logging the replacement engine is not eligible. Please refer to Section D.3. for additional criteria.

(D) For repower projects with new off-road compression-ignition engines equipped with original engine manufacturer after treatment devices, addition of a retrofit is ineligible due to issues with engine warranty and anti-tampering provisions.

(E) Repower to convert to zero-emission technology is eligible for funding. Except for stationary agricultural equipment, zero-emission repower

projects must include a three-year or 5,000-hour warranty. The warranty must cover zero-emission system parts and labor.

(F) Variable frequency devices (VFD) may be eligible for funding provided the air district reports VFD cost and serial number information in the Clean Air Reporting Log (CARL).

(G) In stationary electric motor projects, the grantee must provide documentation of application or payment to the local utility company for power installation.

(H) An electric motor on an agricultural irrigation pump project that is under contract may be considered for invoice payment once the motor has been delivered to the project site, and the motor has been connected to the electricity grid.

(I) For portable/stationary agricultural projects, except for remotely located or less than 50 hp agricultural engines (as defined in Appendix B), only Tier 3 engines are eligible to be repowered. These must repower to Tier 4 Final engines. Air districts with a local rule may repower uncontrolled, Tier 1, and Tier 2 engines to Tier 4 Final engines as long as there is at least one year of surplus emissions reductions prior to the compliance date of the local rule for the specific tier. The minimum project life in these instances is one year. When repowering a Tier 3 engine, air districts are encouraged to consider the feasibility of repowering with zero-emission technology, such as an electric motor, over a Tier 4 Final engine.

3. Retrofit

(A) Existing off-road CI engines equipped with original engine manufacturer aftertreatment devices are ineligible for funding.

(B) The retrofit must be verified by ARB to the highest level available for the engine being retrofitted.

(C) Eligible project costs include:

(1) Retrofit system (including all essential components)

(2) Installation

(3) Maintenance (for duration of project life)

(4) Hour meter (if none existed on existing equipment)

(D) The data logging cost of a retrofit-only project is not eligible.

(E) Additional information on verified diesel retrofit systems may be found on ARB's website at http://www.arb.ca.gov/diesel/verdev/verdev.htm. Information on verified LSI retrofit systems may be found at: http://www.arb.ca.gov/msprog/offroad/orspark/verdev.htm.

4. Equipment Replacement

(A) Equipment replacement projects are limited to mobile and portable equipment.

(B) Equipment manufactured under the "Flexibility Provisions for Equipment Manufacturers" (Flex equipment), as detailed in CCR, title 13, section 2423(d) is eligible for funding as replacement equipment, provided the equipment meets the requirements of section D.1.(J) above.

(1) Eligible Flex equipment whose reference engine family is certified to an FEL is also subject to the provisions of Section D.1.(H) and (I).

(2) Flex equipment with an engine whose reference engine family meets a standard, Tier, or FEL less stringent than Tier 3 standard (or Tier 2 standard for engines less than 50 horsepower or greater than 750 horsepower), is ineligible for funding.

(C) The replacement of two (or more) pieces of existing equipment with one piece of replacement equipment is eligible for funding. Each piece of existing and replacement equipment must comply with all of the appropriate criteria in this section. The replacement equipment must execute the same job as the existing pieces of equipment. For baseline emissions calculation, the annual emissions of the two pieces of existing equipment are summed. For the replacement equipment emissions calculation, the annual usage of the two pieces of existing equipment is summed for the replacement equipment usage. The horsepower rating for the replacement equipment must not be greater than 125 percent of the original manufacturer rated horsepower (baseline horsepower) for the lowest horsepower of the two existing equipment engines (unless the grantee pays for the horsepower upgrade as specified in Section D.1.(M)).

(D) If air districts use equipment dealers in implementing the equipment replacement program, reimbursement cannot be issued until all necessary documentation is received and approved by the air district. Participants may purchase the replacement equipment from a private party, provided all required documentation is submitted and approved by the air district. This includes warranty requirements and all other equipment replacement requirements.

(E) Existing Equipment Requirements:

(1) Equipment Ownership: the applicant must have owned the existing equipment in California for the previous two years. The applicant must provide documentation of the following specific to the existing equipment (select one):

a. Bill of sale for the old existing equipment (preferred)

b. Tax depreciation logs

c. Property tax records

d. Equipment insurance records

e. Bank appraisals for equipment

f. Maintenance/service records

g. General ledgers

h. Fuel records specific to the existing equipment that identify the equipment owner

i. Other documentation approved by ARB

(2) Operational Requirements: the existing equipment must be in operational condition to qualify for funding. A pre-inspection of the existing equipment must be performed prior to funding to verify the operational status of the equipment. In addition, the applicant must provide documentation to demonstrate that the equipment was operational for the previous year. The following types of documents are acceptable:

a. Revenue and usage records that identify operational, standby, and down hours for the equipment

b. Routine inspections which document the operating condition of the existing equipment (Occupational Safety and Health Administration or workplace required)

c. Employee timesheets linked to specific equipment use

d. Preventative maintenance/service records tied to specific hours of equipment use

e. Repair work orders specific to the equipment

f. Other documents approved by ARB

(3) Pre-Inspection Requirements: Pre-inspection must verify the operational condition of the existing equipment. The pre-inspection must verify, at a minimum, the following items:

a. Tires in usable condition (able to hold air, sufficient tread or tracks, etc.)

b. Steering wheel operational

c. Equipment able to start up and move backwards and forwards

d. Buckets, blades, rollers, etc. are working

e. Undercarriage structurally sound

f. Fuel tank in usable condition

g. No parts stripped

h. Equipment not vandalized

i. Clear photographs of the existing equipment must include the following views listed below. The air district will specify the required digital format.

i. Right side - hood down

ii. Front - hood down

iii. Left side - hood down

iv. Equipment serial number

v. Engine serial number - either tag or stamp on block

vi. Diesel Off-Road Online Reporting System (DOORS) Equipment Identification Number (EIN), if applicable

vii. Rear

(4) Destruction and Salvage Requirements: Equipment replacement requires that the existing equipment be scrapped to permanently remove it from service. This ensures that emission reductions are real and prevents the existing equipment from being moved into another locale to continue emitting high levels of pollutants.

a. Destruction of the equipment may occur either at an air district approved salvage yard or another facility in conjunction with an air district salvage inspection.

b. Both the existing engine and equipment must be destroyed. Refer to Section D.1.(P) for the engine destruction method. The destruction method of the equipment will vary depending on the structure of the equipment:

   i. Equipment with permanent frame rails running the length of the equipment: complete cuts of both frame rails between the front and rear axles.

   ii. Equipment with removable/bolt-on frame rails: structural damage, with cuts or otherwise, that renders the main body of the equipment inoperable and unrepairable.

   iii. Equipment without frame rails: structural damage, with cuts or otherwise, that renders the main body of the equipment inoperable and unrepairable.

   iv. Articulated equipment: damage, cuts or otherwise, to the articulation joints of front and rear halves of the equipment so that neither half can be joined.

   v. Other equivalent methods of destruction are acceptable if approved by the air district.

c. The existing engine and equipment must be destroyed within 60 days of being replaced. Documentation of the destruction must be provided to the air district within 10 days of destruction.

d. Funding is not available for the salvage of any existing equipment.

e. The existing equipment salvage value will be negotiated between either the applicant, the dealership, and/or the salvage yard.

f. A salvage inspection of the existing equipment must be performed by either the air district or a contracted salvage yard.

g. Air districts which perform their own salvage inspections must be notified within 10 days of destruction so that a salvage inspection can occur.

h. Salvage inspection must include clear photographs of the following views:

   i. DOORS EIN (if applicable)

   ii. Equipment serial number

iii. Engine serial number either stamped on the block or on the tag

iv. Destroyed engine block as described in Section D.1.(P).

v. Cut structural components as described in Section D.4.(E)(4)b.

vi. Other views dependent on the method of equipment destruction

i. Salvage inspection of the existing equipment must be completed prior to disbursement of funds.

(F) Replacement Equipment Requirements

(1) The replacement equipment must serve the same function and perform the same work equivalent as the existing equipment (e.g., replacement of an agricultural tractor with another agricultural tractor).

(2) Only items essential to the operation of the equipment and the minimum attachments normally sold with the original equipment, as determined by the air district, are eligible for reimbursement on the replacement equipment. Equipment owners may remove non-emission related body components and place them on the replacement equipment as long as the components do not exist on the replacement equipment and are not part of the paid components for the replacement equipment.

(3) Applicants may purchase the replacement equipment from a private party, provided all required documentation is submitted and approved. This includes warranty requirements and all other equipment replacement requirements.

(4) If an applicant elects to install a retrofit with the replacement equipment, then the retrofit must be installed prior to equipment delivery to the grantee and must stay in operation on the replacement equipment for the project life. The retrofit must meet all the requirements per Section D.3.

(5) Warranty Requirements

a. All new or used replacement equipment must have a minimum one-year or 1600-hour powertrain warranty. The warranty must cover parts and labor. A separate supplemental minimum one-year or 1600-hour power and drivetrain warranty must be

purchased if the equipment does not have one. The supplemental warranty costs are not eligible for funding.

b. It is recommended that the highest grade warranty be purchased in order to avoid expensive repairs in the future.

c. Warranty documentation must be provided to the air district.

(6) Post-Inspection Requirements

a. Post-inspection of the replacement equipment must be completed prior to disbursement of funds.

b. The post-inspection must include clear photographs of the following views:

i. Pictures(s) of full equipment

ii. Equipment serial number

iii. Engine serial number and engine information

iv. Retrofit (if available)

v. Hour meter reading

(G) Air District Requirements

(1) Air districts must establish an off-road equipment replacement plan before funding projects. The plan must include criteria for the following:

a. Development of grantee contracts which must include a generic statement of work

b. Inspections (pre-, post-, salvage). The required digital format for the inspections photographs must be specified.

c. Reimbursement procedures

d. Monitoring and enforcement considerations

e. If applicable, for air districts that contract with dealers and salvage yards, the off-road equipment replacement plan must identify the air district's requirements for dealer and/or salvage yard contracts, and the process for oversight and review of program requirements that are expected of each entity, and the repercussions for non-compliance with the terms of the contract

for each entity. For air districts that contract with dealer(s), liaison training must be provided to the dealership staff.

(2) Air districts may fund equipment replacement projects through a regional program administered by a designated air district. The designated air district could be either an air district located within the regional program or a large air district located outside of the regional program. A regional equipment replacement implementation plan must be established, containing all the required components as required in an individual air district's equipment replacement implementation plan. A regional equipment replacement plan must also contain a detailed description of the funding mechanism among the participating air districts. All air districts participating in the regional program must sign the regional equipment replacement implementation plan and must adhere to all the requirements specified in such regional implementation plan.

(3) Air districts are encouraged, but are not required to establish contracts with dealers and salvage yards for participation in the program.

(4) Air districts must ensure the following are performed:

a. Pre-inspection of the existing equipment. This may be performed by an air district approved dealer.

b. Verification that the replacement equipment proof of sale and if applicable, proof of financing have been received from the dealer or participant.

c. Post-inspection of the replacement equipment. This may be performed by an air district approved dealer.

d. Salvage inspection of the existing equipment. This may be performed by an approved salvage yard.

e. Verification that all post-inspection of replacement equipment and salvage inspection of existing equipment were completed and all documentation is submitted and approved prior to disbursement of funds.

(5) The air district is allowed to make full payment to the dealer at the time the dealer delivers the replacement equipment to the applicant under the following framework:

a. The air district must complete the pre-inspection of the existing equipment and post-inspection of the replacement equipment to

make sure that all equipment complies with program requirements.

b. The air district must sign a contract with the dealer and the salvage yard that contains, at a minimum, the program requirements that are expected of each entity and the repercussions for non-compliance with the terms of the contract for each entity. This shall include, but is not limited to, the requirement that the dealer delivers the existing equipment to a qualified salvage yard within 30 days of the date that the existing equipment was turned in to the dealer by the applicant.

c. The air district must ensure the equipment is scrapped within 60 days of the salvage yard's receipt of the equipment through salvage inspection with the salvage yard to properly document the destruction of the existing equipment in accordance with the Moyer Program equipment replacement program requirements.

(H) Dealer Requirements

(1) Equipment dealers that enter into a contract with an air district must:

a. Provide basic information to potential applicants about the equipment replacement category. Air districts must also provide liaison training to dealership staff.

b. Inform potential applicants of rights and responsibilities as outlined in the air district and ARB guidelines.

c. Help the potential applicants correctly complete the application. It is important that the participant understands the meaning of the program and the subsequent air district contract if approved for funding. The air district will provide all forms and certificates as appendices to the application.

d. Ensure that an application package is complete. The dealer must verify that all the following items are included in the application package:

i. A signed and complete application.

ii. All documentation as required in Sections D.4.(E)(1) and (2).

iii. The following information must also be included in the documentation:

(a) Make

(b) Model

(c) Model year

(d) Equipment serial number

(e) Engine make

(f) Engine serial number

(g) Expected delivery date of existing equipment

iv. Documentation of replacement equipment warranty.

e. Submit the completed application package to the air district.

(2) After the application and all required documentation have been approved by the air district, the dealer must provide the air district with proof of sale and if applicable, proof of financing of the replacement equipment. The financing package will enable the air district to determine the reimbursement costs that may be accrued in case the participant defaults on the contracted performance requirements. Proof of project financing can be a document showing the lender and the amount loaned, which at a minimum is a copy of the check given to the dealer equal to the portion of the project that was not Moyer Program funded. Proof of project financing is always required unless the grantee paid cash for the portion of the project that was not Moyer Program funded.

(3) Prior to releasing the replacement equipment to the participant, the dealer must have documentation of an air district pre-inspection of the existing equipment and the post-inspection of the replacement equipment. Alternatively, if approved by the air district to do pre- and post-inspections, the dealer must verify that photographs of the existing equipment and the replacement equipment, as defined in Sections D.4.(E)(3)i. and (F)(6)b., are clear prior to submitting them to the air district.

(4) Provide documentation certifying that the existing equipment will be received by a contracted salvage yard within 30 days.

(I) Salvage Yard Requirements

(1) Equipment salvage yards must enter into an agreement with the air district to qualify for participation.

(2) Contracted salvage yard(s) must:

a. Destroy the existing equipment and engine within 60 days of receipt of the existing equipment in accordance with the program guidelines.

b. Provide the air district with all photographs required under the air district's salvage inspections requirements per Section D.4.(E)(4)h. below within ten business days of salvaging the existing equipment.

c. For each project, provide the following information:

i. Make

ii. Model

iii. Model year

iv. Serial number

v. Engine make

vi. Engine serial number

vii. Delivery date of the existing equipment

d. Submit a completed certificate of equipment destruction or other similarly approved documentation to the air district.

E. Projects subject to the In-Use Off-Road Diesel-Fueled Fleets Regulation (Off-Road Regulation) (CCR, title 13, section 2449 et. seq.)

1. The existing equipment must be registered in DOORS.

2. Fleets must be in compliance with the regulation in order to be eligible for and receive funding. Fleets subject to the Off-Road Regulation that meet the final compliance requirements of the Off-Road Regulation are eligible for funding, and are exempt from the requirements of Section E.2.(E) through (I).

(A) Applicants must submit information regarding fleet size and compliance status. All documentation submitted must be signed and dated by the applicant and include language certifying that the fleet list provided is accurate and complete. Air districts are not required to validate submitted information and will not be held liable if fleet owners falsify fleet information. The following information shall be submitted at the time of application:

(1) DOORS ID of the fleet.

(2) DOORS EIN of the existing equipment.

(3) Fleet size information (total horsepower) as reported to DOORS

(4) Information to determine compliance with the Off-Road Regulation

a. Large fleets and medium fleets are required to show compliance with the Off-Road Regulation.

b. Prior to 1/1/2019, small fleets are not required to show compliance with the Off-Road Regulation.

(5) For those fleets that have previously received Moyer Program funding, a list of funded equipment with the DOORS EIN of the funded equipment.

(6) Large fleets must certify that they have not applied for Moyer Program funding for their off-road diesel fleet in another fiscal year (July 1-June 30) after January 1, 2017, excluding applications for which no funding was ultimately received.

(B) Applicants must submit to the air district the DOORS EIN of the replacement equipment no later than at post-inspection of replacement equipment.

(C) Applicants are not required to submit information on exempted equipment. Information on exempted off-road equipment can be found in the Off-Road Regulation.

(D) No emission reductions achieved from a funded project can count towards a fleet's regulatory requirements for the duration of the contract term.

(E) Eligibility for a project is based upon the Best Available Control Technology (BACT) requirements of the Off-Road Regulation.

(1) Any equipment funded through the Moyer program, and that is still under contract, must be deducted from the amount of equipment eligible for funding. For instance, a fleet that is eligible for funding to reduce emissions for 50 percent of its horsepower, but which has already received funding in previous years to reduce emissions from 20 percent of its horsepower, is only eligible for funding to reduce emissions from 30 percent of its horsepower.

(2) Equipment funded through the Moyer program must be included in the fleet's total horsepower from which the BACT requirements of the regulation are calculated.

(F) Large Fleets

(1) Eligible projects for large fleets, as defined in the Off-Road Regulation must provide at least three years emission reductions surplus to the regulation with a corresponding minimum project life of at least three years.

(2) Projects must be installed and in operation at least three years before the BACT requirements become effective for the funded equipment.

a. The first compliance date for large fleets, as defined in the Off-Road Regulation, is January 1, 2014. The final compliance date is January 1, 2023. Funding for these fleets is available through December 31, 2019.

b. Large fleets are eligible for funding once after January 1, 2017. After January 1, 2017, for those large fleets eligible for funding a second or subsequent time, only zero-emission projects are eligible.

c. Large fleets may have alternative requirements per Section E.2.(I) below.

(G) Medium Fleets

(1) Eligible projects for medium fleets, as defined in the Off-Road Regulation must provide at least three years emission reductions surplus to the regulation with a corresponding minimum project life of at least three years.

(2) Projects must be installed and in operation at least three years before the BACT requirements become effective for the funded equipment.

(3) The first compliance date for medium fleets, as defined in the Off-Road Regulation is January 1, 2017. The final compliance date is January 1, 2023. Funding for these fleets is available through December 31, 2019.

(H) Small Fleets (includes Captive Attainment Area Fleets)

(1) Eligible projects for small fleets, as defined in the Off-Road Regulation must provide at least two years emission reductions surplus to the regulation, with a corresponding minimum project life of at least two years.

(2) Projects must be installed and in operation at least two years before the BACT requirements become effective for the funded equipment.

(3) The first compliance date for small fleets, as defined in the Off-Road Regulation is January 1, 2019. The final compliance date is January 1, 2028. Funding for these fleets is available through December 31, 2025.

(I) Surplus Off-Road Opt-In for NOx (SOON) Program

(1) Fleets located in air districts that have opted into the SOON program and that are subject to the SOON provisions are eligible for funding in accordance with the Off-Road Regulation (CCR, title 13, section 2449.2) and must meet the applicable criteria in Sections A. through D. in this chapter.

(2) Projects funded under SOON, are not subject to Section E above, except for the requirements of Sections E.1., E.2.(A) through (C), and E.2.(I).

3. For more information on eligibility of off-road diesel equipment, please see the Regulation for In Use Off-Road Diesel-Fueled Fleets Carl Moyer Program Implementation Chart available at http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm.

F. Projects subject to the Regulation for Cargo Handling Equipment at Ports and Intermodal Rail Yards (CHE Regulation) (CCR, title 13, section 2479)

1. Eligible Engines

(A) For repower or replacement projects in which the equipment is subject to the CHE Regulation, only Tier 4 Final engines or cleaner are eligible for funding.

(B) Replacement engines participating in the averaging, banking and trading program that are certified to FEL higher than the applicable emission standards, as designated on the Executive Order, are not eligible for funding.

2. Eligible projects must provide at least three years of emission reductions surplus to the regulation, with a corresponding minimum project life of at least three years. Cargo handling fleets that have met the final compliance requirements of the CHE Regulation are eligible for funding.

G. Projects subject to the Large Spark Ignition Engine Fleet Requirements (LSI Fleet Regulation) (CCR, title 13, section 2775 et. seq.)

1. Eligible funding must provide at least three years of emission reductions surplus to the LSI Fleet Regulation, with a corresponding minimum project life of at least three years.

2. Large and Medium Forklift Fleets and Fleets of Four or More Sweeper/Scrubbers, Ground Support Equipment, and/or Industrial Tow Tractors: In order to be eligible for funding, large and medium forklift fleets and fleets of four or more non-forklift LSI equipment must meet the final fleet average emission level applicable on January 1, 2013.

3. Agricultural Crop Preparation Forklift Fleets Model Year 1990 and Newer: These fleets are required to either retrofit, repower, or replace 100 percent of their fleet by January 1, 2012, or currently meet a 3.0 g/bhp hr fleet average HC + NOx level. Fleets that have met the 3.0 g/bhp-hr fleet average can apply for funding. Additionally, in accordance with SBx2 3 (H&SC § 44282.5(a)), fleets that have retrofitted/repowered 20 percent of their fleet in compliance with the regulation are eligible for funding up to the final compliance date. In order to be eligible, these projects must be under executed contract and must be installed and in operation prior to the applicable compliance date.

4. LSI fleets that have met the final compliance requirements of the LSI Fleet Regulation are eligible for funding. Due to the regulatory requirements for rental and lease equipment subject to the LSI Fleet Regulation, projects that include rented or leased equipment are not eligible.

5. Fleets with equipment not subject to the LSI Fleet Regulation are eligible for funding, including:

(A) Agricultural crop preparation non-forklift equipment and pre-1990 forklifts.

(B) Forklifts used exclusively in fields to harvest and maintain crops.

(C) Non-forklift LSI equipment such as aerial lifts, lawn and garden tractors, commercial turf equipment, mining and construction equipment, and industrial equipment.

(D) Small fleets (one to three forklifts and/or one to three sweepers/scrubbers, industrial tow tractors, or pieces of airport ground support equipment (airport GSE)).

6. Required Off-Road LSI Fleet Information: For forklifts, sweeper/scrubbers, airport GSE, and/or industrial tow tractors, an applicant's fleet size impacts project eligibility. Applicants must submit information regarding fleet size and compliance status. All documentation submitted must be signed and dated by the applicant and include language certifying that the fleet list provided is accurate and complete. Air districts are not required to validate submitted information and will not be held liable if fleet owners falsify fleet information.

(A) Large/Medium/Non-Forklift Fleets: For large, medium, and non-forklift fleets subject to the LSI Fleet Regulation, applicants are required to report compliance records for the entire statewide fleet as described in the regulatory language (CCR, title 13, section 2775.2).

(1) DOORS ID of the fleet.

(2) DOORS EIN of the existing equipment.

(3) Fleet size information (total number of forklifts; total number of non-forklift LSI equipment).

(4) Information to determine compliance with the LSI fleet Regulation. Large and medium fleets are required to show compliance with the applicable final fleet average emission level.

(B) Small Fleets: Small fleets are not required to maintain compliance records, but for the purposes of determining project eligibility, air districts must obtain the following information for the entire statewide fleet:

(1) Equipment identification number (equipment identification number, fleet assigned identification, etc.)

(2) Equipment type (e.g., forklift, GSE, etc.)

7. If applicable, applicants must submit to the air district the DOORS EIN of the replacement equipment not later than at post-inspection of the replacement equipment.

8. Applicants are not required to submit information on exempted equipment (except as noted above for small fleets). Information on exempted LSI equipment can be found in CCR, title 13, sections 2775(b), 2775.1(c) (4), and 2775.1(d-f) of the Final Regulation Order (http://www.arb.ca.gov/regact/lore2006/oalapprovedfro.pdf).

H. Projects subject to the Airborne Toxic Control Measure for Diesel Particulate Matter from Portable Engines Rated at 50 Horsepower and Greater (Portable Engine ATCM) (CCR, title 17, section 93116 et. seq.)

1. In order to be eligible for repower projects, diesel engines regulated under the Portable Engine ATCM must be permitted or registered in an air district or registered in the Portable Equipment Registration Program. If the portable engine is not required to be permitted or registered, documentation must be included in the project file from the air district stating that a permit or registration is not required to operate in the air district.

2. In order to be eligible for funding, fleets must be fully compliant with the regulatory requirements in effect in 2020.

3. For more information on eligibility of engines used in portable equipment, please see the Portable Engine Airborne Toxic Control Measure Implementation Chart available at: http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm.

I. Projects subject to the Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants from In-Use Heavy-Duty Diesel-Fueled Vehicles (Statewide Truck and Bus Regulation) (CCR, title 13, section 2025)

This regulation impacts the eligibility of all on-road heavy-duty diesel-fueled and alternative diesel-fueled vehicles operated in California with a manufacturer's GVWR greater than 14,000 pounds. Although this regulation primarily affects vehicles with on-road engines, some vehicles with off-road engines are also covered. Any application for Moyer Program funding to replace a vehicle with an off-road engine that is subject to an on-road regulation must comply with the applicable surplus requirements described in Chapter 4. For example, a yard truck with an off-road engine that is subject to the Statewide Truck and Bus Regulation (including yard trucks used primarily in agricultural operations) must meet the applicable on-road surplus requirements described in Chapter 4, Section C.2., and must also comply with all off-road project criteria described in this chapter.

CHAPTER 6: LOCOMOTIVES

This chapter describes the minimum criteria and requirements for Carl Moyer Memorial Air Quality Standards Attainment Program (Moyer Program) locomotive projects. Air quality management districts or air pollution control districts (air districts) may set more stringent requirements based upon local priorities.

A. Projects Eligible for Funding

The Moyer Program provides incentive to upgrade old high-polluting locomotives to new Tier 4 units. Rail equipment, designed for use on tracks, such as on-rail vehicles, railcar movers, sweepers, and wheel cranes which have tires or mounted tracks, that replace switcher locomotives, are also considered locomotives for the purposes of the Moyer Program. Funding opportunities may be limited due to the availability of Goods Movement Emission Reduction Bond Program (Proposition 1B Goods Movement Program) funding, and the South Coast and Statewide Memoranda of Understanding (MOU) with these railroads (See Table 6-1).

Table 6-1
Summary of Locomotive Funding Opportunities

Railroad Class	Subject to ARB Rule or MOU	Moyer Funding Opportunities
Class 1 Freight Railroads (Burlington Northern Santa Fe Railroad and Union Pacific Railroad)	*2005 Statewide Railyard Agreement* and *1998 South Coast MOU*[(a)]	Projects in California's goods movement trade corridors are generally ineligible for Moyer Program funding if Proposition1B funds are available.[(b)] These projects are only eligible for Moyer Program funding on a case-by-case basis.
Class 2 and 3 Freight Railroads and Passenger Railroads	No	Class 2 and 3 and passenger railroad projects are not limited.

[(a)] The South Coast MOU limits funding eligibility for Class 1 freight railroad new purchase or engine remanufacture/repower projects in the South Coast. See: http://www.arb.ca.gov/msprog/offroad/loco_flt.pdf
[(b)] For a map of the trade corridors, see: http://www.arb.ca.gov/bonds/gmbond/docs/gmtradecorridors.jpg

Project Types: Three types of locomotive projects are eligible for Moyer Program funding:

1. Locomotive Replacement
2. Locomotive Engine Repower
3. Head End Power Unit (HEP)

B. Maximum Eligible Funding Amounts

Table 6-2 summarizes the maximum eligible funding for each project type. All projects are also subject to the cost-effectiveness threshold defined in Appendix C.

Table 6-2
Maximum Grant Amount for Moyer Program Locomotive Projects

Railroad Class/Type	All Project Types
Class 1/Class 2	75%
Class 3 and Passenger	85%

C. Emission Standards

The U.S. EPA has adopted regulations for exhaust emission standards for new and remanufactured locomotives. For reference, Tables 6-3 and 6-4 below summarize the hydrocarbon (HC), oxides of nitrogen (NOx) and particulate matter (PM) standards in grams per brake horsepower-hour (g/bhp-hr) for the 1998 Federal Standards and the 2008 Federal Standards.

Table 6-3
U.S. EPA Locomotive Emission Standards (g/bhp-hr)
Based on 1998 Federal Standards

Tier and Engine Model Year	Type	NOx	HC	PM10
Uncontrolled Pre-1973	Line-haul and Passenger	13.5	1.00	0.60
	Switcher	17.4	2.10	0.72
Tier 0 1973 - 2001	Line-haul and Passenger	9.5	1.00	0.60
	Switcher	14.0	2.10	0.72
Tier 1 2002-2004	Line-haul and Passenger	7.4	0.55	0.45
	Switcher	11.0	1.20	0.54
Tier 2 2005 - 2011	Line-haul and Passenger	5.5	0.30	0.20
	Switcher	8.1	0.60	0.24

Table 6-4
U.S. EPA Locomotive Emission Standards (g/bhp-hr)
Based on 2008 Federal Standards

Tier and Engine Model Year	Type	NOx	HC	PM10
Tier 0+ 1973-2001	Line-haul and Passenger	7.4	0.55	0.22
	Switcher	11.8	2.10	0.26
Tier 1+ 2002-2004	Line-haul and Passenger	7.4	0.55	0.22
	Switcher	11.0	1.20	0.26
Tier 2+ 2005-2011	Line-haul and Passenger	5.5	0.30	0.10
	Switcher	8.1	0.60	0.13
Tier 3 2011-2014	Line-haul and Passenger	5.5	0.30	0.10
	Switcher	5.0	0.60	0.10
Tier 4 2015	Line-haul and Passenger	1.3	0.14	0.03
	Switcher	1.3	0.14	0.03

D. Project Criteria

The minimum qualifications for locomotives are listed below. All projects must also conform to the requirements in Chapter 2: General Criteria, and in Chapter 3: Program Administration. Participating air districts retain the authority to impose additional requirements in order to address local concerns. Note that railroad classes are defined in Appendix B.

1. General Locomotive Project Criteria

(A) Baseline emission factors must reflect the tier level required by federal locomotive remanufacture standards (i.e., the baseline emission factors are the required remanufacture standards, which may not be the certification standard of the baseline locomotive).

(B) Class 1 freight locomotive projects meeting the eligibility requirements for the Proposition 1B Goods Movement Program are only eligible for Moyer Program funding on a case-by-case basis. Moyer Program funds cannot be co-funded with Proposition 1B Goods Movement Program funds.

(C) Class 1 freight locomotives subject to the South Coast Memorandum of Understanding (MOU) are only eligible for Moyer Program funding on a case-by-case basis. These locomotive projects must be excluded from the fleet average emission rate calculations which demonstrate compliance with the MOU provisions. The baseline emission rates used to determine emission reductions and cost-effectiveness for these locomotive projects reflect the U.S. EPA Locomotive Tier 2 emission rates for line-haul and switch locomotives.

(D) Military and industrial railroads are considered Class 3 railroads for the purposes of the Moyer Program.

(E) Locomotive project activity must be based upon fuel consumption. If fuel consumption is not available, megawatt hours from the electronically logged data may be used.

(F) Moyer Program funds cannot be used to pay for labor or parts used during routine maintenance.

(G) Air districts may enter into contract and work may begin on a locomotive project prior to U.S. EPA certification and/or Air Resources Board (ARB) verification. In this instance, the air district contract with the grantee must specify that any work performed is done grantee's own risk. Air districts cannot make payment until certification and verification have been received.

(H) Participant must have owned the baseline locomotive for at least one year prior to application submittal, and the locomotive must be operational.

(I) At a minimum the destruction of a locomotive engine must include a hole in the engine block with a diameter of at least eighteen inches at the narrowest point. The hole must be irregularly shaped (i.e. no symmetrical squares or circles).

(J) Unless otherwise stated in this chapter, the minimum project life allowed is three years.

2. Locomotive Replacement

(A) New locomotives with an aggregate engine power rating greater than or equal to 1,006 horsepower (750 kW) must be certified by U.S. EPA and verified by ARB to achieve Tier 4 locomotive emission standards (or cleaner).

(B) New locomotives with an aggregate engine power rating less than 1,006 horsepower are not required to be certified by U.S. EPA to locomotive standards, but are required to be certified U.S EPA off-road (non-road) emission standards. This lower horsepower equipment must

also be verified by ARB to meet or exceed the Tier 4 locomotive standards.

(C) Zero-emission locomotives must have ARB verification.

(D) Due to the design of alternative technology switchers, fuel consumption for the new locomotive may differ from baseline fuel consumption. For contractual purposes only, when specifying the annual usage requirement in the contract the air district may assume a fuel savings of 20 percent from that used in the cost-effectiveness calculation. This fuel savings is already embedded into the cost-effectiveness calculation, and therefore it should not be applied when determining cost-effectiveness for the project.

(E) The baseline locomotive engine(s) must be destroyed. The grantee may choose to retain the baseline locomotive chassis since locomotive components have a long lifespan, ARB recognizes the benefits of reusing and/or recycling baseline locomotives. To prevent the baseline locomotive body from being fitted with a similar high-polluting engine, the grantee must sign an agreement with the air district which will ensure, with due diligence, that the baseline locomotive, if brought back into service, will be repowered to a Tier 4 or cleaner locomotive engine standard.

(F) Project life:

(1) Class 1 locomotive replacement projects in air districts other than the South Coast must have a minimum project life of ten years.

(2) All other locomotive replacement projects have a minimum project life of three years.

(3) The maximum project life for a locomotive replacement project is 15 years.

3. Locomotive Engine Repower

(A) Purchase and installation of an engine meeting Tier 4 locomotive emission standards or cleaner. The engine must be certified by U.S. EPA and verified by ARB to be eligible for Moyer Program funding.

(B) The maximum project life for a locomotive engine repower project is 15 years.

4. Head End Power Unit (HEP)

(A) HEP repower is eligible on a case-by-case basis.

(B) The baseline engine must be certified to the applicable off-road standard at the time of manufacture.

(C) The new engine must be certified to the U.S. EPA Tier 4 final or cleaner off-road (non-road) emission standards.

CHAPTER 7: MARINE VESSELS

This chapter describes the minimum criteria and requirements for Carl Moyer Memorial Air Quality Standards Attainment Program (Moyer Program) marine vessel projects. Air quality management districts or air pollution control districts (air districts) may set more stringent requirements based upon local priorities.

A. Projects Eligible for Funding

The Air Resources Board (ARB) has adopted two regulations that impact funding opportunities for marine vessel projects: 1) Amendments to the Regulations to Reduce Emissions from Diesel Engines on Commercial Harbor Craft Operated Within California Waters and 24 Nautical Miles of the California Baseline (Commercial Harbor Craft regulation or CHC) and 2) Regulations to Reduce Emissions from Diesel Auxiliary Engines on Ocean-Going Vessels While At-Berth at a California Port (Shore Power Regulation). There are limited funding opportunities for marine vessels subject to this regulations.

Table 7-1
Summary of Funding Opportunities

Project Type	Subject to ARB Rule	Moyer Funding Opportunities[(a)]
Vessels subject to Commercial Harbor Craft Regulation Schedules for Meeting Tier 2 or Tier 3 Standards (ex: barge, crew & supply, dredge, excursion, ferry, towboat, tugboat) - engine repower, remanufacture, retrofit or new purchase	Commercial Harbor Craft Regulation[(b)]	Opportunities depend on compliance status
Vessels *not* subject to Commercial Harbor Craft Regulation Schedules for Meeting Tier 2 or Tier 3 Standards (ex: fishing vessel or pilot/work boat) - engine repower, remanufacture, retrofit or new purchase	No	Not limited by regulation
Shore power - vessel retrofit	Shore Power Regulation[(c)]	Limited opportunity

[(a)] A fleet's compliance status with the ARB regulations must be determined. Contact air district Moyer Program staff or consult CHC regulation Moyer Program Implementation Charts at: http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm in addition to these guidelines.
[(b)] Harbor Craft Regulation: http://www.arb.ca.gov/ports/marinevess/harborcraft.htm
[(c)] Shore Power Regulation: http://www.arb.ca.gov/ports/shorepower/shorepower.htm

Project Types:

1. **Engine Repower.** Replacing an old vessel engine with a newer, lower emission engine. Limited opportunities remain for those vessel engines subject to the in-use compliance requirements of the CHC regulation. Repower must be completed at least three years prior to the vessel's in-use compliance date. Based on the vessel's operation, the newer engine's emissions must be surplus to the currently required United States Environmental Protection Agency (U.S. EPA) marine engine emission standard (i.e., Tier 3 or cleaner).

2. **Remanufacture Kit.** Kits are comprised of engine component parts that, when installed, reduce the engine's emissions. Limited Moyer funding opportunities remain for those vessel engines subject to the in-use compliance requirements of the CHC. Remanufacture must be completed at least three years prior to the vessel's in-use compliance date.

3. **Retrofit Device.** The installation of an ARB verified diesel emission control strategy (VDECS). This project type will be considered for funding on a case-by-case basis.

4. **Hybrid System.** The installation of an EPA verified hybrid system. A hybrid system implements various strategies (e.g. engine switching, electric power) to reduce emissions of NOx, ROG, and PM.

5. **Ship-Side Shore Power Projects.** The retrofit of a marine vessel to enable shore power connection. Ship-side shore power projects are not eligible unless the applicant can demonstrate that it will be surplus to the implementation requirements of ARB's Shore Power Regulation. For marine infrastructure projects, including Shore-Side Shore power, see Chapter 10: Infrastructure.

6. **Marine Vessel Exhaust Capture and Control System.** The purchase of an EPA verified marine vessel exhaust capture and control system. EPA verifications of exhaust capture systems include specific percentage reductions of NOx and PM. In lieu of EPA verification an ARB Executive Order will suffice.

Please see Section C (Project Criteria) for detailed minimum eligibility requirements.

B. Maximum Eligible Funding Amounts

Table 7-2 summarizes the maximum funding for each project type as a percentage of eligible costs. All projects are also subject to the cost-effectiveness threshold defined in Appendix C.

Table 7-2
Maximum Percentage of Eligible Costs for
Moyer Program Marine Projects

	Baseline Technology	Project Type	Maximum Percentage
Vessels subject to Commercial Harbor Craft Regulation Schedules for Meeting Tier 2 or Tier 3 Standards (ex: barge, crew & supply, dredge, excursion, ferry, towboat, tugboat)	Tier 0,1[(a)]	Engine repower or remanufacture kit compliant to EPA marine Tier 3	50%
		Engine repower or remanufacture kit compliant to EPA marine Tier 4[(b,c)]	85%
	Tier 2	Engine repower or remanufacture kit compliant to EPA marine Tier 3	80%
		Engine repower or remanufacture kit compliant to EPA marine Tier 4[(b,c)]	85%
Vessels ***not*** subject to Commercial Harbor Craft Regulation Schedules for Meeting Tier 2 or Tier 3 Standards (ex: fishing, pilot, work boat)	Tier 0,1,2	Engine repower or remanufacture kit compliant to EPA marine Tier 3	80%
		Engine repower or remanufacture kit compliant to EPA marine Tier 4[(b,c)]	85%
Any vessel propulsion engine repower with an off-road Tier 3 or cleaner certified engine			Case-by-case basis
EPA Verified Marine Retrofit Device			Case-by-case basis
Installation of an EPA verified Hybrid System			85%
Shore Power- ship side			100% of retrofit cost 50% of transformer cost
Purchase of an EPA verified marine vessel exhaust capture and control system			Case-by-case basis

[(a)] Chapter 1, Section A, Part 2 requires projects to provide three years of surplus reductions prior to any applicable regulatory compliance deadline

[(b)] Due to the absence of emission factors, 2016 and newer model year Tier 4 emission standards (Table D-16) will be used for funding calculations.

[(c)] Engines using a Family Emission Limit (FEL) or Averaging, Banking, and Trading (ABT) to meet the Tier 4 emission standards will be funded at Tier 3 engine levels. Tier 3 emission factors will be used for funding calculations.

C. Project Criteria

The minimum qualifications for marine vessels are listed below. All projects must also conform to the requirements in Chapter 2: General Criteria, and in Chapter 3: Program Administration. Participating air districts retain the authority to impose additional requirements in order to address local concerns.

1. General Marine Project Criteria

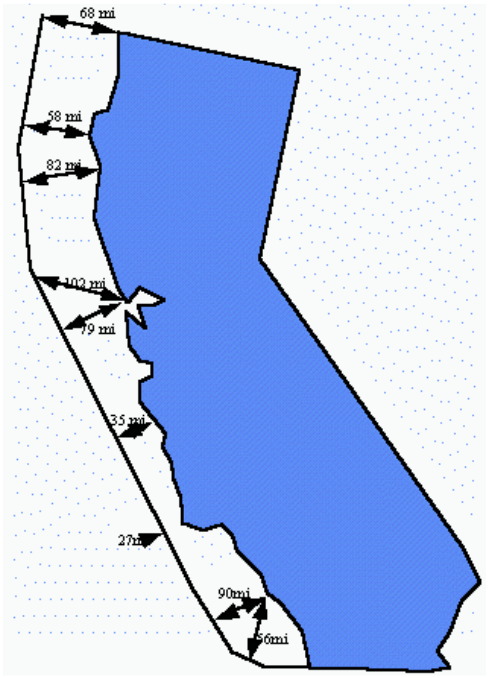
(A) To be eligible for Moyer Program funding, an applicant for harbor craft funding must have a United States Coast Guard Documentation Number, except in cases where such documentation is not required (such as fishing boats constructed outside the United States, vessels of less than five net ton displacement, or vessels owned by non-United States citizens). In such cases, the applicant must include with the application documentation at least one of the following:

(1) A valid California vessel registration (CF) number and a copy of the California Department of Fish and Game license can be provided instead of a Coast Guard Documentation Number.

(2) The vessel's Lloyd's/International Maritime Organization (IMO) number for an oceangoing vessel that does not have any of the above documentation.

(B) Both propulsion and auxiliary engines may be eligible for Moyer Program funding.

Figure 7-1
California Coastal Water Boundaries



(C) Only marine vessel activity in California coastal waters and internal waters may be used to determine project emission reductions. Figure 7-1 depicts the boundary of California coastal waters (defined as that area between the California Coastline and a line starting at the California-Oregon border at the Pacific Ocean, thence to 42.0°N 125.5°W, thence to 41.0°N 125.5°W, thence to 40.0°N 125.5°W, thence to 39.0°N 125.0°W, thence to 38.0°N 124.5°W, thence to 37.0°N 123.5°W, thence to 36.0°N 122.5°W, thence to 35.0°N 121.5°W, thence to 34.0°N 120.5°W, thence to 33.0°N 119.5°W, thence to 32.5°N 118.5°W, and ending at the California-Mexico border at the Pacific Ocean).

(D) Marine projects are not required to meet the minimum California usage requirement in Chapter 2, Section S. Air districts may impose more stringent operational requirements.

(E) Non-captive California fleets and vessels may be considered for funding on a case-by-case basis if their operation in California coastal waters can be properly documented.

(F) Funding is not available for projects where spark-ignition engines are replaced with diesel engines. Repowering a diesel engine to a spark-ignited engine may be considered on a case-by-case basis.

(G) Only marine engines equal to or greater than 25 horsepower are eligible for Moyer Program funding.

(H) Harbor craft engines less than 50 horsepower are exempt from the in-use compliance requirements of the Harbor Craft Regulation. Emission reductions from projects involving these engines are surplus.

(I) Engines on marine vessels with wet exhaust systems are eligible for Moyer Program funding if the project vessel meets all other applicable program requirements. The wet exhaust systems themselves are not eligible for Moyer Program funding. A wet exhaust factor of 0.80 must be applied to the baseline and reduced emission propulsion and auxiliary engine emission calculations for all projects on vessels with wet exhaust systems.

(J) New engines must be installed and operational at least three years prior to the compliance deadline specified by the CHC regulation. Project life for an engine cannot extend beyond that engine's compliance deadline. For compliance deadlines, see implementation charts at: http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm.

(K) Air districts have the option of calculating the project cost-effectiveness on a per vessel basis.

(L) All harbor craft vessels are required to install and maintain a functioning hour meter as required by the CHC Regulation.

(M) Moyer Program funding can be based on engine hours or fuel use. Hours of operation are the preferred basis for project cost-effectiveness calculations and eligibility. Applicants must submit historical usage data as part of the application process. This data must be based on the previous two years of historical usage documentation specific to the vessel being funded. Acceptable forms of documentation may include hour meter readings, maintenance records, fuel logs, purchase receipts or ledger entries. Grant funding that is based on historical fuel usage may not exceed the grant funding amount that would be based on hours of operation; the more conservative calculation must be used.

(N) Owners and operators of engines subject to the CHC Regulation must include a copy of the most recent Initial Report in their project application. The reporting requirements are outlined under California Code of Regulations, title 17, section 93118.5(h)(1).

2. Repower. Repower projects involving the replacement of an older harbor craft engine with a newer, cleaner engine must meet the following criteria:

(A) All new engines and replacement engines purchased for Moyer Program marine vessel repower projects must meet the requirements of the CHC Regulation set forth under California Code of Regulations, title 17, sections 93118.5(e). The regulation includes requirements for newly acquired engines and requirements for replacement engines in vessels subject to the schedules to meet Tier 2 and Tier 3 standards. Use of an off-road certified engine must adhere to the requirements set forth under California Code of Regulations, title 17, sections 93118.5(e)(3) and (e)(4),

especially the marinization requirements set forth in Code of Federal Regulations, title 40, part 1042.605. Project proposals for repower of propulsion engines with off-road engines will be considered on a case-by-case basis.

(B) For all marine engine repower projects, the replacement engine must provide at least a 15 percent NOx reduction relative to the baseline engine. The replacement engine cannot be significantly modified or reconfigured in any way during the project life.

(C) Funding of Tier 4 marine repower projects:

(1) Due to the absence of emission factors, 2016 and newer model year Tier 4 emission standards (Table D-16) will be used for emission reduction calculations.

(2) Tier 4 Engines using a Family Emission Limit (FEL) or Averaging, Banking, and Trading (ABT) to meet the Tier 4 emission standards will be funded at Tier 3 engine levels. Tier 3 emission factors will be used for emission reduction calculations.

(D) The maximum project life for a marine vessel repower project is 16 years. A longer project may receive case-by-case approval if applicants provide justifying documentation. The maximum project life does not consider regulatory requirements and may be shorter.

(E) The total project repower cost may include charges for the following:

(1) The capital cost of the new engine.

(2) Purchase of or modifications to the cooling system; fuel and exhaust system; wiring, panel, and harness system; power take-offs; propulsion control system; gauges and alarms; and radiator and ventilation, if attached to or integral to the functioning of funded engine.

(3) Costs related to the purchase and/or installation of a new transmission may be eligible when it is a necessary part of the engine repower; and an ineligible expense when it is required for maintenance or repair purposes. Ordinarily, a statement from the vendor or applicant that the new reduced emissions engine is not compatible with the existing baseline transmission is sufficient justification for eligibility; please retain a copy of the vendor or applicant’s statement(s) or other documentation in the project file.

(4) Frames needed to be extended or other parts needed to be cut or modified in order to accommodate the new engine, as well as paint

or coating needed to protect those specific areas that were cut or modified.

(5) Tax and transport for eligible parts or costs.

(6) Labor for installation of or modification to parts eligible for funding.

(F) The total project repower cost may not include charges for the following:

(1) Rudders or propellers.

(2) Steering system.

(3) Sea trials and dry docking.

(4) Paint, coatings, or hull work not directly related to the engine repower.

(5) Tax and transport for ineligible parts or costs.

(6) Labor for installation of or modification to parts ineligible for funding.

(7) Any parts or labor typically included as part of the vessel or engine overhaul, maintenance, repair, or upkeep.

(8) These and other items may be eligible for funding on a case-by-case basis if it can be proven that they are not part of the typical vessel overhaul, repair, upkeep or maintenance and are a necessary part of the engine repower.

(G) All engines replaced as part of a marine vessel repower project must be scrapped, consistent with the requirements of Chapter 3: Section BB.

3. Engine Remanufacture Kit. Engine remanufacture kit projects must meet the following criteria:

(A) A remanufacture kit for a specific vessel type may be certified by the U.S. EPA, IMO, or approved by ARB to meet the requirements of the CHC Regulation, but must be surplus to the current in-use requirements of CHC Regulation.

(1) Engine remanufacture kits specific to vessels not subject to the in-use requirements of the CHC Regulation must meet U.S. EPA Tier 3 marine or Tier 3 non-road engine emission standards or cleaner (e.g., Tier 3 or higher).

(2) Engine remanufacture kits specific to vessels subject to the in-use requirements of the CHC Regulation must be surplus to the current requirements of the regulation.

(B) The applicant must provide a copy of the regulatory compliance letter from ARB (similar to an Executive Order) to the air district demonstrating that the remanufacture kit is compliant with the CHC Regulation. Remanufacture kits which reduce NOx only are not eligible for Moyer Program funding.

(C) Remanufacture kit projects have a maximum project life of six years.

(D) If the U.S. EPA Emissions Warranty for the project kit requires fuel injectors to be replaced before the end of the project life, the applicant must replace the injectors with equivalent low-emission injectors. The Moyer Program project cost may include the replacement injectors. The project annual report must include documentation that all required maintenance identified in the U.S. EPA Emissions Warranty (if applicable) is completed on schedule. Maintenance other than replacement of low-emission fuel injectors is not eligible for Moyer Program funding.

4. **Retrofits**. Retrofits include selective catalytic reduction, diesel oxidation catalysts or diesel particulate filters. A retrofit device must be verified by ARB to reduce emissions from the project engine in order to be eligible for funding. This project type will be considered for funding on a case-by-case basis.

5. **Hybrid System**. A Hybrid System project must meet the following criteria:

(A) The hybrid system must be verified by the United States EPA to reduce the total vessel emissions of NOx, ROG, and PM by specific percentages compared to the baseline vessel.

(B) The hybrid system must be verified to reduce NOx by at least 15 percent compared to the baseline vessel.

(C) The vessel must meet the EPA verification parameters (i.e. vocation, duty cycle, horsepower range) for the proposed hybrid system.

(D) The vessel must be compliance with the CHC Regulation engine replacement schedule for meeting Tier 2 or Tier 3 standards.

(E) The vessel must have Tier 3 or cleaner propulsion engines and Tier 2 or cleaner auxiliary engines.

(F) The applicant must be able to provided individual usage history for each engine on the baseline vessel.

(G) Hybrid system installation projects have a maximum project life of five years.

(H) The hybrid system must include a manufacturer’s warranty for the duration of the project life.

(I) Eligible costs for a Hybrid System project include the components and labor costs directly related to the purchase and installation of a hybrid system.

(J) Ineligible costs for a hybrid system include the following:

(1) Paint, coatings, or hull work not directly related to the hybrid system installation.

(2) Tax and transport for ineligible parts or costs.

(3) Sea trials and dry docking.

(4) Labor for installation of or modification to parts ineligible for funding.

(5) Any parts or labor typically included as part of the vessel or engine overhaul, maintenance, repair, or upkeep.

(6) Other items may be eligible for funding on a case-by-case basis if it can be proven that they are not part of the typical vessel overhaul, repair, upkeep or maintenance and are a necessary part of the hybrid system.

(K) All engines replaced as part of Hybrid System project must be scrapped, consistent with the requirements of Chapter 3: Section BB.

6. Ship-Side Shore Power Projects. The retrofit of a marine vessel to enable shore power connection. For shore-side projects see Chapter 10: Infrastructure.

(A) Only a marine vessel owner may apply to receive Moyer Program funding for a ship-side power project.

(B) Vessels subject to the Shore Power Regulation:

(1) Applications for Moyer Program funding of shore power projects must include a copy of the most recent Vessel Plan, Annual Statement of Compliance as identified in Section (g) of the Shore Power Regulation. All subsequent project reports to air districts must include any new or updated Vessel Plans in order to evaluate compliance with the project contract.

(2) The commitment of visits and hours made by the applicant, above those required by the Shore Power Regulation, must be used in the project cost-effectiveness calculation and is required in the contract between the applicant and the air district.

(3) The entire fleet roster and all the California ports of harbor the fleet will be visiting. From the locales submitted, the fleet must indicate

per location, the number of vessel visits and hours per year the fleet will be utilizing shore-side power.

(C) Up to 100 percent of necessary vessel (non-transformer) retrofit costs, specifically required to allow the vessel to plug into shore-side power, are eligible for Moyer Program funding. Up to 50 percent of any necessary transformer costs on board the vessel are eligible for Moyer Program funding.

(D) Docking at ports or terminals funded by the Proposition 1B Goods Movement Program is not prohibited; however, vessel retrofits funded with Moyer Program funds cannot claim emission reductions resulting from ship visits to ports or terminals during the active Proposition 1B Goods Movement Program contract period.

(E) The Moyer Program shall not pay for energy costs (fuel or electricity), shore power routine maintenance, or labor costs for connection and disconnection of the vessel to shore-side power.

(F) All contracts for Moyer Program funding of shore power projects must include a stipulation that receipt of program funding is contingent on the project being post-inspected and operational. The project contract must include a provision that if the shore power is not used for the total hours committed to in the contract, the project participant shall return the pro-rated contract amount (commensurate with the shortfall in usage) to the air district. If the contract activity is not met, air districts may refer to Chapter 3 Section FF.4. to address this underutilization. However, the contract must include language prohibiting the grantee from obtaining a waiver from the contracted usage, specifically Section FF.4.(D).

(G) Shore power projects have a maximum project life of 20 years. A longer project may receive case-by-case approval if applicants provide justifying documentation. The maximum project life does not consider regulatory requirements and may be shorter.

(H) The emissions from vessels using grid power in lieu of auxiliary engines when the vessel is at berth are assumed to be reduced by 90 percent. The emission reductions from a shore-side transformer project are calculated as the total emission reductions from each participating ship. Each ship's emission reductions calculated as: (Ship emission rate * berthing time * power requirements * number of visits * 0.9).

(I) Estimated berthing time shall include the time needed to connect and disconnect the vessel to shore power. Ship emission rates and power requirements are included in Appendix D.

7. **Marine Vessel Exhaust Capture and Control System**. Funding for the purchase of exhaust capture and control systems may be approved on a case-by-case basis.

CHAPTER 8: LIGHT-DUTY VEHICLES

This chapter describes the minimum criteria and requirements for Carl Moyer Memorial Air Quality Standards Attainment Program (Moyer Program) light-duty vehicle projects.

A. Projects Eligible for Funding

Voluntary Accelerated Vehicle Retirement (VAVR) projects are eligible for Moyer Program funding. VAVR projects scrap older, more-polluting vehicles earlier than their expected lifetime that are still operational and have useful remaining life. Two types of VAVR projects are allowed: conventional and high emitting. Retirement of a high emitting vehicle results in emission reductions greater than those generated by conventional projects. To be eligible for a high emitting VAVR project, a vehicle's Smog Check results must exceed the pass/fail emission standards for the vehicle's model year and class.

The Bureau of Automotive Repair (BAR) concurrently administers two different vehicle retirement programs similar to the Moyer Program, the Enhanced Fleet Modernization Program's (EFMP) Retirement-Only component and their own Consumer Assistance Program (CAP). Although the Moyer Program, EFMP Retirement-Only Program, and CAP are administered and operated in a consistent manner, each program has different eligibility requirements, funding sources, and accepts vehicles at different times within the Smog Check cycle. The Moyer Program accepts vehicles that have passed their most recent Smog Check, while CAP accepts vehicles that have failed their most recent Smog Check. EFMP Retirement-Only however, accepts vehicles that have either passed or failed their most recent Smog Check, but is limited to income eligible applicants only.

B. Maximum Eligible Funding Amounts

VAVR projects are subject to the Moyer Program cost-effectiveness limit and must meet all other relevant criteria in Section D of this chapter. Incentives paid for eligible VAVR projects are limited to a maximum of $1,500 per vehicle. Air quality management districts or air pollution control districts (air districts) have the authority to set more stringent project requirements.

C. Regulatory Background

Moyer Program VAVR projects are subject to the requirements of the VAVR Regulation, California Code of Regulations (CCR), title 13, section 2601 et seq. Air districts may choose to act as the enterprise operator in lieu of contracting out this work to a third party. However, costs incurred by the air district to perform the duties of an enterprise operator shall be considered administrative costs.

VAVR projects funded through AB 923 are authorized by Health and Safety Code section 44229(b)(4) which states that these projects must be in compliance with

guidelines adopted by the Air Resources Board (ARB). This chapter constitutes ARB's adopted guidelines for VAVR projects.

D. Project Criteria

The following criteria provide the minimum requirements for Moyer Program VAVR projects. All projects must also conform to Chapter 2: General Criteria, as well as the project application, contract, reporting, and other requirements as described in Chapter 3: Program Administration. Participating air districts retain the authority to impose additional or more restrictive requirements to address local concerns.

Vehicle Eligibility Requirements:

1. Participation shall be entirely voluntary for vehicle owners.

2. A vehicle volunteered for retirement must be a diesel or gasoline powered passenger car or light-duty truck up to 10,000 pounds gross vehicle weight.

3. A vehicle volunteered for retirement must be currently registered with the Department of Motor Vehicles (DMV) as an operating vehicle and must have been registered for at least 24 consecutive months, to an address within the air district in which the VAVR enterprise is operated, prior to the date of the sale to a VAVR enterprise. Smog Checks must be performed as required by DMV in order for the vehicle to be considered registered.

(A) A vehicle may also be eligible if the owner of the vehicle placed the vehicle in planned non-operational status, per Vehicle Code section 4604 et seq., for up to 60 days during the previous 24 month registration period and occurring at least 90 days immediately prior to its sale to the VAVR enterprise.

(B) A vehicle may also be eligible if the registration has lapsed for a period not to exceed 181 days during the previous 24 months and all appropriate registration fees and late penalties have been paid to DMV, provided that the vehicle is registered for at least 90 days immediately prior to its sale to a VAVR enterprise.

4. A vehicle volunteered for retirement shall be driven to the VAVR enterprise purchase site to be retired under its own power.

5. A vehicle volunteered for retirement whose emission control systems have been tampered with as defined in CCR, title 16, section 3340.41.5 is not eligible until such tampering has been completely corrected.

6. A vehicle volunteered for retirement shall not be operating under a Smog Check repair cost waiver or economic hardship extension.

7. If a vehicle volunteered for retirement is within 60 days of its next required Smog Check, the vehicle shall pass a Smog Check without receiving a repair cost waiver or economic hardship extension prior to acceptance by a VAVR enterprise.

8. If a vehicle volunteered for retirement is within 61-90 days of its next required Smog Check, the air district shall verify that the vehicle has not failed a Smog Check during this time frame.

9. A vehicle volunteered for retirement shall pass functional and equipment eligibility inspections as specified in the VAVR Regulation, CCR, title 13, section 2603(b).

10. For high emitting VAVR projects, a vehicle volunteered for retirement must receive a confirmatory Smog Check to establish its baseline emissions, and the emissions must exceed the pass/fail emission standards for the model year and vehicle class as defined in CCR, title 16, section 3340.

    (A) Only vehicles identified as potential high emitters through a technology operated in accordance with the VAVR Regulation, CCR, title 13, section 2610 and approved by ARB are eligible to receive extra emission reductions credit for VAVR projects.

    (B) If a vehicle's emissions are within the pass/fail standards, the vehicle is not a high emitter and does not quality for high emitter projects but may be retired for default emission reductions through a conventional VAVR project.

    (C) For pre-1974 model years, the pass/fail emission standards for the 1974 model year may be used to qualify vehicles for the project.

    (D) Smog Checks must be full tests and not "fast pass" tests. The test must be conducted only by BAR-licensed technicians according to BAR protocols and completed as close to the retirement date as reasonably possible.

    (E) Diesel powered vehicles are not eligible for high emitting VAVR projects.

E. Emissions Measurement Methods

1. Smog Checks for model year 1999 and older gasoline powered vehicles are performed via a conventional Acceleration Simulation Mode (ASM) test. For certain vehicles, such as four-wheel and all-wheel drive vehicles, the Smog Check cannot be performed via an ASM test for safety or other mechanical reasons. In those limited cases, the Two Speed Idle (TSI) test may be used. TSI tests must be performed in strict compliance with BAR protocols.

    (A) Consistent with the model's limitations, TSI test results and the BAR protocol may only be used to predict ROG emissions, as TSI tests do not

directly measure either NOx or PM. For high emitting vehicles that are retired, default evaporative ROG, NOx, and PM emission reductions may be claimed.

2. Smog Checks for model year 2000 and newer gasoline powered vehicles and 1998 and newer diesel powered vehicles are performed via an On-Board Diagnostic Inspection (OIS) test. The OIS test must be performed in strict compliance with BAR protocols.

(A) Consistent with the model's limitations, OIS test results and the BAR protocol may only be used to predict ROG, NOx, and PM emissions, as the OIS test does not directly measure tailpipe emissions.

F. Air District Project Plan Requirements

1. An air district shall submit a detailed VAVR program project plan to ARB for approval and must receive written approval from ARB's Executive Officer (EO) prior to implementing a VAVR program. The program must follow the approved plan, and any substantive changes must be pre-approved by ARB in writing.

2. The air district project plan shall include, at a minimum, the following:

(A) The name, title, and telephone number of the air district program contact.

(B) An evaluation of environmental justice considerations including, but not limited to, outreach addressing community needs.

(C) An estimate of the number of vehicles to be retired, and an estimate of the cost-effectiveness with all assumptions and calculations used.

(D) Copies of contracts with enterprise operators, consultants, and any other third party contractor(s) participating in the project.

(E) A description of and timetable for monitoring and auditing enterprise operators, consultants, and other third party contractor(s).

(F) A copy of the statement of certification that an enterprise operator(s) has demonstrated compliance with all applicable provisions of the VAVR Regulation.

(G) The protocol for verifying vehicle eligibility including confirmation of compliance with any Smog Check requirements and for informing the public of the availability of vehicles eligible for retirement.

(H) A sample of the records that will be required of the enterprise operator(s).

(I) A description of any project criteria elements stricter than the ARB minimum requirements.

3. For high emitter projects, the air district project plan shall also include, at a minimum, the following:

(A) A detailed operating description of the technology and software used to identify high emitting vehicles including, but not limited to, set up, typical operation, location and location criteria, calibration, and maintenance.

(B) A copy of the standard operating procedures for that technology including software maintenance and the criteria to be used to identify a high emitting vehicle with documentation that operating personnel are trained and qualified.

(C) A detailed description of the methodology used to calculate extra emission reductions, including changes to any ARB-recommended method.

(D) If an air district intends to include an evaporative emissions testing element, the plan must specify the test equipment and include a copy of the test protocol.

(E) If an air district intends to include a PM measuring element, the plan must specify the test equipment and include verification that the methodology for measuring PM is scientifically valid, documentation that the results are reproducible, and a complete copy of the methodology.

(F) An itemized breakdown of estimated project costs including, but not limited to, funds allocated to identifying high emitters, the number of vehicles to be retired, data analysis, outreach to and solicitation of vehicle owners.

G. Recordkeeping and Reporting

1. For each VAVR project, the air district shall retain the following records for inclusion in the annual report to ARB.

(A) Vehicle Identification Number and license plate digits

(B) Vehicle odometer reading

(C) Vehicle make and model

(D) Name, address, and phone number of legal vehicle owner(s)

(E) Name and business address of the enterprise operator

(F) Emission reductions claimed

(G) Total air district cost to retire each vehicle

(H) Date of vehicle purchase and retirement by the enterprise operator

(I) Data identifying vehicles as potential high emitters along with confirmatory Smog Check date and results (High Emitter VAVR)

2. For each VAVR project, the enterprise operator shall maintain the following records. These records are not required for the annual report but must be made available to ARB for review.

(A) Reproduction of California Certificate of Title and registration, as signed-off by the seller at time of final sale to the enterprise operator.

(B) Reproduction of the applicable certificate of functional and equipment eligibility.

(C) Reproduction of the applicable Notice to Dismantler (DMV Registration 42 form).

(D) Reproduction of written documentation from DMV verifying that a vehicle meets the vehicle registration requirements of ARB's VAVR Regulation.

(E) Copies of documentation demonstrating that the retired vehicle did not fail a Smog Check within 90 days prior to its sale to the enterprise operator.

3. Air districts and enterprise operators shall retain these records for the three year life of the project plus an additional two years.

H. Minimum Project Application Requirements

Air districts must ensure project applications include the specific information needed to determine program eligibility and populate the Clean Air Reporting Log (CARL), including the information needed to track the project and calculate project cost-effectiveness.

I. Offering Vehicles/Parts to the Public

1. Enterprise operators must inform the air district of the vehicles ready for dismantling, and the air district must provide an easily accessible and detailed description of the vehicles to interested parties including collectors and enthusiasts as defined in CCR, title 13, section 2605(a)(1).

2. The enterprise operator must wait a minimum of ten days after informing the air district of vehicles ready for dismantling before submitting a Notice to Dismantle to DMV, and if interested parties contact the enterprise operator, the enterprise operator must hold the vehicle for a minimum of seven additional days as defined in CCR, title 13, section 2605(a).

3. Upon completion of the ten day waiting period (and additional seven day extension as applicable), the emission-related and drive train parts must be removed from the retired vehicle and destroyed prior to offering the remaining

non-emission-related and non-drive train parts for resale, as defined in CCR, title 13, section 2606(b).

4. If a vehicle, or a vehicles emission-related or drive train parts, are resold instead of retired, no emission reductions will be generated; and no Moyer Program funds may be used for retiring the vehicle. However, non-emission-related and non-drive train parts from the vehicle may be sold at the discretion of the enterprise operator.

J. Emission Benefits

Emission reductions from conventional VAVR projects are calculated using the VAVR Regulation methodology as described in CCR, title 13, section 2608(g). They are equal to the retired vehicle's emission rates minus those of the replacement vehicle with the difference multiplied by the average vehicle miles traveled by light-duty vehicles in the year of vehicle retirement and then multiplied by the three year project life. The retired vehicle's emission rates are equal to those for gasoline powered, light-duty vehicles for the model year of the retired vehicle in the year of vehicle retirement. Replacement vehicle emissions are the fleet average emissions for all gasoline powered light-duty vehicles for model years 1990 through the year of vehicle retirement. Emission rates and average vehicle miles traveled are generated by ARB's motor vehicle emissions model. ROG, NOx, and PM emission reductions over the three year project life by vehicle model year are located in Tables 8-1 through 8-5 below. These tables will be updated on an as needed basis through a mail-out to reflect revisions to the motor vehicle emissions model or to include additional years.

Table 8-1
Retired Vehicle Emission Reductions, CY 2016 (lbs/3yr)

MY	ROG	NOx	PM10
	Total	Exhaust	Exhaust
pre 1973	376.3	141.8	2.21
1973	382.2	146.1	2.28
1974	340.8	147.3	2.35
1975	288.9	146.3	2.37
1976	271.2	182.9	2.43
1977	254.4	194.7	2.40
1978	166.9	107.5	2.41
1979	161.5	102.8	2.44
1980	150.9	106.1	2.38
1981	136.3	83.7	0.94
1982	149.1	84.3	0.95
1983	165.1	85.0	0.92
1984	164.9	90.5	0.94
1985	155.3	88.5	0.96
1986	166.4	89.4	0.98
1987	153.9	86.9	1.01
1988	146.8	85.0	1.04
1989	133.6	76.3	1.05
1990	123.1	66.0	1.04
1991	100.4	68.2	0.55
1992	99.2	71.7	0.57
1993	92.2	69.6	0.59
1994	84.0	63.9	0.60
1995	71.6	51.4	0.60
1996	56.6	38.4	0.13
1997	46.3	36.5	0.14
1998	23.5	30.5	0.14
1999	19.6	27.8	0.14
2000	14.5	21.5	0.14
2001	12.4	19.9	0.14
2002	10.9	19.8	0.14
2003	8.3	19.1	0.15

Source: EMFAC2014 V1.0.7

Table 8-2
Retired Vehicle Emission Reductions, CY 2017 (lbs/3yr)

MY	ROG	NOx	PM10
	Total	Exhaust	Exhaust
pre 1974	377.5	143.3	2.24
1974	338.2	144.9	2.30
1975	286.6	144.6	2.32
1976	269.5	182.1	2.38
1977	252.3	192.2	2.36
1978	165.3	105.4	2.36
1979	160.3	101.2	2.39
1980	149.6	103.9	2.34
1981	135.1	82.0	0.92
1982	148.3	82.6	0.93
1983	165.8	83.5	0.90
1984	165.3	88.9	0.92
1985	155.8	87.1	0.93
1986	167.6	88.1	0.96
1987	154.8	85.0	0.99
1988	149.0	84.3	1.02
1989	137.0	75.7	1.02
1990	127.4	66.4	1.02
1991	103.1	68.7	0.54
1992	102.3	72.3	0.56
1993	95.9	70.4	0.57
1994	88.2	64.8	0.59
1995	75.7	52.7	0.59
1996	60.4	39.7	0.13
1997	49.7	37.8	0.13
1998	25.6	31.7	0.13
1999	21.7	29.0	0.13
2000	16.7	22.8	0.13
2001	14.7	21.4	0.14
2002	13.1	21.1	0.14
2003	10.6	20.5	0.14

Source: EMFAC2014 V1.0.7

Table 8-3
Retired Vehicle Emission Reductions, CY 2018 (lbs/3yr)

MY	ROG	NOx	PM10
	Total	Exhaust	Exhaust
pre 1975	333.7	140.9	2.24
1975	283.0	141.3	2.25
1976	265.2	177.2	2.31
1977	250.7	189.7	2.30
1978	163.6	102.4	2.30
1979	158.7	98.3	2.33
1980	148.3	101.1	2.28
1981	133.9	79.5	0.89
1982	147.4	80.3	0.90
1983	166.0	81.1	0.87
1984	166.2	86.7	0.90
1985	156.6	84.8	0.91
1986	169.2	86.1	0.93
1987	156.0	83.2	0.95
1988	150.4	82.0	0.98
1989	139.8	74.6	0.99
1990	130.6	65.5	0.98
1991	105.3	68.6	0.52
1992	105.2	72.3	0.54
1993	99.3	70.5	0.55
1994	92.4	65.5	0.57
1995	80.0	53.3	0.57
1996	64.3	40.5	0.12
1997	53.2	39.0	0.13
1998	28.0	32.8	0.13
1999	24.1	30.2	0.13
2000	19.0	24.0	0.13
2001	17.1	22.6	0.13
2002	15.6	22.5	0.13
2003	13.0	21.8	0.14

Source: EMFAC2014 V1.0.7

Table 8-4
Retired Vehicle Emission Reductions, CY 2019 (lbs/3yr)

MY	ROG	NOx	PM10
	Total	Exhaust	Exhaust
pre 1976	279.3	137.8	2.19
1976	262.3	174.9	2.24
1977	246.6	184.8	2.23
1978	161.5	99.6	2.23
1979	157.1	95.7	2.26
1980	146.5	98.1	2.21
1981	132.8	77.4	0.86
1982	146.5	78.0	0.88
1983	166.0	78.7	0.84
1984	166.5	84.2	0.87
1985	157.8	82.6	0.88
1986	171.1	83.9	0.90
1987	157.3	81.3	0.92
1988	152.0	80.2	0.95
1989	141.4	72.4	0.96
1990	133.1	64.6	0.95
1991	106.6	67.6	0.50
1992	107.4	72.1	0.52
1993	102.3	70.5	0.53
1994	96.1	65.8	0.55
1995	84.1	54.0	0.55
1996	68.1	40.7	0.12
1997	56.6	39.7	0.12
1998	30.2	34.0	0.12
1999	26.5	31.4	0.12
2000	21.3	25.1	0.12
2001	19.3	23.6	0.12
2002	17.9	23.5	0.13
2003	15.4	23.0	0.13

Source: EMFAC2014 V1.0.7

Table 8-5
Retired Vehicle Emission Reductions, CY 2020 (lbs/3yr)

MY	ROG	NOx	PM10
	Total	Exhaust	Exhaust
pre 1977	257.3	169.2	2.18
1977	244.9	182.3	2.17
1978	159.5	96.4	2.17
1979	155.3	93.1	2.20
1980	145.0	95.2	2.15
1981	131.3	74.8	0.84
1982	145.6	75.9	0.85
1983	165.7	76.2	0.82
1984	166.6	81.8	0.84
1985	158.6	80.2	0.85
1986	173.7	81.7	0.87
1987	158.9	79.2	0.89
1988	153.7	78.5	0.92
1989	143.3	70.9	0.93
1990	134.3	62.5	0.92
1991	107.5	66.5	0.49
1992	108.7	71.0	0.50
1993	104.7	70.3	0.52
1994	99.4	66.1	0.53
1995	87.6	54.4	0.53
1996	71.6	41.0	0.12
1997	59.8	40.0	0.12
1998	32.1	34.6	0.12
1999	28.7	32.6	0.12
2000	23.6	26.3	0.12
2001	21.5	24.6	0.12
2002	20.0	24.3	0.12
2003	17.5	24.0	0.13

Source: EMFAC2014 V1.0.7

1. Emission reductions from retired diesel powered vehicles are also calculated using the VAVR Regulation methodology. Because of limited data and minor differences in emission rates from one year to another, average emission reductions are shown for only two model year ranges in the four calendar year intervals shown. Replacement vehicle emission rates are the same as those used for gasoline powered vehicles. Average ROG, NOx, and PM emission reductions over the three year project life by model year range are located in Tables 8-6 and 8-7. There are no evaporative emission reductions for the retirement of a diesel powered vehicle.

Table 8-6
Retired Diesel Powered Vehicle Emission Reductions

Model Year Range	Pollutant	CY 2014-2017 (lbs/3 yrs)
Pre-1984	ROG	11.6
	NOx	53.4
	PM	11.5
1984-1992	ROG	10.8
	NOx	42.8
	PM	8.4

Source: EMFAC2014 V1.0.7

Table 8-7
Retired Diesel Powered Vehicle Emission Reductions

Model Year Range	Pollutant	CY 2018-2021 (lbs/3 yrs)
Pre-1984	ROG	10.8
	NOx	48.9
	PM	10.1
1984-1992	ROG	10.3
	NOx	39.6
	PM	7.4

Source: EMFAC2014 V1.0.7

2. Please refer to Appendix C for a discussion of the methodology for estimating emission reductions and how to calculate VAVR project cost-effectiveness.

3. Currently, none of the air district VAVR programs have components for high emitter projects. ARB will provide the methodology for any new plans which include special cases, such as high emitter projects, through a mail-out as needed.

CHAPTER 9: LAWN AND GARDEN EQUIPMENT REPLACEMENT

This chapter describes the minimum criteria and requirements for the Carl Moyer Memorial Air Quality Standards Attainment Program (Moyer Program) Lawn and Garden Equipment (L&GE) replacement projects. L&GE replacement provides a streamlined approach to reduce emissions by replacing existing gasoline lawn mowers with cordless, zero-emission electric lawn mowers. Zero-emission lawn mowers are not required by regulation, so the emission benefits are surplus. The Moyer Program provides funding for vouchers to offset part of the cost of the replacement electric lawn mower.

A. Projects Eligible for Funding

New Replacement Cordless, Zero-Emission Electric Lawn Mower Purchase: The purchase of a new cordless, zero-emission electric lawn mower to replace the existing gasoline lawn mower that is to be scrapped is eligible for funding under this program.

No emission reductions generated by the Moyer Program shall be used as marketable emission reduction credits, or to offset any emission reduction obligation of any person or entity. Therefore, an electric lawn mower model that generates credits by participating in the Air Resources Board's (ARB) zero-emission equipment credit averaging, banking, and trading program is not eligible for funding.

B. Maximum Eligible Funding Amounts

The maximum total project funding amount associated with reducing the eligible costs of a L&GE replacement project has been predetermined as $145 per lawn mower.

C. Project Criteria

The criteria listed below are the minimum requirements for L&GE replacement project participants: air quality management districts or air pollution control districts (air districts); cordless zero-emission electric lawn mower manufacturers and merchants; hazardous waste material disposal companies and recycling companies. All projects must also conform to the requirements in Chapter 2: General Criteria and in Chapter 3: Program Administration, except for the following Sections: S. Project Application Requirements, W. Project Pre-Inspection, X. Project Post-Inspection, Y. Project Invoice and Payment, Z. Grantee Annual Reporting, AA. Air District Audit of Projects, BB. Nonperforming Projects; and as noted elsewhere below.

1. **General Lawn and Garden Equipment Replacement Criteria**. As allowed under Chapter 2, Sections I, N, O, P, and Q, an air district may contribute additional non-Moyer Program incentive funds towards the purchase of the individual lawn mower. However, Moyer Program and AB 923 funds combined cannot exceed $145. Bulk-purchasing discounts from the electric lawn mower manufacturer or merchant are also allowed.

2. **Participant Requirements.** All participants must meet the following requirements to be eligible for funding**:**

   (A) *Application Form*: To be approved for L&GE replacement funds, the applicant must meet L&GE replacement program requirements and submit an application. Once an application is approved by the air district, the air district will return the application form to the applicant. The applicant must turn in the approved application form with applicant's signature at the location designated by the air district.

   (B) *Applicant must certify in the application*:

      (1) California Residence: Participants must reside in California. Air districts may add the requirement that participants reside within the air district.

      (2) Own and Operate: The participant must currently own and operate the existing gasoline lawn mower in California.

      (3) Replacement Cordless, Zero-Emission Electric Lawn Mower Operation in California: The participant must intend to own and operate the new replacement cordless, zero-emission electric lawn mower in California for a minimum of 36 months from the date of purchase.

3. **Existing Lawn Mower Requirements.** Each existing lawn mower must meet the following conditions before the L&GE replacement application can be approved and awarded a voucher.

   (A) *Operational Gasoline Lawn Mowers*: The existing lawn mower must be in operational condition. The lawn mower must operate on gasoline, be able to start, move, and have all operational parts. Applicant certifies operability on the application form.

   (B) *Delivery of the Existing Lawn Mower to the Air District or Air District-specified Facility*: The participant must deliver the existing lawn mower to the air district or air district-specified facility. The air district or air district-specified facility must reject the existing lawn mower if it is deemed inoperative.

4. **Replacement Lawn Mower Requirements.** All replacement lawn mowers must meet the following requirements before a voucher is awarded to the participant:

   (A) *New, Cordless, Zero-Emission Electric Lawn Mower*: The replacement lawn mower must be a new, cordless, zero-emission electric lawn mower.

(B) *Not Used for Credit Generation*: Only an electric lawn mower model that does not generate credit or participate in ARB's zero-emission equipment credit averaging, banking and trading program is eligible for funding.

(C) *Purchase*: The replacement lawn mowers must be purchased from a participating air district, or a third party, participating manufacturer or participating merchant, as chosen by the implementing air district.

5. Air District Requirements. An air district implementing the program must meet the following requirements:

(A) *Add an addendum to the air district's Moyer Program Policies and Procedures*: An air district must create an addendum to its current Moyer Program Policies and Procedures (P&P's) describing their program within two (2) months after they begin implementation of the L&GE replacement program. Air districts are not required to submit this addendum to ARB but it must be available to ARB upon request.

(B) *Agreements*:

(1) An air district must have written agreements with both of the following parties:

a. A hazardous waste materials disposal company.

b. A recycling company.

The agreements can be included as part of the air district's agreements with the same entities for other Moyer Programs. The recycling company and the hazardous waste material company can be the same company.

(2) If an air district is working with either or both of the following parties,

a. A cordless, zero-emission electric lawn mower manufacturer, or

b. A cordless, zero-emission electric lawn mower merchant,

the air district must have a written agreement with that party. The agreement must include the requirements of subsection 6 (Participating Manufacturer Requirements) or 7 (Participating Merchant Requirements) of this chapter, as applicable, and Chapter 3: Program Administration, Section V. Minimum Contract Requirements, except for the following subsections: 6. Project Specifications, 7. Maintenance, 9. Reporting, and 11. Repercussions of Nonperformance - equipment operation requirement.

(C) *Third Party*: An air district may enter into an agreement with a third party to manage some of the air district's program requirements. The third party

must agree to comply with all L&GE replacement program requirements. The air district must train the third party on L&GE replacement program requirements and include an example of the agreement in its P&P's.

(D) *Application*: Applications, at a minimum, must have the following information:

(1) Information about the Applicant:

a. Name.

b. Mailing Address (including city, state, zip code).

c. Physical Address (if different from mailing address).

d. Phone Number.

e. Date of Application.

(2) Information about the Applicant's Existing Gasoline Lawn Mower:

a. Manufacturer (if known).

b. Model Year (if known).

c. Engine family (if known).

(3) Section for the applicant to certify the following information is accurate and true:

a. Existing gasoline lawn mower is operational.

b. Applicant resides in California.

c. Applicant currently owns and operates the gasoline lawn mower in California.

d. From the date of purchase, applicant intends to own and operate the new, cordless zero-emission electric lawn mower in California for a minimum of 36 months.

e. The information provided in the application is true and correct and meets the minimum requirements of the L&GE replacement program.

f. "I understand that an incomplete or illegible application may be immediately rejected, and I will be notified."

g. “I understand as an applicant that incentive programs have limited funds and shall terminate upon depletion of program funding.”

(4) A box for the applicant to check to certify the information included in (3) is correct and signify the applicant’s agreement with the above statements.

(E) *Application Approval*: The application approval process consists of the following steps:

(1) Applicant submits application to the air district.

(2) Air district or designated third party reviews and approves application (if appropriate), and returns it to applicant. Application review and approval may be conducted on-site at a lawnmower exchange event.

(3) Applicant turns in approved application with applicant’s signature per subsection C. 2.(A).

(F) *Rejected Application*: If a submitted application is incomplete, ineligible, or illegible, the air district must reject the application immediately and notify the applicant within five days of receipt. Air districts may follow up with an applicant in order to complete an incomplete or illegible application.

(G) *Disbursement Request Requirements*: An air district may request Moyer Program funds as these funds become available. In order for an air district to be approved for a disbursement request, the air district must follow Chapter 3: Program Administration, Section E requirements, and also provide the following to ARB:

(1) Verification of board approval to implement the L&GE replacement program for the requested disbursement amount or more; and

(2) If applicable per Section 5(B)(2) a copy of at least one cordless zero-emission electric lawn mower manufacturer or merchant agreement; and

(3) A copy of at least one active hazardous waste materials disposal company agreement; and

(4) A copy of at least one active recycling company agreement; and

(5) A history (up to five years, if applicable) of previous years of the air district’s lawn and garden equipment exchange programs, including the following information:

a. Yearly amount funded.

b. Yearly number of mowers funded.

c. Yearly program administration costs.

d. Cordless, zero-emission electric lawn mower cost breakdown:

i. Amount air district paid to manufacturer.

ii. Amount air district pays from air district's local funds.

iii. Amount of any additional funds.

iv. Amount participant pays.

(H) *Operational Condition of Existing Lawn Mower*: Air district or air district-specified facility must ensure that each existing lawn mower is in apparently operational condition. The air district or air district-specified facility must reject the existing lawn mower if it is deemed inoperative.

(I) *Project Payment*: Air districts must include in their P&P's a detailed description of the process through which the air district provides payment to the cordless, zero-emission electric lawn mower manufacturer, merchant and/or applicant.

(J) *Merchant Reimbursement Package*: Prior to receiving reimbursement, an air district-specified third party, participating manufacturer or participating merchant must submit a reimbursement package to the air district. The following documents should be included in the reimbursement package:

(1) Invoice signed by the applicant that shows the final purchase price less the voucher award. In the case of an online merchant, the invoice does not have to be signed by the applicant.

(2) If a recycling code is used in addition to a voucher in order to purchase the lawn mower, the recycling code.

(3) The name and address of the participant.

(K) *Lawn Mower Destruction Documentation*: All existing gasoline lawn mowers must be destroyed. Air districts must collect from their participating Recycling Companies signed receipts that show the number of lawn mowers destroyed.

(L) *Audit and Monitoring*: Air districts must allow ARB to monitor their L&GE replacement program which may include audits of the air district's implementation of the program.

(M) *Meeting Environmental Justice (EJ) Requirements*: Air districts with environmental justice requirements shall not apply these requirements to the L&GE replacement application review until after each year of implementation. The air district must then review each project to determine if it helps to meet the air district's EJ requirements. If EJ requirements have not been met, then other Moyer Program funded projects will need to be used to fulfill this EJ requirement.

(N) Reporting in CARL: For liquidation reporting requirements the following information must be entered into the CARL database:

(1) Total number of lawn mowers exchanged.

(2) Date of the exchange of the final lawn mower.

(3) Total amount of Moyer Program funds liquidated.

(4) Date of liquidation of the final project.

(5) The Moyer Program funding year.

(O) *Records Retention*: Air districts must retain all records of approved projects for a minimum of three years from the date of issuing the voucher. For rejected projects, air districts must maintain a copy of the application, the rejection letter, and method of notification for three years from the date the application was received.

6. Participating Manufacturer Requirements. Participating manufacturers' agreements must include the following information:

(A) *Covered Lawn Mowers*: Information about the cordless zero-emission electric lawn mowers covered by the agreement:

(1) Lawn mower model name.

(2) Lawn mower year of production.

(3) Lawn mower cutting radius.

(4) Lawn mower battery description (voltage).

(5) Total number of cordless, electric lawn mowers covered by the agreement.

(6) The cost of each cordless, electric lawn mower.

(7) The total contract amount, or total contract amount not to exceed.

(8) The date by which the work shall be completed.

(9) Lawn mower warranty description.

(B) *Manufacturer Qualifications*: A statement that the manufacturer meets the following minimum qualifications for participation in the L&GE replacement program, and shall continue to meet these qualifications throughout its participation in the L&GE replacement program.

(1) Manufacturer has had a valid business license for a minimum of the last two years.

(2) Manufacturer agrees to allow the air district or ARB to inspect cordless, zero-emission electric lawn mowers or audit program records covered under this agreement during normal business hours.

(C) *Aftermarket Service*: A statement that the manufacturer shall provide aftermarket service to customers for defects in materials or workmanship as defined by the Terms and Conditions listed in the product warranty.

(D) *Recalls*: A statement that as soon as reasonably possible, manufacturer shall notify the air district and individually notify any and all purchasers of equipment through this program of any recall of the lawn mower or any of its constituent parts ordered by manufacturer or by a government agency.

(E) *Air District Does Not Warrant or Endorse Lawn Mowers*: A statement that the air district does not warrant or endorse the manufacturer's lawn mowers for any purpose, including materials, workmanship, merchantability or fitness for use. Nothing in the air district/manufacturer contract shall be construed as a warranty or endorsement.

(F) *Averaging, Banking, and Trading Program Exclusion*: A statement that no emission reductions generated by the Moyer Program shall be used as marketable emission reduction credits, or to offset any emission reduction obligation of any person or entity. Therefore, electric lawn mower models included in the agreement are not generating credits by participating in ARB's zero-emission equipment credit averaging, banking, and trading program or any similar program.

(G) *Return of Funds*: A statement that, should the manufacturer fail to show that they are implementing the program consistent with the L&GE replacement program requirements, the manufacturer or merchant shall return to the air district funds in proportion to any loss of emission reductions compared with the projected reductions of the agreement.

7. **Participating Merchant Requirements**. Participating merchants' agreements must include the following:

(A) *Covered Lawn Mowers*: Information about the cordless, zero-emission electric lawn mowers covered by the agreement:

(1) Lawn mower model name.

(2) Lawn mower year of production.

(3) Lawn mower cutting radius.

(4) Lawn mower battery description (voltage).

(5) Estimate of total number of cordless electric lawn mower units covered by the agreement.

(6) The cost of each cordless, electric lawn mower.

(7) The total contract amount, or total contract amount not to exceed.

(8) The date by which the agreement ends.

(9) Lawn mower warranty description.

(B) *Merchant Qualifications*: A statement that the merchant meets the following minimum qualifications for participation in the L&GE replacement program, and shall continue to meet these qualifications throughout its participation in the L&GE replacement program.

(1) Merchant has had a valid business license issued in California for a minimum of the last two years.

(2) Merchant agrees to allow the air district or ARB to inspect cordless, zero-emission electric lawn mowers or audit program records covered under this Agreement during normal business hours.

(C) *Invoice*: A statement that the merchant shall show on the replacement lawn mower invoice the voucher amount. The receipt of voucher funds does not lower the base price of the lawn mower nor does it reduce the tax basis of the lawn mower, but is an incentive to the lawn mower owner that will result in a lower price paid by the participant.

(D) *Average, Banking and Trading Program Exclusion*: A statement that no emission reductions generated by the Moyer Program shall be used as marketable emission reduction credits, or to offset any emission reduction obligation of any person or entity. Therefore, electric lawn mower models included in the agreement are not generating credits by participating in ARB's zero-emission equipment credit averaging, banking and trading program or any similar program.

(E) *Return of Funds*: A statement that, should the merchant fail to show that they are implementing the program consistent with L&GE replacement program requirements, the manufacturer or merchant shall return to the air district funds in proportion to any loss of emission reductions compared with the projected reductions of the agreement.

8. **Participating Recycling Company Requirements**. Participating recycling companies' agreements must include the following:

(A) *Destruction of Lawn Mowers*: A statement that the recycling company shall destroy the lawn mower and engine within 60 days of receipt such that the lawn mower is no longer operable or repairable.

(B) *Receipt of Lawn Mower Destruction*: A statement that the recycling company shall notify the air district that a lawn mower is destroyed by sending the air district a signed receipt indicating the number of lawn mowers destroyed.

D. Emission Benefits

L&GE replacement provides emission benefits by providing lawn mower owners the incentivized option of purchasing a zero-emission lawn mower instead of a higher polluting gasoline lawn mower. Zero-emission lawn mowers are not required by regulation, so the emission benefits are surplus. Emission reductions are the difference in emissions from a new gasoline lawn mower engine and the emissions of a zero-emission lawn mower for the operational lifetime of the zero-emission lawn mower. The average operational lifetime of a replacement zero-emission lawn mower is estimated to be approximately 10 years. L&GE replacement project emission reductions are shown in Table 9-1.

Table 9-1
Gasoline Lawn Mower Emission Reductions (lbs/yr)

Model Year	ROG			NOx	PM10
	Exhaust	Evap	Total	Exhaust	Exhaust
2010	0.290	0.847	1.137	0.071	0.048

CHAPTER 10: INFRASTRUCTURE

Senate Bill 513 (Beall, Chapter 610, Statutes of 2015) provides the Air Resources Board's (ARB) Carl Moyer Memorial Air Quality Standards Attainment Program (Moyer Program) the ability to incorporate infrastructure projects into its program. It authorizes the funding of projects that enable the deployment of alternative, advanced, and cleaner technologies to support the State's air quality goals. Specifically, Health and Safety Code section 44281(c) gives ARB the ability to provide funding toward the installation of fueling or energy infrastructure to fuel or power covered sources. Statute does not require infrastructure projects to meet a cost-effectiveness threshold.

This chapter provides project criteria for selecting and funding infrastructure projects that enable emission reductions in meeting State and local air quality goals. All infrastructure projects must be used to fuel or power a covered source as defined by Health and Safety Code section 44275(a)(7). These covered sources include but are not limited to on-road, off-road, agricultural and marine vessel emission sources.

A. Funding

Air quality management districts or air pollution control districts (air districts) determine project priority and select projects funded within their region.

Table 10-1
Maximum Percentage of Eligible Cost for Moyer Program Infrastructure Projects

Maximum Percentage of Eligible Cost	Infrastructure Projects
50%	All Projects
60%	Publicly Accessible Projects
65%	Projects with Solar/Wind Power Systems[(a)]
75%	Publicly Accessible Projects with Solar/Wind Power Systems[(a)]
100%	Public School Buses - Battery Charging and Alternative Fueling

[(a)] At least 50 percent of the energy provided to covered sources by the project must be generated from solar or wind.

B. Eligible Projects

Eligible projects are those that provide fuel or power to a covered source, and include, but are not limited to, the following:

1. **Battery Charging Station**. New, conversion of existing, and expansion to existing non-residential battery charging stations. (e.g. workplace charging, direct current fast chargers along freeway roadway corridors, long-term charging

at destination areas such as airports and shopping centers, and charging at distribution centers and warehouses).

2. **Alternative Fueling Station**. New, conversion of existing, and expansion to existing hydrogen and natural gas fueling stations.

3. **Stationary Agricultural Pump**. Pump electrification.

4. **Shore Power**. Shore-side electrification.

5. Additional projects may be considered on a case-by-case basis, such as residential battery charging stations for low-income and multi-unit dwellings, as well as infrastructure for transport refrigeration units and truckstop electrification. Please contact ARB Moyer staff for further guidance on these case-by-case projects.

C. Eligible Applicants

Public and private entities are eligible to apply unless otherwise stated. Public entities include but are not limited to State, metropolitan, county, city, multi-county special district (e.g. water district), school district, university, and federal agencies and organizations. Private entities include but are not limited to private organizations and corporations. Out of State applicants are eligible to apply provided that the infrastructure is situated in California.

D. Eligible Costs

Eligible costs are limited to the purchase and installation of the equipment for power delivery or fueling directly related to the infrastructure project. The eligible costs listed below must utilize commercially available technologies.

1. **Eligible project costs include:**

   (A) Cost of design and engineering, (i.e., labor, site preparation, Americans with Disabilities Act accessibility, signage).

   (B) Cost of equipment (e.g., charging/fueling units, electrical parts, energy storage equipment, materials).

   (C) Cost of installation directly related to the construction of the station.

   (D) Meter/data loggers.

   (E) On-site power generation system that fuels or powers covered sources (i.e., solar and wind power generation equipment).

2. **Air districts have the option to fund the following discretionary costs:**

   (A) Federal, sales, and other taxes.

(B) Shipping and delivery costs.

(C) Fees incurred pre-contract execution (i.e., permits, design, engineering, site preparation), license fees, environmental fees, commissioning fees (safety testing), and onsite required safety equipment.

(D) Consulting fees associated with the preparation of Environmental Assessment, Environmental Impact Statement, Environmental Impact Report, or other California Environmental Quality Act (CEQA) documents, etc.

E. Ineligible Costs

Ineligible costs include but are not limited to:

1. Existing station upgrade.

2. Fuel and energy costs.

3. Non-essential equipment hardware.

4. Operation cost (e.g., operational fees, maintenance, repairs, improvements, spare parts).

5. Extended warranty.

6. Insurance.

7. Data collection and reporting.

8. Grantee administrative costs.

9. Travel/lodging.

10. Employee training and salaries.

11. Legal fees.

12. Real estate property purchases/leases.

13. Performance bond costs.

14. Construction management.

15. Storm water plan costs.

16. Security costs.

17. Testing and soil sampling.

18. Hazardous materials, including permitting, handling and disposal.

F. Project Eligibility Criteria

The minimum qualifications for infrastructure projects are listed below. All projects must also conform to the requirements in Chapter 2: General Criteria, and in Chapter 3: Program Administration. Participating air districts retain the authority to impose additional requirements to address local concerns.

1. General Criteria

(A) The project must be installed and located in California.

(B) The project must comply with all applicable federal, State, local laws and requirements including environmental laws, and State building, environmental and fire codes. For instance, air districts may need to perform CEQA review and obtain approval prior to funding a project.

(C) A publicly accessible infrastructure project must be solicited and selected through a competitive bidding process that has been approved by the air district board.

(D) Work must be performed by a licensed contractor.

(E) For projects that contain Moyer Program funding for both infrastructure and engine replacement or repower within the same contract, only the cost of the engine replacement or repower will be considered when performing a cost-effectiveness calculation.

(F) Publicly accessible station must at a minimum be accessible to the public daily during regular business hours.

(G) Equipment and parts must be new. Remanufactured or refurbished equipment and parts are not eligible.

(H) Except for stationary agricultural pump projects, a completed Uniform Commercial Code-1 Financing Statement Form must be submitted by the air district to the California Secretary of State for infrastructure projects with a grant funding amount of $50K or greater. The financing statement must list the air district as the secured party.

2. Battery Charging Station

(A) Chargers must be a level 2 and higher to support non-residential stations.

(B) Publicly accessible light-duty charging stations must use a valid and universally accepted charge connector protocol (e.g. Society of Automotive Engineers (SAE), CHAdeMO).

(C) Charger must be certified by a Nationally Recognized Testing Laboratory (e.g., Underwriter's Laboratories, Intertek) located at https://www.osha.gov/dts/otpca/nrtl/nrtllist.html.

(D) Equipment must have at least a one year warranty.

3. **Stationary Agricultural Pump**. To be eligible for funding, infrastructure must directly power a zero-emission stationary agricultural pump funded by the air district with Moyer Program funds, including match (see Chapter 5 for specific criteria related to funding agricultural pumps).

4. **Shore Power**

(A) Funding is available to install shore-side electrical grid-based power at a berth that receives visits solely by vessels not subject to the control requirements of ARB's Shore Power Regulation (Title 17, California Code Regs., section 93118.3.).

(B) Shore-side projects meeting the eligibility criteria of the Goods Movement Program are eligible for Moyer Program funding only on a case-by-case basis. Moyer Program project funds cannot be co-funded with Proposition 1B Goods Movement Program funds.

5. **Alternative Fueling Station**. Equipment must have at least a three year warranty.

G. Applicant Requirements

1. General Criteria

(A) The applicant must be able to demonstrate to the air district that the applicant can obtain all required land use permits from agencies needed to install and operate the station.

(B) For a publicly accessible station, the applicant must provide a description of the geographic location, including an aerial map (i.e. satellite view from an internet based map or city/county map) and specific street address of the proposed station.

(C) Applicants must demonstrate that they either own the land on which the project will be located, or control it through a long-term lease, easement or other legal arrangement, for the duration of the project life. For a proposed project where the land is not owned by the applicant, an executed lease agreement or letters of commitment lasting for the duration of the project life must be signed by property owners/authorized representatives and must be submitted with the application.

(D) Applicants must be able to provide documentation that power or fuel is being provided to the site (e.g. application, payment to the local utility company for power installation, or contract).

2. Shore Power

(A) Applicants who own/operate at a terminal must submit a copy of the Initial Terminal Plan per Section (g) of ARB's Shore Power Regulation (Title 17, California Code Regs, section 93118.3). All subsequent project reports to air districts must include a copy of the terminal plan in order to evaluate compliance with the project contract.

(B) Only a port authority, terminal operator, or marine vessel owner may apply to receive Moyer Program funding for a shore power project.

H. Project Life

1. All projects must have a minimum project life of three years.

2. Maximum project life is 15 years, except stationary agricultural pump electrification projects which have a maximum project life of ten years.

I. Contract Requirements

1. General Criteria

(A) Contracts must include anticipated usage in terms of projected throughput and/or number of vehicles that will be using the station for the term of the contract.

(B) Contracts must require that the equipment be in operating condition throughout the contract term.

(C) Contracts must specify that publicly accessible infrastructure projects must maintain a 95 percent successful charging rate with 24/7 customer service available on site, via toll free telephone number. Contracts must also specify that if equipment is not functional, the grantee is responsible for ensuring that repairs are made and station is up and running within 48 hours. The grantee must notify air districts of any downtime beyond the 48 hours and work with air districts to ensure publicly accessible stations are operational.

(D) For non-publicly accessible infrastructure projects, contracts must specify that if equipment is not functional, the grantee has 15 business days to report the problem to the air district and begin working with the air district promptly to ensure infrastructure equipment is operational.

(E) Contracts must specify that, if during the project life the fuel/energy meter fails for any reason, the fuel/energy meter must be repaired or replaced as soon as possible and is considered a maintenance expense, therefore not an eligible cost.

(F) Contracts must specify the maximum grant amount.

(G) Contracts must identify milestone dates including project completion, invoice, and annual reporting dates.

2. Battery Charging Station

(A) Contracts must include the number of ports and charging units.

(B) Grantee must report all battery charging station installations to the Department of Energy Alternative Fuel Data Center located at http://www.afdc.energy.gov/locator/stations/.

3. Alternative Fueling Station. For hydrogen fueling stations, grantee must register and report to the Station Online Status System (SOSS) maintained by the California Fuel Cell Partnership (www.cafcp.org). In addition, grantee must abide by the requirements of the reporting system.

J. Post-Inspection

1. General Criteria

(A) Air districts must verify and document that each infrastructure project is operational. Inspections must include verification of operation by connecting a vehicle or equipment to the charging or fueling station, or in the case of an agricultural pump or shore power project, by connecting to the electrical grid. For projects that incorporate solar or wind power, the inspection must verify that infrastructure has been installed and connected to the power generation equipment (i.e. solar panels or wind turbines). Air districts may be exempted from this requirement if the grantee does not own a vehicle/equipment, and no vehicle/equipment can reasonably be obtained for the inspection. Air districts must document such instances and obtain other types of verification that the infrastructure is capable of dispensing fuel/electricity, or in the case of an agricultural pump or shore power project, capable of being powered by the electrical grid.

(B) Air district must take photos of the equipment and keep photos in the project file. At the minimum, the photos must include equipment manufacturers, model number, and serial number.

2. Battery Charging Station. Air district must document the following: Name of manufacturer, serial number and date of manufacture, amperage/voltage, and equipment recharge rate.

K. Invoice and Payment

A project may be considered for final payment once the necessary infrastructure has been installed and connected to the power generation equipment (i.e., solar panels, wind turbine) and/or electricity grid and has been demonstrated to the air district that it is fully operational during a post-inspection.

L. Data Collection and Annual Reporting

1. **Solar or Wind Power Generating Equipment**. For infrastructure projects that incorporate solar or wind power generating equipment, the grantee must annually provide to the air district the amount of electricity generated (e.g. kilowatt-hour) from the solar or wind power generating equipment for the duration of the project life.

2. **Battery Charging Station**. Grantee must annually provide to the air district the following data for the entire project life:

   (A) Qualitative description of public and private uses.

   (B) Annual usage per charger (e.g., kilowatt-hour) and the number of plug-in events.

   (C) Any unscheduled downtime, including duration of downtime and causes of downtime.

3. **Stationary Agricultural Pump**. Grantee must annually provide to the air district the following data for the entire project life:

   (A) Annual usage (e.g., kilowatt-hour) using an energy meter.

   (B) Episodes of electrical service interruption by the local utility company.

4. **Shore Power**. Grantee must annually provide to the air district the following data per berth for the entire project life:

   (A) Total ship visits utilizing berth and ship visits utilizing program funded equipment.

   (B) Annual usage (e.g., kilowatt-hour).

   (C) Episodes of electrical service interruption by the local utility company.

5. **Alternative Fueling Station**. Grantee must annually provide to the air district the following data for the entire project life:

   (A) Annual usage (e.g., kilograms, standard cubic feet).

(B) Any unscheduled downtime, including duration of downtime and causes of downtime.

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APPENDICES

Appendix A: Acronyms

Appendix B: Definitions

Appendix C: Cost-Effectiveness Calculation Methodology

Appendix D: Tables for Emission Reduction and Cost-Effectiveness Calculations

Appendix E: Chapter References

APPENDIX A

ACRONYMS

APPENDIX A: ACRONYMS

AAP	Agricultural Assistance Program
AB	Assembly Bill
ABT	Average Banking and Trading
AC	Alternating Current
ACS	Applicant Cost Share
ADA	Americans With Disabilities
Ah	Amp-hour
APCD	Air Pollution Control District
APCO	Air Pollution Control Officer
APU	Auxiliary Power Unit
AQMD	Air Quality Management District
ARB	Air Resources Board
ASM	Acceleration Simulation Mode
ATCM	Airborne Toxic Control Measure
BACT	Best Available Control Technology
BAR	Bureau of Automotive Repair
bhp	Brake Horsepower
bhp-hr/gal	Brake horsepower-hour per gallon
bhp-hr/yr	Brake horsepower-hour per year
BIT	Biennial Inspection of Terminals
C/E	Cost-Effectiveness
Cal/EPA	California Environmental Protection Agency
CAP	Consumer Assistance Program
CAPCOA	California Air Pollution Control Officers Association
CARL	Clean Air Reporting Log
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CF	Vessel Registration Number
CFO	Chief Financial Officer
CHC	Commercial Harbor Craft
CHE	Cargo Handling Equipment
CHP	California Highway Patrol
CI	Compression Ignition
CMP	Carl Moyer Memorial Air Quality Standards Attainment Program
CNG	Compressed Natural Gas
CO	Carbon Monoxide
CRF	Capital Recovery Factor
DBA	Doing Business As
DMV	Department of Motor Vehicles
DOE	Department of Energy
DOF	Department of Finance

DOORS	Diesel Off-Road Online Reporting System
DOT	Department of Transportation
DPF	Diesel Particulate Filter
E/S	Electric Standby
EF	Emission Factor
EFMP	Enhanced Fleet Modernization Program
EGR	Exhaust Gas Recirculation
EJ	Environmental Justice
EMFAC	ARB's On-Road Motor Vehicle Emission Inventory Model
EMY	Engine Model Year
EO	Executive Order
EQIP	Environmental Quality Incentives Program
ERCs	Emission Reduction Credits
ES	Emission Standards
ESN	Engine Serial Number
EIN	Equipment Identification Number
EVSE	Electric Vehicle Supply Equipment
FEL	Family Emission Limit
FTA	Federal Transit Administration
FTF	Flow-Through Filter
FY	Fiscal Year
GAAP	Generally Accepted Accounting Principles
g	Gram
g/bhp-hr	Gram per brake horsepower-hour
gal	Gallon
gal/yr	Gallons per year
GHG	Greenhouse Gas
GMERP	Goods Movement Emission Reduction Program
GPS	Geographic Positioning System
GSE	Ground Support Equipment
GVW	Declared Gross Vehicle Weight
GVWR	Gross Vehicle Weight Rating
HC	Hydrocarbons
HD	Heavy-Duty
HDDE	Heavy-Duty Diesel Engine
HDT	Heavy-Duty Truck
HDV	Heavy-Duty Vehicle
HEP	Head End Power Unit
HHD	Heavy Heavy-Duty
HHDV	Heavy Heavy-Duty Vehicle
hp	Horsepower

hr	Hour
H&SC	Health and Safety Code
HVAC	Heating, Ventilation and Air Conditioning
ICE	Internal Combustion Engine
ILD	Idle Limiting Device
IMO	International Maritime Organization
IOU	Investor Owned Utility
IPI	Incentive Program Implementation Team
IRP	International Registration Plan
IRS	Internal Revenue Service
ITR	Innovative Technology Regulation
JPA	Joint Power Authority
kW	Kilowatt
lbs.	Pounds
lbs/bhp-hr	Pounds per brake horsepower-hour
lb/gal	Pound per gallon
lb/hp-hr	Pound per horsepower-hour
L&GE	Lawn and Garden Equipment
LDV	Light-Duty Vehicle
LESBP	Lower-Emission School Bus Program
LETRU	Low Emission Transport Refrigeration Unit
LEV	Low Emission Vehicle
LHD	Light Heavy-Duty
LNG	Liquefied Natural Gas
LPG	Liquefied Petroleum Gas – commonly called Propane
LSI	Large Spark Ignition
MEC	Moyer Eligible Cost
MGO	Marine Gas Oil
MHD	Medium Heavy-Duty
MHDV	Medium Heavy-Duty Vehicle
mi	Mile
MIC	Moyer Ineligible Cost
MOU	Memorandum of Understanding
MPC	Moyer Paid Cost
MV Fee	Motor Vehicle Registration Fee
MY	Model Year
NMHC	Non-Methane Hydrocarbons
NFPA	National Fire Protection Association
NOx	Oxides of Nitrogen

OBD II	On-Road Diagnostics, Phase II
OEM	Original Equipment Manufacturer
OIS	On-Board Diagnostic Inspection System
ORVIP	Off-Road Voucher Incentive Program
PG&E	Pacific Gas and Electric
P&P	Policies and Procedures
PM	Particulate Matter
PM10	Particulate Matter less than 10 microns in diameter
PSIP	Periodic Smoke Inspection Program
PTO	Power Take-Off
RAP	Rural District Assistance Program
REC	Remaining Eligible Cost
RFP	Request for Proposals
ROG	Reactive Organic Gas
SAE	Society of Automotive Engineers
SB	Senate Bill
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SCE	Southern California Edison
SCR	Selective Catalytic Reduction
SI	Spark Ignition
SRF	Special Revenue Fund
SIP	State Implementation Plan
SMAQMD	Sacramento Metropolitan Air Quality Management District
SOON	Surplus Off-Road Opt-in for NOx Program
STD	Standard
SWCV	Solid Waste Collection Vehicle
TPC	Total Project Cost
TRU	Transport Refrigeration Unit
TRUCRS	Truck Regulations Upload and Compliance Reporting System
TSI	Two Speed Idle
ULETRU	Ultra Low Emission Transport Refrigeration Unit
ULEV	Ultra Low Emission Vehicle
U.S. EPA	United States Environmental Protection Agency
V	Volt
VAVR	Voluntary Accelerated Vehicle Retirement
VDECS	Verified Diesel Emission Control Strategy
VFD	Variable Frequency Device
VIN	Vehicle Identification Number
VIP	Voucher Incentive Program

VOC	Volatile Organic Compound
YR	Year

APPENDIX B

DEFINITIONS

APPENDIX B: DEFINITIONS

Acceleration Simulation Mode: A type of vehicle emissions test conducted with the test vehicle on a chassis dynamometer to simulate on-road acceleration operating conditions.

Administrative Funds: State funds allocated to program support and outreach costs directly associated with implementing the Moyer Program.

Agricultural Assistance Program: A program established by section 39011.5 of the Health and Safety Code (H&SC) providing funds for new purchase, retrofit, repower, or add-on for previously unregulated agricultural equipment.

Air district or District: An air pollution control district or an air quality management district.

Air Pollution Control Officer: The air pollution control officer, executive director, executive officer or designee as determined by each air district.

Airport Ground Support Equipment: Any engine- or motor-powered equipment used for service and support of aircraft operations. Airport ground support equipment (GSE) performs a variety of functions, including but not limited to: aircraft maintenance, pushing or towing aircraft, transporting cargo to and from aircraft, loading cargo, and baggage handling. GSE vehicles include equipment types such as baggage tugs, belt loaders, and cargo loaders.

Applicant Cost Share (ACS): The 15 percent or more of Moyer Eligible Cost (MEC) that is paid by the applicant, except when waived for public entity applicants.

Auxiliary Engine: An engine that is not the propulsion engine but for which the fuel, cooling, and/or exhaust systems are an integral part of the equipment or vehicle.

Auxiliary Power Unit: Any device that provides electrical, mechanical, or thermal energy to the primary diesel engine, truck cab, or sleeper berth as an alternative to idling the primary diesel engine.

Barge: A vessel having a flat-bottomed rectangular hull with sloping ends and built with or without a propulsion engine.

Baseline Technology: Engine technology applied under normal business practices, such as the existing engine in a vehicle or equipment for replacements, repowers, and retrofits.

California's Goods Movement Trade Corridor: The entirety of the South Coast Air Basin, San Joaquin Valley Air Basin, Sacramento Federal Ozone Nonattainment Area, San Francisco Bay Area Air Basin, San Diego County Air District, Imperial County Air District, and Port Hueneme.

Captive Attainment Area Fleet: A fleet or an identified subpart of the fleet (fleet portion, consistent with, California Code of Regulations, title 13, section 2449(d)) in which all of the vehicles in the fleet or fleet portion operate exclusively within the following counties: Alpine, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Monterey, Plumas, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz, Shasta, Sierra, Siskiyou, Trinity, Tehama, and Yuba. A fleet or identified fleet portion that operates one or more vehicles outside the counties listed above is not a captive attainment area fleet.

Case-by-Case Determination: A process in which local air districts may request Moyer Program staff to review and approve a project that varies from the specific requirements of these Guidelines only if such approval will not adversely affect the achievement of real, surplus, quantifiable, enforceable and cost-effective emission reductions. See Chapter 3: Program Administration, Section U for additional information.

Certification: A finding by the Air Resources Board (ARB) or the U.S. EPA that a mobile source or emissions control device has satisfied applicable criteria for specified air contaminants.

Charter Fishing Vessel: A vessel for hire by the general public, dedicated to the search for and collection of fish for the purpose of general consumption.

Class 1 Freight Railroad**:** As defined by the Surface Transportation Board (see www.stb.dot.gov<http://www.stb.dot.gov/>). As of January 2017, Union Pacific Railroad (UP), Burlington Northern and Santa Fe Railroad (BNSF), and their subsidiaries are the only Class 1 freight railroads operating in California.

Class 2 Freight Railroad**:** As defined by the Surface Transportation Board (see www.stb.dot.gov<http://www.stb.dot.gov/>). As of January 2017, Arizona and California Railroad, Central Oregon and Pacific Railroad are the only Class 2 freight railroads operating in California.

Class 3 Freight Railroad: As defined by the Surface Transportation Board (see www.stb.dot.gov<http://www.stb.dot.gov/>). Short-line railroads and military and industrial railroads are generally considered Class 3 freight railroads for the purposes of eligibility.

Clean Air Reporting Log (CARL): An on-line database tool maintained by ARB and used by air districts to track and report projects and funds under the Moyer Program.

Commercial Fishing Vessel: A vessel dedicated to the search for and collection of fish to be sold at market or directly to a purchaser.

Commitment: Under Chapter 5, a program milestone in which Moyer Program funds have been designated or applied towards an eligible project approved by the air district board, district air pollution control officer, or other delegated authority.

Competitive Bidding Process: For Moyer Program purposes, the process by which an air district competitively selects publicly accessible infrastructure projects. The process, including selection criteria, must be outlined in the air district solicitation and approved by the air district board.

Conversion of Existing Station: Infrastructure projects in which an existing non-alternative fueling station (i.e. diesel) is converted to an alternative fueling station for hydrogen or natural gas.

Cost-effectiveness: A measure of the dollars provided to a project for each ton of covered emission reduction (H&SC § 44275(a)(4)).

Cost-effectiveness Limit: The maximum amount of funds the Moyer Program will pay per weighted ton of emission reductions, using the methodology in Appendix C.

Covered Emissions: Emissions of oxides of nitrogen, particular matter, and reactive organic gases from any covered source.

Covered Source: On-road vehicles, off-road non-recreational equipment and vehicles, locomotives, marine vessels, agricultural sources of air pollution as defined in Section 39011.5, and, as determined by the State Board, other categories necessary for the State and air districts to meet air quality goals (H&SC § 44275(a)(7)).

Crawler Tractor: A tracked off-road tractor equipped with a substantial metal plate, or blade, as opposed to a bucket on a loader. This equipment is commonly referred to as a track mounted bulldozer and is used to push large quantities of soil, sand, rubble, etc., during construction and mining work. The dozing power of the crawler tractor exceeds that of the rubber tired dozer. A ripper, which is a claw-like device, may be attached to the back of a larger dozer.

Crew and Supply Vessel: A self-propelled vessel used for carrying personnel and/or supplies to and from off-shore and in-harbor locations (including, but not limited to, off- shore work platforms, construction sites, and other vessels).

Deterioration: The increased exhaust emissions over time taking into account wear and tear on engines and emissions control devices.

Deterioration Life: A factor calculated from the period of time the engine has deteriorated, plus half the project life, used to estimate deterioration over the entire project life. DL= project starting year - engine model year + (project life / 2).

Deterioration Product: The result of multiplying the deterioration rate, equipment activity, and the deterioration life for a technology.

Deterioration Rate (DR): Rates that estimate increased emissions of NOx, ROG and PM from engine wear and tear and other variables that increase engine emissions over time. On-road deterioration rates are established by weight class and engine model year, based on values in ARB's on-road emission inventory model (EMFAC2014). Off

road deterioration rates are established by horsepower and either Tier or model year, based on values in ARB category specific inventory models.

DC fast charger: A unit for 200 - 480V Direct-Current (DC) charging up to 200 amps, using an off-board charger that connects directly to the vehicle's battery. Also called DC Level 1 and DC Level 2.

Dredge: A vessel designed to remove debris or earth from the bottom of waterways. Dredges may be built with or without a propulsion engine.

Electric Vehicle Supply Equipment (EVSE): An electrical energy transfer device that conducts and regulates power from the electrical portal connection to the electrical vehicle inlet.

Emission Control System: Any device, system, or element of design that controls or reduces the emissions of regulated pollutants from a vehicle.

Emission Factor (EF): A category specific estimate of emissions per unit of activity. On-road emission factors are based on ARB mobile source emission inventory model (EMFAC2014) values. Off-road emission factors are based on values applied in ARB category specific inventory models.

Enterprise Operator: A person who conducts a voluntary accelerated vehicle retirement enterprise according to the Voluntary Accelerated Vehicle Retirement Regulation (California Code of Regulations, title 13, § 2601 et seq.), purchases vehicles, arranges for a vehicle's permanent removal from operation, and receives any emission reduction credit generated.

Excavator: An engineering vehicle consisting of an upper carriage with hydraulically rotating upper deck (revolving 360º) and attachment, directly mounted to either a wheeled or crawler undercarriage. The front end of the excavator attachment consists either of a bucket, grapple, scrap shear, or another implement.

Excursion Vessel: A self-propelled vessel that transports passengers for purposes including, but not limited to: dinner cruises; harbor, lake, or river tours; scuba diving expeditions; and whale watching tours. Excursion vessels do not include crew and supply vessels, ferries, and recreational vessels.

Executed Contract: A legally binding contract signed by the local air district Air Pollution Control Officer, or other air district designated representative, and the grantee to fund an eligible engine, equipment, or vehicle project that will reduce covered emissions. An executed contract is a program milestone in which parties agree to meet the obligations within the contract by a specified date.

Existing Lawn Mower: A gasoline-fueled, operational lawn mower owned and operated in California by the applicant.

Existing Station Upgrade: Improvements to a battery charging or alternative fueling station without increasing the output capacity.

Expansion to Existing Station: Infrastructure projects that increase the amount of fuel/energy throughput or capacity to fuel/charge equipment/vehicles at current alternative fueling and battery charging stations.

Expend: To make a full or partial payment of Moyer Program funds toward a project invoice for an eligible Moyer Program project.

Farm Equipment: As applied to off-road engines, includes equipment used in agricultural operations as defined in the Regulation for In-Use Off-Road Diesel-Fueled Fleets (California Code of Regulations, title 13, § 2449(c)(1)). As applied to portable and stationary engines, includes the agricultural sources defined in Health and Safety Code section 39011.5.

Federal Funds: Awards of financial assistance to an individual or organization from the U.S. government to carry out a government-authorized purpose, and not provided as personal benefits or assistance from the government.

Family Emission Limit (FEL): An emission level declared by the manufacturer to serve in place of an otherwise applicable emission standard under a federal or State averaging, banking, and trading program.

Ferry: Any self-propelled vessel or boat or owned, controlled, operated, or managed for public use in transportation of carrying passengers, property or vehicles on scheduled services.

Fleet Average Emission Level: The arithmetic mean of the combined hydrocarbon plus oxides of nitrogen emissions for each piece of applicable large spark-ignition engine powered equipment comprising an operator's fleet. For full definition, see California Code of Regulations, title 13, section 2775.

Forklift: Electric Class 1 or 2 rider trucks or large spark-ignition engine powered Class 4, 5 or 6 rider trucks as defined by the Industrial Truck Association. Electric Class 3 trucks are not forklifts for the purposes of these Guidelines. More information can be found at http://www.osha.gov/dcsp/products/etools/pit/forklift/types/classes.html and http://www.indtrk.org.

Freight Locomotive: A locomotive that hauls freight as its primary function.

Funding Amount: The amount of funds dedicated to a contracted project for reporting purposes in CARL; this value may never exceed the grant amount.

Funding Cap: The maximum dollar amount or maximum percentage of Moyer or State funds that may be expended on a project, as specified by source category and limited by variables that include the contribution of other incentive programs, rules, regulations, and incremental cost.

Funding Target: The total funds required to meet a program milestone such as funds executed or liquidated during a funding cycle, for purposes of cumulative tracking and reporting. Funding targets consider regular Moyer Program funds, State Reserve funds, Rural District Assistance Program funds, Moyer voucher program funds, required match funds, interest funds, reallocated funds, recaptured funds, interest and salvage revenues, and other funds associated with the Moyer Program.

Funding Year: The designation given to each year that air districts are awarded Moyer Program funds. Moyer Program grant awards were first made in fiscal year 1998 to 1999; therefore, that year is designated as Year 1; fiscal year 1999 to 2000 is Year 2, etc. Each funding year is associated with set times for achieving program milestones such as contract execution, fund expenditure, and fund liquidation.

Funding Year Adjustment: An addition or subtraction to an air district's project and/or administrative fund amounts in one funding year to account for changes (e.g., recaptured funds, errors) in liquidated funds in an earlier funding year.

Grant Amount: Contracted amount of Moyer funds for a project, which may not exceed the maximum dollar amount or maximum percentage of eligible cost specified by source category and project type.

Glider Kit: A replacement chassis and cab for on-road heavy-duty vehicles. Glider kits are identified with a vehicle identification number starting with the letters "GL".

Gross Vehicle Weight Rating (GVWR): A value specified by the vehicle manufacturer as the maximum design loaded weight of a single vehicle. Examples are shown in Table B-1.

Harbor Craft: (also called "Commercial Harbor Craft") Any private, commercial, government, or military marine vessel including, but not limited to, passenger ferries, excursion vessels, tugboats, ocean-going tugboats, towboats, push-boats, crew and supply vessels, work boats, pilot vessels, supply boats, fishing vessels, research vessels, United States Coast Guard vessels, hovercraft, emergency response harbor craft, and barge vessels that do not otherwise meet the definition of ocean-going vessels or recreational vessels.

Head End Power Unit**:** Most passenger locomotives are equipped with head end power (HEP) or hotel power, an onboard generator typically about a 500 horsepower that provides power to the passenger cars of the train for such functions as heating, lighting and air conditioning.

Heavy-Duty Vehicles (HDV): Trucks and buses in the weight classes shown in Table B-1.

Table B-1
Heavy-Duty Vehicle Classification for Moyer Program On-Road Projects

Vehicle Classification	GVWR
Light Heavy-Duty (LHD)	14,001 to 19,500 pounds
Medium Heavy-Duty (MHD)	19,501 to 33,000 pounds
Heavy Heavy-Duty (HHD)	Over 33,000 pounds

Home Port: The port in which a vessel is registered or permanently based.

Incremental Cost: The cost of the project less a baseline cost that would otherwise be incurred by the applicant in the normal course of business. Incremental costs may include added lease, energy, or fuel costs pursuant to Health and Safety Code section 44283 as well as incremental capital costs.

Interest Revenue: Interest generated from Moyer Program funds held by an air district in interest-bearing accounts. Interest earned on Moyer Program funds becomes Moyer Program funds.

Industrial Tow Tractor: An electric or large spark-ignition engine-powered Class 6 truck as defined by the Industrial Truck Association. They are designed primarily to push or pull non-powered trucks, trailers, or other mobile loads.

Investor Owned Utility: A business providing utility services such as electricity, natural gas, telephone and water services, that is managed privately rather than as a function of a government or public cooperative. Examples are Pacific Gas and Electric, Southern California Edison, and Sempra Energy.

Large Fleet: Under the In-Use Off-Road Diesel-Fueled Fleets Regulation, a fleet with a total maximum power greater than 5,000 horsepower. A fleet must meet large fleet requirements of this regulation if the total vehicles under common ownership or control would be defined as a large fleet. All fleets owned by the United States, the State of California, or agencies thereof (i.e., an agency in the judicial, legislative, or executive branch of the federal or state government) are considered as a unit whole and must meet the large fleet requirements of the In-Use Off-Road Diesel-Fueled Fleets Regulation (California Code of Regulations, title 13, § 2449). Under the Large Spark Ignition Engine Fleet Requirements Regulation, a large fleet is an operator's aggregated operations in California of 26 or more pieces of large spark-ignition equipment.

Lawn and Garden Equipment: Equipment used to maintain lawns and gardens. This equipment is generally, but not exclusively, powered by spark-ignition engines. This equipment is traditionally used in applications such as lawn mowers, edger's, trimmers, leaf blowers, and chainsaws. Equipment that does not fall into this category includes golf carts, specialty vehicles, generators, pumps, and other small utility equipment.

Lawn Mower Exchange Event: An occasion where participants' existing gasoline lawn mowers are exchanged for new cordless, zero-emission electric lawn mowers or vouchers for new, cordless, zero-emission electric lawn mowers.

Level 2: Electric vehicle supply equipment for connection to an on-board vehicle charging system, with 208V–240V alternating-current (AC) charging up to 80 amps.

Line-Haul Locomotive**:** A locomotive powered by an engine or engines typically totaling 4,000 or more horsepower that transports goods between major urban centers.

Liquidate: To spend all moneys for a specified fiscal year to reimburse grantees for valid and eligible project invoices and air district administrative costs. Payments withheld from the grantee by an air district until all contractual reporting requirements are met may be excluded from these amounts for the purposes of liquidation.(H&SC § 44275(a)(12)). For a specific project, liquidation refers to all funded equipment as paid in full and operational.

Local Funds: Monies provided by any unit of local government including a publicly owned utility and Joint Powers Authority (JPA).

Match Funds: Funds under an air district's budget authority that will be applied towards eligible Moyer Program projects in accordance with the matching requirements of the program. See Health and Safety Code section 44287(e) and 44287.2(c).

Maximum Dollar Amount: The maximum amount of funds that may be expended on a project as specified by source category and project type, often to reflect incremental cost.

Maximum Grant Amount: The maximum amount of money a grantee is eligible to receive for a cost-effective Moyer Program project. The maximum grant amount for a project is the lowest of the three following values: (a) the grant amount at the cost-effectiveness limit; (b) the maximum percentage of eligible cost; or (c) any maximum dollar amount specified in the relevant source category chapter.

Maximum Percentage: The maximum percentage of eligible cost that may be expended on a project as specified by source category and project type, often to reflect incremental cost.

Medium Fleet. Under the In-Use Off-Road Diesel-Fueled Fleets Regulation, a fleet with total minimum power of greater than 2,500 horsepower and with a total maximum power less than or equal to 5,000 horsepower. Under the Large Spark Ignition Engine Fleet Requirements Regulation, an operator's aggregated operations in California of 4 to 25 pieces of large spark-ignition equipment.

Memorandum of Agreement (MOA) or Memorandum of Understanding (MOU): A document recording the basic terms of a proposed transaction or setting forth the principles and guidelines under which parties will work together.

Mitigation Funds: Monies received for the compensation for the impacts to the environment from a proposed activity.

Mobile Cargo Handling Equipment: Any motorized vehicle used to handle cargo delivered by ship, train, or truck such as yard trucks, rubber tired gantry cranes, top picks, dozers, and excavators.

Moyer Eligible Cost: Costs associated with projects that are eligible for reimbursement under the Moyer Program, prior to considering the cost-effectiveness limit or any project funding cap restrictions. This includes the sum of Moyer Paid Cost and Remaining Eligible Cost.

Moyer Ineligible Cost: Costs associated with a project that are not eligible under the Moyer Program guidelines, but are eligible project costs under other funding sources.

Moyer Paid Cost: Project costs eligible under the Moyer Program, and are to be paid by the Moyer Program. These costs are used to determine project cost-effectiveness, except in the case of infrastructure projects.

Moyer Program Funds: State funds awarded by ARB to local air districts to implement the Moyer Program, including project and administrative, and interest revenue from the awarded funds, and revenues from salvage of equipment scrapped under the program. Local funds that are under the air district's budget authority may also qualify as Moyer Program funds or match funds (see H&SC § 44287(e)); however, certain limitations apply (see H&SC § 44287(j)).

Nationally Recognized Testing Laboratory: Is a private-sector organization that OSHA has recognized as meeting the legal requirements in 29 CFR 1910.7 to perform testing and certification of products using consensus based test standards.

New Station: Construction of a new battery charging or alternative fueling station where there is currently no station.

Non-forklift fleet: Under the Large Spark Ignition Engine Fleet Requirements Regulation, an operator's aggregated operations in California of four or more sweeper/scrubbers, industrial tow tractors, or pieces of airport ground support equipment, alone or in combination.

Non-Moyer Funds: Project funds from sources other than the Moyer Program, Moyer match funds, and AB 923 $2 DMV fees.

Off-Highway Tractors: Equipment that feature yoke hitches that oscillate four ways to reduce frame stresses. Rugged turn stops prevent excessive wagon rotation in either direction. The rear platform functions as a power train guard providing a safe, stable work area. (These are not off-highway trucks (e.g. articulated trucks or rigid haul trucks) which are bulk-handling machines, such as earthmovers or dump trucks, designed to operate on steep or rough terrain and not designed to drive on-highway.)

Off-Road Compression-Ignition Equipment: A piece of equipment that is powered by an off-road compression-ignition engine which is any internal combustion engine: in or on a piece of equipment that is self-propelled or serves as a dual purpose by both propelling itself and performing another function and is primarily used off the highways (such as garden tractors, off-highway mobile cranes and bulldozers); or in or on a piece of equipment that is intended to be propelled while performing its function (such as lawnmowers and string trimmers); or that, by itself or in or on a piece of equipment, is portable or transportable, meaning designed to be and capable of being carried or moved from one location to another. Indicia of transportability include, but are not limited to wheels, skids, carrying handles, dolly, trailer, or platform that is consistent with California Code of Regulations, title 13 section 2421.

Off-Road Large Spark-Ignition Engine: any engine that produces a gross horsepower of 25 horsepower or greater (greater than 19 kilowatts for 2005 and later model years) or is designed (e.g., through fueling, engine calibrations, valve timing, engine speed modifications, etc.) to produce 25 horsepower or greater (greater than 19 kilowatts for 2005 and later model years) used to propel an off-road piece of equipment. The engine may be designed to use gasoline fuel, liquid petroleum gas, compressed natural gas, methanol fuel, or a combination of these.

Off-Road Large Spark-Ignition Equipment: Equipment that cannot be registered and driven safely on-road or was not designed to be driven on-road. Newer equipment uses engines certified to the off-road spark ignition engine standards. These engines may be designed to use gasoline fuel, liquid petroleum gas (LPG), compressed natural gas, methanol fuel or a combination of these and are most commonly found in forklifts.

Other Applied Funds: Funds that are not local, State, or federal that are used to co-fund a Moyer eligible project.

Operator: A person, corporation, public agency, or other entity that owns, operates or maintains a vehicle, equipment, or installation.

Passenger Locomotive: A locomotive that hauls passengers as its primary function.

Penalty Funds: Funds paid to an enforcing entity as a result of enforcement action brought against a violator of a local, State or federal law, ordinance, regulation or rule.

Pilot Vessel: A vessel designed for, but not limited to, the transfer and transport of maritime pilots to and from oceangoing vessels while such vessels are underway.

Policies and Procedures: An air district manual for local implementation of the Moyer Program. For more information see Chapter 3, Section C.

Power Take-Off (PTO): A secondary engine shaft (or equivalent) that provides substantial auxiliary power for purposes unrelated to vehicle propulsion or normal vehicle accessories such as air conditioning, power steering, and basic electrical accessories. A typical PTO uses a secondary shaft on the engine to transmit power to a hydraulic pump that powers auxiliary equipment.

Program Milestone: A measure of progress toward meeting Moyer Program grant terms or statutory requirements. Examples are contract execution, liquidation and (in Chapter 5) commitment.

Project Life: The period for which the Moyer Program funds surplus emission reductions for a given project.

Project Funds: Moyer Program funds designated for eligible project costs to reduce covered emissions from covered sources.

Propulsion Engine: A marine engine that generates the power to propel a vessel through the water.

Publicly Accessible: An infrastructure project that is available to provide fuel or energy to all members of the general public with no physical access restrictions and no necessity to enter into a contract or sign release of liability.

Public Entity: The State of California, a public university or college, a county, city, district, public authority, public agency, public corporation, another state government, the federal government, or any other subdivision or agency of a state government or the federal government.

Public Fleets: Heavy-duty on-road diesel-fueled vehicles operated by a municipality. A municipality is a city, county, city and county, special district, or a public agency of the State of California, and any department, division, public corporation, or public agency of this State, or two or more entities acting jointly, or the duly constituted body of an Indian reservation or Rancheria.

Public Funds: Funds provided toward project costs by local, State or federal public entities, including grants, rebates and vouchers.

Rail equipment: Non-locomotive equipment designed for use on tracks, such as on-rail vehicles, railcar movers, sweepers, and wheel cranes that have tires or mounted tracks. Equipment that replaces switcher locomotives are considered locomotives for the purposes of the Moyer Program.

Reallocation: A process for allocating mitigation funds and/or returned funds to eligible air districts. See Chapter 3, Section P for additional information.

Rebuilt or Remanufactured: Engines offered by the original engine manufacturer (OEM) or by a non-OEM rebuilder who demonstrates to ARB that the rebuilt engine and parts are functionally equivalent from an emissions and durability standpoint to the OEM engine and components being replaced.

Recaptured Funds: Project funds that are returned by a grantee to an air district or ARB because that grantee did not meet all of its contractual obligations. Air districts must spend these funds on another project in a later funding year.

Reduced Technology: Newer technology that is used by the applicant to obtain surplus emission reductions.

Remaining Eligible Cost: Project costs that are eligible under the Moyer Program but are to be paid by other sources of funding. Remaining eligible costs exist when the Moyer Paid Cost and Applicant Cost Share provide less than 100 percent of the Moyer Eligible Cost.

Remotely Located: Agricultural engines located in a federal ambient air quality area that is designated as unclassifiable or attainment for all PM and ozone national ambient air quality standards and that are located more than one-half mile from any residential area, school, or hospital.

Replacement Lawn Mower: A cordless, zero-emission electric lawn mower.

Repower: A repower is the replacement of the existing engine with an electric motor or a newer emission-certified engine instead of rebuilding the existing engine to its original specifications.

Retrofit: Modifications to the engine and fuel system so that the retrofitted engine does not have the same emissions specifications as the original engine, or the process of installing an ARB-verified emissions control system on an existing engine.

Returned Funds: Funds returned by an air district to ARB for reallocation because they are either not liquidated by the required funding year liquidation deadline, or are associated with an ARB Incentive Program Review mitigation measure.

Rough Terrain Forklift: Class 7 forklifts powered by compression ignition engines and having pneumatic tires that handle uneven surfaces. This includes both straight-mast forklifts and extended-reach forklifts, also called telescopic forklifts or tele-handlers.

Rubber Tired Dozer: A wheeled off-road tractor equipped with a substantial metal plate, or blade as opposed to a bucket on a loader. This equipment is commonly referred to as a rubber tired bulldozer and is used to push large quantities of soil, sand, rubble or other materials during construction and mining work where the traction of a crawler tractor is not required. A ripper, which is a claw-like device, may be attached to the back of a larger dozer.

Rural District Assistance Program: An element of the Moyer Program in which air districts pool their project funds to streamline project outreach, solicitation, and review.

School Bus: Vehicles used for the express purpose of transporting students, kindergarten through grade 12, from home to school, school to home, and to any school sponsored activities.

Shore Power: Electrical power being provided to the ship at berth by either the local utility or by distributed generation.

Skid Steer Loader: A very compact and maneuverable off-road tractor that uses a bucket on the end of movable arms to lift materials and move material such as dirt, debris, building materials, bulk goods, heavy objects, or snow removal. Unlike conventional loaders, the lift arms are alongside the driver with the pivot points behind the driver's shoulders. Skid steer loaders are used in tight spaces and can be equipped with a variety of attachments, such as a hammer, augur, trencher, forklift and other attachments (never greater than 120 horsepower (hp), predominantly 40-75 hp. Skid Steer loaders are often utilized to excavate swimming pools and in landscaping residential backyards.

Small Fleet: In the on-road sector, a fleet size of three or fewer vehicles as defined in the California Code of Regulations, title 13, section 2025(d)(31)(G). Under the In-Use Off-Road Diesel-Fueled Fleets Regulation, a fleet with a total maximum power of less than or equal to 2,500 horsepower that is owned by a business, non-profit organization, or local municipality; or a local municipality fleet in a low population county irrespective of total maximum power; or a non-profit training center irrespective of total maximum power. Under the Large Spark Ignition Engine Fleet Requirements Regulation, an operator's aggregated operations in California of 1 to 3 forklifts and/or 1 to 3 pieces of non-forklift equipment.

Smog Check: the motor vehicle inspection and maintenance program established by California Health and Safety Code Section 44000, et seq.

Solid Waste Collection Vehicle (SWCV): Diesel-fueled vehicles greater than 14,000 pounds GVWR with model year 1960 through 2006 engines used to collect residential and commercial solid waste.

Spark Ignition: A gasoline-fueled engine or any other type of engine with a spark plug (or other sparking device) and with operating characteristics significantly similar to a combustion cycle.

State Funds: Funds provided by a State agency for the purpose of co-funding projects under the Moyer Program. State agencies include every State office, department, division, bureau, board, commission, the University of California, and the California State University.

State Implementation Plan: Under the Clean Air Act, the plan submitted by a state that demonstrates attainment or maintenance of an air quality standard through implementation of specified control measures.

Supplemental Environmental Project: An environmentally beneficial project that a violator subject to an enforcement action voluntarily agrees to undertake in a settlement action to offset a portion of an administrative or civil penalty.

Sweeper/scrubber: A large spark-ignition engine-powered piece of industrial floor cleaning equipment designed to brush and vacuum up small debris and litter and then scrub and squeegee the floor.

Switch Locomotive: A locomotive powered by an engine or engines typically totaling less than 2,300 total horsepower, and used to separate and move railcars from track to track or transfer cars to and from regional carriers. All Class 3 railroad locomotives – including all short-line and military and industrial locomotives – are considered switch locomotives for the purposes of the Moyer Program eligibility.

Total Project Cost: The Moyer Eligible Cost and the Moyer Ineligible Cost for vehicles, equipment, engines, accessories, installation and infrastructure within a single Moyer Program project. An applicant may not accept grant funds from all sources that exceed 100 percent of total project cost excluding the Applicant Cost-Share.

Tow Boat: Any self-propelled vessel engaged in or intending to engage in the service of pulling, pushing, or hauling alongside barges or other vessels, or any combination of pulling, pushing, or hauling alongside barges or other vessels.

Transit Fleet Vehicle: On-road vehicles operated by a public transit agency, less than 35 feet in length and 33,000 GVWR, but greater than 8,500 GVWR, powered by heavy- duty engines fueled by diesel or alternative fuel; including service vehicles, tow trucks, dial-a-ride buses, paratransit buses, charter buses, and commuter service buses operated during peak commute hours with ten or fewer stops per day.

Transport Refrigeration Unit (TRU): A refrigeration system powered by an internal combustion engine designed to control the environment of temperature sensitive products transported in trucks and refrigerated trailers. TRUs may be capable of both cooling and heating.

Truck Stop Electrification: The installation at a truck stop of electric power infrastructure and/or external systems that provide heating, cooling, and other energy needs for trucks.

Tug Boat: Any self-propelled vessel engaged in, or intending to engage in, the service of pulling, pushing, maneuvering, berthing, or hauling alongside other vessels, or any combination of pulling, pushing, maneuvering, berthing or hauling alongside such vessels in harbors, over the open seas, or through rivers and canals. Tug boats generally can be divided into three groups: harbor or short-haul tugboats, ocean-going or long-haul tugboats, and barge tugboats. “Tug boat” is interchangeable with “tow boat” and “push boat” when the vessel is used in conjunction with barges.

Tier 1, 2, and 3 Engines: Engines that are subject to California Code of Regulations, title 13, section 2423(b)(1)(A) and/or Code of Federal Regulations, title 40,part 89.112(a). This also includes engines certified under the averaging, banking, and trading program with respect to the Tier 1, 2, and 3 Family Emission Limits (FEL) listed in California Code of Regulations, title 13, section 2423(b)(2)(A) and/or Code of Federal Regulations, title 40, part 89.112(d).

Tier 4 Engine: Engines that are subject to interim or final after-treatment based Tier 4 emission standards in California Code of Regulations, title 13, section 2423(b)(1)(B) and/or Code of Federal Regulations, title 40, part 1039.101. This also includes engines

certified under the averaging, banking, and trading program with respect to the Tier 4 FEL listed in California Code of Regulations, title 13, section 2423(b)(2)(B) and/or Code of Federal Regulations, title 40, part 1039.101. For locomotives, the term refers to the Tier 4 (2015 engine model year) emission standards in the Code of Federal Regulations, title 40, Part 1033.

Uncontrolled Large Spark-Ignition Engines: Means pre-2001 uncertified engines and 2001-2003 certified "non-compliant' large spark-ignition engines.

Urban Bus: A passenger carrying vehicle owned or operated by a public transit agency, powered by a heavy heavy-duty engine, or of a type normally powered by a heavy heavy-duty engine, intended primarily for intra-city operation. The buses are generally greater than 35 feet, and or greater than 33,000 pounds gross vehicle weight rating.

Utility: A privately-owned company that provides the same or similar service for water, natural gas, and electricity as a public utility operated by a municipality.

Voluntary Accelerated Vehicle Retirement Enterprise (VAVR): a privately owned and/or operated business by an enterprise operator.

Verification: A determination by ARB or the U.S. EPA that a diesel emission control strategy meets specified requirements, based on both data submitted and engineering judgement.

Violator: An individual, company, or entity responsible for a violation of an environmental law, regulation or rule.

Voucher Incentive Program (VIP): An air district incentive program using Moyer Program funds to provide a streamlined approach to replace or retrofit older, high-polluting heavy-duty vehicles or equipment with cleaner-than -required vehicles or equipment providing early or extra emission reductions. Funds for VIP projects are used to reduce some of the costs associated with replacing or retrofitting a vehicle.

Workover Rig: Mobile self-propelled rigs used to perform one or more remedial operations on an existing well. The primary function of a workover rig is to act as a hoist so that pipe, sucker rods and down-hole equipment can be run into and out of a well. Operations include deepening, plugging back, or pulling and resetting liners, usually on a producing oil or gas well to try to restore or increase the well's production.

APPENDIX C

COST-EFFECTIVENESS CALCULATION METHODOLOGY

APPENDIX C: COST-EFFECTIVENESS CALCULATION METHODOLOGY

A. Introduction

Cost-effectiveness is the measure of dollars provided to a project for each ton of covered emissions reduced. Statute requires that the Air Resources Board (ARB) update the cost-effectiveness limit and capital recovery factors (CRF) annually. In addition, changes in statute per SB 513 now allow ARB, in consultation with air quality management districts and air pollution control districts (air districts), to establish new cost-effectiveness limits that reflect the cost of regulations and technology.

To determine a project's cost-effectiveness, all Moyer Program funds, air district match funds, and local AB 923 funds must be included. Non-Moyer funds used to co-fund a Moyer eligible project do not need to be included in the cost-effectiveness calculation. Projects that include such funds must meet all Moyer requirements and the other funding source requirements.

Projects are subject to the cost-effectiveness limits in Table C-1, which shows the changes in the cost-effectiveness limit over time based on changes in the Consumer Price Index. Historically, one limit has been applied to all Moyer Program projects. Per SB 513, a second cost-effectiveness limit for school buses was added in 2016 as shown in the table.

Table C-1
Cost-Effectiveness Limit Criteria 1998-2016

Year	Annual CA CPI	Percentage change (inflation rate)	Annual Change	Revised C/E Limit
1998	163.7	NA	NA	$12,000
1999	168.5	2.93%	$352	$12,352
2000	174.8	3.74%	$462	$12,814
2001	181.7	3.95%	$506	$13,319
2002	186.1	2.42%	$323	$13,642
2003	190.4	2.31%	$315	$13,957
2004	195.4	2.63%	$367	$14,324
2005	202.6	3.68%	$528	$14,852
2006	210.5	3.90%	$579	$15,431
2007	217.4	3.28%	$506	$15,938
2008	224.8	3.40%	$541	$16,479
2009	224.1	-0.31%	-$51	$16,428
2010	227.0	1.29%	$212	$16,640
2011	233.0	2.66%	$443	$17,084
2012	238.3	2.25%	$385	$17,469
2013	241.8	1.46%	$255	$17,724
2014	246.1	1.77%	$313	$18,037
2015	249.1	1.25%	$225	$18,262
2016 Base	No C/E update pending 2017 guideline update			$18,262
2016 School Bus	New C/E Limit under SB 513			$276,230

Table C-2 shows the cost-effectiveness limits proposed under the 2017 Guidelines. As shown, two cost-effectiveness limits are now available: one to support conventional projects and a second higher cost-effectiveness limit that air districts may choose to apply to the additional reductions provided by the cleanest engines, including those needed for long-term SIP commitments.

Base Limit: The base cost-effectiveness limit is $30,000 per weighted ton of emissions reductions. This level allows full funding for a wide range of currently typical projects, such as diesel replacement projects for early compliance with the Truck and Bus Regulation. The level is consistent with the cost of compliance with regulations and will enable grants of sufficient size to encourage off-road engines to be replaced or repowered sooner to a Tier 4 standard.

Optional Advanced Technology Limit: For advanced technology projects that are zero-emission, or alternatively meet the cleanest optional standard level certified, air districts have the option to apply a cost-effectiveness limit of up to $100,000 per weighted ton for the emissions reductions beyond those achieved by the required standard. The higher cost-effectiveness limit is not technology or vocation specific, but

available for technologies like the 0.02 g/bhp-hr optional low-NOx engine. To be eligible, the engine must be:

- Zero-emission or meet the cleanest optional emission standard where applicable (0.02 g/bhp-hr in the case of on-road);
- Commercially available and offered for sale; and
- Certified or verified by ARB or the United States Environmental Protection Agency

The higher cost-effectiveness limit is applied only to the incremental emission reductions beyond what the conventional project would achieve. An air district would apply the base cost-effectiveness limit for costs associated with getting engines to the cleanest required standard, and then could apply the advanced technology limit to the additional costs of getting emissions down to or below the cleanest optional standard.

Table C-2
Cost-Effectiveness Limit Criteria 2017

Year	Project	Proposed Change or Status	Revised C/E Limit
2017	Base Limit	New C/E Limit	$30,000
	Optional Advanced Technology Limit	New C/E Limit for incremental reductions from specified advanced technologies	$100,000
	School Bus	2016 C/E Limit retained in 2017 Guidelines	$276,230

For projects in source categories without optional standards, only vehicles certified as zero-emission would be eligible for the higher cost-effectiveness limit. In these cases, the higher limit would apply to the incremental reductions below the most stringent standard for that category. General calculations for determining cost-effectiveness and other calculations needed to administer the Moyer Program are described in the following pages.

B. General Cost-Effectiveness Calculations

1. Determining the Maximum Grant Amount

The calculation methodology below must be applied in order to ensure final grant amounts meet the cost-effectiveness limit requirement, and do not exceed incremental cost based on the maximum percentage or any other funding caps. For advanced technology projects that include a baseline vehicle dirtier than the cleanest required standard, the calculations in (A), (B), and (C) below must be applied twice. The project life may differ between the first and second series of calculations, depending on availability of surplus emission reductions. The first series of calculations is made using the base cost-effectiveness limit and the emission reductions going up to the cleanest required standard (including

deterioration), and the second series of calculations is made using the advanced technology cost-effectiveness limit and the emission reductions beyond the cleanest required standard. The final maximum grant amount is equal to the combined total of the lowest values from each series. Note that school bus projects are subject to funding caps and a separate cost-effectiveness limit as listed above in Table C-2. The maximum grant amount for any given project is the lowest of the three following calculations:

- The potential grant amount at the cost-effectiveness limit;
- The potential grant amount based on maximum percentage of eligible cost; or
- The potential grant amount based on any maximum dollar amount or other funding cap specified in the relevant source category chapter.

Each of the above values is calculated as follows:

(A) The potential grant amount at the cost-effectiveness limit is determined by multiplying the cost-effectiveness limit by the estimated annual emission reductions and dividing by the CRF in formula C-1 below.

Formula C-1: Potential grant amount at the cost-effectiveness limit ($)

Potential grant amount ($) =
*cost-effectiveness limit ($/ton) * estimated annual emission reductions (weighted tons/yr) / CRF*

The CRF is based on a discount rate. The CRF uses an interest rate and project life to determine the rate at which earnings could reasonably be expected to accrue if the same funds were invested over that length of time. The CRF may be calculated using Formula C-2 below, or you may refer to Tables D-24 and D-25 in Appendix D for CRFs at various project lives. Each source category chapter will specify which project lives are acceptable to determine which CRF value to use.

Formula C-2: Capital recovery factor

Capital recovery factor =
*(1 + discount rate[(a)]) ^ project life * discount rate /((1 + discount rate) ^ project life - 1)*

[(a)] Discount rate varies from year to year. See Tables D-24 and D-25 in Appendix D for CRF values at a one percent and two percent discount rate, respectively.

(1) Calculating the Annual Weighted Surplus Emission Reductions

Annual weighted surplus emission reductions are calculated using Formula C-3 below. Note that particulate matter (PM) is weighted by a factor of 20.

Formula C-3: Annual weighted surplus emission reductions (weighted tons/yr)

Weighted emission reductions (weighted tons/yr) =
*NOx reductions (tons/yr) + ROG reductions (tons/yr) + (20 * PM reductions (tons/yr))*

The result of Formula C-3 is used to complete Formula C-1 to determine the potential grant amount at the cost-effectiveness limit, as well for Formula C-14 to determine the cost-effectiveness if not at the limit.

In order to determine the annual surplus emission reductions by pollutant, Formula C-4, C-5, C-6, C-7,or C-8 below must be completed for each pollutant (NOx, ROG, and PM), for the baseline technology and the reduced technology. Formula C-4 is the general calculation and can be applied to any project, whereas Formulas C-5, C-6, C-7 and C-8 are specific variations of Formula C-4 for use with mileage, hours of operation, fuel use, and shore power systems, respectively.

All five fomulas involve multiplying the engine emission factor (found in Appendix D) by the annual activity level and by other adjustment factors (such as load factor in the case of off-road equipment calculations) as specified for the calculation methodologies presented. Emission factors are also adjusted to account for in-use deterioration where applicable.

Formula C-4: Estimated annual emissions (tons/yr)

Annual emissions by pollutant (tons/yr) =
*(emission factor + deterioration product (if applicable)) * annual activity * adjustment factor(s) (if applicable) * percentage operation in California / 907,200 (g/ton)*

Deterioration product =
*deterioration rate * total equipment activity*

Total equipment activity =
*annual activity * deterioration life (yrs)*

Deterioration life (baseline equipment) (yrs) =
expected first year of operation – baseline engine model year + (project life / 2)

Deterioration life (reduced equipment) (yrs) =
project life / 2

The Moyer Program allows the emission reductions from a project to be calculated using a variety of methods, but mileage and hours of operation are the primary methods. Specific activity factors allowed for each project category may differ and are identified in the source category chapters.

a. Calculating Annual Emissions Based on Annual Miles Traveled

Calculations based on annual miles traveled are used for on-road projects only. Mileage records must be maintained by the engine owner as described in Chapter 4: On-Road Heavy-Duty Vehicles. Formula C-5 below describes the method for calculating pollutant emissions based on miles traveled, including the method for calculating mile-based deterioration products.

Formula C-5: Estimated annual emissions based on mileage (tons/yr)

Annual emissions by pollutant (tons/yr) =
*(emission factor (g/mi) + deterioration product (g/mi) (if applicable)) * annual activity (mi/yr) * percentage operation in California / 907,200 (g/ton)*

Mile-based deterioration product (g/mi) =
*deterioration rate (g/mi-10,000 mi) * total equipment activity (mi)*

Total equipment activity[(b)] (mi) =
*annual activity (mi/yr) * deterioration life (yrs)*

Deterioration life (baseline equipment) (yrs) =
expected first year of operation – baseline engine model year + (project life / 2)

Deterioration life (reduced equipment) (yrs) =
project life / 2

[(b)] Total equipment activity for mile-based calculations is limited to 400,000 miles for school buses or 800,000 miles for other on-road vehicles. Used heavy heavy-duty replacement vehicles add 500,000 miles, medium heavy-duty vehicles add 250,000 miles, or light heavy-duty vehicles add 150,000 miles.

b. Calculating Annual Emissions Based on Hours of Operation

When hours of equipment operation are the basis for determining emissions, the horsepower rating of the engine and an engine load factor found in Appendix D must be used. The method for calculating emissions based on hours of operation is described in Formula C-6 below, and includes the method for calculating hour-based deterioration product.

Formula C-6: Estimated annual emissions based on hours of operation (tons/yr)

Annual emissions by pollutant (tons/yr) =
*(emission factor (g/bhp-hr) + deterioration product (g/bhp-hr) (if applicable)) * horsepower (hp) * load factor * annual activity (hrs/yr) * percentage operation in California / 907,200 (g/ton)*

Hour-based deterioration product (g/bhp-hr) =
*deterioration rate (g/bhp-hr-hr) * total equipment activity (hrs)*

Total equipment activity[(c)] (hrs) =
*annual activity (hrs/yr) * deterioration life (yrs)*

Deterioration life (baseline equipment) (yrs) =
expected first year of operation – baseline engine model year + (project life / 2)

Deterioration life (reduced equipment) (yrs) =
project life / 2

The engine load factor is an indicator of the nominal amount of work done by the engine for a particular application. It is given as a fraction of the rated horsepower of the engine and varies with engine application. Load factors for a variety of equipment types may be found in Appendix D.

c. Calculating Annual Emissions Based on Fuel Consumption

In some cases as outlined in each source category chapter, fuel consumption may be used to calculate annual emissions. In such cases a fuel consumption rate factor must be used to convert

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[(c)] Total equipment activity for hour-based calculations is limited to a maximum of 12,000 hours for diesel engines, 3,500 hours for large-spark ignition (LSI) engines with a model year of 2006 or older, or 5,000 hours for LSI engines with a model year of 2007 or newer.

emissions given in g/bhp-hr to units of grams of emissions per gallon of fuel used (g/gal). The fuel consumption rate factor is a number that combines the effects of engine efficiency and the energy content of the fuel used in that engine into an approximation of the amount of work output by an engine for each unit of fuel consumed. Formula C-7 below is used to calculate the annual emissions based on annual fuel consumed.

Formula C-7: Estimated annual emissions based on fuel consumption (tons/yr)

Annual emissions by pollutant (tons/yr) =
*emission factor (g/bhp-hr) * fuel consumption rate factor (bhp-hr/gal) * annual activity (gal/yr) * percentage operation in California / 907,200 (g/ton)*

d. Calculating Annual Emissions for Shore Power Systems

For marine shore power systems, calculate the estimated annual emissions by pollutant as shown in Formula C-8 below.

Formula C-8: Estimated annual emissions for shore power systems (tons/yr)

Annual emissions by pollutant (tons/yr) =
ship emission factor (g/kW-hr) * power requirements (kW) * berthing time (hrs/visit) * annual number of visits (visits/yr) * 0.9 / 907,200 (g/ton)

(2) Calculating Annual Surplus Emission Reductions by Pollutant

Subtract the annual emissions for the reduced technology from the annual emissions for the baseline technology as shown in Formula C-9 below, for NO_x, ROG and PM emissions.

Formula C-9: Annual surplus emission reductions (tons/yr)

Annual surplus emission reductions by pollutant (tons/yr) =
annual emissions for the baseline technology (tons/yr) –
annual emissions for the reduced technology (tons/yr)

For marine vessels with a wet exhaust system, a wet exhaust factor of 0.80 must be applied; calculate the annual surplus emission reductions as shown in Formula C-10 below.

Formula C-10: Annual surplus emission reductions for marine vessels with wet exhaust systems (tons/yr)

*Annual surplus emission reductions by pollutant (tons/yr) = 0.80 * (annual emissions for the baseline technology (tons/yr) – annual emissions for the reduced technology (tons/yr))*

For retrofits, multiply the baseline technology pollutant emissions by the percentage of emission reductions that the ARB-verified reduced technology is verified to following Formula C-11 below.

Formula C-11: Annual surplus emission reductions for retrofits (tons/yr)

*Annual surplus emission reductions by pollutant (tons/yr) = annual emissions for the baseline technology (tons/yr) * reduced technology verification percentage*

For on-road heavy-duty projects, the baseline will be the newer vehicle emissions.

For marine vessel hybrid systems, calculate the annual surplus emission reductions as shown in Formula C-12 below.

Formula C-12: Annual surplus emission reductions for marine vessel hybrid systems (tons/yr)

*Annual surplus emission reductions by pollutant (tons/yr) = total annual emissions (all engines on vessel) for the baseline technology (tons/yr) – (total annual emissions (all engines on vessel) for the baseline technology (tons/yr) * reduced technology verification percentage)*

For marine vessels, calculate the annual surplus emission reductions for each pollutant as shown in Formula C-13 below.

Formula C-13: Total annual surplus emission reductions for marine vessels (tons/yr)

*Total annual surplus emission reductions for marine vessels by pollutant (tons/yr) = (propulsion engine annual surplus emission reductions (tons/yr) * number of propulsion engines) + (auxiliary engine annual surplus emission reductions (tons/yr) * number of auxiliary engines)*

(B) The potential grant amount based on maximum percentage of eligible cost is a measure of the incremental cost as determined by multiplying the cost of the reduced technology by the maximum percentage of eligible cost (from the applicable chapter) as described in Formula C-14 below.

Formula C-14: Potential grant amount based on maximum percentage of eligible cost ($)

Potential grant amount ($) =
*cost of reduced technology ($) * maximum percentage of eligible cost*

(C) The potential grant amount based on any maximum dollar amount or other funding cap is specified in the relevant source category chapter

2. Calculating Two for One Projects

In Two for One equipment replacement projects, two baseline technology equipment are replaced with one reduced technology equipment. First, calculate the emission reduction benefits based on activity for each baseline engine separately using Formulas C-4, C-5, C-6, C-7, or C-8. These emission reductions will then be summed together before deducting the emission reduction benefits of the reduced technology using Formula C-9. See the sample calculations supplemental document for an example on this calculation methodology.

3. Calculating Split Project Life Projects

Split Project Life: Split Project Life Projects must use a separate project life for the two baseline technology scenarios. First, Formulas C-4, C-5, C-6, C-7, or C-8 must be used to calculate emission reduction by pollutant for the two baseline scenarios:

(A) Baseline technology to phase 1 reduced technology
(B) Phase 1 reduced technology to phase 2 reduced technology

Formula C-3 is used to calculate the annual emission reductions for each baseline technology. Next, a fraction of the project life must be applied to the annual emission reductions for each of the baseline scenarios, as outlined below in Formula C-15.

Formula C-15: Split project life

Total annual weighted surplus emission reductions (tons/yr) =
*(fraction project life (yrs) * annual weighted surplus emissions from transaction 1 (tons/yr) /*
*total project life (yrs)) + (fraction project life (yrs) **
annual weighted surplus emissions from transaction 2 (tons/yr) / total project life (yrs))

Total annual weighted surplus emission reductions (tons/yr) =
$(n_1 * a_1 / t) + (n_2 * a_2 / t)$
where:
n_1 = *fraction project life from transaction 1 (yrs)*
n_2 = *fraction project life from transaction 2 (yrs)*
a_1 = *annual weighted surplus emissions from transaction 1 (tons/yr)*
a_2 = *annual weighted surplus emissions from transaction 2 (tons/yr)*
t = total project life (yrs)

4. Calculating the Applicant Cost Share

Moyer eligible costs are costs associated with a project that are eligible for reimbursement under the program prior to considering the cost-effectiveness limit or any project cap restrictions. Guidance on these costs is contained in Chapters 2, 3, and the applicable chapter for the Moyer project. The applicant cost share is determined by multiplying the Moyer eligible cost by 15 percent, as described in Formula C-16 below. Applicant cost share is determined from the Moyer eligible costs, but the value itself is not an ineligible Moyer cost. A public entity applicant may other use public funds toward meeting this requirement.

Formula C-16: Applicant cost share ($)

Applicant cost share ($) ≥
*15 percent * Moyer eligible costs ($)*

5. Calculation for Co-funding Moyer Funds with Other Sources

Air districts must request information from grantee to determine what other funds will be used toward the project. This information will be utilized to ensure that the applicant is not overpaid for the project by adding the Applicant Cost Share contribution and the grants paid toward the project, as shown in Formula C-17 below and comparing against the total project cost value. The total project cost includes both Moyer eligible and Moyer ineligible costs. Refer to Chapters 2 and 3 for additional criteria and guidance related to co-funding projects.

Formula C-17: Project overpayment check ($)

Total project cost ≥
applicant cost share ($) + ∑grants paid ($)

If the total project cost is exceeded then adjustments must be made to ensure the project applicant is not overpaid for the project.

6. Calculating the Cost-Effectiveness of a Grant Amount

The cost-effectiveness of a grant amount is determined by multiplying the CRF as calculated in Formula C-18 by the grant amount, and dividing that by the annual weighted surplus emission reductions that will be achieved by the project as calculated in Formula C-3.

Formula C-18: Cost-effectiveness of weighted surplus emission reductions ($/tons)

Cost-effectiveness ($/tons) =
*grant amount ($) * CRF / annual weighted surplus emission reductions (weighted tons/yr)*

C. List of Formulas

The necessary formulas to calculate the cost-effectiveness of surplus emission reductions for a project funded through the Moyer Program are provided below.

Formula C-1: Potential grant amount at the cost-effectiveness limit ($)

Potential grant amount ($) =
*cost-effectiveness limit ($/ton) * estimated annual emission reductions (weighted tons/yr) /CRF*

Formula C-2: Capital recovery factor (CRF)

Capital recovery factor =
*(1 + discount rate[(d)]) ^ project life * discount rate* /((1 + discount rate*) ^ project life - 1)*

Formula C-3: Annual weighted surplus emission reductions (weighted tons/yr)

Weighted emission reductions (weighted tons/yr) =
*NO_x reductions (tons/yr) + ROG reductions (tons/yr) + (20 * PM reductions (tons/yr))*

Formula C-4: Estimated annual emissions (tons/yr)

Annual emission by pollutant (tons/yr) =
*(emission factor + deterioration product (if applicable)) * annual activity * adjustment factor(s) * percentage operation in California / 907,200 (g/ton)*

Deterioration product =
*deterioration rate * total equipment activity*

Total equipment activity =
*annual activity * deterioration life (yrs)*

Deterioration life (baseline) (yrs) =
expected first year of operation – baseline engine model year + (project life / 2)

Deterioration life (reduced) (yrs) =
project life / 2

(d) *Discount rate varies from year to year. See Tables D-24 and D-25 in Appendix D for CRF values at a 1 percent and 2 percent discount rate, respectively.*

Formula C-5: Estimated annual emissions based on mileage (tons/yr)

Annual emissions by pollutant (tons/yr) =
*(emission factor (g/mi) + deterioration product (g/mi) (if applicable)) * annual activity (mi/yr) * percentage operation in California / 907,200 (g/ton)*

Mile-based deterioration product (g/mi) =
*deterioration rate (g/mi-10,000 mi) * total equipment activity (mi)*

Total equipment activity[(e)] (miles) =
*annual activity (mi/yr) * deterioration life (yrs)*

Deterioration life (baseline) (yrs) =
expected first year of operation – baseline engine model year + (project life / 2)

Deterioration life (reduced) (yrs) =
project life / 2

Formula C-6: Estimated annual emissions based on hours of operation (tons/yr)

Annual emissions by pollutant (tons/yr) =
*(emission factor (g/bhp-hr) + deterioration product (g/bhp-hr) (if applicable)) * horsepower (hp) * load factor * annual activity (hrs/yr) * percentage operation in California / 907,200 (g/ton)*

Hour-based deterioration product (g/bhp-hr) =
*deterioration rate (g/bhp-hr-hr) * total equipment activity (hrs)*

Total equipment activity[(f)] (hrs) =
*annual activity (hrs/yr) * deterioration life (yrs)*

Deterioration life (baseline) (yrs) =
expected first year of operation – baseline engine model year + (project life / 2)

Deterioration life (reduced) (yrs) =
project life / 2

[(e)] Total equipment activity for mile-based calculations is limited to 400,000 miles for school buses or 800,000 miles for other on-road vehicles. Used heavy heavy-duty replacement vehicles add 500,000 miles, medium heavy-duty vehicles add 250,000 miles, or light heavy-duty vehicles add 150,000 miles.

[(f)] Total equipment activity for hour-based calculations is limited to a maximum of 12,000 hours for diesel engines, 3,500 hours for large-spark ignition (LSI) engines with a model year of 2006 or older, or 5,000 hours for LSI engines with a model year of 2007 or newer.

Formula C-7: Estimated annual emissions based on fuel consumption (tons/yr)

Annual emissions by pollutant (tons/yr) =
*Emission factor (g/bhp-hr) * fuel consumption rate factor (bhp-hr/gal) * annual activity (gal/yr) * percentage operation in California / 907,200 (g/ton)*

Formula C-8: Estimated annual emissions for shore power systems (tons/yr)

Annual emissions by pollutant (tons/yr) =
*Ship emission factor (g/kW-hr) * power requirements (kW) * berthing time (hrs/visit) * annual number of visits (visits/yr) * 0.9 / 907,200 (g/ton)*

Formula C-9: Annual surplus emission reductions (tons/yr)

Annual surplus emission reductions by pollutant (tons/yr) =
annual emissions for the baseline technology (tons/yr) –
annual emissions for the reduced technology (tons/yr)

Formula C-10: Annual surplus emission reductions for marine vessels with wet exhaust systems (tons/yr)

Annual surplus emission reductions by pollutant (tons/yr) =
*0.80 * (annual emissions for the baseline technology (tons/yr) –*
annual emissions for the reduced technology (tons/yr))

Formula C-11: Annual surplus emission reductions for retrofits (tons/yr)

Annual surplus emission reductions by pollutant (tons/yr) =
*annual emissions for the baseline technology (tons/yr) **
reduced technology verification percentage

Formula C-12: Annual surplus emission reductions for marine vessel hybrid systems (tons/yr)

Annual surplus emission reductions by pollutant (tons/yr) =
total annual emissions (all engines on vessel) for the baseline technology (tons/yr) –
*(total annual emissions (all engines on vessel) for the baseline technology (tons/yr) **
reduced technology verification percentage)

Formula C-13: Total annual surplus emission reductions for marine vessels (tons/yr)

*Total annual surplus emission reductions for marine vessels by pollutant (tons/yr) = (propulsion engine annual surplus emission reductions (tons/yr) * number of propulsion engines) + (auxiliary engine annual surplus emission reductions (tons/yr) * number of auxiliary engines)*

Formula C-14: Potential grant amount based on maximum percentage of eligible cost ($)

*Incremental cost ($) = cost of reduced technology ($) * maximum percentage of eligible cost*

Formula C-15: Split project life

*Total annual weighted surplus emission reductions (tons/yr) = (fraction project life (yrs) * annual weighted surplus emissions from transaction 1 (tons/yr) / total project life (yrs)) + (fraction project life (yrs) * annual weighted surplus emissions from transaction 2 (tons/yr) / total project life (yrs))*

Total annual weighted surplus emission reductions (tons/yr) =
$(n_1 * a_1 / t) + (n_2 * a_2 / t)$
where:
n_1 = *fraction project life from transaction 1 (yrs)*
n_2 = *fraction project life from transaction 2 (yrs)*
a_1 = *annual weighted surplus emissions from transaction 1 (tons/yr)*
a_2 = *annual weighted surplus emissions from transaction 2 (tons/yr)*
t = *total project life (yrs)*

Formula C-16: Applicant cost share ($)

Applicant cost share ($) ≥ 15 percent * moyer eligible costs ($)

Formula C-17: Project overpayment check ($)

Total project cost ≥ applicant cost share ($) + ∑grants paid ($)

Formula C-18: Cost-effectiveness of weighted surplus emission reductions ($/ton)

*Cost-effectiveness ($/ton) = grant amount ($) * CRF / annual weighted surplus emission reductions (weighted tons/yr)*

APPENDIX D

TABLES FOR EMISSION REDUCTION AND COST-EFFECTIVENESS CALCULATIONS

APPENDIX D:

TABLES FOR EMISSION REDUCTION AND COST-EFFECTIVENESS CALCULATIONS

This appendix presents tables summarizing the data needed to calculate the emission reductions and cost-effectiveness of potential projects. Included are data such as engine emission factors, load factors, and other conversion factors used in the calculations discussed in Appendix C: Cost-Effectiveness Calculation Methodology.

	Table Number
Heavy-Duty On-Road Projects	D-1 to D-6
Off-Road Diesel and Non-Mobile Agricultural (Ag) Projects	D-7 to D-9
Large Spark-Ignition (LSI) Projects	D-10 to D-13
Locomotive Projects	D-14a to D-14b
Marine Projects	D-15a to D-20
All Engines – Fuel Consumption	D-21
Reference Tables	D-22 to D-25

Table D-1
Heavy-Duty Vehicles
14,001-33,000 pounds (lbs) Gross Vehicle Weight Rating (GVWR)
Emission Factors (g/mile)[a] (EF) and Deterioration Rates (g/mile-10k miles) (DR)

Engine Model Year	NOx[b]		ROG[b],[c]		PM[b],[i]	
	EF[d]	DR[e]	EF[d]	DR[e]	EF[d]	DR[e]
Pre-1987	14.52	0.031	0.89	0.051	0.713	0.0283
1987-90	14.31	0.041	0.70	0.060	0.774	0.0252
1991-93	10.70	0.054	0.37	0.031	0.425	0.0193
1994-97	10.51	0.063	0.27	0.036	0.241	0.0129
1998-02	10.33	0.072	0.28	0.036	0.266	0.0116
2003-06	6.84	0.071	0.23	0.021	0.175	0.0067
2007-09	3.99	0.090	0.18	0.007	0.014	0.0008
2007+[f] (0.21-0.50 g/bhp-hr NOx FEL)	1.27	0.079	0.06	0.002	0.002	0.0001
2010-12 (0.20 g/bhp-hr NOx std)	1.03	0.079	0.06	0.002	0.002	0.0001
2013+[g] (0.20 g/bhp-hr NOx std)	1.03	0.045	0.06	0.001	0.002	0.0001
2016+[h] (0.10 g/bhp-hr NOx std)	0.52	0.023	0.06	0.001	0.002	0.0001
2016+[h] (0.05 g/bhp-hr NOx std)	0.26	0.011	0.06	0.001	0.002	0.0001
2016+[h] (0.02 g/bhp-hr NOx std)	0.10	0.005	0.06	0.001	0.002	0.0001

[a] EMFAC 2014 Zero-Mile Based Emission Factors. Factors are based on diesel engines. Same factors used for alternative fuel engines due to limited alternative fuel data in EMFAC.
[b] Emission factors incorporate the ultra low-sulfur diesel fuel correction factors listed in Table D-22. NOx – Oxides of nitrogen, ROG – Reactive Organic Gases, PM – Particulate Matter.
[c] EMFAC provides HC emission factors which are converted into ROG. ROG = HC * 1.26639.
[d] Emission Factors are based on zero-mile rates contained in EMFAC 2014.
[e] Deterioration Rate per 10,000 miles.
[f] All model year 2007 and newer engines with Family Emission Limits (FEL) from 0.21 g/bhp-hr to 0.50 g/bhp-hr NOx must use different emission factors from those listed for model years 2010 and newer engines certified to 0.20 g/bhp-hr NOx standards. FEL emission factors are based on EMFAC factors for model year 2010-2012 engines that include weighted averaging of 0.5, 0.35, and 0.20 g/bhp-hr NOx standards based on sales.
[g] Deterioration rates for 2013+ engines incorporate use of on-board diagnostic system.
[h] Factors for 2016+ engines are reduced values of 2013 factors by 50 percent, 75 percent, and 90 percent to correspond with 0.10 g/bhp-hr NOx, 0.05 g/bhp-hr NOx, and 0.02 g/bhp-hr NOx optional low NOx standards.
[i] Factors for 2006 or older engines are for unfiltered trucks.

Table D-2
Heavy-Duty Vehicles
Over 33,000 pounds (lbs) GVWR
Emission Factors (g/mile)[a] (EF) and Deterioration Rates (g/mile-10k miles) (DR)

Engine Model Year	NOx[b]		ROG[b],[c]		PM[b],[i]	
	EF[d]	DR[e]	EF[d]	DR[e]	EF[d]	DR[e]
Pre-1987	21.37	0.018	1.38	0.031	1.260	0.0200
1987-90	21.07	0.024	1.08	0.037	1.369	0.0178
1991-93	18.24	0.037	0.78	0.027	0.574	0.0104
1994-97	17.92	0.043	0.58	0.031	0.377	0.0080
1998-02	17.61	0.049	0.60	0.031	0.415	0.0073
2003-06	11.66	0.049	0.49	0.018	0.267	0.0041
2007-09	6.80	0.077	0.39	0.007	0.022	0.0006
2007+[f] (0.21-0.50 g/bhp-hr NOx FEL)	2.17	0.068	0.13	0.002	0.004	0.0001
2010-12 (0. 2 g/bhp-hr NOx std)	1.76	0.068	0.13	0.002	0.004	0.0001
2013+[g] (0. 2 g/bhp-hr NOx std)	1.76	0.039	0.13	0.001	0.004	0.0001
2016+[h] (0.10 g/bhp-hr NOx std)	0.88	0.019	0.13	0.001	0.004	0.0001
2016+[h] (0.05 g/bhp-hr NOx std)	0.44	0.010	0.13	0.001	0.004	0.0001
2016+[h] (0.02 g/bhp-hr NOx std)	0.18	0.004	0.13	0.001	0.004	0.0001

[a] EMFAC 2014 Zero-Mile Based Emission Factors. Factors are based on diesel engines. Same factors used for alternative fuel engines due to limited alternative fuel data in EMFAC.
[b] Emission factors incorporate the ultra low-sulfur diesel fuel correction factors listed in Table D-22.
[c] EMFAC provides HC emission factors which are converted into ROG. ROG = HC * 1.26639.
[d] Emission Factors are based on zero-mile rates contained in EMFAC 2014.
[e] Deterioration Rate are per 10,000 miles.
[f] All model year 2007 and newer engines with Family Emission Limits (FEL) from 0.21 g/bhp-hr to 0.50 g/bhp-hr NOx must use different emission factors from those listed for model years 2010 and newer engines certified to 0.20 g/bhp-hr NOx standards. FEL emission factors are based on EMFAC factors for model year 2010-2012 engines that include weighted averaging of 0.5, 0.35, and 0.20 g/bhp-hr NOx standards based on sales.
[g] Deterioration rates for 2013+ engines incorporate use of on-board diagnostic system.
[h] Factors for 2016+ engines are reduced values of 2013 factors by 50 percent, 75 percent, and 90 percent to correspond with 0.10 g/bhp-hr NOx, 0.05 g/bhp-hr NOx, and 0.02 g/bhp-hr NOx optional low NOx standards, respectively.
[i] Factors for 2006 or older engines are for unfiltered trucks.

Table D-3
Diesel Urban Buses
Emission Factors (g/mile)[a]

Engine Model Year	NOx[b]	ROG[b],[c]	PM[b],[e]
Pre-1987	42.97	1.88	0.929
1987-1990	37.39	1.87	0.878
1991-1993	23.72	1.84	0.835
1994-1995	27.71	1.81	1.015
1996-1998	36.46	1.81	1.217
1999-2002	18.97	1.81	0.417
2003	13.02	0.77	0.084
2004-2006	3.56	0.08	0.084
2007+ (0.20 g/bhp-hr NOx std)	1.90	0.03	0.011
2016+[d] (0.10 g/bhp-hr NOx std)	0.95	0.03	0.011
2016+[d] (0.05 g/bhp-hr NOx std)	0.47	0.03	0.011
2016+[d] (0.02 g/bhp-hr NOx std)	0.19	0.03	0.011

[a] EMFAC 2014 Zero-Mile Based Emission Factors.
[b] Emission factors incorporate the ultra low-sulfur diesel fuel correction factors listed in Table D-22.
[c] EMFAC provides HC emission factors which are converted into ROG. ROG = HC * 1.26639.
[d] Factors for 2016+ engines are reduced values of 2007 factors by 50 percent, 75 percent, and 90 percent to correspond with 0.10 g/bhp-hr NOx, 0.05 g/bhp-hr NOx, and 0.02 g/bhp-hr NOx optional low NOx standards, respectively.
[e] Factors for 2006 or older engines are for unfiltered trucks.

Table D-4
Alternative Fuel Urban Buses
Emission Factors (g/mile)[a]

Engine Model Year	NOx	ROG[b]	PM[d]
Pre-2003	21.60	2.68	0.043
2003-06	15.40	3.87	0.023
2007+ (0.20 g/bhp-hr NOx std)	0.65	0.04	0.001
2016+[c] (0.10 g/bhp-hr NOx std)	0.33	0.04	0.001
2016+[c] (0.05 g/bhp-hr NOx std)	0.16	0.04	0.001
2016+[c] (0.02 g/bhp-hr NOx std)	0.07	0.04	0.001

[a] EMFAC 2014 Zero-Mile Based Emission Factors.
[b] EMFAC provides HC emission factors which are converted into ROG.
ROG (Pre-2007 engines) = HC * 0.16137.
ROG (2007+ engines) = HC * 0.013972.
[c] Factors for 2016+ engines are reduced values of 2007 factors by 50 percent, 75 percent, and 90 percent to correspond with 0.10 g/bhp-hr NOx, 0.05 g/bhp-hr NOx, and 0.02 g/bhp-hr NOx optional low NOx standards, respectively.
[d] Factors for 2006 or older engines are for unfiltered trucks.

Table D-5
Diesel Refuse Trucks
Emission Factors (g/mile)[a]

Engine Model Year	NOx[b]	ROG[b],[c]	PM[b],[g]
pre-1994	34.69	0.01	0.346
1994-97	31.53	0.01	0.137
1998-02	31.25	0.01	0.144
2003-06	21.39	0.01	0.086
2007-09	11.25	0.14	0.008
2007+[d] (0.21-0.50 g/bhp-hr NOx FEL)	1.23	0.26	0.008
2010+[e] (0.20 g/bhp-hr NOx std)	1.09	0.04	0.008
2016+[f] (0.10 g/bhp-hr NOx)	0.54	0.04	0.008
2016+[f] (0.05 g/bhp-hr NOx)	0.27	0.04	0.008
2016+[f] (0.02 g/bhp-hr NOx)	0.11	0.04	0.008

Note: These emission factors are not applicable to transfer trucks. Transfer trucks must use the emission factors from Table D-1 or D-2. Per EMFAC 2014, solid waste collection vehicles are considered to be well-maintained and have negligible deterioration which is why only zero-mile emission factors are to be used in calculations for solid waste collection vehicle projects.

(a) EMFAC 2014 Zero-Mile Based Emission Factors.
(b) Emission factors incorporate the ultra low-sulfur diesel fuel correction factors listed in Table D-22.
(c) EMFAC provides HC emission factors which are converted into ROG. ROG = HC * 1.26639.
(d) All model year 2007 and newer engines with Family Emission Limits (FEL) from 0.21 g/bhp-hr to 0.50 g/bhp-hr NOx must use different emission factors from those listed for model years 2010 and newer engines certified to 0.20 g/bhp-hr NOx standards. FEL emission factors are based on EMFAC factors for model year 2010-2012 engines that include weighted averaging of 0.5, 0.35, and 0.20 g/bhp-hr NOx standards based on sales.
(e) These 2010+ emission factors are based only on engines certified to the 0.20 g/bhp-hr NOx standard.
(f) Factors for 2016+ engines are reduced values of 2013 factors by 50 percent, 75 percent, and 90 percent to correspond with 0.10 g/bhp-hr NOx, 0.05 g/bhp-hr NOx, and 0.02 g/bhp-hr NOx optional low NOx standards, respectively.
(g) Factors for 2006 or older engines are for unfiltered trucks.

Table D-6
Alternative Fuel Refuse Trucks
Emission Factors (g/mile)[a]

Engine Model Year	NOx	ROG[b]	PM[d]
Pre-2007	53.20	9.86	0.091
2007-09	18.80	3.68	0.004
2010+ (0.20 g/bhp-hr NOx std)	0.88	0.14	0.004
2016+[c] (0.10 g/bhp-hr NOx)	0.44	0.14	0.004
2016+[c] (0.05 g/bhp-hr NOx)	0.22	0.14	0.004
2016+[c] (0.02 g/bhp-hr NOx)	0.09	0.14	0.004

Note: These emission factors are not applicable to transfer trucks. Transfer trucks must use the emission factors from Table D-1 or D-2. Per EMFAC 2014, solid waste collection vehicles are considered to be well-maintained and have negligible deterioration which is why only zero-mile emission factors are to be used in calculations for solid waste collection vehicle projects.

[a] EMFAC 2014 Zero-Mile Based Emission Factors.
[b] EMFAC provides HC emission factors which are converted into ROG.
ROG (Pre-2007 engines) = HC * 0.16137.
ROG (2007+ engines) = HC * 0.013972.
[c] Factors for 2016+ engines are reduced values of 2010 factors by 50 percent, 75 percent, and 90 percent to correspond with 0.10 g/bhp-hr NOx, 0.05 g/bhp-hr NOx, and 0.02 g/bhp-hr NOx optional low NOx standards, respectively.
[d] Factors for 2006 or older engines are for unfiltered trucks.

Table D-7
Off-Road Diesel Engines Default Load Factors

Category	Equipment Type	Load Factor
Airport Ground Support	Aircraft Tug	0.54
	Air Conditioner	0.75
	Air Start Unit	0.90
	Baggage Tug	0.37
	Belt Loader	0.34
	Bobtail	0.37
	Cargo Loader	0.34
	Cargo Tractor	0.36
	Forklift	0.20
	Ground Power Unit	0.75
	Lift	0.34
	Passenger Stand	0.40
	Service Truck	0.20
	Other Ground Support Equipment	0.34
Agricultural (Mobile, Portable or Stationary)	Agricultural Mowers	0.43
	Agricultural Tractors	0.70
	Balers	0.58
	Combines/Choppers	0.70
	Chippers/Stump Grinders	0.73
	Generator Sets	0.74
	Hydro Power Units	0.48
	Irrigation Pump	0.65
	Shredders	0.40
	Sprayers	0.50
	Swathers	0.55
	Tillers	0.78
	Other Agricultural	0.51
Construction	Air Compressors	0.48
	Bore/Drill Rigs	0.50
	Cement & Mortar Mixers	0.56
	Concrete/Industrial Saws	0.73
	Concrete/Trash Pump	0.74
	Cranes	0.29
	Crawler Tractors	0.43
	Crushing/Process Equipment	0.78
	Excavators	0.38
	Graders	0.41

Table D-7
Off-Road Diesel Engines Default Load Factors
(Continued)

Category	Equipment Type	Load Factor
Construction	Off-Highway Tractors	0.44
	Off-Highway Trucks	0.38
	Pavers	0.42
	Other Paving	0.36
	Pressure Washer	0.30
	Rollers	0.38
	Rough Terrain Forklifts	0.40
	Rubber Tired Dozers	0.40
	Rubber Tired Loaders	0.36
	Scrapers	0.48
	Signal Boards	0.78
	Skid Steer Loaders	0.37
	Surfacing Equipment	0.30
	Tractors/Loaders/Backhoes	0.37
	Trenchers	0.50
	Welders	0.45
	Other Construction Equipment	0.42
Industrial	Aerial Lifts	0.31
	Forklifts	0.20
	Sweepers/Scrubbers	0.46
	Other General Industrial	0.34
	Other Material Handling	0.40
Logging	Fellers/Bunchers	0.71
	Skidders	0.74
Oil Drilling	Drill Rig	0.50
	Lift (Drilling)	0.60
	Swivel	0.60
	Workover Rig (Mobile)	0.50
	Other Workover Equipment	0.60
Cargo Handling	Container Handling Equipment	0.59
	Cranes	0.20
	Excavators	0.55
	Forklifts	0.30
	Other Cargo Handling Equipment	0.51
	Sweeper/Scrubber	0.68
	Tractors/Loaders/Backhoes	0.55
	Yard Trucks	0.39
Other	All	0.43

Table D-8
Uncontrolled Off-Road Diesel Engines
Emission Factors (g/bhp-hr) (EF) and Deterioration Rates (g/bhp-hr-hr) (DR)

Horsepower	Model Year	NOx		ROG		PM10	
		EF	DR	EF	DR	EF	DR
25-49	Pre-1988	6.51	0.000098	1.68	0.000210	0.547	0.0000424
	1988+	6.42	0.000097	1.64	0.000210	0.547	0.0000424
20-119	Pre-1988	12.09	0.00028	1.31	0.000061	0.605	0.0000440
	1988+	8.14	0.00019	0.90	0.000042	0.497	0.0000361
120+	Pre-1970	13.02	0.00030	1.20	0.000056	0.554	0.0000403
	1970-1979	11.16	0.00026	0.91	0.000042	0.396	0.0000288
	1980-1987	10.23	0.00024	0.80	0.000037	0.396	0.0000288
	1988+	7.60	0.00018	0.62	0.000029	0.274	0.0000199

Table D-9
Controlled Off-Road Diesel Engines
Emission Factors (g/bhp-hr) (EF) and Deterioration Rates (g/bhp-hr-hr) (DR) [a]

Horsepower	Tier	NOx		ROG		PM10	
		EF	DR	EF	DR	EF	DR
25-49	1	5.26	0.0000980	1.32	0.000170	0.480	0.0000372
	2	4.63	0.0000930	0.22	0.000050	0.280	0.0000218
	4 (Interim)	4.55	0.0000950	0.09	0.000036	0.128	0.0000096
	4 (Final)	2.75	0.0000570	0.09	0.000036	0.009	0.0000010
50-74	1	6.54	0.0001500	0.90	0.000042	0.552	0.0000402
	2	4.75	0.0000710	0.17	0.000025	0.192	0.0000141
	3[b]	2.74	0.0000360	0.09	0.000023	0.192	0.0000141
	4 (Interim)	2.74	0.0000360	0.09	0.000023	0.112	0.0000080
	4 (Final)	2.74	0.0000360	0.09	0.000023	0.009	0.0000009
75-99	1	6.54	0.0001500	0.90	0.000042	0.552	0.0000402
	2	4.75	0.0000710	0.17	0.000025	0.192	0.0000141
	3	2.74	0.0000360	0.09	0.000023	0.112	0.0000080
	4 (Phase-Out)	2.74	0.0000360	0.09	0.000030	0.009	0.0000009
	4 (Phase-In or Alt. NOx)	2.15	0.0000270	0.08	0.000021	0.009	0.0000009
	4 (Final)	0.26	0.0000035	0.05	0.000015	0.009	0.0000009
100-174	1	6.54	0.0001500	0.62	0.000029	0.304	0.0000221
	2	4.15	0.0000600	0.15	0.000023	0.128	0.0000094
	3	2.32	0.0000300	0.09	0.000030	0.112	0.0000080
	4 (Phase-Out)	2.32	0.0000300	0.09	0.000030	0.009	0.0000004
	4 (Phase-In or Alt. NOx)	2.15	0.0000270	0.08	0.000020	0.009	0.0000004
	4 (Final)	0.26	0.0000040	0.05	0.000011	0.009	0.0000004

Table D-9
Controlled Off-Road Diesel Engines
Emission Factors (g/bhp-hr) (EF) and Deterioration Rates (g/bhp-hr-hr) (DR) [(a)]
(Continued)

Horsepower	Tier	NOx		ROG		PM10	
		EF	DR	EF	DR	EF	DR
175-299	1	5.93	0.0001400	0.29	0.000013	0.120	0.0000064
	2	4.15	0.0000600	0.11	0.000022	0.088	0.0000046
	3	2.32	0.0000300	0.09	0.000023	0.088	0.0000046
	4 (Phase-Out)	2.32	0.0000300	0.09	0.000023	0.009	0.0000003
	4 (Phase-In or Alt. NOx)	1.29	0.0000170	0.06	0.000017	0.009	0.0000003
	4 (Final)	0.26	0.0000036	0.05	0.000011	0.009	0.0000003
300-750	1	5.93	0.0000990	0.29	0.000010	0.120	0.0000064
	2	3.79	0.0000500	0.09	0.000023	0.088	0.0000044
	3	2.32	0.0000300	0.09	0.000023	0.088	0.0000044
	4 (Phase-Out)	2.32	0.0000300	0.09	0.000023	0.009	0.0000003
	4 (Phase-In or Alt. NOx)	1.29	0.0000170	0.06	0.000017	0.009	0.0000003
	4 (Final)	0.26	0.0000036	0.05	0.000011	0.009	0.0000003
751+	1	5.93	0.0000990	0.29	0.000010	0.120	0.0000064
	2	3.79	0.0000500	0.09	0.000023	0.088	0.0000044
	4 (Interim)	2.24	0.0000280	0.06	0.000017	0.051	0.0000021
	4 (Final)	2.24	0.0000280	0.05	0.000011	0.017	0.0000009

Note: Engines participating in the “Tier 4 Early Introduction Incentive for Engine Manufacturers” program per California Code of Regulations, Title 13, section 2423(b)(6) are eligible for funding provided the engines are certified to the final Tier 4 emission standards. The Air Resources Board (ARB) Executive Order indicates engines certified under this provision. The emission rates for these engines shall be equivalent to the emission factors associated with Tier 3 engines.

Note: For equipment with baseline engines certified under the flexibility provisions per California Code of Regulations, Titles 13, section 2423(d), baseline emission rates shall be determined by using the previous applicable emission standard or Tier for that engine model year and horsepower rating. The ARB Executive Order indicates engines certified under this provision.

[(a)] Emission factors were converted using the ultra low-sulfur diesel fuel correction factors listed in Table D-23.
[(b)] Alternate compliance option.

Table D-10
Off-Road LSI Equipment Default Load Factors

Category	Equipment Type	Load Factor
Agriculture (Mobile, Portable or Stationary)	Agricultural Tractors	0.62
	Balers	0.55
	Combines/Choppers	0.74
	Chipper/Stump Grinder	0.78
	Generator Sets	0.68
	Sprayers	0.50
	Swathers	0.52
	Pumps	0.65
	Other Agricultural Equipment	0.55
Airport Ground Support	A/C Tug	0.80
	Baggage Tug	0.55
	Belt Loader	0.50
	Bobtail	0.55
	Cargo Loader	0.50
	Forklift	0.30
	Ground Power Unit	0.75
	Lift	0.50
	Passenger Stand	0.59
	Other Ground Support Equipment	0.50
Construction	Air Compressors	0.56
	Asphalt Pavers	0.66
	Bore/Drill Rigs	0.79
	Concrete/Industrial Saws	0.78
	Concrete/Trash Pump	0.69
	Cranes	0.47
	Gas Compressor	0.85
	Paving Equipment	0.59
	Pressure Washer	0.85
	Rollers	0.62
	Rough Terrain Forklifts	0.63
	Rubber Tired Loaders	0.54
	Skid Steer Loaders	0.58
	Tractors/Loaders/Backhoes	0.48

Table D-10
Off-Road LSI Equipment Default Load Factors
(Continued)

Category	Equipment Type	Load Factor
Construction	Trenchers	0.66
	Welders	0.51
	Other Construction	0.48
Industrial	Aerial Lifts	0.46
	Forklifts	0.30
	Sweepers/Scrubbers	0.71
	Other Industrial	0.54

Table D-11a
Off-Road LSI Engines
Emission Factors (g/bhp-hr) (EF) and Deterioration Rates (g/bhp-hr-hr) (DR)
Gasoline

Horsepower	Model Year	NOx		ROG		PM10	
		EF	DR	EF	DR	EF	DR
25-50	Uncontrolled pre-2004	8.01	0.0000406	3.760	0.000412	0.060	0.000
	Controlled 2001 - 2006	1.33	0.0004710	0.710	0.000169	0.060	0.000
	Controlled 2007 - 2009	0.89	0.0001192	0.473	0.000064	0.060	0.000
	Controlled 2010+	0.27	0.0000250	0.142	0.000013	0.060	0.000
51-120	Uncontrolled Pre-2004	11.84	0.0000601	2.630	0.000287	0.060	0.000
	Controlled 2001 – 2006	1.78	0.0002070	0.260	0.000081	0.060	0.000
	Controlled 2007 - 2009	1.17	0.0000660	0.130	0.000074	0.060	0.000
	Controlled 2010+	0.35	0.0000300	0.030	0.000014	0.060	0.000
121+	Uncontrolled pre-2004	12.94	0.0001270	1.610	0.000042	0.060	0.000
	Controlled 2001 – 2006	1.94	0.0002780	0.160	0.000102	0.060	0.000
	Controlled 2007 - 2009	1.17	0.0000660	0.130	0.000074	0.060	0.000
	Controlled 2010+	0.35	0.0000300	0.030	0.000014	0.060	0.000

Table D-11b
Off-Road LSI Engines
Emission Factors (g/bhp-hr) (EF) and Deterioration Rates (g/bhp-hr-hr) (DR)
Alternative Fuels

Horsepower	Model Year	NOx		ROG		PM10	
		EF	DR	EF	DR	EF	DR
25-50	Uncontrolled pre-2004	13.00	0.0000662	1.380	0.000151	0.060	0.000
	Controlled 2001 - 2006	1.95	0.0002760	0.140	0.000106	0.060	0.000
	Controlled 2007 - 2009	1.30	0.0000011	0.093	0.000172	0.060	0.000
	Controlled 2010+	0.39	0.0000002	0.028	0.000036	0.060	0.000
51-120	Uncontrolled pre-2004	10.53	0.0000533	1.550	0.000169	0.060	0.000
	Controlled 2001 – 2006	1.58	0.0003500	0.160	0.000103	0.060	0.000
	Controlled 2007 - 2009	1.04	0.0000125	0.100	0.000047	0.060	0.000
	Controlled 2010+	0.31	0.0000380	0.030	0.000014	0.060	0.000
121+	Uncontrolled pre-2004	10.51	0.0001040	1.380	0.000035	0.060	0.000
	Controlled 2001 – 2006	1.58	0.0002640	0.140	0.000106	0.060	0.000
	Controlled 2007 - 2009	1.04	0.0000125	0.100	0.000047	0.060	0.000
	Controlled 2010+	0.31	0.0000380	0.030	0.000014	0.060	0.000

Table D-12
Emission Factors for Off-Road LSI Engine Retrofits
Verified to Absolute Emission Number (g/bhp-hr)

Manufacturers of LSI retrofit systems may verify to a percentage emission reduction or absolute emissions. If a retrofit system is verified to a percentage reduction, the emission factors will be that verified percentage of the appropriate emissions factors in Table D-11a or D-11b. If a retrofit system is verified to an absolute emission number, when calculating emission reductions use the following table for the emission factors and the deterioration rate for the baseline engine.

Fuel	Verified Value	NOx	ROG	PM10
Gasoline	3.0	1.78	0.26	0.060
	2.5	1.48	0.22	0.060
	2.0	1.19	0.17	0.060
	1.5	0.89	0.13	0.060
	1.0	0.59	0.09	0.060
	0.6	0.35	0.03	0.060
	0.5	0.29	0.03	0.060
Alt Fuel	3.0	1.58	0.16	0.060
	2.5	1.32	0.13	0.060
	2.0	1.05	0.11	0.060
	1.5	0.79	0.08	0.060
	1.0	0.53	0.05	0.060
	0.6	0.31	0.03	0.060
	0.5	0.26	0.03	0.060

Table D-13a
Off-Road LSI Engines Certified to Optional Standards
Emission Factors (g/bhp-hr) (EF) and Deterioration Rates (g/bhp-hr-hr) (DR)
Gasoline

Horsepower	Optional Standard	NOx		ROG		PM10	
		EF	DR	EF	DR	EF	DR
25-50	0.4	0.18	0.000017	0.09	0.0000087	0.060	0.000
	0.2	0.09	0.000008	0.05	0.0000043	0.060	0.000
	0.1	0.04	0.000005	0.02	0.0000027	0.060	0.000
51-120	0.4	0.24	0.000021	0.04	0.0000034	0.060	0.000
	0.2	0.12	0.000010	0.02	0.0000017	0.060	0.000
	0.1	0.06	0.000005	0.01	0.0000009	0.060	0.000
121+	0.4	0.26	0.000022	0.02	0.0000017	0.060	0.000
	0.2	0.13	0.000011	0.01	0.0000009	0.060	0.000
	0.1	0.06	0.000005	0.01	0.0000009	0.060	0.000

Table D-13b
Off-Road LSI Engines Certified to Optional Standards
Emission Factors (g/bhp-hr) (EF) and Deterioration Rates (g/bhp-hr-hr) (DR)
Alternative Fuels

Horsepower	Optional Standard	NOx		ROG		PM10	
		EF	DR	EF	DR	EF	DR
25-50	0.4	0.26	0.000022	0.02	0.0000017	0.060	0.000
	0.2	0.13	0.000011	0.01	0.0000009	0.060	0.000
	0.1	0.07	0.000006	0.00	0.0000000	0.060	0.000
51-120	0.4	0.21	0.000031	0.02	0.0000030	0.060	0.000
	0.2	0.11	0.000015	0.01	0.0000013	0.060	0.000
	0.1	0.05	0.000007	0.01	0.0000013	0.060	0.000
121+	0.4	0.21	0.000034	0.01	0.0000016	0.060	0.000
	0.2	0.11	0.000015	0.01	0.0000013	0.060	0.000
	0.1	0.05	0.000010	0.00	0.0000000	0.060	0.000

LOCOMOTIVES

Table D-14a
Locomotive Emission Factors (g/bhp-hr)
Based on 1998 Federal Standards

Engine Model Year	Type	NOx[(a)]	ROG[(b)]	PM10[(a)]
Pre-1973	Line-haul and Passenger	12.22	0.51	0.275
	Switcher	16.36	1.06	0.378
1973-2001 Tier 0	Line-haul and Passenger	8.93	1.05	0.516
	Switcher	13.16	2.21	0.619
2002-2004 Tier 1	Line-haul and Passenger	6.96	0.58	0.387
	Switcher	10.34	1.26	0.464
2005-2011 Tier 2	Line-haul and Passenger	5.17	0.32	0.172
	Switcher	7.61	0.63	0.206

Note: These factors are to be used for the project baseline emissions if the baseline locomotive is certified or required to be certified to the 1998 federal locomotive remanufacture standards, and for the reduced emission locomotive if the project locomotive is remanufactured to these 1998 standards. Factors are based upon Regulatory Impact Analysis: Final United States Environmental Protection Agency (U.S. EPA) Locomotive Regulation (2008).

[(a)] NOx and PM10 emission factors have been adjusted by a factor of 0.94 and 0.86, respectively, to account for use of California ultra-low sulfur diesel fuel.
[(b)] ROG = HC * 1.053

Table D-14b
Locomotive Emission Factors (g/bhp-hr)
Based on 2008 Federal Standards

Engine Model Year	Type	NOx[(a)]	ROG[(b)]	PM10[(a)]
1973-2001 Tier 0+	Line-haul and Passenger	6.96	0.58	0.189
	Switcher	11.09	2.21	0.224
2002-2004 Tier 1+	Line-haul and Passenger	6.96	0.58	0.189
	Switcher	10.34	1.26	0.224
2005-2011 Tier 2+	Line-haul and Passenger	5.17	0.32	0.086
	Switcher	7.61	0.63	0.112
2011-2014 Tier 3	Line-haul and Passenger	5.17	0.32	0.086
	Switcher	4.70	0.63	0.086
2015 Tier 4	Line-haul and Passenger	1.22	0.15	0.026
	Switcher	1.22	0.15	0.026

Note: These factors are to be used for the project baseline emissions if the baseline locomotive is certified or required to be certified to the new (2008) federal locomotive remanufacture standards, and for the reduced emission locomotive if the project locomotive is remanufactured to the new standards or meets Tier 3 standards. Factors are based upon Regulatory Impact Analysis: Final U.S. EPA Locomotive Regulation (2008).

[(a)] NOx and PM10 emission factors have been adjusted by a factor of 0.94 and 0.86, respectively, to account for use of California ultra-low sulfur diesel fuel.

[(b)] ROG = HC * 1.053

Table D-15a
Uncontrolled Harbor Craft Propulsion Engine
Emission Factors (g/bhp-hr)

Horsepower	Model Year	NOx	ROG	PM10
25-50	All	7.57	1.32	0.520
51-120	pre-1997	14.27	1.04	0.575
	1997+	9.70	0.71	0.524
121-250	pre-1971	15.36	0.95	0.527
	1971-1978	14.27	0.79	0.451
	1979-1983	13.17	0.72	0.376
	1984+	12.07	0.68	0.376
251+	pre-1971	15.36	0.91	0.506
	1971-1978	14.27	0.76	0.431
	1979-1983	13.17	0.68	0.363
	1984-1994	12.07	0.65	0.363
251-750	1995+	8.97	0.49	0.260
751+	1995+	12.07	0.60	0.363

Table D-15b
Controlled Harbor Craft Propulsion Engine
Emission Factors (g/bhp-hr)

Horsepower	Tier	NOx	ROG	PM10
25-50	1	6.93	1.30	0.580
	2	5.04	1.30	0.240
	3	5.04	1.30	0.176
51-120	1	6.93	0.71	0.524
	2	5.04	0.71	0.240
	3	5.04	0.71	0.176
121-175	1	8.97	0.49	0.290
	2	4.84	0.49	0.176
	3	3.60	0.49	0.077
176-750	1	8.97	0.49	0.290
	2	4.84	0.49	0.120
	3	3.87	0.49	0.068
751-1900	1	8.97	0.49	0.290
	2	5.24	0.49	0.160
	3	3.87	0.49	0.068
1901+	1	8.97	0.49	0.290
	2	5.24	0.49	0.160
	3	4.14	0.49	0.085

Table D-16
Tier 4 Harbor Craft Propulsion Engine
Emission Standards (g/bhp-hr)
(Not applicable for engines using FEL or ABT for compliance)

Model Year	Horsepower	Tier	NOx	ROG	PM10
2016+	805-4960	4	1.34	0.142	0.030

Table D-17a
Uncontrolled Harbor Craft Auxiliary Engine
Emission Factors (g/bhp-hr)

Horsepower	Model Year	NOx	ROG	PM10
25-50	all	6.42	1.58	0.460
51-120	pre-1997	12.09	1.23	0.508
	1997+	8.14	0.85	0.417
121-250	pre-1971	13.02	1.13	0.466
	1971-1978	12.09	0.94	0.399
	1979-1983	11.16	0.86	0.333
	1984-1995	10.23	0.82	0.333
	1996+	7.75	0.59	0.255
251-750	pre-1971	13.02	1.08	0.448
	1971-1978	12.09	0.90	0.381
	1979-1983	11.16	0.81	0.321
	1984-1994	10.23	0.77	0.321
	1995+	7.60	0.58	0.230
751+	pre-1971	13.02	1.08	0.448
	1971-1978	12.09	0.90	0.381
	1979-1986	11.16	0.81	0.321
	1987-1998	10.23	0.72	0.321
	1999+	7.75	0.58	0.255

Table D-17b
Controlled Harbor Craft Auxiliary Engine
Emission Factors (g/bhp-hr)

Horsepower	Tier	NOx	ROG	PM10
25-50	1	6.54	1.54	0.511
	2	5.04	1.54	0.240
	3	5.04	1.54	0.176
51-120	1	6.93	0.85	0.464
	2	5.04	0.85	0.240
	3	5.04	0.85	0.176
121-175	1	6.93	0.58	0.255
	2	4.84	0.58	0.176
	3	3.60	0.58	0.077
176-750	1	6.93	0.58	0.255
	2	4.84	0.58	0.120
	3	3.78	0.58	0.068
751-1900	1	6.93	0.58	0.255
	2	5.24	0.58	0.160
	3	3.87	0.58	0.068
1901+	1	6.93	0.58	0.255
	2	5.24	0.58	0.160
	3	4.14	0.58	0.085

Table D-18
Harbor Craft Load Factors

Vessel Type	Propulsion Engine	Auxiliary Engine
Charter Fishing	0.52	0.43
Commercial Fishing	0.27	
Ferry/Excursion	0.42	
Pilot	0.51	
Tow	0.68	
Work	0.45	
Other	0.52	
Barge/Dredge	0.45	0.65
Crew & Supply	0.38	0.32
Tug	0.50	0.31

Table D-19
Shore Power
Default Emission Rates (Grams per kilowatt-hour (g/kW-hr))

Pollutant	Emission Rate
NOx	13.09
ROG	0.49
PM10 (marine gas oil fuel with 0.11- 0.5 % sulfur content)	0.38
PM10 (marine gas oil fuel with <= 0.10 % sulfur content)	0.25

Table D-20
Shore Power
Default Power Requirements

Ship Category	Ship Size / Type Default (Twenty-foot Equivalent Unit (TEU))	Power Requirement (kW)
Container Vessel	<1,000	1,000
	1,000 – 1,999	1,300
	2,000 – 2,999	1,600
	3,000 – 3,999	1,900
	4,000 – 4,999	2,200
	5,000 – 5,999	2,300
	6,000 – 6,999	2,500
	7,000 – 7,999	2,900
	8,000 – 9,999	3,300
	10,000 – 12,000	3,700
Passenger Vessel	No Default Value – Use Actual Power Requirement[(a)]	
Reefer	Break Bulk	1,300
	Fully containerized	3,300

[(a)] The average power requirement for passenger vessels is 7,400 kW (ARB Oceangoing Vessel Survey, 2005).

ALL ENGINES

Table D-21
Fuel Consumption Rate Factors (bhp-hr/gal)

Category	Horsepower/Application	Fuel Consumption Rate
Non-Mobile Agricultural Engines	ALL	17.5
Locomotive	Line Haul and Passenger (Class I/II)	20.8
	Line Haul and Passenger (Class III)	18.2
	Switcher	15.2
Other	< 750 hp	18.5
	≥ 750 hp	20.8

REFERENCES

The information in these tables has already been incorporated into the preceding emission factor tables. These tables are included for informational purposes.

Table D-22
Fuel Correction Factors
On-Road Diesel Engines

Model Year	NOx	PM10	HC
Pre- 2007	0.93	0.72	0.72
2007+	0.93	0.80	0.72

Table D-23
Fuel Correction Factors
Off-Road Diesel Engines

Model Year	NOx	PM10	HC
Pre-Tier 1	0.930	0.720	0.720
Tier 1 – Tier 3	0.948	0.800	0.720
Tier 4	0.948	0.852	0.720

Table D-24
Capital Recovery Factor (CRF) for Various Project Lives
At a 1% Discount Rate

Project Life	CRF
1	1.010
2	0.508
3	0.340
4	0.256
5	0.206
6	0.173
7	0.149
8	0.131
9	0.117
10	0.106
11	0.096
12	0.089
13	0.082
14	0.077
15	0.072
16	0.068
17	0.064
18	0.061
19	0.058
20	0.055

Table D-25
Capital Recovery Factor (CRF) for Various Project Lives
At a 2% Discount Rate[a][b]

Project Life	CRF
1	1.020
2	0.515
3	0.347
4	0.263
5	0.212
6	0.179
7	0.155
8	0.137
9	0.123
10	0.111
11	0.102
12	0.095
13	0.088
14	0.083
15	0.078
16	0.074
17	0.070
18	0.067
19	0.064
20	0.061

[a] Upon ARB approval of the 2017 Moyer Program Guidelines, the discount rate is one percent. Per statute ARB reviews and may update discount rates annually, using the average rates of return for U.S. Treasury securities and the California Consumer Price Index data available at the time of publication.

[b] The Discount Rate varies from year to year, and may increase beyond 2 percent. The formula used to calculate the CRF based on the Discount Rate can be found in Appendix C, Formula C-2.

APPENDIX E

CHAPTER REFERENCES

APPENDIX E: CHAPTER REFERENCES

Chapter 1: Program Overview

California Air Resources Board (April 28, 2011). *The Carl Moyer Program Guidelines:* Approved by the Board: April 28, 2011; Revised Date: December 18, 2015. https://www.arb.ca.gov/msprog/moyer/guidelines/2011gl/2011cmpgl_20151218.pdf

California Air Resources Board (January 25, 2007). *The Carl Moyer Program: 2006 Status Report.* Carl Moyer Memorial Air Quality Standards Attainment Program. https://www.arb.ca.gov/board/books/2007/012507/07-1-10pres.pdf

California Air Resources Board (March 25, 2010). *The Carl Moyer Program Guidelines: Approved Near-Term Revisions to the Carl Moyer Program Guidelines.* https://www.arb.ca.gov/regact/nonreg/cmp2010not.pdf

Bureau of State Audits (June 14, 2007). *The Carl Moyer Memorial Air Quality Standards Attainment Program: Improved Practices in Applicant Selection, Contracting, and Marketing Could Lead to More Cost-Effective Emission Reductions and Enhanced Operations,* Report 2006-115. http://www.bsa.ca.gov/pdfs/reports/2006-115.pdf

Department of Finance (December 21, 2006) *Report on the California Air Resources Board*: Review of the Carl Moyer Air Quality Attainment Program Administrative, Fund, and Project Tracking Procedures, Prepared by Department of Finance Office of State Audits and Evaluations. http://www.arb.ca.gov/msprog/moyer/audits/2006/dof_eval_12-21-06.pdf

Chapter 2: General Criteria

California State Constitution Article 9, §8; *Education.* http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=CONS&sectionNum=SEC.%208.&article=IX

California State Constitution Article 16, §5; *Public Finance.* http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=CONS&sectionNum=SEC.%205.&article=XVI

Chapter 3: Program Administration

Governmental Accounting Standards Board (December 1998), *Governmental Accounting Standards Series: Statement No. 33;* Accounting and Financial Reporting for Non-exchange Transactions.
http://gasb.org/jsp/GASB/Document_C/GASBDocumentPage?cid=1176160029148&acceptedDisclaimer=true

California Legislative Counsel (October 8, 2015), *Senate Bill No. 513*, *Chapter 610: Fees*; Carl Moyer Memorial Air Quality Standards Attainment Program.
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160SB513

Chapter 4: On-Road Heavy-Duty Vehicles

California Air Resources Board (December 14, 2015) *Emission Factors: Mobile Source Emissions Inventory;* EMFAC2014.
http://www.arb.ca.gov/msei/modeling.htm

California Code of Regulations Title 13, §2023; *Chapter 1: Motor Vehicle Pollution Control Devises*; Fleet Rule for Transit Agencies.
https://www.arb.ca.gov/msprog/bus/zbus/zbusregorderfinal.pdf

California Code of Regulations Title 13, §2021; *Chapter 1: Motor Vehicle Pollution Control Devices*; Solid Waste Collection Vehicles.
http://www.arb.ca.gov/regact/dieselswcv/fro2.pdf

California Code of Regulations Title 13, §2477; *Chapter 9: Off-Road Vehicles and Engines Pollution Control Devices*; Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units (TRU) and TRU Generator Sets, and Facilities Where TRUs Operate.
https://www.arb.ca.gov/diesel/tru/documents/fro_10-16-12.pdf

California Air Resources Board (September 2, 2015) *California Exhaust Emission Standards and Test Procedures:* For 2004 and Subsequent Model Heavy-Duty Diesel Engines and Vehicles.
https://www.arb.ca.gov/msprog/onroadhd/hddtps_lev_iii_clean_complete_10-15.pdf

California Code of Regulations, Title 13, §2485; *Chapter 10: Mobile Source Operational Controls*; Airborne Toxic Control Measure to Limit Diesel-Fueled Commercial Motor Vehicle Idling.
https://www.arb.ca.gov/msprog/truck-idling/13ccr2485_09022016.pdf

California Code of Regulations Title 13, §2022; *Chapter 1: Motor Vehicle Pollution Control Devices;* Diesel Particulate Matter Control Measure for Municipality or Utility On-Road Heavy-Duty Diesel-Fueled Vehicles.
https://www.arb.ca.gov/msprog/publicfleets/title13ccr2022.pdf

California Code of Regulations Title 13, §2021; *Chapter 1: Motor Vehicle Pollution Control Devices;* Diesel Particulate Matter Control Measure for On-Road Heavy-Duty Diesel-Fueled Residential and Commercial Solid Waste Collection Vehicles.
https://www.arb.ca.gov/msprog/swcv/swcv.htm

California Code of Regulations Title 13, §2025; *Chapter 1: Motor Vehicle Pollution Control Devices;* Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants from In-Use Heavy-Duty Diesel-Fueled Vehicles.
https://www.arb.ca.gov/regact/2014/truckbus14/tbfrooal.pdf

California Code of Regulations Title 13, §2027; *Chapter 1: Motor Vehicle Pollution Control Devices;* In-Use On-Road Diesel-Fueled Heavy-Duty Drayage Trucks.
https://www.arb.ca.gov/msprog/onroad/porttruck/finalregdrayage.pdf

California Air Resources Board (May 12, 2015) *California Emissions Inventory Model, EMFAC2014 Volume III:* Technical Documentation v1.0.7.
http://www.arb.ca.gov/msei/modeling.htm

California Air Resources Board (October 20, 2016) *Proposed Regulation to Provide Certification Flexibility for Innovative Heavy-Duty Engines and California Certification and Installation Procedures for Medium-and Heavy-Duty Vehicle Hybrid Conversion systems (Innovative Technology Regulation* (ITR)).
https://www.arb.ca.gov/regact/2016/itr2016/res16-20.pdf

California Air Resources Board (February 24, 2005) *Proposed Modifications to the Fleet Rule:* For the Transit Agencies and New Requirements for Transit Fleet Vehicles.
https://www.arb.ca.gov/regact/bus04/bus04.htm

California Vehicle Code Section 165: Authorized Emergency Vehicle.
http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=VEH&sectionNum=165.

California Vehicle Code Section 545: Definition of a School Bus.
http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=VEH&sectionNum=545

California Vehicle Code Section 2807: School Bus Inspections.
http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=VEH&sectionNum=2807

California Vehicle Code Section 27156.2: Vehicle Emission Standards for Emergency Vehicles.
http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=27156.2.&lawCode=VEH

Chapter 5: Off-Road Equipment

California Air Resources Board (June 1, 2015); Executive Orders for Off-Road Engines.
https://www.arb.ca.gov/msprog/offroad/cert/cert.php

California Code of Regulations Title 13, §2423; *Chapter 9: Off-Road Vehicles and Engines Pollution Control Devices*; Exhaust Emission Standards and Test Procedures - Off-Road Compression-Ignition Engines.
https://govt.westlaw.com/calregs/Document/IA37661604AFA11E29E4FACF11FEB22A2?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)

Code of Federal Regulations Title 40, §1068.240; *Chapter 1: Environmental Protection Agency*; General Compliance Provisions for Engine Programs.
https://www.gpo.gov/fdsys/pkg/CFR-2011-title40-vol33/pdf/CFR-2011-title40-vol33-part1068.pdf

California Code of Regulations Title 13, §2700 to §2711; *Chapter 14: Verification Procedure, Warranty and in-Use Compliance Requirements for in-Use Strategies to Control Emissions from Diesel Engines*.
https://govt.westlaw.com/calregs/Browse/Home/California/CaliforniaCodeofRegulations?guid=I0BC18F70D46A11DE8879F88E8B0DAAAE&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default)&bhcp=1

California Code of Regulations Title 13, §2775; *Chapter 15: Additional off-Road Vehicles and Engines Pollution Control Requirements*; Large Spark-Ignition (LSI) Engine Fleet Requirements.
https://www.arb.ca.gov/msprog/offroad/orspark/largesparkappa-clean.pdf

California Code of Regulations Title 13, §2449; *Chapter 9: Off-Road Vehicles and Engines Pollution Control Devices*; Regulation for In-Use Off-Road Diesel Vehicles.
https://www.arb.ca.gov/regact/2007/ordiesl07/frooal.pdf

California Air Resources Board (July 15, 2013) *Carl Moyer Program Guidelines Supplemental Documents:* Portable Engine Airborne Toxic Control Measure Implementation Chart.
http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm

California Code of Regulations Title 13, §2022; *Chapter 1: Motor Vehicle Pollution Control Devices;* Diesel Particulate Matter Control Measure for Municipality or Utility On-Road Heavy-Duty Diesel-Fueled Vehicles.
http://www.arb.ca.gov/regact/dpmcm05/revfro.pdf

California Air Resources Board (November 1, 2006) *California Emissions Inventory Model:* EMFAC2007, V2.3.
http://www.arb.ca.gov/msei/onroad/latest_version.htm

California Code of Regulations Title 13, §2025; *Chapter 1: Motor Vehicle Pollution Control Devices;* Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants from In-Use Heavy-Duty Diesel-Fueled Vehicles.
https://www.arb.ca.gov/msprog/onrdiesel/documents/tbfinalreg.pdf

California Code of Regulations Title 13, §2027; *Chapter 1: Motor Vehicle Pollution Control Devices;* In-Use On-Road Diesel-Fueled Heavy-Duty Drayage Trucks.
https://www.arb.ca.gov/msprog/onroad/porttruck/finalregdrayage.pdf

Portable Engines

California Code of Regulations Title 17, §93116; *Chapter 1: Air Resources Board*; Airborne Toxic Control Measure for Diesel Particulate Matter from Portable Engines Rated at 50 Horsepower and Greater.
https://www.arb.ca.gov/portable/perp/perpatcm.pdf

California Air Resources Board (February 2, 2007) Staff Report: Initial Statement of Reasons for Proposed Amendments to the Airborne Toxic Control Measure for Diesel Particulate Matter from Portable Engines.
https://www.arb.ca.gov/regact/2007/perp07/isor.pdf

California Air Resources Board (December 10, 2009) Staff Report: Initial Statement of Reason for Proposed Amendments to the Regulations Applicable to Portable Diesel Engines and Diesel Engines Used in Off-Road and On-Road Vehicles. *Stationary Source Division*.
https://arb.ca.gov/regact/2010/perp2010/perpisor.pdf

Stationary Agricultural Engines

California Air Resources Board (September 1, 2010) Staff Report: Initial Statement of Reasons, Airborne Toxic Control Measure for Stationary Compression Ignition Engines. *Stationary Source Division Emissions Assessment Branch.*
https://www.arb.ca.gov/regact/2010/atcm2010/atcmisor.pdf

California Air Resources Board (September 1, 2010) Staff Report: Initial Statement of Reasons for Proposed Revisions to the Airborne Toxic Control Measure for Stationary Compression Ignition Engines. *Stationary Source Division Emissions Assessment Branch*.
http://www.arb.ca.gov/regact/statde05/isor.pdf

California Air Resources Board (November 16, 2006) Staff Report: Initial Statement of Reasons for Proposed Requirements for Stationary Diesel In-Use Agricultural Engines.
http://www.arb.ca.gov/regact/agen06/isor.pdf

California Code of Regulations Title 17, §93115; *Chapter 1: Air Resources Board*; Amendments to the Stationary Airborne Toxic Control Measure for Stationary Compression Ignition Engines.
https://www.arb.ca.gov/diesel/documents/FinalReg2011.pdf

Chapter 6: Locomotives

California Air Resources Board (June 2015) Goods Movement Emission Reduction Program: Guidelines for Implementation.
https://www.arb.ca.gov/bonds/gmbond/docs/prop_1b_goods_movement_2015_program_guidelines_for_implementation.pdf

California Air Resources Board (July 12, 1998) South Coast Locomotive Fleet Average Emissions Program: MEMORANDUM OF MUTUAL UNDERSTANDINGS AND AGREEMENTS.
http://www.arb.ca.gov/msprog/offroad/loco_flt.pdf

Code of Federal Regulations Title 40, Parts 85, 89 and 92; *Chapter 1: Environmental Protection Agency;* Emission Standards for Locomotives and Locomotive Engines Final Rule.
https://www.gpo.gov/fdsys/pkg/FR-1998-04-16/pdf/98-7769.pdf

California Air Resources Board (October 31, 2016) U.S. EPA verified by ARB to Achieve Tier 4 Locomotive Emission Standards: ARB Locomotive Emissions Verifications and Technology Demonstrations.
https://www.arb.ca.gov/railyard/demover/locotech.htm

United States Environmental Protection Agency (March 2007) Regulatory Announcement: EPA Proposal for More Stringent Emission Standards for Locomotives and Marine Compression-Ignition Engines; EPA420-F-07-015.
http://www.epa.gov/nonroad/420f07015.pdf

United States Environmental Protection Agency (March 14, 2008) Final Rule: Control of Emissions from Locomotive Engines and Marine Compression-Ignition Engines Less than 30 Liters per Cylinder.
http://www.epa.gov/oms/regs/nonroad/420r08006.htm

Chapter 7: Marine Vessels

California Air Resources Board (May 2008) Commercial Harbor Craft Regulation: Fact Sheet.
https://www.arb.ca.gov/ports/marinevess/documents/chcfactsheet0508.pdf

California Air Resources Board (July 15, 2013) Carl Moyer Program Guidelines Supplemental Implementation Charts.
http://www.arb.ca.gov/msprog/moyer/guidelines/supplemental-docs.htm

California Air Resources Board (July 26, 2016) Harbor Craft Regulation: Regulatory Activities.
http://www.arb.ca.gov/ports/marinevess/harborcraft.htm

California Code of Regulations Title 17, §93118.5; Chapter 1: Air Resources Board; Airborne Toxic Control Measure for Commercial Harbor Craft.
https://www.arb.ca.gov/regact/2007/chc07/rev93118.pdf

California Air Resources Board (2003) Harbor Craft Survey.
http://www.arb.ca.gov/ports/marinevess/documents/hcsurveyrep1203.pdf

California Air Resources Board (March 2006) California Air Resources Board. Evaluation of Cold-Ironing Oceangoing Vessels at California Ports.
http://www.arb.ca.gov/ports/marinevess/documents.htm

California Air Resources Board (May 2010) Staff Report: Initial Statement of Reasons for the Proposed Rulemaking – Amendments to the Regulations to Reduce Emissions from Diesel Engines on Commercial Harbor Craft Operated Within California Waters and 24 Nautical Miles of the California Baseline.
http://www.arb.ca.gov/regact/2010/harborcraft10/harborcraftisor.pdf

California Air Resources Board (September 19, 2007) Movement Emission Reduction Program: Staff Draft Concepts for Implementation.
http://www.arb.ca.gov/bonds/gmbond/docs/gmbondfinalstaffdraftconcepts1.pdf

California Air Resources Board (October 2007) Staff Report: Initial Statement of Reasons for the Proposed Rulemaking – Regulations to Reduce Emissions from Diesel Auxiliary Engines on Ocean-Going Vessels While At-Berth at a California Port.
http://www.arb.ca.gov/regact/2007/shorepwr07/isor.pdf

Chapter 8: Light-Duty Vehicles

California Air Resources Board (December 7, 2006). Final Statement of Reasons (FSOR) for Proposed Amendments to Regulations for Voluntary Accelerated Light-Duty Vehicle Retirement.
https://www.arb.ca.gov/regact/vavr06/fsor.pdf

California Code of Regulations Title 13 §2601; *Chapter 13: Voluntary Accelerated Vehicle Retirement Enterprises*; Definitions.
https://www.arb.ca.gov/regs/regs.htm

California Code of Regulations Title 26 §16-3340.41.5; *Division 16: Bureau of Automotive Repair*; Tampering with Emissions Control Systems.
https://govt.westlaw.com/calregs/Document/I79FF6860D44F11DEB97CF67CD0B99467?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)#co_anchor_I41A9EDF6DAA1449FAFBB5E5D2E2228C9

California Code of Regulations Title 16 §3340.42; *Chapter 1: Bureau of Automotive Repair*; Smog Check Test Methods and Standards.
https://govt.westlaw.com/calregs/Document/I428D11D0FAF011DEAB9F840E8C11CEE5?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)

Chapter 9: Lawn and Garden Equipment Replacement

California Air Resources Board (July 7, 2014) Assembly Bill 118: Lawn and Garden Equipment Replacement (LGER) Project.
https://www.arb.ca.gov/msprog/aqip/lger.htm

Code of Federal Regulations (June 17, 2013) 49 CFR 535.7 - Averaging, Banking, and Trading (ABT) Program.
https://www.law.cornell.edu/cfr/text/49/535.7

California Air Resources Board (June 2013) Emission Reduction Offset Transaction Costs Summary Report for 2012.
https://www.arb.ca.gov/nsr/erco/erc12.pdf

Chapter 10: Infrastructure

Legislative Digest Counsel (October 8, 2015) Senate Bill No. 513 Chapter 610: SB 513, Beall. Carl Moyer Memorial Air Quality Standards Attainment Program: Fees.
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160SB513

Society of Automotive Engineers International (2017) SAE Standards. http://standards.sae.org/

Occupational Safety and Health Administration (2017) Nationally Recognized Testing Laboratory Program: Current List of NRTLs. https://www.osha.gov/dts/otpca/nrtl/nrtllist.html

California Code of Regulations Title 17, §93118.3; *Chapter 1: Air Resources Board*; Airborne Toxic Control Measure for Auxiliary Diesel Engines Operated on Ocean-Going Vessels At-Berth in a California Port. https://www.arb.ca.gov/ports/shorepower/finalregulation.pdf



Indirect Source Review Program

2023 ANNUAL REPORT

July 1, 2022 - June 30, 2023

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT
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EXECUTIVE DIRECTOR/AIR POLLUTION CONTROL OFFICER:

SAMIR SHEIKH

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I. EXECUTIVE SUMMARY

This "*2023 Annual Report on the District's Indirect Source Review Program"* covers the reporting period from July 1, 2022, through June 30, 2023.

The District's Indirect Source Review (ISR) rule, was originally adopted in 2005 to reduce the growth in both nitrogen oxides (NOx) and particulate matter smaller than ten microns in aerodynamic diameter (PM_{10}) emissions from mobile and area sources associated with construction and operation of new industrial, commercial, residential, transit and other non-residential development projects in the Valley. New development projects create air pollution during construction and operation by prompting more vehicle trips and other pollution-causing activities. To address the rule requirements and achieve emissions reductions at the project site and within local communities, developers incorporate clean air measures into their project designs to reduce emissions impacts at project locations. Some examples include: use of clean, newer model-year off-road construction equipment, zero emission and or near-zero emission heavy duty on-road trucks and van fleets, zero and or near-zero emission on-site equipment, installation of electric vehicle charging infrastructure, solar power, installation of bike paths and sidewalks, and high-efficiency buildings.



If on-site clean air measures implemented by a developer do not achieve the emission reductions mandated by the ISR rule, the developer must pay an off-site mitigation fee for balance of the emission reductions required for the project. One hundred percent of off-site mitigation fees are used by the District to fund emission reduction projects through its incentive grant programs. Additionally, developers pay an administrative fee equal to four percent (4%) of the required off-site fees. This administrative fee is to cover the District's cost of administering the off-site emission reduction projects through the District's grants and incentives programs.

In addition to reducing the development project's impact on air quality through compliance with the District's ISR rule, a developer can further reduce the project's impact on air quality by entering into a "Voluntary Emission Reduction Agreement" (VERA) with the District to address the mitigation requirements under the California Environmental Quality Act (CEQA) or National Environmental Policy Act (NEPA). Under a VERA, the developer may fully mitigate project emission impacts by providing funds to the District, which are then used by the District to administer emission reduction projects. The District has entered into 52 VERAs since 2005.

This annual report includes revenues, expenditures, and emission reductions achieved for both ISR and VERA (ISR-VERA program). To date, in addition to avoiding approximately over 20,800 tons of NOx and PM_{10} emissions from new development through the incorporation of on-site mitigation and clean-air design measures into projects subject to the Indirect Source Review rule, the District has achieved more than

18,689 tons of reductions in NOx and PM_{10} emissions through the investment of over $162 million dollars in ISR and VERA funds through its emission reduction grants and incentives programs.



During this reporting period, the District received 360 ISR Air Impact Assessment applications and entered into two VERAs.

The total amount of funds received for this reporting period under the ISR rule and VERA program were $7,245,676 and $5,020,240, respectively, for a total of $12,265,916. The District achieved emission reductions via grants and incentives clean-air projects totaling 1,270 tons NOx and 220 tons PM_{10}, for a combined total of 1,490 tons, at a cost effectiveness of $13,154 per ton of emissions reduced.

II. INTRODUCTION

The San Joaquin Valley's challenges in meeting national ambient air quality standards are unmatched anywhere in the nation due to the region's unique geography, meteorology and topography. Since 1992, the District has adopted more than 670 rules to implement an aggressive on-going control strategy to reduce emissions in the Valley in order to reach attainment of the federal mandates, resulting in air quality benefits throughout the Valley. Through these ongoing efforts by the District, and significant efforts by CARB to reduce emissions from mobile sources, NOx emissions across the Valley have been reduced by over 75%, while stationary source emissions, which are under the District's jurisdiction, have been reduced by over 90% since 1980.

Although significant progress has been made, the San Joaquin Valley is one of the fastest growing regions in the state. The Population Research Unit of the Department of Finance recent population growth projections, demonstrated a 13.9% increase in the Valley's population from 2020 to 2035 period. In contrast, the total population for the State of California is projected to increase by only 7.4% over the same time period.

Population growth results in increased area source emissions from activities such as consumer product use, fuel combustion for heating and cooking, and landscape maintenance. The total number of vehicle miles traveled (VMT) also increases with population growth, resulting in more emissions due to the combustion of vehicle fuels.

The projected growth in these so called "indirect source" emissions erodes some of the progress generated by emission reductions achieved through the District's stationary source air quality management program and state and federal mobile source controls.

Although the District cannot directly regulate mobile source tailpipe emissions, it does have longstanding statutory authority to regulate indirect sources of air pollution. Pursuant to this authority, the District made a federally enforceable commitment to regulate indirect sources when it adopted its PM_{10} Attainment Plan in June 2003. Subsequently, the California State Legislature passed Senate Bill 709, Florez, in the fall of 2003, which Governor Gray Davis subsequently signed and codified into the Health and Safety Code in §40604. This additional legislation required the District to adopt, by regulation, a schedule of fees to be assessed on area wide or indirect sources of emissions that are regulated by the District.





The purpose of the District's Indirect Source Review rule is to require developers to incorporate clean air measures and reduce emissions of NOx and PM10 from new development projects. It is important to note, particulate matter emissions from mobile sources are overwhelmingly PM2.5, a subset of PM10. Therefore, the PM10 emission reductions achieved under ISR result directly in PM2.5 emission reductions. In other words, PM10 emissions increases are being offset by emissions reductions that are overwhelmingly PM2.5, a positive impact on PM2.5 concentrations.

The Indirect Source Review rule applies to any applicant that seeks to gain final discretionary approval for a development project, or any portions thereof, which upon full build-out will include any one of the following:

- 50 residential units
- 2,000 square feet of commercial space
- 9,000 square feet of educational space
- 10,000 square feet of government space
- 20,000 square feet of medical or recreational space
- 25,000 square feet of light industrial space
- 39,000 square feet of general office space
- 100,000 square feet of heavy industrial space
- 9,000 square feet of any land use not identified above

Additionally, the Indirect Source Review rule applies to any applicant that seeks to gain approval from a public agency for a large development project, which upon full build out will include any of the following:

- 250 residential units
- 10, 000 square feet of commercial space
- 45,000 square feet of educational space
- 50,000 square feet of governmental space
- 100,000 square feet of medical office or recreational space
- 125,000 square feet of light industrial space
- 195,000 square feet of general office space
- 500,000 square feet of heavy industrial space
- 45,000 of square feet of space not identified above

In addition to the above, a transit or transportation development project is subject to the Indirect Source Review rule if construction exhaust emissions equal or exceed two (2.0) tons of NOx or two (2.0) tons of PM10.

This report was prepared pursuant to provisions of Rule 9510 that require the District to prepare an annual report regarding expenditure of received funds and achieved emission reductions. The annual report includes the following:

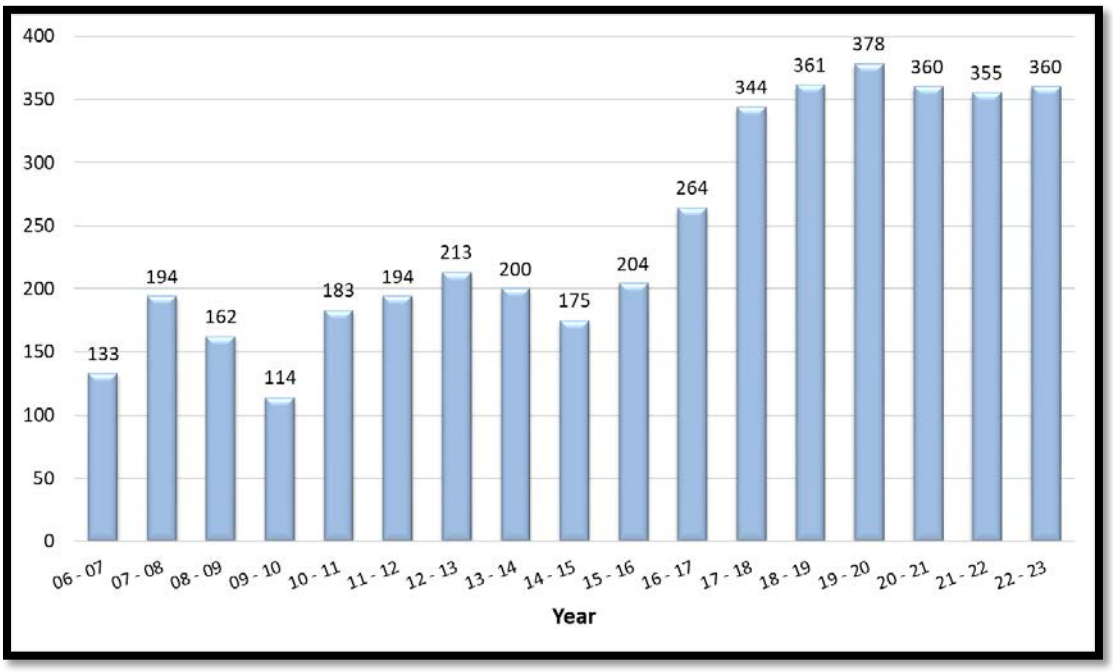
- Total amount of off-site fees received;
- Total monies spent;
- Total monies remaining;
- Any refunds distributed;
- A list of all projects funded;
- Total emissions reductions realized; and
- The overall cost-effectiveness factor for the projects funded.

III. IMPLEMENTATION

District Indirect Source Review Rule

During this reporting period, the District received 360 ISR applications. For historic context, the number of ISR applications received each year is presented in Figure 1 below.

Figure 1: Number of ISR Applications Received



Voluntary Emission Reduction Agreements

A Voluntary Emission Reduction Agreement is an air quality mitigation measure by which a developer can voluntarily enter into a contractual agreement with the District to mitigate a development project's impact on air quality, going beyond reductions achieved by compliance with the District's ISR rule. Under the agreement, the developer provides funds to the District to administer the implementation of the VERA. The District then identifies emissions reductions projects, funds those projects, and verifies that the specified emission reductions have been successfully achieved.

The types of emission reduction projects that have been funded in the past include electrification of stationary internal combustion engines (such as agricultural irrigation pumps), replacing old heavy-duty trucks with new, cleaner, more efficient heavy-duty trucks, and replacement of older farm tractors with cleaner tractors. Since 2005, the District has entered into 52 VERAs. It is the District's experience that implementation of a VERA is an effective mitigation measure under CEQA, to achieve emission reductions necessary to reduce air quality impacts to a less than significant level.

For development projects subject to the ISR rule, the developer must also comply with applicable ISR rule provisions. This report therefore includes revenues and emission reductions achieved through both the ISR and the VERA process.

During this reporting period, the District adopted the following VERAs, with their estimated dollar amounts and emissions reductions shown below:

- Majestic Gateway: $4,583,446 and 476.1 tons of emissions reductions
- Shafter-Wasco Composting and Waste Division: $197,292 and 20.4 tons of emissions reductions

Oil and Gas Emission Reduction Agreement

In 2015, Kern County adopted an EIR for amendments to the Kern County Zoning Ordinance to address oil and gas exploration and operation activities in the identified area within Kern County. Consistent with the final EIR, Kern County and the District adopted an oil and gas emission reduction agreement (OGERA) to mitigate emissions associated with future oil and gas exploration and production in the San Joaquin Valley. Under this process, Kern County collects a mitigation fee from oil and gas companies when issuing permits for the drilling of new oil or gas production wells, and transfers the funds to the District to mitigate air quality impacts through its grants and incentives programs.

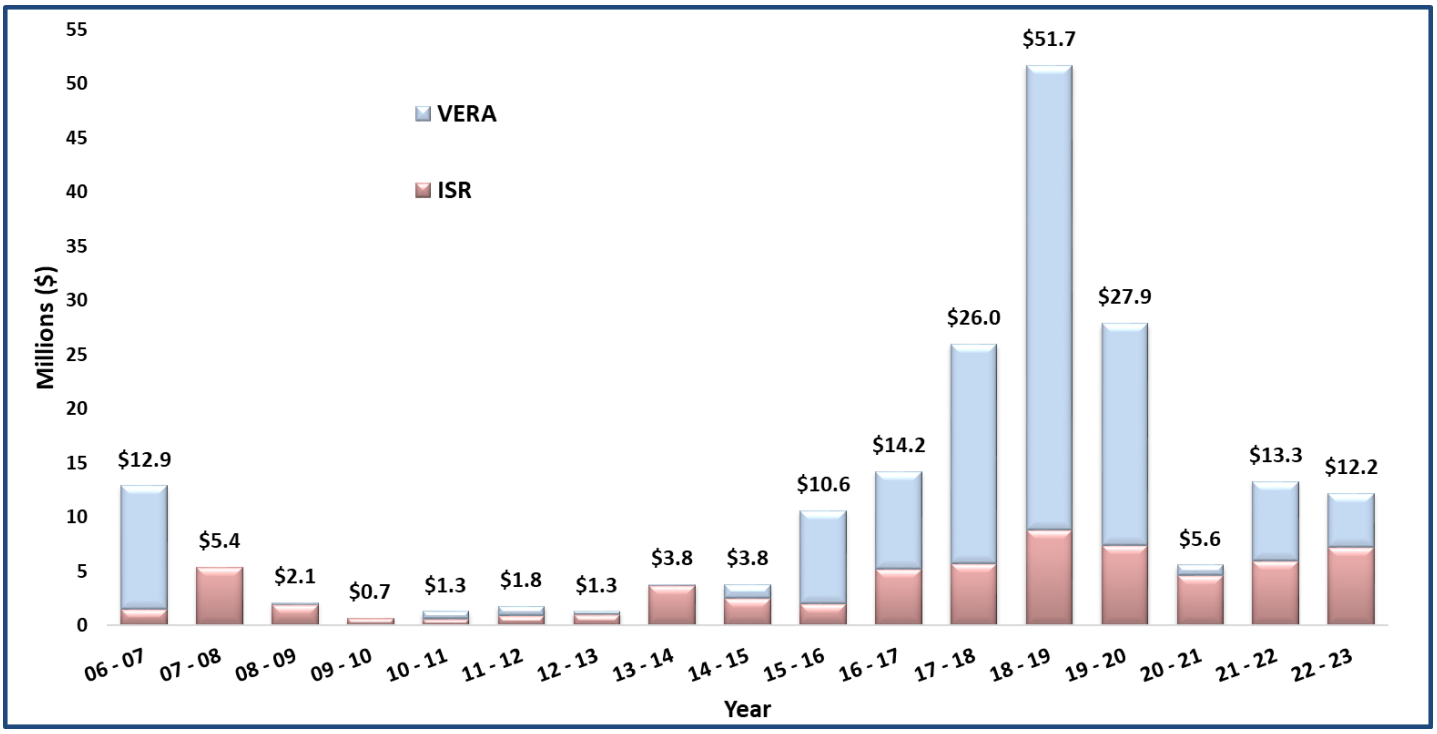
A Petition for Writ of Mandate filed in the Kern County Superior Court challenged Kern County's 2015 Ordinance. The County subsequently amended the Ordinance and accompanying EIR in 2021, which was also challenged by Petitioners. On June 7, 2022, the court issued a ruling that the 2021 amended Ordinance was defective in several respects and ordered suspension of the Ordinance. Following the County's correction of the defects, in November 2022, the court lifted suspension of the Ordinance to allow oil and gas permitting to resume.

However, following an appeal of the Superior Court's ruling, on January 26, 2023, the Court of Appeal re-imposed the suspension of oil and gas permitting in Kern County pending review of the Superior Court's ruling. The District is currently working with Kern County and monitoring the impacts of the ruling as it relates to implementation of the OGERA.

IV. FISCAL SUMMARY

The total amount of funds received for this reporting period under ISR and VERA were $7,245,676 and $5,020,240 respectively, for a total of $12,265,916.

Figure 2: ISR and VERA Program Funds Received



As presented in Table 1 below, the District's ISR and VERA accounts held a beginning balance of $34,963,884. During this reporting period, the District received $12,265,916, spent (paid out) off-site emission reduction projects totaling $19,610,101, encumbered $19,475,357 in contracts for emission reduction projects, leaving an unencumbered balance of $8,144,342.

Table 1: ISR-VERA Fiscal Summary (July 1, 2022 - June 30, 2023)

	ISR	VERA	Total
Beginning Fund Balance	$8,032,311	$26,931,573	$34,963,884
Amount Received	$7,245,676	$5,020,240	$12,265,916
Amount Refunded	$0	$0	$0
Amount Spent (Paid Out)	-$9,647,436	-$9,962,665	-$19,610,101
Ending Fund Balance	$5,630,551	$21,989,148	$27,619,699
Encumbered Amount	-$4,929,514	-$14,545,843	-$19,475,357
Ending Unencumbered Amount	**$701,037**	**$7,443,305**	**$8,144,342**

V. EMISSION REDUCTION SUMMARY

Through the District's grants and incentives programs, clean-air emissions reduction projects undergo a thorough application review before the contract for these projects between the District and the project applicant is executed. Once executed, funds are then encumbered for that project. The contract is valid for a limited time to allow for the purchase of the new equipment and to submit a reimbursement request. Once the reimbursement request is approved, the funds encumbered for the emission reduction project are spent (reimbursed to the project applicant). This process typically takes several months for completion. Therefore, depending on the types of emission reduction projects available for funding, the funds received during this reporting period may result in the funds being spent the in same reporting period or in future reporting periods.

ISR and VERA Off-Site Emission Reductions Achieved

During this reporting period, the District achieved emission reductions via grants and incentives clean-air projects totaling 1,270 tons NOx and 220 tons PM_{10}, for a combined total of 1,490 tons, at a cost effectiveness of $13,153 per ton of emissions reduced, summarized in Table 2 below. The District spent ISR and VERA monies to fund 2,741 clean-air emission reduction projects. These clean-air projects included the replacement of older, higher-emitting agricultural tractors with new latest-tier tractors, replacement of older, higher-emitting agricultural irrigation water pump



engines with electric motors, retrofit of residential open-hearth fireplaces with certified natural gas burning inserts, rebates to Valley residents and businesses for the purchase or lease of new clean-air vehicles, new zero-emission railcar moving equipment to replace an existing switcher locomotive for use within the Valley and a dairy feed mixer electrification project. A complete list of all clean-air projects funded under this annual report period is presented in Appendix A.

Table 2: Off-Site Emission Reductions Achieved (July 1, 2022 - June 30, 2023)

Program	NOx (tons)	PM_{10} (tons)	Total (tons)	Amount Paid Out	Cost Effectiveness
ISR	217.5	138.1	355.6	$9,646,815	$27,128/ton
VERA	1,052.9	82.4	1,135.3	$9,962,665	$8,775/ton
Total	**1,270.4**	**220.5**	**1,490.9**	**$19,609,480**	**$13,153/ton**

ISR and VERA Off-Site Emission Reductions Achieved - Historic Since 2006

As discussed above, mitigation funds under ISR and VERA are administered through the District's grants and incentive programs to fund clean-air projects in the Valley. The District has built a reputation for excellence in the implementation of these programs, as highlighted in multiple audits by state agencies that commended the District's incentive programs for their efficiency and effectiveness. Since inception of the District's ISR rule and VERA program, the District's programs have achieved the emissions reductions shown in Table 3 below.

Table 3: Off-Site Emission Reductions Achieved Since 2006

Program	NOx (tons)	PM_{10} (tons)	Total (tons)
ISR	5,612	1,652	**7,264**
VERA	10,603	1,027	**11,630**
Total	**16,215**	**2,679**	**18,894**

ISR Program Estimated Emission Reductions - Previous Reporting Period

Estimated emission reductions are a combination of emission reductions to be achieved through implementation of project design elements at full project build out and through funding off-site emission reductions projects through District grants and incentive programs using off-site emission reduction mitigation fees.

For this reporting period, projects assessed under ISR resulted in estimated combined on-site and off-site emission reductions as shown in Table 4 below.

Table 4: Estimated Emission Reductions from Approved ISR Projects During the Previous Reporting Period (July 1, 2022 - June 30, 2023)

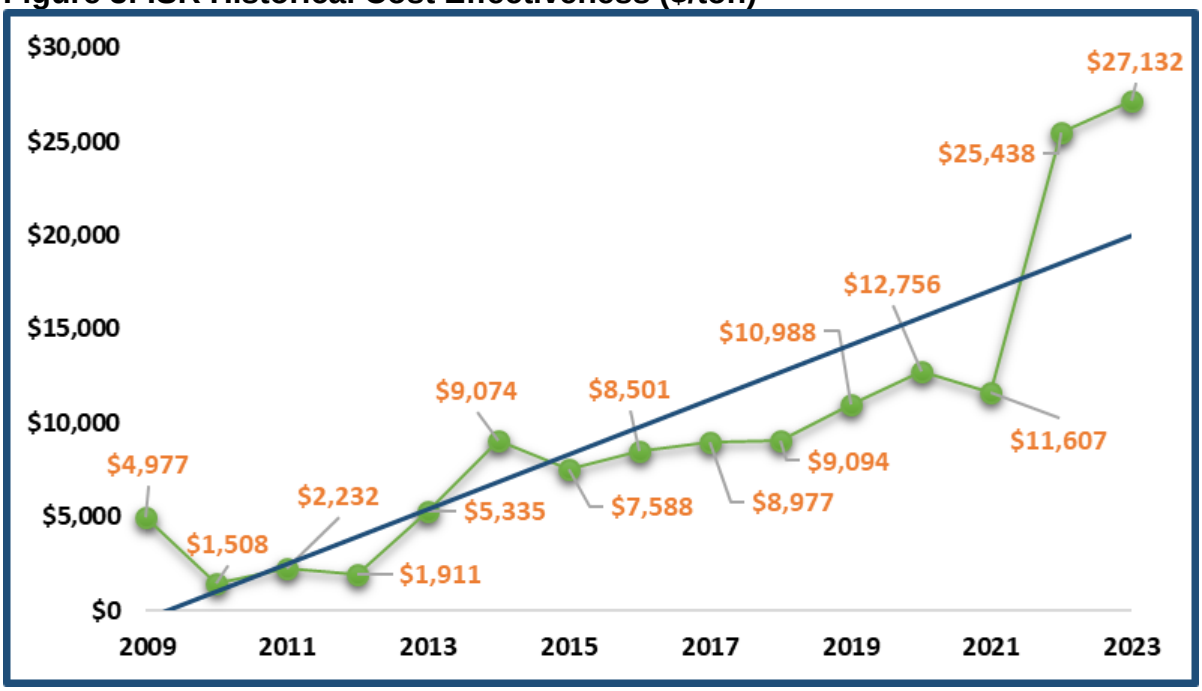
Source	NOx (tons)	PM_{10} (tons)	Total (tons)
On-site Emission Reductions	859	1,846	**2,705**
Off-site Emission Reductions	1,419	1,117	**2,536**
Total	**2,278**	**2,963**	**5,241**

VI. COST EFFECTIVENESS

Over the years, the District has had significant success achieving emission reductions under ISR, including reductions achieved through the aforementioned offsite mitigation fees. Since 2008, the offsite mitigation fees collected under the ISR is $9,350 per ton of NOx and $9,011 per ton of PM10.

Historically, determining cost effectiveness for voluntary incentive grant projects follows the methodology established by the state's perennial Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program). Cost effectiveness is defined as a measure of dollars provided to an emission reduction project for each ton of emissions reduced. Statute requires that the California Air Resources Board (CARB) updated the cost effectiveness annually based on changes to the California Consumer Price Index. In addition, SB 513 has required CARB and Air District's to establish new cost effectiveness limits that specifically reflect categories such as school bus replacement projects, as well as advanced zero-emission technology projects. These increased cost effectiveness limits reflect the significantly higher cost of new and emerging zero-emission technology, compared with the more traditional technology. With the promulgation and implementation of several statewide regulations that require a shift to zero-emission technology, the Carl Moyer Program, and other state incentive funding programs focus almost exclusively on funding zero-emission technology. The current program cost effectiveness limits must also take into account regulatory compliance dates that can limit the surplus nature of the emission reductions. These factors and the availability of voluntary incentive projects at any given time that meet these new mandates have led to an increase in the cost effectiveness year over year. The current cost effectiveness for projects funded under the Carl Moyer Program are $34,000/ton of emission reduced (combined NOx, ROG, and PM) for conventional projects and up to $522,000 for advanced, zero-emission projects, such as school buses and heavy-duty trucks. Figure 3 below illustrates the steady increase in the cost effectiveness over the years for achieving emission reductions through District incentive grant programs under ISR.

Figure 3: ISR Historical Cost Effectiveness ($/ton)



Overall as a program the District has successfully mitigated emissions associated with projects and collected mitigation fees; however over the past five years specifically (2019 - 2023), the Rule's current collection rate in $/ton is now below the actual $/ton achieved through the District's Grants and Incentives programs.

To cover the District's cost of administering these funds, the project proponent is required to pay an administrative fee equal to four percent (4%) of the required offsite mitigation fee. This administrative fee has been in place and remained at 4% since the rule's initial adoption in 2005, and is lower than all other grant programs that the District and other air districts administer, as other administrative fees range from 6.25% - 15%.

Therefore, the current mitigation fee schedule and administrative fees will be critical in ensuring the dollars collected by the District in the future are sufficient to achieve and administer the required emission reductions under ISR.

APPENDIX A - EMISSION REDUCTION PROJECTS

List of all emission reduction projects funded by the ISR-VERA Program from July 2022 through June 2023:

Grant Project Number	Program	Component	Option	NOx Reduced (tons/project life)	PM10 Reduced (tons/project life)
G-107675	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-100120	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-103917	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-104040	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-104804	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-104934	Burn Cleaner	Wood Stove Change Out	New Device		0.6926
G-105619	Burn Cleaner	Wood Stove Change Out	New Device		0.3199
G-105962	Burn Cleaner	Wood Stove Change Out	New Device		0.1154
G-106315	Burn Cleaner	Wood Stove Change Out	New Device		0.4618
G-106544	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-106604	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-106890	Burn Cleaner	Wood Stove Change Out	New Device		0.0577
G-107411	Burn Cleaner	Wood Stove Change Out	New Device		0.3182
G-107556	Burn Cleaner	Wood Stove Change Out	New Device		0.1154
G-107704	Burn Cleaner	Wood Stove Change Out	New Device		0.4618
G-107705	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-107823	Burn Cleaner	Wood Stove Change Out	New Device		0.0577
G-107839	Burn Cleaner	Wood Stove Change Out	New Device		0.0577
G-107950	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-108075	Burn Cleaner	Wood Stove Change Out	New Device		0.1154
G-108246	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-108397	Burn Cleaner	Wood Stove Change Out	New Device		0.6926
G-108719	Burn Cleaner	Wood Stove Change Out	New Device		0.08
G-109017	Burn Cleaner	Wood Stove Change Out	New Device		0.0577
G-109023	Burn Cleaner	Wood Stove Change Out	New Device		0.0577
G-109932	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-110787	Burn Cleaner	Wood Stove Change Out	New Device		0.1154
G-111705	Burn Cleaner	Wood Stove Change Out	New Device		0.1154
G-112434	Burn Cleaner	Wood Stove Change Out	New Device		0.0618
G-112948	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-113229	Burn Cleaner	Wood Stove Change Out	New Device		0.4618
G-113387	Burn Cleaner	Wood Stove Change Out	New Device		0.4618
G-114307	Burn Cleaner	Wood Stove Change Out	New Device		0.4618
G-114563	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-114633	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-114862	Burn Cleaner	Wood Stove Change Out	New Device		0.0796

G-114898	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-115675	Burn Cleaner	Wood Stove Change Out	New Device		0.4618
G-115690	Burn Cleaner	Wood Stove Change Out	New Device		0.1154
G-115763	Burn Cleaner	Wood Stove Change Out	New Device		0.6926
G-115879	Burn Cleaner	Wood Stove Change Out	New Device		0.0577
G-116237	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-116631	Burn Cleaner	Wood Stove Change Out	New Device		0.0577
G-116641	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-117215	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-117544	Burn Cleaner	Wood Stove Change Out	New Device		0.4618
G-117560	Burn Cleaner	Wood Stove Change Out	New Device		0.1154
G-117577	Burn Cleaner	Wood Stove Change Out	New Device		0.0177
G-117783	Burn Cleaner	Wood Stove Change Out	New Device		0.4798
G-117921	Burn Cleaner	Wood Stove Change Out	New Device		0.1154
G-118045	Burn Cleaner	Wood Stove Change Out	New Device		0.0577
G-118302	Burn Cleaner	Wood Stove Change Out	New Device		0.1154
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G-121973	Burn Cleaner	Wood Stove Change Out	New Device		0.0577
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G-126984	Burn Cleaner	Wood Stove Change Out	New Device		0.0577
G-127445	Burn Cleaner	Wood Stove Change Out	New Device		0.0577
G-127738	Burn Cleaner	Wood Stove Change Out	New Device		0.6926
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G-153630	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-153670	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-153671	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-153677	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-153754	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-153767	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-153786	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-153833	Burn Cleaner	Wood Stove Change Out	New Device		0.0709
G-153837	Burn Cleaner	Wood Stove Change Out	New Device		0.3182

G-153914	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-154027	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-154097	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-154114	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-154132	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-154324	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-155428	Burn Cleaner	Wood Stove Change Out	New Device		0.2309
G-86836	Burn Cleaner	Wood Stove Change Out	New Device		0.1596
G-89710	Burn Cleaner	Wood Stove Change Out	New Device		0.23088
G-90802	Burn Cleaner	Wood Stove Change Out	New Device		0.23088
G-91215	Burn Cleaner	Wood Stove Change Out	New Device		0.23088
G-83839	Heavy-Duty	Off-Road	Ag Tractor Replacement	9.9	0.49
C-46128-1	Heavy-Duty	Off-Road	Ag Tractor Replacement	7.99	0.6
C-57171-1	Heavy-Duty	Off-Road	Ag Tractor Replacement	1.04	0.11
C-59505-1	Heavy-Duty	Off-Road	Ag Tractor Replacement	6.7	0.46
C-59507-1	Heavy-Duty	Off-Road	Ag Tractor Replacement	3.99	0.26
C-62529-1	Heavy-Duty	Dairy Feed Mixer	Electrification	59.63	4.63
G-101534	Heavy-Duty	Off-Road	Ag Tractor Replacement	0.09	0.02
G-103338	Heavy-Duty	Off-Road	Ag Tractor Replacement	38.09	1.99
G-103392	Heavy-Duty	Off-Road	Ag Tractor Replacement	0.74	0.15
G-103397	Heavy-Duty	Off-Road	Ag Tractor Replacement	9.35	0.79
G-107026	Heavy-Duty	Off-Road	Ag Tractor Replacement	4.5	0.41
G-107105	Heavy-Duty	Off-Road	Ag Tractor Replacement	2.89	0.19
G-107121	Heavy-Duty	Off-Road	Ag Tractor Replacement	7.49	0.68
G-107141	Heavy-Duty	Off-Road	Ag Tractor Replacement	12.75	0.94
G-107431	Heavy-Duty	Off-Road	Ag Tractor Replacement	6.8	0.62
G-107830	Heavy-Duty	Off-Road	Ag Tractor Replacement	5.5	0.47
G-107832	Heavy-Duty	Off-Road	Ag Tractor Replacement	3.25	0.21
G-107838	Heavy-Duty	Off-Road	Ag Tractor Replacement	0.44	0.36
G-108011	Heavy-Duty	Off-Road	Ag Tractor Replacement	8.94	0.62
G-108013	Heavy-Duty	Off-Road	Ag Tractor Replacement	12.95	0.69
G-108706	Heavy-Duty	Off-Road	Ag Tractor Replacement	7.28	0.93
G-108943	Heavy-Duty	Off-Road	Ag Tractor Replacement	2.57	0.23
G-109115	Heavy-Duty	Off-Road	Ag Tractor Replacement	1.67	0.2
G-109128	Heavy-Duty	Off-Road	Ag Tractor Replacement	6.45	0.59
G-109418	Heavy-Duty	Off-Road	Ag Tractor Replacement	15.47	0.39
G-110225	Heavy-Duty	Off-Road	Ag Tractor Replacement	13.17	0.7
G-110530	Heavy-Duty	Off-Road	Ag Tractor Replacement	21.08	0.6
G-110587	Heavy-Duty	Off-Road	Ag Tractor Replacement	20.67	1.1
G-110695	Heavy-Duty	Off-Road	Ag Tractor Replacement	7.49	0.75
G-110713	Heavy-Duty	Off-Road	Ag Tractor Replacement	22.55	1.67
G-110715	Heavy-Duty	Off-Road	Ag Tractor Replacement	0.91	0.29
G-110716	Heavy-Duty	Off-Road	Ag Tractor Replacement	0.91	0.29
G-110717	Heavy-Duty	Off-Road	Ag Tractor Replacement	0.91	0.29

G-110718	Heavy-Duty	Off-Road	Ag Tractor Replacement	0.91	0.29
G-110719	Heavy-Duty	Off-Road	Ag Tractor Replacement	0.91	0.29
G-110721	Heavy-Duty	Off-Road	Ag Tractor Replacement	0.91	0.29
G-110864	Heavy-Duty	Off-Road	Ag Tractor Replacement	4.29	0.41
G-110910	Heavy-Duty	Off-Road	Ag Tractor Replacement	2.08	0.27
G-110959	Heavy-Duty	Off-Road	Ag Tractor Replacement	7.37	0.51
G-111049	Heavy-Duty	Off-Road	Ag Tractor Replacement	23.31	1.34
G-111249	Heavy-Duty	Off-Road	Ag Tractor Replacement	0.73	0.23
G-111288	Heavy-Duty	Off-Road	Ag Tractor Replacement	5.72	0.42
G-111289	Heavy-Duty	Off-Road	Ag Tractor Replacement	5.72	0.42
G-111449	Heavy-Duty	Off-Road	Ag Tractor Replacement	4.17	0.35
G-111623	Heavy-Duty	Off-Road	Ag Tractor Replacement	4.71	0.35
G-111722	Heavy-Duty	Off-Road	Ag Tractor Replacement	7.08	0.65
G-112038	Heavy-Duty	Off-Road	Ag Tractor Replacement	6.68	0.5
G-112039	Heavy-Duty	Off-Road	Ag Tractor Replacement	6.68	0.5
G-113687	Heavy-Duty	Off-Road	Ag Tractor Replacement	4	0.2
G-113692	Heavy-Duty	Off-Road	Ag Tractor Replacement	19.17	1.09
G-113696	Heavy-Duty	Off-Road	Ag Tractor Replacement	5.46	0.7
G-113698	Heavy-Duty	Off-Road	Ag Tractor Replacement	9.73	0.72
G-115004	Heavy-Duty	Off-Road	Ag Tractor Replacement	0.98	0.35
G-116114	Heavy-Duty	Off-Road	Ag Tractor Replacement	3.84	0.36
G-116974	Heavy-Duty	Off-Road	Ag Tractor Replacement	8.07	0.6
G-117435	Heavy-Duty	Off-Road	Ag Tractor Replacement	16.48	0.47
G-119291	Heavy-Duty	Off-Road	Ag Tractor Replacement	9.31	0.61
G-124495	Heavy-Duty	Off-Road	Ag Tractor Replacement	16.79	0.48
G-124546	Heavy-Duty	Off-Road	Ag Tractor Replacement	12.27	0.65
G-125113	Heavy-Duty	Off-Road	Ag Tractor Replacement	28.24	1.96
G-125670	Heavy-Duty	Off-Road	Ag Tractor Replacement	4.12	0.37
G-126551	Heavy-Duty	Off-Road	Ag Tractor Replacement	8.32	0.62
G-140677	Heavy-Duty	Ag Engine	Diesel to Diesel	2.86	0.16
G-66106	Heavy-Duty	Off-Road	Ag Tractor Replacement	14.31	0.76
G-66108	Heavy-Duty	Off-Road	Ag Tractor Replacement	17.27	1.19
G-66109	Heavy-Duty	Off-Road	Ag Tractor Replacement	13.83	1.26
G-66110	Heavy-Duty	Off-Road	Ag Tractor Replacement	25.6	0.8
G-66560	Heavy-Duty	Off-Road	Ag Tractor Replacement	9.67	0.88
G-66565	Heavy-Duty	Off-Road	Ag Tractor Replacement	10.16	0.92
G-66568	Heavy-Duty	Off-Road	Ag Tractor Replacement	9.67	0.88
G-66946	Heavy-Duty	Off-Road	Ag Tractor Replacement	14.67	0.78
G-69348	Heavy-Duty	Off-Road	Ag Tractor Replacement	1.03	0.11
G-69618	Heavy-Duty	Off-Road	Ag Tractor Replacement	8.58	0.49
G-73414	Heavy-Duty	Locomotive	Replacement	64.69	1.5
G-73416	Heavy-Duty	Locomotive	Replacement	64.69	1.5
G-75359	Heavy-Duty	Off-Road	Ag Tractor Replacement	3.97	0.36
G-76150	Heavy-Duty	Off-Road	Ag Tractor Replacement	6.3	0.57

G-76304	Heavy-Duty	Off-Road	Ag Tractor Replacement	4.39	0.33
G-78575	Heavy-Duty	Off-Road	Ag Tractor Replacement	27.13	0.69
G-80530	Heavy-Duty	Ag Engine	Alt Fuel to Electric	4.23	0.1
G-80920	Heavy-Duty	Off-Road	Ag Tractor Replacement	3.64	0.24
G-80971	Heavy-Duty	Off-Road	Ag Tractor Replacement	1.01	0.08
G-81259	Heavy-Duty	Off-Road	Ag Tractor Replacement	11.98	0.63
G-81732	Heavy-Duty	Off-Road	Ag Tractor Replacement	39.25	2.08
G-81861	Heavy-Duty	Off-Road	Ag Tractor Replacement	9.39	0.49
G-89922	Heavy-Duty	Off-Road	Ag Tractor Replacement	13.11	0.7
G-89925	Heavy-Duty	Off-Road	Ag Tractor Replacement	2.27	0.16
G-92722	Heavy-Duty	Off-Road	Ag Tractor Replacement	5.72	0.42
G-92840	Heavy-Duty	Off-Road	Ag Tractor Replacement	14.91	0.85
G-92845	Heavy-Duty	Off-Road	Ag Tractor Replacement	0.16	0.04
G-92846	Heavy-Duty	Off-Road	Ag Tractor Replacement	0.16	0.04
G-92854	Heavy-Duty	Off-Road	Ag Tractor Replacement	0.16	0.04
G-92856	Heavy-Duty	Off-Road	Ag Tractor Replacement	0.34	0.1
G-93091	Heavy-Duty	Off-Road	Ag Tractor Replacement	2.18	0.14
G-94125	Heavy-Duty	Off-Road	Ag Tractor Replacement	25.32	1.34
G-94432	Heavy-Duty	Off-Road	Ag Tractor Replacement	8.15	0.41
G-95177	Heavy-Duty	Off-Road	Ag Tractor Replacement	23.6	1.25
G-95421	Heavy-Duty	Off-Road	Ag Tractor Replacement	2.67	0.26
G-95474	Heavy-Duty	Off-Road	Ag Tractor Replacement	6.29	0.47
G-95716	Heavy-Duty	Off-Road	Ag Tractor Replacement	0.88	0.1
G-95717	Heavy-Duty	Off-Road	Ag Tractor Replacement	1.49	0.18
G-95719	Heavy-Duty	Off-Road	Ag Tractor Replacement	1.89	0.23
G-95721	Heavy-Duty	Off-Road	Ag Tractor Replacement	1.88	0.23
G-95738	Heavy-Duty	Off-Road	Ag Tractor Replacement	1.77	0.22
G-95744	Heavy-Duty	Off-Road	Ag Tractor Replacement	1.34	0.16
G-95745	Heavy-Duty	Off-Road	Ag Tractor Replacement	1.37	0.17
G-95746	Heavy-Duty	Off-Road	Ag Tractor Replacement	1.48	0.18
G-95747	Heavy-Duty	Off-Road	Ag Tractor Replacement	1.36	0.16
G-95748	Heavy-Duty	Off-Road	Ag Tractor Replacement	1.01	0.12
G-96110	Heavy-Duty	Off-Road	Ag Tractor Replacement	1.51	0.18
G-96111	Heavy-Duty	Off-Road	Ag Tractor Replacement	1.51	0.18
G-96112	Heavy-Duty	Off-Road	Ag Tractor Replacement	1.42	0.17
G-96113	Heavy-Duty	Off-Road	Ag Tractor Replacement	1.51	0.18
G-96114	Heavy-Duty	Off-Road	Ag Tractor Replacement	1.47	0.18
G-97962	Heavy-Duty	Off-Road	Ag Tractor Replacement	7.56	0.56
G-98464	Heavy-Duty	Ag Engine	Alt Fuel to Electric	1.19	0.14
G-99415	Heavy-Duty	Off-Road	Ag Tractor Replacement	4.66	0.13
G-88837	Heavy-Duty	Off-Road	Ag Tractor Replacement	35.43	1.87
C-63331-1	Heavy-Duty	Off-Road	Ag Tractor Replacement	30.11	1.72
G-107900	Heavy-Duty	Off-Road	Ag Tractor Replacement	20.54	1.17
G-115048	Heavy-Duty	Off-Road	Ag Tractor Replacement	16.2	2.11

C-54743-1	Heavy-Duty	Off-Road	Ag Tractor Replacement	14.33	0.39
G-141940	Heavy-Duty	Off-Road	Ag Tractor Replacement	11.48	1.05
G-135044	Heavy-Duty	Off-Road	Ag Tractor Replacement	12.11	0.38
G-114796	Heavy-Duty	Off-Road	Ag Tractor Replacement	11.37	0.65
G-112907	Heavy-Duty	Off-Road	Ag Tractor Replacement	11.34	0.57
C-53942-1	Heavy-Duty	Off-Road	Ag Tractor Replacement	11.24	0.56
G-113329	Heavy-Duty	Off-Road	Ag Tractor Replacement	11.36	0.33
C-51760-1	Heavy-Duty	Off-Road	Ag Tractor Replacement	10.03	1.29
G-133703	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0001	0.0001
G-116489	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-125668	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-130761	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-131764	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-132155	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-132170	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-132878	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-132884	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-132979	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-133159	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0095	0.0016
G-133189	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-133341	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-133384	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-133542	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-133551	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-133627	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-133634	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0083	0.0014
G-133635	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-133638	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-133642	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-133733	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-133740	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-133834	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-133835	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-133873	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-133879	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0086	0.0014
G-133903	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0086	0.0014
G-133906	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-133913	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-133919	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-133929	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-133982	Light-Duty	Drive Clean	EV Vehicle Rebate	0.033	0.0055
G-133986	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-133993	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-134003	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001

G-134014	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-134020	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-134028	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-134056	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-134057	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-134059	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0123	0.002
G-134229	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-134232	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-134236	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-134254	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0067	0.0011
G-134257	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-134258	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0057	0.0009
G-134290	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-134327	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-134341	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-134359	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-134361	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-134367	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-134387	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-134389	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-134390	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0081	0.0013
G-134392	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-134396	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-134397	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-134401	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-134402	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0148	0.0025
G-134403	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0165	0.0028
G-134413	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-134414	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-134417	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-134425	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0011
G-134426	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0139	0.0023
G-134428	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-134430	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0186	0.0031
G-134432	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-134434	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-134437	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-134439	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-134440	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0072	0.0012
G-134442	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-134447	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-134452	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0264	0.0044
G-134458	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0198	0.0033
G-134474	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018

G-134478	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-134518	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-134525	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-134526	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-134529	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-134530	Light-Duty	Drive Clean	EV Vehicle Rebate	0.063	0.0105
G-134531	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-134541	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-134556	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-134567	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0064	0.0011
G-134573	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-134574	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-134580	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0185	0.0031
G-134586	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-134587	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-134589	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-134606	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-134607	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-134610	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-134671	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-134682	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0159	0.0026
G-134683	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-134688	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-134702	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-134705	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-134719	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-134720	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-134724	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-134725	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0081	0.0013
G-134726	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-134732	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-134737	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-134746	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-134747	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-134748	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-134757	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-134764	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-134766	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-134769	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-134775	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-134777	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-134778	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0091	0.0015
G-134779	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-134780	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012

G-134781	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-134783	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0119	0.002
G-134799	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-134802	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-134812	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-134815	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-134816	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-134817	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-134819	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-134821	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-134822	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-134826	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-134827	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-134841	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-134846	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-134853	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-134855	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-134876	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-134880	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-134885	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-134890	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-134892	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0112	0.0019
G-134893	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-134894	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0058	0.001
G-134896	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0016
G-134927	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-134928	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-134932	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-134975	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-134977	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-134979	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-134991	Light-Duty	Drive Clean	EV Vehicle Rebate	0.006	0.001
G-134993	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0093	0.0015
G-135000	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-135003	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-135018	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-135027	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0139	0.0023
G-135029	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-135035	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-135041	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0124	0.0021
G-135053	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-135059	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-135070	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-135093	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013

G-135103	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-135108	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0159	0.0026
G-135111	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-135112	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-135114	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-135123	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0165	0.0028
G-135130	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-135131	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-135132	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-135140	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0198	0.0033
G-135143	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-135144	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-135150	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-135151	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-135152	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-135163	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-135168	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0067	0.0011
G-135188	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-135190	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-135210	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-135211	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-135217	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-135239	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-135241	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-135246	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-135253	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0064	0.0011
G-135276	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-135284	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-135285	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-135288	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0198	0.0033
G-135291	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-135303	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-135304	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0119	0.002
G-135306	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0198	0.0033
G-135369	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-135384	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-135388	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-135456	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-135476	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-135480	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0057	0.0009
G-135490	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-135528	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0049	0.0008
G-135529	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-135541	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013

G-135575	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0082	0.0014
G-135675	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0112	0.0019
G-135681	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-135682	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-135697	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0198	0.0033
G-135709	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0238	0.004
G-135809	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-135822	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0165	0.0028
G-135824	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-135827	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0185	0.0031
G-135836	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-135837	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-135844	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-135876	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-135882	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-135884	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-135885	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-135935	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-135945	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0162	0.0027
G-135947	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-135967	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-135971	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-135972	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-135973	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-135974	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-135979	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-136056	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-136058	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0012
G-136059	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0198	0.0033
G-136071	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-136095	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-136131	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0231	0.0039
G-136133	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-136142	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-136146	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-136152	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0178	0.003
G-136186	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0012
G-136193	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-136195	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0264	0.0044
G-136199	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-136204	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-136213	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-136217	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-136224	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0107	0.0018

G-136233	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-136248	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0139	0.0023
G-136256	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-136259	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0119	0.002
G-136286	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0052	0.0009
G-136288	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-136346	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-136370	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0258	0.0043
G-136384	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-136433	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-136439	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-136447	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-136469	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-136473	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-136478	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0073	0.0012
G-136510	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-136556	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-136575	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-136614	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-136615	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-136637	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0047	0.0008
G-136652	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-136662	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-136947	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-136992	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-137066	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-137069	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-137265	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0198	0.0033
G-137267	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0162	0.0027
G-137460	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0082	0.0014
G-137495	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-137513	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-137519	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-137529	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-137535	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-137538	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0145	0.0024
G-137565	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0165	0.0028
G-137588	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-137602	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-137608	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-137613	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-137614	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-137678	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-137704	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0126	0.0021

G-137723	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-137831	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-137834	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-137844	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-137914	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-137974	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-138072	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0052	0.0009
G-138083	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-138092	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0073	0.0012
G-138124	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-138127	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-138137	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-138140	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-138200	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-138227	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-138233	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-138254	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-138256	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-138286	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-138299	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-138324	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0111	0.0019
G-138328	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0116	0.0019
G-138331	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-138336	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-138337	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-138387	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-138396	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-138408	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-138425	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-138449	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0119	0.002
G-138452	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-138494	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-138495	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-138496	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-138567	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-138568	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-138626	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0198	0.0033
G-138640	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-138646	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-138695	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-138696	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-138770	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0052	0.0009
G-138773	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-138786	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001

G-138794	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-138822	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-138823	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0047	0.0008
G-138841	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-138842	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0012
G-138844	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0143	0.0024
G-138852	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-138853	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-138897	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-138905	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-138950	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-138959	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-138968	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0185	0.0031
G-138978	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-139144	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-139150	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-139191	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-139201	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-139210	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-139213	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-139217	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-139302	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-139309	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-139314	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-139317	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-139333	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0119	0.002
G-139379	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-139432	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0083	0.0014
G-139436	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-139461	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-139469	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-139470	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-139471	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-139472	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-139474	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0095	0.0016
G-139476	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0159	0.0026
G-139483	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-139494	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-139506	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0083	0.0014
G-139529	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-139547	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0145	0.0024
G-139551	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-139567	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-139600	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0077	0.0013

G-139613	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-139643	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-139665	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-139678	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-139679	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-139697	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-139700	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-139722	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-139726	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0119	0.002
G-139783	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-139797	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-139805	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-139869	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-139890	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-139899	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-139924	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-139928	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-139937	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-139940	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-139953	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-139965	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-139970	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-139977	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-139979	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-139981	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-139993	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0093	0.0015
G-140024	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-140025	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-140026	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-140029	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-140031	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-140042	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0058	0.001
G-140053	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-140063	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0073	0.0012
G-140069	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-140141	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-140142	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0012
G-140152	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0141	0.0024
G-140167	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-140245	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0251	0.0042
G-140246	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-140253	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-140267	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0064	0.0011
G-140270	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001

G-140273	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-140288	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-140292	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0145	0.0024
G-140294	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0159	0.0026
G-140295	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-140296	Light-Duty	Drive Clean	EV Vehicle Rebate	0.013	0.0022
G-140305	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-140327	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-140375	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0074	0.0012
G-140388	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-140393	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-140395	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-140397	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-140409	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-140411	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-140412	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-140413	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-140415	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-140427	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-140478	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-140481	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-140483	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-140527	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0157	0.0026
G-140577	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-140589	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-140641	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-140672	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-140690	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-140691	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-140692	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0058	0.001
G-140694	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-140696	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-140731	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-140749	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-140768	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-140773	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-140774	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-140789	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0149	0.0025
G-140818	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-140826	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-140828	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-140838	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-140844	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-140855	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022

G-140868	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-140882	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-140921	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0125	0.0021
G-140927	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0164	0.0027
G-140951	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-140967	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-140977	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-140983	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-141040	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0116	0.0019
G-141077	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0083	0.0014
G-141084	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-141088	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-141095	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-141101	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-141118	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-141119	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0011
G-141120	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0082	0.0014
G-141126	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-141133	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-141140	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0054	0.0009
G-141147	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-141162	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0198	0.0033
G-141171	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-141175	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-141182	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-141193	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-141207	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-141208	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-141209	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-141252	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-141299	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-141313	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-141318	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-141378	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-141430	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-141451	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-141505	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-141522	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-141584	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-141596	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0054	0.0009
G-141605	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-141611	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0238	0.004
G-141616	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0084	0.0014
G-141622	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013

G-141633	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-141644	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-141645	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-141646	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0112	0.0019
G-141648	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-141652	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-141665	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0198	0.0033
G-141681	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-141685	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-141694	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0078	0.0013
G-141708	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-141729	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-141732	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-141763	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-141764	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-141840	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-141853	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0113	0.0019
G-141877	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0051	0.0008
G-141878	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-141902	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-141933	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-141936	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-141937	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-141960	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-141966	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-141967	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-141968	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-141983	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-141993	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-142000	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-142004	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-142012	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-142016	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0185	0.0031
G-142020	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0054	0.0009
G-142063	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-142115	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-142117	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-142127	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0119	0.002
G-142157	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-142253	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0159	0.0026
G-142259	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-142265	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-142268	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-142291	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011

G-142292	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-142294	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-142302	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-142333	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-142338	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-142347	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-142350	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-142365	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0057	0.0009
G-142368	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-142375	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-142389	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-142396	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-142398	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-142403	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-142404	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-142410	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-142430	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-142466	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0096	0.0016
G-142467	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-142470	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-142488	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0086	0.0014
G-142494	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-142496	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0067	0.0011
G-142497	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0074	0.0012
G-142504	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-142505	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-142513	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0119	0.002
G-142517	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-142547	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-142554	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-142560	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-142572	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-142621	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0057	0.0009
G-142628	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0188	0.0031
G-142633	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-142649	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-142650	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-142651	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-142653	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-142671	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0098	0.0016
G-142677	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0231	0.0039
G-142679	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-142698	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-142699	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0119	0.002

G-142701	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-142702	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-142710	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-142721	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-142722	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-142731	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-142741	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0101	0.0017
G-142746	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-142759	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-142767	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-142770	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0051	0.0008
G-142775	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-142777	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-142782	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-142826	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-142838	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-142872	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-142923	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-142927	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-142963	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0109	0.0018
G-143036	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-143049	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-143072	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-143076	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-143078	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-143112	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-143225	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-143265	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-143266	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-143269	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-143274	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-143290	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-143294	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-143298	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0083	0.0014
G-143317	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-143318	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-143320	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-143339	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0083	0.0014
G-143340	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-143371	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-143376	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-143377	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-143381	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-143383	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009

G-143385	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0113	0.0019
G-143386	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-143396	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-143399	Light-Duty	Drive Clean	EV Vehicle Rebate	0.014	0.0023
G-143410	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0073	0.0012
G-143411	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-143414	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-143426	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0077	0.0013
G-143453	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-143463	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-143734	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0297	0.005
G-143853	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0178	0.003
G-143861	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-143899	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-143946	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-143975	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-143976	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0211	0.0035
G-143991	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-143992	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-144097	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0095	0.0016
G-144103	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-144104	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-144117	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-144126	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-144136	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-144173	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-144198	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-144212	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-144243	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-144244	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-144245	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-144246	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-144253	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0086	0.0014
G-144262	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-144272	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-144275	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-144277	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0129	0.0021
G-144286	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0054	0.0009
G-144291	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-144323	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-144325	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0157	0.0026
G-144326	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-144373	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-144428	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013

G-144457	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-144476	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-144491	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-144512	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-144519	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0093	0.0015
G-144571	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0126	0.0021
G-144574	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0077	0.0013
G-144583	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0231	0.0039
G-144615	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-144625	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-144653	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-144670	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-144688	Light-Duty	Drive Clean	EV Vehicle Rebate	0.013	0.0022
G-144691	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-144707	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-144713	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-144738	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-144746	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0057	0.0009
G-144749	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-144753	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-144755	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-144758	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-144764	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0051	0.0008
G-144783	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-144847	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-144882	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-144883	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-144884	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-144906	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0085	0.0014
G-144907	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-144937	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0074	0.0012
G-144938	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-144988	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-145045	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-145054	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-145068	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-145087	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-145091	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-145113	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-145117	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-145140	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0116	0.0019
G-145161	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-145164	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-145165	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012

G-145166	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-145167	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-145171	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-145175	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0159	0.0026
G-145180	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0054	0.0009
G-145194	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-145206	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-145218	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0067	0.0011
G-145220	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0143	0.0024
G-145224	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-145233	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-145237	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-145293	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-145295	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-145338	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-145340	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-145342	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-145365	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-145393	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-145395	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-145405	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-145412	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-145481	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-145515	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-145524	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0093	0.0015
G-145525	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-145531	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-145532	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-145533	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-145534	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-145539	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-145545	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-145546	Light-Duty	Drive Clean	EV Vehicle Rebate	0.014	0.0023
G-145549	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-145551	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-145572	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-145574	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0077	0.0013
G-145580	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0012
G-145583	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-145584	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0058	0.001
G-145585	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0012
G-145586	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0129	0.0021
G-145587	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-145588	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012

G-145590	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-145591	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-145593	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-145594	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-145596	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-145598	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-145599	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0129	0.0021
G-145607	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0012
G-145614	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-145640	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0067	0.0011
G-145675	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0095	0.0016
G-145678	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-145682	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-145719	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0126	0.0021
G-145724	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-145726	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-145731	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-145746	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-145747	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-145765	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-145776	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-145783	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0083	0.0014
G-145784	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-145793	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-145794	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-145845	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-145846	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0165	0.0028
G-145864	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-145906	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-145927	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-145951	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-145955	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0188	0.0031
G-145975	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-145976	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0109	0.0018
G-145983	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-145984	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-145991	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-146015	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-146016	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0064	0.0011
G-146025	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-146029	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-146034	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-146038	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-146044	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009

G-146062	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-146081	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-146097	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-146133	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-146141	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-146146	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-146149	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-146159	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0083	0.0014
G-146160	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-146229	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0188	0.0031
G-146239	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-146242	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0162	0.0027
G-146245	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0248	0.0041
G-146281	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0198	0.0033
G-146298	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-146318	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-146328	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-146344	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-146346	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-146373	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-146376	Light-Duty	Drive Clean	EV Vehicle Rebate	0.006	0.001
G-146378	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0134	0.0022
G-146385	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-146405	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-146406	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-146408	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-146426	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0068	0.0011
G-146436	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0093	0.0015
G-146440	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-146443	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-146453	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-146456	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-146465	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-146468	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-146469	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-146475	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0012
G-146481	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-146500	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0074	0.0012
G-146505	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-146507	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-146512	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0067	0.0011
G-146516	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0083	0.0014
G-146523	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-146552	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011

G-146560	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-146566	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-146567	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-146573	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0169	0.0028
G-146626	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0084	0.0014
G-146635	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-146706	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0231	0.0039
G-146718	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-146735	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-146743	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0074	0.0012
G-146744	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0095	0.0016
G-146774	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-146777	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-146813	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0149	0.0025
G-146832	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0165	0.0028
G-146833	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-146840	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-146842	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-146844	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0119	0.002
G-146850	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-146853	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0165	0.0028
G-146865	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-146866	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-146887	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-146892	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-146896	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-146913	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-146917	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0011
G-146936	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-146938	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-146993	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-147050	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-147053	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-147055	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147065	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-147070	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0074	0.0012
G-147074	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-147160	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-147170	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147179	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-147196	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-147197	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-147201	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-147203	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001

G-147215	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-147218	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-147222	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-147225	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0012
G-147245	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0072	0.0012
G-147257	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147266	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-147269	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-147275	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147282	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-147285	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-147286	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-147295	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0012
G-147298	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-147302	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-147307	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-147312	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0113	0.0019
G-147338	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-147342	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-147343	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0012
G-147348	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-147349	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147361	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147366	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-147374	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0178	0.003
G-147385	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-147394	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-147395	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-147396	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-147410	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147413	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147423	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-147426	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-147437	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-147465	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147466	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-147482	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-147489	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-147494	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-147495	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-147553	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-147559	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-147572	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0074	0.0012
G-147574	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001

G-147581	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0074	0.0012
G-147585	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147586	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-147587	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-147597	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-147612	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-147616	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147630	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0112	0.0019
G-147633	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-147640	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-147659	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-147663	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-147683	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-147690	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-147692	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-147696	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-147704	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-147707	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0074	0.0012
G-147712	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-147714	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-147726	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-147734	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-147735	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-147736	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147738	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0159	0.0026
G-147739	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0064	0.0011
G-147742	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147749	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-147750	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-147751	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-147752	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-147753	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-147754	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147755	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-147763	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-147770	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147771	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-147777	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-147779	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-147781	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-147786	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-147788	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0074	0.0012
G-147789	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-147791	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011

G-147816	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-147818	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0074	0.0012
G-147819	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-147837	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-147838	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0088	0.0015
G-147843	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147848	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-147849	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147853	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-147854	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-147859	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-147862	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147863	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-147869	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-147872	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147874	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-147876	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-147878	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147880	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0058	0.001
G-147883	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-147884	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-147909	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0058	0.001
G-147912	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-147917	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-147918	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-147934	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147948	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-147950	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-147954	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-147960	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-147969	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-147977	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-147979	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-148015	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-148016	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-148025	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-148026	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-148029	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-148031	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0051	0.0009
G-148034	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-148041	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-148042	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-148044	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-148060	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011

G-148061	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-148062	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-148064	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-148067	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-148073	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-148079	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-148081	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0127	0.0021
G-148084	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-148093	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-148096	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-148101	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-148104	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-148108	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-148109	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-148111	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-148117	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-148144	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-148145	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0119	0.002
G-148173	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-148176	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0088	0.0015
G-148195	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-148198	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-148200	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-148201	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-148205	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-148207	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-148212	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-148218	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-148237	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-148263	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-148267	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-148268	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-148281	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-148286	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-148296	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0074	0.0012
G-148300	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-148304	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0151	0.0025
G-148308	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0083	0.0014
G-148320	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-148321	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0082	0.0014
G-148335	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-148339	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-148340	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-148341	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011

G-148348	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-148370	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-148379	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-148390	Light-Duty	Drive Clean	EV Vehicle Rebate	0.014	0.0023
G-148392	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0159	0.0026
G-148395	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-148418	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0095	0.0016
G-148448	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-148460	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-148464	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-148465	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-148514	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-148547	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-148550	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-148562	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0095	0.0016
G-148591	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-148604	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-148616	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-148618	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-148619	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-148624	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-148631	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-148632	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-148633	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-148634	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-148636	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-148646	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-148649	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-148650	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-148652	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-148655	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-148657	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-148660	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-148662	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-148665	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-148672	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-148673	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-148675	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-148682	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0107	0.0018
G-148685	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0007	0.0005
G-148694	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-148699	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-148702	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-148714	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011

G-148716	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-148718	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-148723	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0149	0.0025
G-148744	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0206	0.0034
G-148758	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-148764	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-148765	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0073	0.0012
G-148772	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-148781	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-148788	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-148808	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-148818	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-148831	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-148834	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0213	0.0035
G-148839	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-148840	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-148893	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0145	0.0024
G-148913	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-148919	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-148926	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-148935	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-148937	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-148938	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-148974	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0051	0.0008
G-148979	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-148996	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-149002	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0077	0.0013
G-149004	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-149005	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-149008	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-149010	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-149012	Light-Duty	Drive Clean	EV Vehicle Rebate	0.014	0.0023
G-149054	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-149063	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-149065	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-149076	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-149091	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-149093	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-149094	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0054	0.0009
G-149112	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-149115	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-149125	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149127	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149135	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001

G-149138	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-149148	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-149162	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-149188	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-149191	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-149216	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149218	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149221	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149236	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0067	0.0011
G-149252	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-149273	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-149275	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-149276	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-149279	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-149280	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0095	0.0016
G-149281	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149287	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-149332	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0088	0.0015
G-149352	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-149378	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0086	0.0014
G-149389	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0198	0.0033
G-149393	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-149395	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0067	0.0011
G-149407	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-149424	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0149	0.0025
G-149433	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-149438	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-149443	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-149444	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-149448	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-149449	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0152	0.0025
G-149454	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-149461	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-149468	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-149470	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-149473	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149475	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-149479	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-149495	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-149497	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-149499	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-149504	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-149508	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-149513	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013

G-149515	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-149516	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149517	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149518	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0077	0.0013
G-149521	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-149524	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-149525	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0086	0.0014
G-149527	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-149536	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-149554	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-149557	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-149567	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-149569	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-149580	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0165	0.0028
G-149608	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-149614	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149617	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-149625	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0238	0.004
G-149627	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-149628	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-149632	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-149633	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0009	0.0006
G-149642	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0103	0.0017
G-149655	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-149657	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-149658	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-149659	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-149667	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0083	0.0014
G-149683	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-149691	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-149694	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-149698	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149700	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149702	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-149704	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-149705	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-149707	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-149718	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-149772	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149782	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-149787	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0149	0.0025
G-149789	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-149791	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-149805	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009

G-149807	Light-Duty	Drive Clean	EV Vehicle Rebate	0.013	0.0022
G-149810	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-149813	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-149819	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-149821	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0119	0.002
G-149831	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149832	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0112	0.0019
G-149833	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-149840	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-149867	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-149871	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149882	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-149886	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-149897	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-149898	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-149900	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-149904	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-149905	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-149907	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-149908	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-149910	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-149913	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149915	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-149920	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-149927	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149943	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149945	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149954	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-149967	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-149977	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149981	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149983	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-149987	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-149990	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-149994	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-150005	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-150014	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-150015	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0088	0.0015
G-150045	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-150048	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-150056	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-150060	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-150069	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-150095	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0057	0.001

G-150096	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0088	0.0015
G-150123	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-150142	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-150143	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0008	0.0005
G-150161	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-150163	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0012
G-150176	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0143	0.0024
G-150180	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-150181	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-150196	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0083	0.0014
G-150197	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-150206	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-150222	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0064	0.0011
G-150228	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0119	0.002
G-150241	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-150248	Light-Duty	Drive Clean	EV Vehicle Rebate	0.012	0.002
G-150249	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0057	0.0009
G-150290	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0097	0.0016
G-150295	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-150296	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-150297	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-150324	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-150329	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-150331	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-150333	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0047	0.0008
G-150345	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-150347	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0012
G-150349	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-150358	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-150364	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-150376	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-150381	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-150382	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0157	0.0026
G-150388	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-150402	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-150405	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-150407	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0011
G-150409	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-150416	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-150418	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-150423	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-150428	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-150430	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0101	0.0017
G-150431	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0093	0.0015

G-150433	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-150435	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-150471	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-150485	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-150486	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-150512	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0119	0.002
G-150517	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-150518	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-150525	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-150529	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-150549	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-150561	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-150576	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0057	0.0009
G-150578	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-150592	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0074	0.0012
G-150598	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-150606	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-150607	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-150608	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-150609	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-150610	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-150613	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-150615	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-150617	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-150618	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-150619	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-150630	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-150639	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0149	0.0025
G-150642	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0119	0.002
G-150646	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-150650	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0139	0.0023
G-150694	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-150704	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-150705	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-150709	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-150712	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-150736	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-150738	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-150741	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-150756	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-150769	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-150775	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-150776	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-150781	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0067	0.0011

G-150824	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-150826	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0052	0.0009
G-150827	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-150829	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-150832	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-150839	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-150845	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-150847	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-150849	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0126	0.0021
G-150853	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-150856	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-150861	Light-Duty	Drive Clean	EV Vehicle Rebate	0.033	0.0055
G-150864	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-150872	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-150882	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0012
G-150886	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-150889	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-150896	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-150898	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-150907	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0095	0.0016
G-150913	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-150914	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0093	0.0015
G-150915	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0084	0.0014
G-150927	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-150929	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-150930	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-150937	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-150948	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0074	0.0012
G-150953	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-150977	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-150989	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-150994	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-151027	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-151028	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0077	0.0013
G-151032	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-151049	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0012
G-151058	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-151060	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-151061	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-151066	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-151118	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-151124	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-151129	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0061	0.001
G-151132	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001

G-151154	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-151155	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0084	0.0014
G-151157	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-151159	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-151163	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-151174	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-151191	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-151193	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0012
G-151197	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-151200	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0085	0.0014
G-151203	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-151208	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0069	0.0012
G-151241	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-151243	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0078	0.0013
G-151249	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-151258	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-151260	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-151268	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-151270	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-151275	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-151280	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0058	0.001
G-151282	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-151285	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-151286	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-151303	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-151305	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-151306	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-151307	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0198	0.0033
G-151309	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0077	0.0013
G-151315	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-151317	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-151318	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0118	0.002
G-151320	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-151321	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-151322	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-151323	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0058	0.001
G-151325	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-151335	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-151336	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0007	0.0004
G-151337	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-151339	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-151349	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0238	0.004
G-151352	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0006	0.0004
G-151362	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012

G-151364	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-151366	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-151404	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0067	0.0011
G-151406	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-151409	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-151423	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-151430	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-151438	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-151462	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-151465	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0064	0.0011
G-151470	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-151478	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-151479	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0054	0.0009
G-151480	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-151482	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-151542	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0047	0.0008
G-151546	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-151556	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-151560	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-151564	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-151572	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-151573	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-151577	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-151578	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0067	0.0011
G-151579	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-151581	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-151636	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-151638	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-151640	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0112	0.0019
G-151647	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-151657	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.0079
G-151666	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0074	0.0012
G-151703	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-151709	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0067	0.0011
G-151714	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-151717	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-151718	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-151740	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-151742	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-151754	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0047	0.0008
G-151760	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-151762	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-151766	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-151779	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001

G-151782	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0077	0.0013
G-151789	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-151803	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0084	0.0014
G-151818	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-151832	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-151844	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-151851	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-151855	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-151864	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0086	0.0014
G-151868	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-151873	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-151877	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-151881	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-151884	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-151888	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-151889	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-151892	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-151894	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0006	0.0004
G-151900	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-151903	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-151914	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-151919	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-151922	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-151927	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-151928	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0169	0.0028
G-151931	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-151932	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-151933	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-151949	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-151950	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-151955	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0159	0.0026
G-151974	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-151976	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-151980	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0165	0.0028
G-151989	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-152000	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-152008	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-152014	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-152015	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-152018	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-152019	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-152022	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-152025	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-152027	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0074	0.0012

G-152028	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-152029	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-152033	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-152036	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-152037	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-152044	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-152060	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-152091	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-152105	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-152108	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-152117	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-152119	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0119	0.002
G-152122	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-152171	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-152175	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-152180	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-152190	Light-Duty	Drive Clean	EV Vehicle Rebate	0.01	0.0017
G-152194	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-152200	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-152222	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-152226	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-152228	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-152232	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-152236	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-152248	Light-Duty	Drive Clean	EV Vehicle Rebate	0.003	0.0005
G-152251	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-152260	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0033	0.0006
G-152290	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0112	0.0019
G-152292	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-152297	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-152308	Light-Duty	Drive Clean	EV Vehicle Rebate	0.002	0.0003
G-152314	Light-Duty	Drive Clean	EV Vehicle Rebate	0.004	0.0007
G-152322	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-152323	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0077	0.0013
G-152325	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0067	0.0011
G-152331	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-152334	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0084	0.0014
G-152335	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-152336	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-152337	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0026	0.0004
G-152341	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-152343	Light-Duty	Drive Clean	EV Vehicle Rebate	0.019	0.0022
G-152344	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-152346	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0033	0.0006

G-152347	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-152349	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-152350	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-152352	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-152356	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0106	0.0018
G-152359	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-152362	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-152364	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-152369	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0097	0.0016
G-152375	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-152379	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-152382	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-152383	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-152390	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0231	0.0039
G-152392	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0021	0.0004
G-152393	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0026	0.0004
G-152395	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-152396	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-152397	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0074	0.0012
G-152406	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0169	0.0028
G-152407	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-152413	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0192	0.0032
G-152417	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0057	0.0009
G-152420	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0092	0.0015
G-152424	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-152431	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-152432	Light-Duty	Drive Clean	EV Vehicle Rebate	0.004	0.0007
G-152450	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-152455	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0096	0.0016
G-152460	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0094	0.0016
G-152461	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0297	0.005
G-152462	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0017	0.0003
G-152465	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0045	0.0007
G-152472	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-152491	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0033	0.0006
G-152512	Light-Duty	Drive Clean	EV Vehicle Rebate	0.003	0.0005
G-152516	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-152518	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-152520	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-152521	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0021	0.0004
G-152534	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-152537	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0033	0.0006
G-152543	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0036	0.0006
G-152563	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0036	0.0006

G-152565	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-152572	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0036	0.0006
G-152618	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-152623	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-152627	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0101	0.0017
G-152647	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-152657	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-152665	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-152670	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-152673	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0095	0.0016
G-152674	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0033	0.0006
G-152675	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0178	0.003
G-152678	Light-Duty	Drive Clean	EV Vehicle Rebate	0.004	0.0007
G-152679	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0446	0.0074
G-152680	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0165	0.0028
G-152681	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-152685	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-152686	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0126	0.0021
G-152738	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-152751	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-152752	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-152785	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-152789	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-152795	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-152798	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-152801	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-152805	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0057	0.0009
G-152808	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0008	0.0005
G-152815	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-152820	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-152822	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-152825	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-152826	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-152831	Light-Duty	Drive Clean	EV Vehicle Rebate	0.004	0.0007
G-152836	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-152837	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-152844	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-152845	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-152846	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-152848	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-152851	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-152852	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0003	0.0002
G-152854	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-152855	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003

G-152858	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0006	0.0004
G-152860	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-152861	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-152862	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0009	0.0006
G-152864	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0002
G-152866	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-152872	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-152874	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-152875	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-152881	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0013	0.0009
G-152890	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0002
G-152892	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-152894	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0009	0.0006
G-152898	Light-Duty	Drive Clean	EV Vehicle Rebate	0.001	0.0006
G-152904	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-152905	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-152921	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0009	0.0006
G-152924	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-152926	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0009	0.0006
G-152933	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-152936	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-152949	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0002
G-152960	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0002
G-152965	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0006	0.0004
G-152966	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-152967	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0001	0.0001
G-152970	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0007	0.0004
G-152971	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-152972	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0003	0.0002
G-152976	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0002	0.0001
G-152979	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0007	0.0004
G-152980	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0009	0.0006
G-153024	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-153026	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-153040	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-153053	Light-Duty	Drive Clean	EV Vehicle Rebate	0.003	0.0005
G-153054	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-153055	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-153059	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-153061	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-153066	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-153073	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-153076	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-153084	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008

G-153101	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-153105	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-153111	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-153140	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-153151	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-153152	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-153153	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-153154	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0074	0.0012
G-153166	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-153168	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0037	0.0006
G-153170	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0067	0.0011
G-153174	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0026	0.0004
G-153216	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-153217	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-153223	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0023	0.0004
G-153227	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-153229	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0017	0.0003
G-153231	Light-Duty	Drive Clean	EV Vehicle Rebate	0.004	0.0007
G-153232	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0019	0.0003
G-153235	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0057	0.001
G-153240	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0033	0.0006
G-153244	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0065	0.0011
G-153260	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0032	0.0005
G-153262	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0026	0.0004
G-153273	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0062	0.001
G-153274	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-153278	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-153292	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-153298	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0099	0.0017
G-153306	Light-Duty	Drive Clean	EV Vehicle Rebate	0.004	0.0007
G-153307	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-153314	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-153319	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.0011
G-153321	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0009	0.0006
G-153322	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-153325	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-153340	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-153341	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0063	0.001
G-153359	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-153360	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-153364	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-153367	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-153369	Light-Duty	Drive Clean	EV Vehicle Rebate	0.004	0.0007
G-153372	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0074	0.0012

G-153373	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0132	0.0022
G-153375	Light-Duty	Drive Clean	EV Vehicle Rebate	0.004	0.0007
G-153376	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-153377	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-153383	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-153390	Light-Duty	Drive Clean	EV Vehicle Rebate	0.002	0.0003
G-153391	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0003	0.0002
G-153393	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-153395	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0026	0.0004
G-153396	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-153397	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-153401	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0025	0.0004
G-153402	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-153404	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-153405	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0075	0.0013
G-153406	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-153409	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-153410	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-153437	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-153450	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-153460	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-153462	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0048	0.0008
G-153467	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0006	0.0004
G-153468	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0042	0.0007
G-153470	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-153471	Light-Duty	Drive Clean	EV Vehicle Rebate	0.005	0.0008
G-153483	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0037	0.0006
G-153485	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0056	0.0009
G-153491	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-153494	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-153498	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-153500	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0149	0.0025
G-153507	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0053	0.0009
G-153509	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-153512	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0039	0.0006
G-153513	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0071	0.0012
G-153515	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-153517	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0013	0.0009
G-153519	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0042	0.0007
G-153520	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011
G-153523	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
G-153524	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0258	0.0043
G-153525	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-153529	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0066	0.0011

G-153530	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0028	
G-153531	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-153532	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-153534	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-153536	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0079	0.0013
G-153538	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0059	0.001
G-153541	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0046	0.0008
G-153547	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0089	0.0015
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G-153604	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-153608	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0007	0.0004
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G-153641	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
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G-153655	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0001	0.0001
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G-153665	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-153669	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0002	0.0001
G-153674	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0002
G-153684	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-153685	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0007	0.0004
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G-153698	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
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G-153701	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0003	0.0002
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G-153761	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0007	0.0004
G-153762	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0002	0.0001
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G-153791	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
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G-153808	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0002	0.0001
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G-153830	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
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G-153884	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0002
G-153898	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0003	0.0002
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G-153904	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0009	0.0006
G-153905	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0007	0.0004
G-153906	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0002	0.0001
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G-153917	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0003	0.0002
G-153918	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0003	0.0002
G-153924	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0007	0.0005
G-153930	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0002
G-153932	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0002	0.0001
G-153933	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-153934	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0003	0.0002
G-153936	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0009	0.0006
G-153938	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-153941	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
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G-153944	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0003	0.0002
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G-153967	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0002
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G-153984	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0011	0.0007
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G-154005	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
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G-154022	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-154024	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0001	0.0001
G-154028	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-154030	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003

G-154039	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-154048	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-154049	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-154051	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-154053	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-154054	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0002
G-154055	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0009	0.0006
G-154060	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-154067	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0007	0.0004
G-154068	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-154073	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-154094	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-154103	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-154104	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0015	0.0009
G-154106	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0003	0.0002
G-154109	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0003	0.0002
G-154111	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0007	0.0004
G-154125	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-154128	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-154129	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0001	0.0001
G-154130	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0002
G-154136	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0002
G-154138	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-154139	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-154142	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0002
G-154148	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0007	0.0004
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G-154155	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-154157	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0009	0.0006
G-154159	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0002	0.0001
G-154177	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-154227	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-154284	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0007	0.0004
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G-154478	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-154533	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0002	0.0001
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G-154726	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-155245	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0007	0.0004
G-155271	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0009	0.0006
G-155336	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0011	0.0007

G-155468	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0008	0.0005
G-155515	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-155561	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-155700	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0007	0.0004
G-155738	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0003	0.0002
G-155744	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-155830	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-155971	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-156039	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0013	0.0009
G-156307	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-156314	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0007	0.0004
G-156322	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-156323	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-156324	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-156341	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0005	0.0003
G-156343	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0004	0.0003
G-156374	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0007	0.0004
G-156385	Light-Duty	Drive Clean	EV Vehicle Rebate	0.0006	0.0004

Appendix

San Joaquin Valley Air Pollution Control District and South Coast Air Quality Management District *Sierra Club v. County of Fresno* Amicus Curiae Briefs

SUPREME COURT COPY

CASE NO. S219783

IN THE SUPREME COURT OF CALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,
Plaintiffs and Appellants

v.

COUNTY OF FRESNO,
Defendant and Respondent

FRIANT RANCH, L.P.,
Real Party in Interest and Respondent

SUPREME COURT
FILED
APR 13 2015
Frank A. McGuire Clerk
Deputy

After a Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO AND REAL PARTY IN INTEREST AND RESPONDENT, FRIANT RANCH, L.P.

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Counsel for San Joaquin Valley Unified Air Pollution Control District

CASE NO. S219783

IN THE SUPREME COURT OF CALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,
Plaintiffs and Appellants

v.

COUNTY OF FRESNO,
Defendant and Respondent

FRIANT RANCH, L.P.,
Real Party in Interest and Respondent

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APPLICATION

Pursuant to California Rules of Court 8.520(f)(1), proposed Amicus Curiae San Joaquin Valley Unified Air Pollution Control District hereby requests permission from the Chief Justice to file an amicus brief in support of Defendant and Respondent, County of Fresno, and Defendant and Real Parties in Interest Friant Ranch, L.P. Pursuant to Rule 8.520(f)(5) of the California Rules of Court, the proposed amicus curiae brief is combined with this Application. The brief addresses the following issue certified by this Court for review:

> Is an EIR adequate when it identifies the health impacts of air pollution and quantifies a project's expected emissions, or does CEQA further require the EIR to *correlate* a project's air quality emissions to specific health impacts?

As of the date of this filing, the deadline for the final reply brief on the merits was March 5, 2015. Accordingly, under Rule 8.520(f)(2), this application and brief are timely.

1. Background and Interest of San Joaquin Valley Unified Air Pollution Control District

The San Joaquin Valley Unified Air Pollution Control District ("Air District") regulates air quality in the eight counties comprising the San Joaquin Valley ("Central Valley"): Kern, Tulare, Madera, Fresno, Merced, San Joaquin, Stanislaus, and Kings, and is primarily responsible for attaining air quality standards within its jurisdiction. After billions of dollars of investment by Central Valley businesses, pioneering air quality regulations, and consistent efforts by residents, the Central Valley air basin has made historic improvements in air quality.

The Central Valley's geographical, topographical and meteorological features create exceptionally challenging air quality

conditions. For example, it receives air pollution transported from the San Francisco Bay Area and northern Central Valley communities, and the southern portion of the Central Valley includes three mountain ranges (Sierra, Tehachapi, and Coastal) that, under some meteorological conditions, effectively trap air pollution. Central Valley air pollution is only a fraction of what the Bay Area and Los Angeles produce, but these natural conditions result in air quality conditions that are only marginally better than Los Angeles, even though about ten times more pollution is emitted in the Los Angeles region. Bay Area air quality is much better than the Central Valley's, even though the Bay Area produces about six times more pollution. The Central Valley also receives air pollution transported from the Bay Area and northern counties in the Central Valley, including Sacramento, and transboundary anthropogenic ozone from as far away as China.

Notwithstanding these challenges, the Central Valley has reduced emissions at the same or better rate than other areas in California and has achieved unparalleled milestones in protecting public health and the environment:

- In the last decade, the Central Valley became the first air basin classified by the federal government under the Clean Air Act as a "serious nonattainment" area to come into attainment of health-based National Ambient Air Quality Standard ("NAAQS") for coarse particulate matter (PM10), an achievement made even more notable given the Valley's extensive agricultural sector. Unhealthy levels of particulate matter can cause and exacerbate a range of chronic and acute illnesses.
- In 2013, the Central Valley became the first air basin in the country to improve from a federal designation of "extreme" nonattainment to

actually attain (and quality for an attainment designation) of the 1-hour ozone NAAQS; ozone creates "smog" and, like PM10, causes adverse health impacts.

- The Central Valley also is in full attainment of federal standards for lead, nitrogen dioxide, sulfur dioxide, and carbon monoxide.
- The Central Valley continues to make progress toward compliance with its last two attainment standards, with the number of exceedences for the 8-hour ozone NAAQS reduced by 74% (for the 1997 standard) and 38% (for the 2008 standard) since 1991, and for the small particulate matter (PM2.5) NAAQS reduced by 85% (for the 1997 standard) and 61% (for the 2006 standard).

Sustained improvement in Central Valley air quality requires a rigorous and comprehensive regulatory framework that includes prohibitions (e.g., on wood-burning fireplaces in new residences), mandates (e.g., requiring the installation of best available pollution reduction technologies on new and modified equipment and industrial operations), innovations (e.g., fees assessed against residential development to fund pollution reduction actions to "offset" vehicular emissions associated with new residences), incentive programs (e.g., funding replacements of older, more polluting heavy duty trucks and school buses)[1], ongoing planning for continued air quality improvements, and enforcement of Air District permits and regulations.

The Air District is also an expert air quality agency for the eight counties and cities in the San Joaquin Valley. In that capacity, the Air District has developed air quality emission guidelines for use by the Central

[1] San Joaquin's incentive program has been so successful that through 2012, it has awarded over $ 432 million in incentive funds and has achieved 93,349 tons of lifetime emissions reductions. *See* SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, 2012 PM2.5 PLAN, 6-6 (2012) *available at* http://www.valleyair.org/Workshops/postings/2012/12-20-12PM25/FinalVersion/06%20Chapter%206%20Incentives.pdf.

Valley counties and cities that implement the California Environment Quality Act (CEQA).[2] In its guidance, the Air District has distinguished between toxic air contaminants and criteria air pollutants.[3] Recognizing this distinction, the Air District's CEQA Guidance has adopted distinct thresholds of significance for *criteria* pollutants (i.e., ozone, PM2.5 and their respective precursor pollutants) based upon scientific and factual data which demonstrates the level that can be accommodated on a cumulative basis in the San Joaquin Valley without affecting the attainment of the applicable NAAQS.[4] For *toxic air* pollutants, the District has adopted different thresholds of significance which scientific and factual data demonstrates has the potential to expose sensitive receptors (i.e., children, the elderly) to levels which may result in localized health impacts.[5]

The Air District's CEQA Guidance was followed by the County of Fresno in its environment review of the Friant Ranch project, for which the Air District also served as a commenting agency. The Court of Appeal's holding, however, requiring correlation between the project's criteria

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[2] *See, e.g.*, SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, PLANNING DIVISION, GUIDE FOR ASSESSING AND MITIGATING AIR QUALITY IMPACTS (2015), *available at* http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf ("CEQA Guidance").

[3] Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health, they are distinguishable from toxic air contaminants and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of toxic air contaminants occurs solely under section 112 of the Act. Compare 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 with 42 U.S.C. § 7411.

[4] See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 64-66, 80.

[5] See, e.g., CEQA Guidance at http://www.valleyair.org/transportation/GAMAQI_3-19-15.pdf, pp. 66, 99-101.

pollutants and local health impacts, departs from the Air District's Guidance and approved methodology for assessing criteria pollutants. A close reading of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants (for which a local health risk assessment is feasible and routinely performed) and criteria air pollutants (for which a local health risk assessment is not feasible and would result in speculative results).[6] The Air District has a direct interest in ensuring the lawfulness and consistent application of its CEQA Guidance, and will explain how the Court of Appeal departed from the Air District's long-standing CEQA Guidance in addressing criteria pollutants and toxic air contaminants in this amicus brief.

2. How the Proposed Amicus Curiae Brief Will Assist the Court

As counsel for the proposed amicus curiae, we have reviewed the briefs filed in this action. In addition to serving as a "commentary agency" for CEQA purposes over the Friant Ranch project, the Air District has a strong interest in assuring that CEQA is used for its intended purpose, and believes that this Court would benefit from additional briefing explaining the distinction between criteria pollutants and toxic air contaminants and the different methodologies employed by local air pollution control agencies such as the Air District to analyze these two categories of air pollutants under CEQA. The Air District will also explain how the Court of Appeal's opinion is based upon a fundamental misunderstanding of these two different approaches by requiring the County of Fresno to correlate the project's *criteria* pollution emissions with *local* health impacts. In doing

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[6] CEQA does not require speculation. *See, e.g., Laurel Heights Improvement Ass'n v. Regents of Univ. of Cal.*, 6 Cal. 4th 1112, 1137 (1993) (upholding EIR that failed to evaluate cumulative toxic air emission increases given absence of any acceptable means for doing so).

so, the Air District will provide helpful analysis to support its position that at least insofar as criteria pollutants are concerned, CEQA does not require an EIR to correlate a project's air quality emissions to specific health impacts, because such an analysis is not reasonably feasible.

Rule 8.520 Disclosure

Pursuant to Cal. R. 8.520(f)(4), neither the Plaintiffs nor the Defendant or Real Party In Interest or their respective counsel authored this brief in whole or in part. Neither the Plaintiffs nor the Defendant or Real Party in Interest or their respective counsel made any monetary contribution towards or in support of the preparation of this brief.

CONCLUSION

On behalf of the San Joaquin Valley Unified Air Pollution Control District, we respectfully request that this Court accept the filing of the attached brief.

Dated: April 2, 2015



Annette A. Ballatore-Williamson
District Counsel
Attorney for Proposed Amicus Curiae

SAN JOAQUIN VALLEY UNIFIED
AIR POLLUTION CONTROL
DISTRICT

CASE NO. S219783

IN THE SUPREME COURT OF CALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,
Plaintiffs and Appellants

v.

COUNTY OF FRESNO,
Defendant and Respondent

FRIANT RANCH, L.P.,
Real Party in Interest and Respondent

After a Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726

AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO AND REAL PARTY IN INTEREST AND RESPONDENT, FRIANT RANCH, L.P.

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TABLE OF AUTHORITIES

CASES

Bakersfield Citizens for Local Control v. City of Bakersfield (2004) 124 Cal.App.4th 1184, 1199, 22 Cal.Rptr.3d 203 15

Citizens for Responsible Equitable Environmental Development v. City of San Diego, (2011) 196 Cal.App.4th 515, 527 129 Cal.Rptr.3d 512, 521 14

Kings County Farm Bureau v. City of Hanford (1990) 221 Cal.App.3d 692, 717 n. 8. 10

Sierra Club v. City of Orange (2008) 163 Cal.App.4th 523, 535, 78 Cal.Rptr.3d 1, 13 14

Sierra Club v. City of Orange,163 Cal.App.4th at 536 15

Sierra Club v. County of Fresno (2014) 172 Cal.Rptr.3d 271, 306 12

Sierra Club, supra, 172 Cal.Rptr.3d at 303; AR 4554 8

FEDERAL STATUTES

United States Environmental Protection Agency ("EPA") Clean Air Act. 42 U.S.C. § 7412 1,2,5,6

42 U.S.C. § 7412 1

U.S.C. §§ 7407 – 7411 1

U.S.C. §§ 7501 – 7515 1

42 U.S.C. § 7411 1

42 U.S.C. § 7412(b) 1,2

42 U.S.C. § 7409(b)(1) 2, 6

CALIFORNIA STATUTES

California Environmental Quality Act ("CEQA") ..... *passim*

OTHER AUTHORITIES

United States Environmental Protection Agency,
Ground-level Ozone: Basic Information,
available at: http://www.epa.gov/airquality/ozonepollution/basic.html
(visited March 10, 015).....4

San Joaquin Valley Air Pollution Control District 2007 Ozone Plan,
Executive Summary p. ES-6, available at:
http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_
Adopted/03%20Executive%20Summary.pdf (visited March 10, 2015).....5

United States Environmental Protection Agency, *Particulate Matter:*
Basic Information, available at:
http://www.epa.gov/airquality/particlepollution/basic.html
(visited March 10, 2015).....5

United States Environmental Protection Agency, *Table of*
National Ambient Air Quality Standards, available at:
http://www.epa.gov/air/criteria.html#3 (visited March 10, 2015) 6

San Joaquin Valley Unified Air Pollution Control District 2013
Plan for the Revoked 1-Hour Ozone Standard, Ch. 2 p. 2-16,
available at: http://www.valleyair.org/Air_Quality_Plans/OzoneOneHourPlan
2013/02Chapter2ScienceTrendsModeling.pdf (visited March 10, 2015.....6

Ch. 2 p. 2-19 (visited March 12, 2015); *San Joaquin Valley Unified*
Air Pollution Control District 2008 PM2.5 Plan,
Appendix F, pp. F-2 – F-5, available at:
http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Final_Adopted
_PM2.5/20%20Appendix%20F.pdf (visited March 19, 2015).....6

San Joaquin Valley Unified Air Pollution Control District Rule 2201 §§ 2.0;
3.3.9; 4.14.1, available at:
http://www.valleyair.org/rules/currntrules/Rule22010411.pdf
(visited March 19, 2015).....7

San Joaquin Valley Unified Air Pollution Control District Guide to
Assessing and Mitigating Air Quality Impacts, (March 19, 2015) p. 22,
available at:
http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI%20Jan
%202002%20Rev.pdf (visited March 30, 2015).....7

San Joaquin Valley Unified Air Pollution Control District Environmental Review Guidelines (Aug. 2000) p. 4-11, available at: http://www.valleyair.org/transportation/CEQA%20Rules/ERG%20Adopted%20_August%202000_.pdf (visited March 12, 2015).....8

San Joaquin Valley Unified Air Pollution Control District 2007 Ozone Plan, Appendix B pp. B-6, B-9, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/19%20Appendix%20B%20April%202007.pdf (visited March 12, 2015).....9

I. INTRODUCTION.

The San Joaquin Valley Unified Air Pollution Control District ("Air District") respectfully submits that the Court of Appeal erred when it held that the air quality analysis contained in the Environmental Impact Report ("EIR") for the Friant Ranch development project was inadequate under the California Environmental Quality Act ("CEQA") because it did not include an analysis of the correlation between the project's criteria air pollutants and the potential adverse human health impacts. A close reading of the portion of the administrative record that gave rise to this issue demonstrates that the Court's holding is based on a misunderstanding of the distinction between toxic air contaminants and criteria air pollutants.

Toxic air contaminants, also known as hazardous air pollutants, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as birth defects. There are currently 189 toxic air contaminants (hereinafter referred to as "TACs") regulated by the United States Environmental Protection Agency ("EPA") and the states pursuant to the Clean Air Act. 42 U.S.C. § 7412. Common TACs include benzene, perchloroethylene and asbestos. *Id.* at 7412(b).

In contrast, there are only six (6) criteria air pollutants: ozone, particulate matter, carbon monoxide, nitrogen oxides, sulfur dioxide and lead. Although criteria air pollutants can also be harmful to human health,

they are distinguishable from TACs and are regulated separately. For instance, while criteria pollutants are regulated by numerous sections throughout Title I of the Clean Air Act, the regulation of TACs occurs solely under section 112 of the Act. *Compare* 42 U.S.C. §§ 7407 – 7411 & 7501 – 7515 *with* 42 U.S.C. § 7411.

The most relevant difference between criteria pollutants and TACs for purposes of this case is the manner in which human health impacts are accounted for. While it is common practice to analyze the correlation between an individual facility's TAC emissions and the expected localized human health impacts, such is not the case for criteria pollutants. Instead, the human health impacts associated with criteria air pollutants are analyzed and taken into consideration when EPA sets the national ambient air quality standard ("NAAQS") for each criteria pollutant. 42 U.S.C. § 7409(b)(1). The health impact of a particular criteria pollutant is analyzed on a regional and not a facility level based on how close the area is to complying with (attaining) the NAAQS. Accordingly, while the type of individual facility / health impact analysis that the Court of Appeal has required is a customary practice for TACs, it is not feasible to conduct a similar analysis for criteria air pollutants because currently available computer modeling tools are not equipped for this task.

It is clear from a reading of both the administrative record and the Court of Appeal's decision that the Court did not have the expertise to fully

appreciate the difference between TACs and criteria air pollutants. As a result, the Court has ordered the County of Fresno to conduct an analysis that is not practicable and not likely yield valid information. The Air District respectfully requests that this portion of the Court of Appeal's decision be reversed.

II. THE COURT OF APPEAL ERRED IN FINDING THE FRIANT RANCH EIR INADEQUATE FOR FAILING TO ANALYZE THE SPECIFIC HUMAN HEALTH IMPACTS ASSOCIATED CRITERIA AIR POLLUTANTS.

Although the Air District does not take lightly the amount of air emissions at issue in this case, it submits that the Court of Appeal got it wrong when it required Fresno County to revise the Friant Ranch EIR to include an analysis correlating the criteria air pollutant emissions associated with the project with specific, localized health-impacts. The type of analysis the Court of Appeal has required will not yield reliable information because currently available modeling tools are not well suited for this task. Further, in reviewing this issue de novo, the Court of Appeal failed to appreciate that it lacked the scientific expertise to appreciate the significant differences between a health risk assessment commonly performed for toxic air contaminants and a similar type of analysis it felt should have been conducted for criteria air pollutants.

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A. Currently Available Modeling Tools are not Equipped to Provide a Meaningful Analysis of the Correlation between an Individual Development Project's Air Emissions and Specific Human Health Impacts.

In order to appreciate the problematic nature of the Court of Appeals' decision requiring a health risk type analysis for criteria air pollutants, it is important to understand how the relevant criteria pollutants (ozone and particulate matter) are formed, dispersed and regulated.

Ground level ozone (smog) is not directly emitted into the air, but is formed when precursor pollutants such as oxides of nitrogen (NOx) and volatile organic compounds (VOCs) are emitted into the atmosphere and undergo complex chemical reactions in the process of sunlight.[1] Once formed, ozone can be transported long distances by wind.[2] Because of the complexity of ozone formation, a specific tonnage amount of NOx or VOCs emitted in a particular area does not equate to a particular concentration of ozone in that area. In fact, even rural areas that have relatively low tonnages of emissions of NOx or VOCs can have high levels of ozone concentration simply due to wind transport.[3] Conversely, the San Francisco Bay Area has six times more NOx and VOC emissions per square mile than the San Joaquin Valley, but experiences lower

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[1] *See* United States Environmental Protection Agency, *Ground-level Ozone: Basic Information*, available at: http://www.epa.gov/airquality/ozonepollution/basic.html (visited March 10, 2015).
[2] *Id.*
[3] *Id.*

concentrations of ozone (and better air quality) simply because sea breezes disperse the emissions.[4]

Particulate matter ("PM") can be divided into two categories: directly emitted PM and secondary PM.[5] While directly emitted PM can have a localized impact, the tonnage emitted does not always equate to the local PM concentration because it can be transported long distances by wind.[6] Secondary PM, like ozone, is formed via complex chemical reactions in the atmosphere between precursor chemicals such as sulfur dioxides (SOx) and NOx.[7] Because of the complexity of secondary PM formation, the tonnage of PM-forming precursor emissions in an area does not necessarily result in an equivalent concentration of secondary PM in that area.

The disconnect between the *tonnage* of precursor pollutants (NOx, SOx and VOCs) and the *concentration* of ozone or PM formed is important because it is not necessarily the tonnage of precursor pollutants that causes human health effects, but the concentration of resulting ozone or PM. Indeed, the national ambient air quality standards ("NAAQS"), which are statutorily required to be set by the United States Environmental Protection

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[4] *San Joaquin Valley Air Pollution Control District 2007 Ozone Plan*, Executive Summary p. ES-6, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/03%20Executive%20Summary.pdf (visited March 10, 2015).

[5] United States Environmental Protection Agency, *Particulate Matter: Basic Information*, available at: http://www.epa.gov/airquality/particlepollution/basic.html (visited March 10, 2015).

[6] *Id.*

[7] *Id.*

Agency ("EPA") at levels that are "requisite to protect the public health," 42 U.S.C. § 7409(b)(1), are established as concentrations of ozone or particulate matter and not as tonnages of their precursor pollutants.[8]

Attainment of a particular NAAQS occurs when the concentration of the relevant pollutant remains below a set threshold on a consistent basis throughout a particular region. For example, the San Joaquin Valley attained the 1-hour ozone NAAQS when ozone concentrations remained at or below 0.124 parts per million Valley-wide on 3 or fewer days over a 3-year period.[9] Because the NAAQS are focused on achieving a particular concentration of pollution region-wide, the Air District's tools and plans for attaining the NAAQS are regional in nature.

For instance, the computer models used to simulate and predict an attainment date for the ozone or particulate matter NAAQS in the San Joaquin Valley are based on regional inputs, such as regional inventories of precursor pollutants (NOx, SOx and VOCs) and the atmospheric chemistry and meteorology of the Valley.[10] At a very basic level, the models simulate future ozone or PM levels based on predicted changes in precursor

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[8] See, e.g., United States Environmental Protection Agency, *Table of National Ambient Air Quality Standards*, available at: http://www.epa.gov/air/criteria.html#3 (visited March 10, 2015).

[9] *San Joaquin Valley Unified Air Pollution Control District 2013 Plan for the Revoked 1-Hour Ozone Standard*, Ch. 2 p. 2-16, available at: http://www.valleyair.org/Air_Quality_Plans/OzoneOneHourPlan2013/02Chapter2ScienceTrendsModeling.pdf (visited March 10, 2015).

[10] *Id.* at Ch. 2 p. 2-19 (visited March 12, 2015); *San Joaquin Valley Unified Air Pollution Control District 2008 PM2.5 Plan*, Appendix F, pp. F-2 – F-5, available at: http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Final_Adopted_PM2.5/20%20Appendix%20F.pdf (visited March 19, 2015).

emissions Valley wide.[11] Because the NAAQS are set levels necessary to protect human health, the closer a region is to attaining a particular NAAQS, the lower the human health impact is from that pollutant.

The goal of these modeling exercises is not to determine whether the emissions generated by a particular factory or development project will affect the date that the Valley attains the NAAQS. Rather, the Air District's modeling and planning strategy is regional in nature and based on the extent to which *all* of the emission-generating sources in the Valley (current and future) must be controlled in order to reach attainment.[12]

Accordingly, the Air District has based its thresholds of significance for CEQA purposes on the levels that scientific and factual data demonstrate that the Valley can accommodate without affecting the attainment date for the NAAQS.[13] The Air District has tied its CEQA significance thresholds to the level at which stationary pollution sources permitted by the Air District must "offset" their emissions.[14] This "offset"

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[11] *Id.*

[12] Although the Air District does have a dispersion modeling tool used during its air permitting process that is used to predict whether a particular project's directly emitted PM will either cause an exceedance of the PM NAAQS or contribute to an existing exceedance, this model bases the prediction on a worst case scenario of emissions and meteorology and has no provision for predicting any associated human health impacts. Further, this analysis is only performed for stationary sources (factories, oil refineries, etc.) that are required to obtain a New Source Review permit from the Air District and not for development projects such as Friant Ranch over which the Air District has no preconstruction permitting authority. *See* San Joaquin Valley Unified Air Pollution Control District Rule 2201 §§ 2.0; 3.3.9; 4.14.1, available at: http://www.valleyair.org/rules/currntrules/Rule2201041l.pdf (visited March 19, 2015).

[13] *San Joaquin Valley Unified Air Pollution Control District Guide to Assessing and Mitigating Air Quality Impacts*, (March 19, 2015) p. 22, available at: http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI%20Jan%202002%20Rev.pdf (visited March 30, 2015).

[14] *Id.* at pp. 22, 25.

level allows for growth while keeping the cumulative effects of all new sources at a level that will not impede attainment of the NAAQS.[15] In the Valley, these thresholds are 15 tons per year of PM, and 10 tons of NOx or VOC per year. *Sierra Club, supra*, 172 Cal.Rptr.3d at 303; AR 4554. Thus, the CEQA air quality analysis for criteria pollutants is not really a localized, project-level impact analysis but one of regional, "cumulative impacts."

Accordingly, the significance thresholds applied in the Friant Ranch EIR (15 tons per year of PM and 10 tons of NOx or VOCs) are not intended to be indicative of any localized human health impact that the project may have. While the health effects of air pollution are of primary concern to the Air District (indeed, the NAAQS are established to protect human health), the Air District is simply not equipped to analyze whether and to what extent the criteria pollutant emissions of an individual CEQA project directly impact human health in a particular area. This is true even for projects with relatively high levels of emissions of criteria pollutant precursor emissions.

For instance, according to the EIR, the Friant Ranch project is estimated to emit 109.52 tons per year of ROG (VOC), 102.19 tons per year of NOx, and 117.38 tons per year of PM. Although these levels well

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[15] [15] *San Joaquin Valley Unified Air Pollution Control District Environmental Review Guidelines* (Aug. 2000) p. 4-11, available at: http://www.valleyair.org/transportation/CEQA%20Rules/ERG%20Adopted%20_August%202000_.pdf (visited March 12, 2015).

exceed the Air District's CEQA significance thresholds, this does not mean that one can easily determine the concentration of ozone or PM that will be created at or near the Friant Ranch site on a particular day or month of the year, or what specific health impacts will occur. Meteorology, the presence of sunlight, and other complex chemical factors all combine to determine the ultimate concentration and location of ozone or PM. This is especially true for a project like Friant Ranch where most of the criteria pollutant emissions derive not from a single "point source," but from area wide sources (consumer products, paint, etc.) or mobile sources (cars and trucks) driving to, from and around the site.

In addition, it would be extremely difficult to model the impact on NAAQS attainment that the emissions from the Friant Ranch project may have. As discussed above, the currently available modeling tools are equipped to model the impact of *all* emission sources in the Valley on attainment. According to the most recent EPA-approved emission inventory, the NOx inventory for the Valley is for the year 2014 is 458.2 tons per day, or 167,243 tons per year and the VOC (or ROG) inventory is 361.7 tons per day, or 132,020.5 tons per year.[16] Running the photochemical grid model used for predicting ozone attainment with the

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[16] *San Joaquin Valley Unified Air Pollution Control District 2007 Ozone Plan*, Appendix B pp. B-6, B-9,
available at:
http://www.valleyair.org/Air_Quality_Plans/docs/AQ_Ozone_2007_Adopted/19%20Appendix%20B%20April%202007.pdf (visited March 12, 2015).

emissions solely from the Friant Ranch project (which equate to less than one-tenth of one percent of the total NOx and VOC in the Valley) is not likely to yield valid information given the relative scale involved.

Finally, even once a model is developed to accurately ascertain local increases in concentrations of photochemical pollutants like ozone and some particulates, it remains impossible, using today's models, to correlate that increase in concentration to a specific health impact. The reason is the same: such models are designed to determine regional, population-wide health impacts, and simply are not accurate when applied at the local level.

For these reasons, it is not the norm for CEQA practitioners, including the Air District, to conduct an analysis of the localized health impacts associated with a project's criteria air pollutant emissions as part of the EIR process. When the accepted scientific method precludes a certain type of analysis, "the court cannot impose a legal standard to the contrary." *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692, 717 n. 8. However, that is exactly what the Court of Appeal has done in this case. Its decision upends the way CEQA air quality analysis of criteria pollutants occurs and should be reversed.

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B. The Court of Appeal Improperly Extrapolated a Request for a Health Risk Assessment for Toxic Air Contaminants into a Requirement that the EIR contain an Analysis of Localized Health Impacts Associated with Criteria Air Pollutants.

The Court of Appeal's error in requiring the new health impact analysis for criteria air pollutants clearly stems from a misunderstanding of terms of art commonly used in the air pollution field. More specifically, the Court of Appeal (and Appellants Sierra Club et al.) appear to have confused the health risk analysis ("HRA") performed to determine the health impacts associated with a project's toxic air contaminants ("TACs"), with an analysis correlating a project's criteria air pollutants (ozone, PM and the like) with specific localized health impacts.

The first type of analysis, the HRA, is commonly performed during the Air District's stationary source permitting process for projects that emit TACs and is, thus, incorporated into the CEQA review process. An HRA is a comprehensive analysis to evaluate and predict the dispersion of TACs emitted by a project and the potential for exposure of human populations. It also assesses and quantifies both the individual and population-wide health risks associated with those levels of exposure. There is no similar analysis conducted for criteria air pollutants. Thus, the second type of analysis (required by the Court of Appeal), is not currently part of the Air District's process because, as outlined above, the health risks associated

with exposure to criteria pollutants are evaluated on a regional level based on the region's attainment of the NAAQS.

The root of this confusion between the types of analyses conducted for TACs versus criteria air pollutants appears to stem from a comment that was presented to Fresno County by the City of Fresno during the administrative process.

In its comments on the draft EIR, the City of Fresno (the only party to raise this issue) stated:

> [t]he EIR must disclose the human health related effects of the Project's air pollution impacts. (CEQA Guidelines section 15126.2(a).) The EIR fails completely in this area. The EIR should be revised to disclose and determine the significance of TAC impacts, and of human health risks due to exposure to Project-related air emissions.

(AR 4602.)

In determining that the issue regarding the correlation between the Friant Ranch project's criteria air pollutants and adverse health impacts was adequately exhausted at the administrative level, the Court of Appeal improperly read the first two sentences of the City of Fresno's comment in isolation rather than in the context of the entire comment. *See Sierra Club v. County of Fresno* (2014) 172 Cal.Rptr.3d 271, 306. Although the comment first speaks generally in terms of "human health related effects" and "air pollution," it requests only that the EIR be revised to disclose "the significance of TACs" and the "human health risks due to exposure."

The language of this request in the third sentence of the comment is significant because, to an air pollution practitioner, the language would only have indicated only that a HRA for TACs was requested, and not a separate analysis of the health impacts associated with the project's criteria air pollutants. Fresno County clearly read the comment as a request to perform an HRA for TACs and limited its response accordingly. (AR 4602.)[17] The Air District submits that it would have read the City's comment in the same manner as the County because the City's use of the terms "human health risks" and "TACs" signal that an HRA for TACs is being requested. Indeed, the Air District was also concerned that an HRA be conducted, but understood that it was not possible to conduct such an analysis until the project entered the phase where detailed site specific information, such as the types of emission sources and the proximity of the sources to sensitive receptors became available. (AR 4553.)[18] The City of Fresno was apparently satisfied with the County's discussion of human health risks, as it did not raise the issue again when it commented on the final EIR. (AR 8944 – 8960.)

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[17] Appellants do not challenge the manner in which the County addressed TACs in the EIR. (Appellants' Answer Brief p. 28 fn. 7.)

[18] Appellants rely on the testimony of Air District employee, Dan Barber, as support for their position that the County should have conducted an analysis correlating the project's criteria air pollutant emissions with localized health impacts. (Appellants Answer Brief pp. 10-11; 28.) However, Mr. Barber's testimony simply reinforces the Air District's concern that a risk assessment (HRA) be conducted once the actual details of the project become available. (AR 8863.) As to criteria air pollutants, Mr. Barber's comments are aimed at the Air District's concern about the amount of emissions and the fact that the emissions will make it "more difficult for Fresno County and the Valley to reach attainment which means that the health of Valley residents maybe [sic] adversely impacted." Mr. Barber says nothing about conducting a separate analysis of the localized health impacts the project's emissions may have.

The Court of Appeal's holding, which incorrectly extrapolates a request for an HRA for TACs into a new analysis of the localized health impacts of the project's criteria air pollutants, highlights two additional errors in the Court's decision.

First, the Court of Appeal's holding illustrates why the Court should have applied the deferential substantial evidence standard of review to the issue of whether the EIR's air quality analysis was sufficient. The regulation of air pollution is a technical and complex field and the Court of Appeal lacked the expertise to fully appreciate the difference between TACs and criteria air pollutants and tools available for analyzing each type of pollutant.

Second, it illustrates that the Court likely got it wrong when it held that the issue regarding the criteria pollutant / localized health impact analysis was properly exhausted during the administrative process. In order to preserve an issue for the court, '[t]he "exact issue" must have been presented to the administrative agency....' [Citation.] *Citizens for Responsible Equitable Environmental Development v. City of San Diego*, (2011) 196 Cal.App.4th 515, 527 129 Cal.Rptr.3d 512, 521; *Sierra Club v. City of Orange* (2008) 163 Cal.App.4th 523, 535, 78 Cal.Rptr.3d 1, 13. "'[T]he objections must be sufficiently specific so that the agency has the

opportunity to evaluate and respond to them.' [Citation.]" *Sierra Club v. City of Orange*,163 Cal.App.4th at 536.[19]

As discussed above, the City's comment, while specific enough to request a commonly performed HRA for TACs, provided the County with no notice that it should perform a new type of analysis correlating criteria pollutant tonnages to specific human health effects. Although the parties have not directly addressed the issue of failure to exhaust administrative remedies in their briefs, the Air District submits that the Court should consider how it affects the issues briefed by the parties since "[e]xhaustion of administrative remedies is a jurisdictional prerequisite to maintenance of a CEQA action." *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1199, 22 Cal.Rptr.3d 203.

III. CONCLUSION

For all of the foregoing reasons, the Air District respectfully requests that the portion of the Court of Appeal's decision requiring an analysis correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

---

[19] *Sierra Club v. City of Orange*, is illustrative here. In that case, the plaintiffs challenged an EIR approved for a large planned community on the basis that the EIR improperly broke up the various environmental impacts by separate project components or "piecemealed" the analysis in violation of CEQA. In evaluating the defense that the plaintiffs had failed to adequately raise the issue at the administrative level, the Court held that comments such as *"the use of a single document for both a project-level and a program-level EIR [is] 'confusing',"* and *"[t]he lead agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the project,"* were too vague to fairly raise the argument of piecemealing before the agency. *Sierra Club v. City of Orange*, 163 Cal.App.4th at 537.

correlating the localized human health impacts associated with an individual project's criteria air pollutant emissions be reversed.

Respectfully submitted,

Dated: April 2, 2015

Catherine T. Redmond
Attorney for Proposed Amicus Curiae

SAN JOAQUIN VALLEY
UNIFIED
AIR POLLUTION CONTROL
DISTRICT

CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.204 of the California Rules of Court, I hereby certify that this document, based on the Word County feature of the Microsoft Word software program used to compose and print this document, contains, exclusive of caption, tables, certificate of word count, signature block and certificate of service, 3806 words.

Dated: April 2, 2015

Annette A. Ballatore-Williamson
District Counsel (SBN 192176)

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

PROOF OF SERVICE

I am over the age of 18 years and not a p[arty to the above-captioned action; that my business address is San Joaquin Valley Unified Air Pollution Control District located at 1990 E. Gettysburg Avenue, Fresno, California 93726.

On April 2, 2015, I served the document described below:

APPLICATION FOR LEAVE TO FILE AMICUS CURIAE BRIEF OF SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT IN SUPPORT OF DEFENDANT AND RESPONDENT, COUNTY OF FRESNO

On all parties to this action at the following addresses and in the following manner:

PLEASE SEE ATTACHED SERVICE LIST

(XX) **(BY MAIL)** I caused a true copy of each document(s) to be laced in a sealed envelope with first-class postage affixed and placed the envelope for collection. Mail is collected daily at my office and placed in a United State Postal Service collection box for pick-up and delivery that same day.

( ) **(BY ELECTRONIC MAIL)** I caused a true and correct scanned image (.PDF file) copy to be transmitted via electronic mail transfer system in place at the San Joaquin Valley Unified Air Pollution Control District ("District"), originating from the undersigned at 1990 E. Gettysburg Avenue, Fresno, CA, to the address(es) indicated below.

( ) **(BY OVERNIGHT MAIL)** I caused a true and correct copy to be delivered via Federal Express to the following person(s) or their representative at the address(es) listed below.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that I executed this document on April 2, 2015, at Fresno, California.

Esthela Soto

SERVICE LIST

Sierra Club et al, v. County of Fresno, et al
Supreme Court of California Case No.: S219783
Fifth District Court of Appeal Case No.: F066798
Fresno County Superior Court Case No.: 11CECG00726

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S219783

IN THE SUPREME COURT OF C ALIFORNIA

SIERRA CLUB, REVIVE THE SAN JOAQUIN, and
LEAGUE OF WOMEN VOTERS OF FRESNO,

Plaintiffs and Appellants,

v.

COUNTY OF FRESNO,

Defendant and Respondent,

and,

FRIANT RANCH, L.P.,

Real Party in Interest and Respondent.

SUPREME COURT
FILED
APR 13 2015
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Deputy

After a Published Decision by the Court of Appeal, filed May 27, 2014
Fifth Appellate District Case No. F066798

Appeal from the Superior Court of California, County of Fresno
Case No. 11CECG00726
Honorable Rosendo A. Pena, Jr.

APPLICATION OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT FOR LEAVE TO FILE BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY AND *[PROPOSED]* BRIEF OF *AMICUS CURIAE*

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TO THE HONORABLE CHIEF JUSTICE AND JUSTICES OF THE SUPREME COURT:

APPLICATION FOR LEAVE TO FILE *AMICUS CURIAE* BRIEF

Pursuant to Rule 8.520(f) of the California Rules of Court, the South Coast Air Quality Management District (SCAQMD) respectfully requests leave to file the attached *amicus curiae* brief. Because SCAQMD's position differs from that of either party, we request leave to submit this amicus brief in support of neither party.

HOW THIS BRIEF WILL ASSIST THE COURT

SCAQMD's proposed amicus brief takes a position on two of the issues in this case. In both instances, its position differs from that of either party. The issues are:

1) Does the California Environmental Quality Act (CEQA) require an environmental impact report (EIR) to correlate a project's air pollution emissions with specific levels of health impacts?
2) What is the proper standard of review for determining whether an EIR provides sufficient information on the health impacts caused by a project's emission of air pollutants?

This brief will assist the Court by discussing the practical realities of correlating identified air quality impacts with specific health outcomes. In short, CEQA requires agencies to provide detailed information about a project's air quality impacts that is sufficient for the public and decisionmakers to adequately evaluate the project and meaningfully understand its impacts. However, the level of analysis is governed by a rule of reason; CEQA only requires agencies to conduct analysis if it is reasonably feasible to do so.

With regard to health-related air quality impacts, an analysis that correlates a project's air pollution emissions with specific levels of health impacts will be feasible in some cases but not others. Whether it is feasible depends on a variety of factors, including the nature of the project and the nature of the analysis under consideration. The feasibility of analysis may also change over time as air districts and others develop new tools for measuring projects' air quality related health impacts. Because SCAQMD has among the most sophisticated air quality modeling and health impact evaluation capability of any of the air districts in the State, it is uniquely situated to express an opinion on the extent to which the Court should hold that CEQA requires lead agencies to correlate air quality impacts with specific health outcomes.

SCAQMD can also offer a unique perspective on the question of the appropriate standard of review. SCAQMD submits that the proper standard of review for determining whether an EIR is sufficient as an informational document is more nuanced than argued by either party. In our view, this is a mixed question of fact and law. It includes determining whether additional analysis is feasible, which is primarily a factual question that should be reviewed under the substantial evidence standard. However, it also involves determining whether the omission of a particular analysis renders an EIR insufficient to serve CEQA's purpose as a meaningful, informational document. If a lead agency has not determined that a requested analysis is infeasible, it is the court's role to determine whether the EIR nevertheless meets CEQA's purposes, and courts should not defer to the lead agency's conclusions regarding the legal sufficiency of an EIR's analysis. The ultimate question of whether an EIR's analysis is "sufficient" to serve CEQA's informational purposes is predominately a question of law that courts should review de novo.

This brief will explain the rationale for these arguments and may assist the Court in reaching a conclusion that accords proper respect to a lead agency's factual conclusions while maintaining judicial authority over the ultimate question of what level of analysis CEQA requires.

STATEMENT OF INTEREST OF *AMICUS CURIAE*

The SCAQMD is the regional agency primarily responsible for air pollution control in the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of the Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410; Cal. Code Regs., tit. 17, § 60104.) The SCAQMD participates in the CEQA process in several ways. Sometimes it acts as a lead agency that prepares CEQA documents for projects. Other times it acts as a responsible agency when it has permit authority over some part of a project that is undergoing CEQA review by a different lead agency. Finally, SCAQMD also acts as a commenting agency for CEQA documents that it receives because it is a public agency with jurisdiction by law over natural resources affected by the project.

In all of these capacities, SCAQMD will be affected by the decision in this case. SCAQMD sometimes submits comments requesting that a lead agency perform an additional type of air quality or health impacts analysis. On the other hand, SCAQMD sometimes determines that a particular type of health impact analysis is not feasible or would not produce reliable and informative results. Thus, SCAQMD will be affected by the Court's resolution of the extent to which CEQA requires EIRs to correlate emissions and health impacts, and its resolution of the proper standard of review.

CERTIFICATION REGARDING AUTHORSHIP AND FUNDING

No party or counsel in the pending case authored the proposed amicus curiae brief in whole or in part, or made any monetary contribution intended to fund the preparation or submission of the brief. No person or entity other than the proposed *Amicus Curiae* made any monetary contribution intended to fund the preparation or submission of the brief.

Respectfully submitted,

DATED: April 3, 2015

SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT
KURT R. WIESE, GENERAL COUNSEL
BARBARA BAIRD, CHIEF DEPUTY COUNSEL

By: Barbara Baird
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SOUTH COAST AIR QUALITY
MANAGEMENT DISTICT

BRIEF OF AMICUS CURIAE

SUMMARY OF ARGUMENT

The South Coast Air Quality Management District (SCAQMD) submits that this Court should not try to establish a hard-and-fast rule concerning whether lead agencies are required to correlate emissions of air pollutants with specific health consequences in their environmental impact reports (EIR). The level of detail required in EIRs is governed by a few, core CEQA (California Environmental Quality Act) principles. As this Court has stated, "[a]n EIR must include detail sufficient to enable those who did not participate in its preparation to understand and to consider meaningfully the issues raised by the proposed project." (*Laurel Heights Improvement Assn. v. Regents of the Univ of Cal.* (1988) 47 Cal.3d 376, 405 ["*Laurel Heights I*"]) Accordingly, "an agency must use its best efforts to find out and disclose all that it reasonably can." (*Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412, 428 (quoting CEQA Guidelines § 15144)[1].). However, "[a]nalysis of environmental effects need not be exhaustive, but will be judged in light of what is reasonably feasible." (*Association of Irritated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383, 1390; CEQA Guidelines §§ 15151, 15204(a).)

With regard to analysis of air quality related health impacts, EIRs must generally quantify a project's pollutant emissions, but in some cases it is not feasible to correlate these emissions to specific, quantifiable health impacts (e.g., premature mortality; hospital admissions). In such cases, a general description of the adverse health impacts resulting from the pollutants at issue may be sufficient. In other cases, due to the magnitude

[1] The CEQA Guidelines are found at Cal. Code Regs., tit. 14 §§ 15000, *et seq.*

or nature of the pollution emissions, as well as the specificity of the project involved, it may be feasible to quantify health impacts. Or there may be a less exacting, but still meaningful analysis of health impacts that can feasibly be performed. In these instances, agencies should disclose those impacts.

SCAQMD also submits that whether or not an EIR complies with CEQA's informational mandates by providing sufficient, feasible analysis is a mixed question of fact and law. Pertinent here, the question of whether an EIR's discussion of health impacts from air pollution is sufficient to allow the public to understand and consider meaningfully the issues involves two inquiries: (1) Is it feasible to provide the information or analysis that a commenter is requesting or a petitioner is arguing should be required?; and (2) Even if it is feasible, is the agency relying on other policy or legal considerations to justify not preparing the requested analysis? The first question of whether an analysis is feasible is primarily a question of fact that should be judged by the substantial evidence standard. The second inquiry involves evaluating CEQA's information disclosure purposes against the asserted reasons to not perform the requested analysis. For example, an agency might believe that its EIR meets CEQA's informational disclosure standards even without a particular analysis, and therefore choose not to conduct that analysis. SCAQMD submits that this is more of a legal question, which should be reviewed de novo as a question of law.

ARGUMENT

I. RELEVANT FACTUAL AND LEGAL FRAMEWORK.

A. Air Quality Regulatory Background

The South Coast Air Quality Management District (SCAQMD) is one of the local and regional air pollution control districts and air quality

management districts in California. The SCAQMD is the regional air pollution agency for the South Coast Air Basin, which consists of all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties. (Health & Saf. Code § 40410, 17 Cal. Code Reg. § 60104.) The SCAQMD also includes the Coachella Valley in Riverside County (Palm Springs area to the Salton Sea). (SCAQMD, *Final 2012 AQMP (Feb. 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "chapter 7" hyperlink; pp 7-1, 7-3 (last visited Apr. 1, 2015).) The SCAQMD's jurisdiction includes over 16 million residents and has the worst or nearly the worst air pollution levels in the country for ozone and fine particulate matter. (SCAQMD, *Final 2012 AQMP (Feb. 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "Executive Summary" hyperlink p. ES-1 (last visited Apr. 1, 2015).)

Under California law, the local and regional districts are primarily responsible for controlling air pollution from all sources except motor vehicles. (Health & Saf. Code § 40000.) The California Air Resources Board (CARB), part of the California Environmental Protection Agency, is primarily responsible for controlling pollution from motor vehicles. (*Id.*) The air districts must adopt rules to achieve and maintain the state and federal ambient air quality standards within their jurisdictions. (Health & Saf. Code § 40001.)

The federal Clean Air Act (CAA) requires the United States Environmental Protection Agency (EPA) to identify pollutants that are widely distributed and pose a threat to human health, developing a so-called "criteria" document. (42 U.S.C. § 7408; CAA § 108.) These pollutants are frequently called "criteria pollutants." EPA must then establish "national ambient air quality standards" at levels "requisite to protect public health",

allowing "an adequate margin of safety." (42 U.S.C. § 7409; CAA § 109.) EPA has set standards for six identified pollutants: ozone, nitrogen dioxide, sulfur dioxide, carbon monoxide, particulate matter (PM), and lead. (U.S. EPA, National Ambient Air Quality Standards (NAAQS), http://www.epa.gov/air/criteria.html (last updated Oct. 21, 2014).)[2]

Under the Clean Air Act, EPA sets emission standards for motor vehicles and "nonroad engines" (mobile farm and construction equipment, marine vessels, locomotives, aircraft, etc.). (42 U.S.C. §§ 7521, 7547; CAA §§ 202, 213.) California is the only state allowed to establish emission standards for motor vehicles and most nonroad sources; however, it may only do so with EPA's approval. (42 U.S.C. §§ 7543(b), 7543(e); CAA §§ 209(b), 209(c).) Sources such as manufacturing facilities, power plants and refineries that are not mobile are often referred to as "stationary sources." The Clean Air Act charges state and local agencies with the primary responsibility to attain the national ambient air quality standards. (42 U.S.C. § 7401(a)(3); CAA § 101(a)(3).) Each state must adopt and implement a plan including enforceable measures to achieve and maintain the national ambient air quality standards. (42 U.S.C. § 7410; CAA § 110.) The SCAQMD and CARB jointly prepare portion of the plan for the South Coast Air Basin and submit it for approval by EPA. (Health & Saf. Code §§ 40460, et seq.)

The Clean Air Act also requires state and local agencies to adopt a permit program requiring, among other things, that new or modified "major" stationary sources use technology to achieve the "lowest achievable emission rate," and to control minor stationary sources as

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[2] Particulate matter (PM) is further divided into two categories: fine particulate or $PM_{2.5}$ (particles with a diameter of less than or equal to 2.5 microns) and coarse particulate (PM_{10}) (particles with a diameter of 10 microns or less). (U.S. EPA, Particulate Matter (PM), http://www.epa.gov/airquality/particlepollution/ (last visited Apr. 1, 2015).)

needed to help attain the standards. (42 U.S.C. §§ 7502(c)(5), 7503(a)(2), 7410(a)(2)(C); CAA §§ 172(c)(5), 173(a)(2), 110(a)(2)(C).) The air districts implement these permit programs in California. (Health & Saf. Code §§ 42300, et seq.)

The Clean Air Act also sets out a regulatory structure for over 100 so-called "hazardous air pollutants" calling for EPA to establish "maximum achievable control technology" (MACT) for sources of these pollutants. (42 U.S.C. § 7412(d)(2); CAA § 112(d)(2).) California refers to these pollutants as "toxic air contaminants" (TACs) which are subject to two state-required programs. The first program requires "air toxics control measures" for specific categories of sources. (Health & Saf. Code § 39666.) The other program requires larger stationary sources and sources identified by air districts to prepare "health risk assessments" for impacts of toxic air contaminants. (Health & Saf. Code §§ 44320(b), 44322, 44360.) If the health risk exceeds levels identified by the district as "significant," the facility must implement a "risk reduction plan" to bring its risk levels below "significant" levels. Air districts may adopt additional more stringent requirements than those required by state law, including requirements for toxic air contaminants. (Health & Saf. Code § 41508; *Western Oil & Gas Assn. v. Monterey Bay Unified APCD* (1989) 49 Cal.3d 408, 414.) For example, SCAQMD has adopted a rule requiring new or modified sources to keep their risks below specified levels and use best available control technology (BACT) for toxics. (SCAQMD, *Rule 1401-New Source Review of Toxic Air Contaminants*, http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiv; then follow "Rule 1401" hyperlink (last visited Apr. 1, 2015).)

B. The SCAQMD's Role Under CEQA

The California Environmental Quality Act (CEQA) requires public agencies to perform an environmental review and appropriate analysis for projects that they implement or approve. (Pub. Resources Code § 21080(a).) The agency with primary approval authority for a particular project is generally the "lead agency" that prepares the appropriate CEQA document. (CEQA Guidelines §§ 15050, 15051.) Other agencies having a subsequent approval authority over all or part of a project are called "responsible" agencies that must determine whether the CEQA document is adequate for their use. (CEQA Guidelines §§ 15096(c), 15381.) Lead agencies must also consult with and circulate their environmental impact reports to "trustee agencies" and agencies "with jurisdiction by law" including "authority over resources which may be affected by the project." (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines §§ 15086(a)(3), 15073(c).) The SCAQMD has a role in all these aspects of CEQA.

Fulfilling its responsibilities to implement its air quality plan and adopt rules to attain the national ambient air quality standards, SCAQMD adopts a dozen or more rules each year to require pollution reductions from a wide variety of sources. The SCAQMD staff evaluates each rule for any adverse environmental impact and prepares the appropriate CEQA document. Although most rules reduce air emissions, they may have secondary environmental impacts such as use of water or energy or disposal of waste—e.g., spent catalyst from control equipment.[3]

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[3] The SCAQMD's CEQA program for its rules is a "Certified Regulatory Program" under which it prepares a "functionally equivalent" document in lieu of a negative declaration or EIR. (Pub. Resources Code § 21080.5, CEQA Guidelines § 15251(l).)

The SCAQMD also approves a large number of permits every year to construct new, modified, or replacement facilities that emit regulated air pollutants. The majority of these air pollutant sources have already been included in an earlier CEQA evaluation for a larger project, are currently being evaluated by a local government as lead agency, or qualify for an exemption. However, the SCAQMD sometimes acts as lead agency for major projects where the local government does not have a discretionary approval. In such cases, SCAQMD prepares and certifies a negative declaration or environmental impact report (EIR) as appropriate.[4] SCAQMD evaluates perhaps a dozen such permit projects under CEQA each year. SCAQMD is often also a "responsible agency" for many projects since it must issue a permit for part of the projects (e.g., a boiler used to provide heat in a commercial building). For permit projects evaluated by another lead agency under CEQA, SCAQMD has the right to determine that the CEQA document is inadequate for its purposes as a responsible agency, but it may not do so because its permit program already requires all permitted sources to use the best available air pollution control technology. (SCAQMD, *Rule 1303(a)(1) – Requirements*, http://www.aqmd.gov/home/regulations/rules/scaqmd-rule-book/regulation-xiii; then follow "Rule 1303" hyperlink (last visited Apr. 1, 2015).)

Finally, SCAQMD receives as many as 60 or more CEQA documents each month (around 500 per year) in its role as commenting agency or an agency with "jurisdiction by law" over air quality—a natural resource affected by the project. (Pub. Resources Code §§ 21104(a), 21153; CEQA Guidelines § 15366(a)(3).) The SCAQMD staff provides comments on as many as 25 or 30 such documents each month.

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[4] The SCAQMD's permit projects are not included in its Certified Regulatory Program, and are evaluated under the traditional local government CEQA analysis. (Pub. Resources Code §§ 21150-21154.)

(SCAQMD Governing Board Agenda, Apr. 3, 2015, Agenda Item 16, Attachment A, http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-april-3-2015; then follow "16. Lead Agency Projects and Environmental Documents Received by SCAQMD" hyperlink (last visited Apr. 1, 2015).) Of course, SCAQMD focuses its commenting efforts on the more significant projects.

Typically, SCAQMD comments on the adequacy of air quality analysis, appropriateness of assumptions and methodology, and completeness of the recommended air quality mitigation measures. Staff may comment on the need to prepare a health risk assessment detailing the projected cancer and noncancer risks from toxic air contaminants resulting from the project, particularly the impacts of diesel particulate matter, which CARB has identified as a toxic air contaminant based on its carcinogenic effects. (California Air Resources Board, Resolution 98-35, Aug. 27, 1998, http://www.arb.ca.gov/regact/diesltac/diesltac.htm; then follow Resolution 98-35 hyperlink (last visited Apr. 1, 2015).) Because SCAQMD already requires new or modified stationary sources of toxic air contaminants to use the best available control technology for toxics and to keep their risks below specified levels, (SCAQMD Rule 1401, supra, note 15), the greatest opportunity to further mitigate toxic impacts through the CEQA process is by reducing emissions—particularly diesel emissions—from vehicles.

II. THIS COURT SHOULD NOT SET A HARD-AND-FAST RULE CONCERNING THE EXTENT TO WHICH AN EIR MUST CORRELATE A PROJECT'S EMISSION OF POLLUTANTS WITH RESULTING HEALTH IMPACTS.

Numerous cases hold that courts do not review the correctness of an EIR's conclusions but rather its sufficiency as an informative document. (*Laurel Heights 1, supra*, 47 Cal.3d at p. 392; *Citizens of Goleta Valley v.*

Bd. of Supervisors (1990) 52 Cal.3d 553, 569; *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1197.)

As stated by the Court of Appeal in this case, where an EIR has addressed a topic, but the petitioner claims that the information provided about that topic is insufficient, courts must "draw[] a line that divides *sufficient* discussions from those that are *insufficient*." (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) The Court of Appeal readily admitted that "[t]he terms themselves – sufficient and insufficient – provide little, if any, guidance as to where the line should be drawn. They are simply labels applied once the court has completed its analysis." (*Id.*)

The CEQA Guidelines, however, provide guidance regarding what constitutes a sufficient discussion of impacts. Section 15151 states that "the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible." Case law reflects this: "Analysis of environmental effects need not be exhaustive, but will be judged in light of what was reasonably feasible." (*Association of Irritated Residents v. County of Madera, supra,* 107 Cal.App.4th at p. 1390; see also CEQA Guidelines § 15204(a).)

Applying this test, this Court cannot realistically establish a hard-and-fast rule that an analysis correlating air pollution impacts of a project to quantified resulting health impacts is always required, or indeed that it is never required. Simply put, in some cases such an analysis will be "feasible"; in some cases it will not.

For example, air pollution control districts often require a proposed new source of toxic air contaminants to prepare a "health risk assessment" before issuing a permit to construct. District rules often limit the allowable cancer risk the new source may cause to the "maximally exposed individual" (worker and residence exposures). (*See, e.g.*, SCAQMD Rule 1401(c)(8); 1401(d)(1), *supra* note 15.) In order to perform this analysis, it

is necessary to have data regarding the sources and types of air toxic contaminants, location of emission points, velocity of emissions, the meteorology and topography of the area, and the location of receptors (worker and residence). (SCAQMD, *Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act (AB2588), pp. 11-16*; (last visited Apr. 1, 2015) http://www.aqmd.gov/home/library/documents-support-material; "Guidelines" hyperlink; AB2588; then follow AB2588 Risk Assessment Guidelines hyperlink.)

Thus, it is feasible to determine the health risk posed by a new gas station locating at an intersection in a mixed use area, where receptor locations are known. On the other hand, it may not be feasible to perform a health risk assessment for airborne toxics that will be emitted by a generic industrial building that was built on "speculation" (i.e., without knowing the future tenant(s)). Even where a health risk assessment can be prepared, however, the resulting maximum health risk value is only a calculation of risk—it does not necessarily mean anyone will contract cancer as a result of the project.

In order to find the "cancer burden" or expected additional cases of cancer resulting from the project, it is also necessary to know the numbers and location of individuals living within the "zone of impact" of the project: i.e., those living in areas where the projected cancer risk from the project exceeds one in a million. (SCAQMD, Health Risk Assessment Summary form, http://www.aqmd.gov/home/forms ; filter by "AB2588" category; then "Health Risk Assessment" hyperlink (last visited Apr. 1, 2015).) The affected population is divided into bands of those exposed to at least 1 in a million risk, those exposed to at least 10 in a million risk, etc. up to those exposed at the highest levels. (*Id.*) This data allows agencies to calculate an approximate number of additional cancer cases expected from

the project. However, it is not possible to predict which particular individuals will be affected.

For the so-called criteria pollutants[5], such as ozone, it may be more difficult to quantify health impacts. Ozone is formed in the atmosphere from the chemical reaction of the nitrogen oxides (NO_x) and volatile organic compounds (VOC) in the presence of sunlight. (U.S. EPA, Ground Level Ozone, http://www.epa.gov/airquality/ozonepollution/ (last updated Mar. 25, 2015).) It takes time and the influence of meteorological conditions for these reactions to occur, so ozone may be formed at a distance downwind from the sources. (U.S. EPA, *Guideline on Ozone Monitoring Site Selection* (Aug. 1998) EPA-454/R-98-002 § 5.1.2, http://www.epa.gov/ttnamti1/archive/cpreldoc.html (last visited Apr. 1, 2015).) NO_x and VOC are known as "precursors" of ozone.

Scientifically, health effects from ozone are correlated with increases in the ambient level of ozone in the air a person breathes. (U.S. EPA, *Health Effects of Ozone in the General Population,* Figure 9, http://www.epa.gov/apti/ozonehealth/population.html#levels (last visited Apr. 1, 2015).) However, it takes a large amount of additional precursor emissions to cause a modeled increase in ambient ozone levels over an entire region. For example, the SCAQMD's 2012 AQMP showed that reducing NO_x by 432 tons per day (157,680 tons/year) and reducing VOC by 187 tons per day (68,255 tons/year) would reduce ozone levels at the SCAQMD's monitor site with the highest levels by only 9 parts per billion. (South Coast Air Quality Management District, *Final 2012 AQMP (February 2013)*, http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan; then follow "Appendix V: Modeling & Attainment Demonstrations" hyperlink,

[5] See discussion of types of pollutants, supra, Part I.A.

pp. v-4-2, v-7-4, v-7-24.) SCAQMD staff does not currently know of a way to accurately quantify ozone-related health impacts caused by NO_x or VOC emissions from relatively small projects.

On the other hand, this type of analysis may be feasible for projects on a regional scale with very high emissions of NO_x and VOCs, where impacts are regional. For example, in 2011 the SCAQMD performed a health impact analysis in its CEQA document for proposed Rule 1315, which authorized various newly-permitted sources to use offsets from the districts "internal bank" of emission reductions. This CEQA analysis accounted for essentially *all* the increases in emissions due to new or modified sources in the District between 2010 and 2030.[6] The SCAQMD was able to correlate this very large emissions increase (e.g., 6,620 pounds per day NO_x (1,208 tons per year), 89,180 pounds per day VOC (16,275 tons per year)) to expected health outcomes from ozone and particulate matter (e.g., 20 premature deaths per year and 89,947 school absences in the year 2030 due to ozone).[7] (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System* (see hyperlink in fn 6*)* at p. 4.1-35, Table 4.1-29.)

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[6] (SCAQMD Governing Board Agenda, February 4, 2011, Agenda Item 26, Attachment G, *Assessment for: Re-adoption of Proposed Rule 1315 – Federal New Source Review Tracking System, Vol. 1, p.4.0-6,* http://www.aqmd.gov/home/library/meeting-agendas-minutes/agenda?title=governing-board-meeting-agenda-february-4-2011; the follow "26. Adopt Proposed Rule 1315 – Federal New Source Review Tracking System" (last visited April 1, 2015).)

[7] The SCAQMD was able to establish the location of future NO_x and VOC emissions by assuming that new projects would be built in the same locations and proportions as existing stationary sources. This CEQA document was upheld by the Los Angeles County Superior Court in *Natural Res. Def. Council v SCAQMD*, Los Angeles Superior Court No. BS110792).

However, a project emitting only 10 tons per year of NO_x or VOC is small enough that its regional impact on ambient ozone levels may not be detected in the regional air quality models that are currently used to determine ozone levels. Thus, in this case it would not be feasible to directly correlate project emissions of VOC or NO_x with specific health impacts from ozone. This is in part because ozone formation is not linearly related to emissions. Ozone impacts vary depending on the location of the emissions, the location of other precursor emissions, meteorology and seasonal impacts, and because ozone is formed some time later and downwind from the actual emission. (EPA Guideline on Ozone Monitoring Site Selection (Aug. 1998) EPA-454/R-98-002, § 5.1.2; https://www.epa.gov/ttnamti1/archive/cpreldoc.html; then search "Guideline on Ozone Monitoring Site Selection" click on pdf) (last viewed Apr. 1, 2015).)

SCAQMD has set its CEQA "significance" threshold for NO_x and VOC at 10 tons per year (expressed as 55 lb/day). (SCAQMD, *Air Quality Analysis Handbook*, http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook; then follow "SCAQMD Air Quality Significance Thresholds" hyperlink (last visited Apr. 1, 2015).) This is because the federal Clean Air Act defines a "major" stationary source for "extreme" ozone nonattainment areas such as SCAQMD as one emitting 10 tons/year. (42 U.S.C. §§ 7511a(e), 7511a(f); CAA §§ 182(e), 182(f).) Under the Clean Air Act, such sources are subject to enhanced control requirements (42 U.S.C. §§ 7502(c)(5), 7503; CAA §§ 172(c)(5), 173), so SCAQMD decided this was an appropriate threshold for making a CEQA "significance" finding and requiring feasible mitigation. Essentially, SCAQMD takes the position that a source that emits 10 tons/year of NO_x or VOC would contribute cumulatively to ozone formation. Therefore, lead agencies that use SCAQMD's thresholds of significance may determine

that many projects have "significant" air quality impacts and must apply all feasible mitigation measures, yet will not be able to precisely correlate the project to quantifiable health impacts, unless the emissions are sufficiently high to use a regional modeling program.

In the case of particulate matter ($PM_{2.5}$)[8], another "criteria" pollutant, SCAQMD staff is aware of two possible methods of analysis. SCAQMD used regional modeling to predict expected health impacts from its proposed Rule 1315, as mentioned above. Also, the California Air Resources Board (CARB) has developed a methodology that can predict expected mortality (premature deaths) from large amounts of $PM_{2.5}$. (California Air Resources Board, *Health Impacts Analysis: PM Premature Death Relationship*, http://www.arb.ca.gov/research/health/pm-mort/pm-mort_arch.htm (last reviewed Jan. 19, 2012).) SCAQMD used the CARB methodology to predict impacts from three very large power plants (e.g., 731-1837 lbs/day). (Final Environmental Assessment for Rule 1315, *supra*, pp 4.0-12, 4.1-13, 4.1-37 (e.g., 125 premature deaths in the entire SCAQMD in 2030), 4.1-39 (0.05 to 1.77 annual premature deaths from power plants.) Again, this project involved large amounts of additional $PM_{2.5}$ in the District, up to 2.82 tons/day (5,650 lbs/day of $PM_{2.5}$, or, or 1029 tons/year. (*Id.* at table 4.1-4, p. 4.1-10.)

However, the primary author of the CARB methodology has reported that this $PM_{2.5}$ health impact methodology is not suited for small projects and may yield unreliable results due to various uncertainties. [9] (SCAQMD, *Final Subsequent Mitigated Negative Declaration for: Warren*

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[8] SCAQMD has not attained the latest annual or 24-hour national ambient air quality standards for "$PM_{2.5}$" or particulate matter less than 2.5 microns in diameter.

[9] Among these uncertainties are the representativeness of the population used in the methodology, and the specific source of PM and the corresponding health impacts. (*Id.* at p. 2-24.)

E&P, Inc. WTU Central Facility, New Equipment Project (certified July 19, 2011), http://www.aqmd.gov/home/library/documents-support-material/lead-agency-permit-projects/permit-project-documents---year-2011; then follow "Final Subsequent Mitigated Negative Declaration for Warren E&P Inc. WTU Central Facility, New Equipment Project" hyperlink, pp. 2-22, 2-23 (last visited Apr. 1, 2015).) Therefore, when SCAQMD prepared a CEQA document for the expansion of an existing oil production facility, with very small $PM_{2.5}$ increases (3.8 lb/day) and a very small affected population, staff elected not to use the CARB methodology for using estimated $PM_{2.5}$ emissions to derive a projected premature mortality number and explained why it would be inappropriate to do so. (*Id.* at pp 2-22 to 2-24.) SCAQMD staff concluded that use of this methodology for such a small source could result in unreliable findings and would not provide meaningful information. (*Id.* at pp. 2-23, 2-25.) This CEQA document was not challenged in court.

In the above case, while it may have been technically possible to plug the data into the methodology, the results would not have been reliable or meaningful. SCAQMD believes that an agency should not be required to perform analyses that do not produce reliable or meaningful results. This Court has already held that an agency may decline to use even the "normal" "existing conditions" CEQA baseline where to do so would be misleading or without informational value. (*Neighbors for Smart Rail v. Exposition Metro Line* (2013) 57 Cal.4th 439, 448, 457.) The same should be true for a decision that a particular study or analysis would not provide reliable or meaningful results.[10]

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[10] Whether a particular study would result in "informational value" is a part of deciding whether it is "feasible." CEQA defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and

Therefore, it is not possible to set a hard-and-fast rule on whether a correlation of air quality impacts with specific quantifiable health impacts is required in all cases. Instead, the result turns on whether such an analysis is reasonably feasible in the particular case.[11] Moreover, what is reasonably feasible may change over time as scientists and regulatory agencies continually seek to improve their ability to predict health impacts. For example, CARB staff has been directed by its Governing Board to reassess and improve the methodology for estimating premature deaths. (California Air Resources Board, *Health Impacts Analysis: PM Mortality Relationship*, http://www.arb.ca.gov/research/health/pm-mort/pm-mort.htm (last reviewed Dec. 29, 2010).) This factor also counsels against setting any hard-and-fast rule in this case.

III. THE QUESTION OF WHETHER AN EIR CONTAINS SUFFICIENT ANALYSIS TO MEET CEQA'S REQUIREMENTS IS A MIXED QUESTION OF FACT AND LAW GOVERNED BY TWO DIFFERENT STANDARDS OF REVIEW.

A. Standard of Review for Feasibility Determination and Sufficiency as an Informative Document

A second issue in this case is whether courts should review an EIR's informational sufficiency under the "substantial evidence" test as argued by Friant Ranch or the "independent judgment" test as argued by Sierra Club.

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technological factors." (Pub. Resources Code § 21061.1.) A study cannot be "accomplished in a *successful* manner" if it produces unreliable or misleading results.

[11] In this case, the lead agency did not have an opportunity to determine whether the requested analysis was feasible because the comment was non-specific. Therefore, SCAQMD suggests that this Court, after resolving the legal issues in the case, direct the Court of Appeal to remand the case to the lead agency for a determination of whether the requested analysis is feasible. Because Fresno County, the lead agency, did not seek review in this Court, it seems likely that the County has concluded that at least some level of correlation of air pollution with health impacts is feasible.

As this Court has explained, "a reviewing court must adjust its scrutiny to the nature of the alleged defect, depending on whether the claim is predominantly one of improper procedure or a dispute over the facts." (*Vineyard Area Citizens v. City of Rancho Cordova, supra,* 40 Cal.4th at 435.) For questions regarding compliance with proper procedure or other legal questions, courts review an agency's action de novo under the "independent judgment" test. (*Id.*) On the other hand, courts review factual disputes only for substantial evidence, thereby "accord[ing] greater deference to the agency's substantive factual conclusions." (*Id.*)

Here, Friant Ranch and Sierra Club agree that the case involves the question of whether an EIR includes sufficient information regarding a project's impacts. However, they disagree on the proper standard of review for answering this question: Sierra Club contends that courts use the independent judgment standard to determine whether an EIR's analysis is sufficient to meet CEQA's informational purposes,[12] while Friant Ranch contends that the substantial evidence standard applies to this question.

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[12] Sierra Club acknowledges that courts use the substantial evidence standard when reviewing predicate factual issues, but argues that courts ultimately decide as a matter of law what CEQA requires. (Answering Brief, pp. 14, 23.)

SCAQMD submits that the issue is more nuanced than either party contends. We submit that, whether a CEQA document includes sufficient analysis to satisfy CEQA's informational mandates is a mixed question of fact and law,[13] containing two levels of inquiry that should be judged by different standards.[14]

The state CEQA Guidelines set forth standards for the adequacy of environmental analysis. Guidelines Section 15151 states:

> An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection, but for adequacy, completeness, and a good-faith effort at full disclosure.

In this case, the basic question is whether the underlying analysis of air quality impacts made the EIR "sufficient" as an informative document. However, whether the EIR's analysis was sufficient is judged in light of what was reasonably feasible. This represents a mixed question of fact and law that is governed by two different standards of review.

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[13] Friant Ranch actually states that the claim that an EIR lacks sufficient relevant information is, "most properly thought of as raising mixed questions of fact and law." (Opening Brief, p. 27.) However, the remainder of its argument claims that the court should apply the substantial evidence standard of review to all aspects of the issue.

[14] Mixed questions of fact and law issues may implicate predominantly factual subordinate questions that are reviewed under the substantial evidence test even though the ultimate question may be reviewed by the independent judgment test. *Crocker National Bank v. City and County of San Francisco* (1989) 49 Cal.3d 881, 888-889.

SCAQMD submits that an EIR's sufficiency as an informational document is ultimately a legal question that courts should determine using their independent judgment. This Court's language in *Laurel Heights I* supports this position. As this Court explained: "The court does not pass upon the correctness of the EIR's environmental conclusions, but only upon its *sufficiency as an informative document.*" (*Laurel Heights I, supra,* 47 Cal.3d at 392-393) (emphasis added.) As described above, the Court in *Vineyard Area Citizens v. City of Rancho Cordova, supra,* 40 Cal.4th at 431, also used its independent judgment to determine what level of analysis CEQA requires for water supply impacts. The Court did not defer to the lead agency's opinion regarding the law's requirements; rather, it determined for itself what level of analysis was necessary to meet "[t]he law's informational demands." (*Id.* at p. 432.) Further, existing case law also holds that where an agency fails to comply with CEQA's information disclosure requirements, the agency has "failed to proceed in the manner required by law." (*Save Our Peninsula Comm. v. Monterey County Bd. of Supervisors* (2001) 87 Cal.App.4th 99, 118.)

However, whether an EIR satisfies CEQA's requirements depends in part on whether it was reasonably feasible for an agency to conduct additional or more thorough analysis. EIRs must contain "a detailed statement" of a project's impacts (Pub. Res. Code § 21061), and an agency must "use its best efforts to find out and disclose all that it reasonably can." (CEQA Guidelines § 15144.) Nevertheless, "the sufficiency of an EIR is to be reviewed in light of what is reasonably feasible." (CEQA Guidelines § 15151.)

SCAQMD submits that the question of whether additional analysis or a particular study suggested by a commenter is "feasible" is generally a question of fact. Courts have already held that whether a particular alternative is "feasible" is reviewed by the substantial evidence test.

(*Uphold Our Heritage v. Town of Woodside* (2007) 147 Cal.App.4th 587, 598-99; *Center for Biological Diversity v. County of San Bernardino* (2010) 185 Cal.App.4th 866, 883.) Thus, if a lead agency determines that a particular study or analysis is infeasible, that decision should generally be judged by the substantial evidence standard. However, SCAQMD urges this Court to hold that lead agencies must explain the basis of any determination that a particular analysis is infeasible in the EIR itself. An EIR must discuss information, including issues related to the feasibility of particular analyses "in sufficient detail to enable meaningful participation and criticism by the public. '[W]hatever is required to be considered in an EIR must be in that formal report; what any official might have known from other writings or oral presentations cannot supply what is lacking in the report.'" (*Laurel Heights I, supra*, 47 Cal.3d at p. 405 (quoting *Santiago County Water District v. County of Orange* (1981) 118 Cal.App.3d 818, 831) (discussing analysis of alternatives).) The evidence on which the determination is based should also be summarized in the EIR itself, with appropriate citations to reference materials if necessary. Otherwise commenting agencies such as SCAQMD would be forced to guess where the lead agency's evidence might be located, thus thwarting effective public participation.

Moreover, if a lead agency determines that a particular study or analysis would not result in reliable or useful information and for that reason is not feasible, that determination should be judged by the substantial evidence test. (See *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority, supra*, 57 Cal.4th 439, 448, 457:

whether "existing conditions" baseline would be misleading or uninformative judged by substantial evidence standard.[15])

If the lead agency's determination that a particular analysis or study is not feasible is supported by substantial evidence, then the agency has not violated CEQA's information disclosure provisions, since it would be infeasible to provide additional information. This Court's decisions provide precedent for such a result. For example, this Court determined that the issue of whether the EIR should have included a more detailed discussion of future herbicide use was resolved because substantial evidence supported the agency's finding that "the precise parameters of future herbicide use could not be predicted." *Ebbetts Pass Forest Watch v. California Dept. of Forestry & Fire Protection* (2008) 43 Cal.4th 936, 955.

Of course, SCAQMD expects that courts will continue to hold lead agencies to their obligations to consult with, and not to ignore or misrepresent, the views of sister agencies having special expertise in the area of air quality. (*Berkeley Keep Jets Over the Bay v. Board of Port Commissioners* (2007) 91 Cal.App.4th 1344, 1364 n.11.) In some cases, information provided by such expert agencies may establish that the purported evidence relied on by the lead agency is not in fact "substantial". (*Id.* at pp. 1369-1371.)

In sum, courts retain ultimate responsibility to determine what CEQA requires. However, the law does not require exhaustive analysis, but only what is reasonably feasible. Agencies deserve deference for their factual determinations regarding what type of analysis is reasonably feasible. On the other hand, if a commenter requests more information, and the lead agency declines to provide it but does *not* determine that the

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[15] The substantial evidence standard recognizes that the courts "have neither the resources nor the scientific expertise" to weigh conflicting evidence on technical issues. (*Laurel Heights I, supra,* 47 Cal.3d 376, 393.)

requested study or analysis would be infeasible, misleading or uninformative, the question becomes whether the omission of that analysis renders the EIR inadequate to satisfy CEQA's informational purposes. (*Id.* at pp. 1370-71.) Again, this is predominantly a question of law and should be judged by the de novo or independent judgment standard of review. Of course, this Court has recognized that a "project opponent or reviewing court can always imagine some additional study or analysis that might provide helpful information. It is not for them to design the EIR. That further study...might be helpful does not make it necessary." (*Laurel Heights I, supra,* 47 Cal.3d 376, 415 – see also CEQA Guidelines § 15204(a) [CEQA "does not require a lead agency to conduct every test. . . recommended or demanded by commenters."].) Courts, then, must adjudicate whether an omission of particular information renders an EIR inadequate to serve CEQA's informational purposes.[16]

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[16] We recognize that there is case law stating that the substantial evidence standard applies to "challenges to the scope of an EIR's analysis of a topic" as well as the methodology used and the accuracy of the data relied on in the document "because these types of challenges involve factual questions." (*Bakersfield Citizens for Local Control v. City of Bakersfield, supra,* 124 Cal.App.4th 1184, 1198, and cases relied on therein.) However, we interpret this language to refer to situations where the question of the scope of the analysis really is factual—that is, where it involves whether further analysis is feasible, as discussed above. This interpretation is supported by the fact that the *Bakersfield* court expressly rejected an argument that a claimed "omission of information from the EIR should be treated as inquiries whether there is substantial evidence supporting the decision approving the project. " *Bakersfield, supra,* 124 Cal.App.4th at p. 1208. And the *Bakersfield* court ultimately decided that the lead agency must analyze the connection between the identified air pollution impacts and resulting health impacts, even though the EIR already included some discussion of air-pollution-related respiratory illnesses. *Bakersfield, supra,* 124 Cal.App.4th at p. 1220. Therefore, the court must not have interpreted this question as one of the "scope of the analysis" to be judged by the substantial evidence standard.

B. Friant Ranch's Rationale for Rejecting the Independent Judgment Standard of Review is Unsupported by Case Law.

In its brief, Friant Ranch makes a distinction between cases where a required CEQA topic is not discussed at all (to be reviewed by independent judgment as a failure to proceed in the manner required by law) and cases where a topic is discussed, but the commenter claims the information provided is insufficient (to be judged by the substantial evidence test). (Opening Brief, pp. 13-17.) The Court of Appeal recognized these two types of cases, but concluded that both raised questions of law. (*Sierra Club v. County of Fresno* (2014) 226 Cal.App.4th 704 (superseded by grant of review) 172 Cal.Rptr.3d 271, 290.) We believe the distinction drawn by Friant Ranch is unduly narrow, and inconsistent with cases which have concluded that CEQA documents are insufficient. In many instances, CEQA's requirements are stated broadly, and the courts must interpret the law to determine what level of analysis satisfies CEQA's mandate for providing meaningful information, even though the EIR discusses the issue to some extent.

For example, the CEQA Guidelines require discussion of the existing environmental baseline. In *County of Amador v. El Dorado County Water Agency* (1999) 76 Cal.App.4th 931, 954-955, the lead agency had discussed the environmental baseline by describing historic month-end water levels in the affected lakes. However, the court held that this was not an adequate baseline discussion because it failed to discuss the timing and amounts of past actual water releases, to allow comparison with the proposed project. The court evidently applied the independent judgment test to its decision, even though the agency discussed the issue to some extent.

Likewise, in *Vineyard Area Citizens* (2007) 40 Cal.4th 412, this Court addressed the question of whether an EIR's analysis of water supply impacts complied with CEQA. The parties agreed that the EIR was required to analyze the effects of providing water to the development project, "and that in order to do so the EIR had, in some manner, to identify the planned sources of that water." (*Vineyard Area Citizens, supra,* at p. 428.) However, the parties disagreed as to the level of detail required for this analysis and "what level of uncertainty regarding the availability of water supplies can be tolerated in an EIR . . . ." (*Id.*) In other words, the EIR had analyzed water supply impacts for the project, but the petitioner claimed that the analysis was insufficient.

This Court noted that neither CEQA's statutory language or the CEQA Guidelines specifically addressed the question of how precisely an EIR must discuss water supply impacts. (*Id.*) However, it explained that CEQA "states that '[w]hile foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can.'" (*Id.*, [Guidelines § 15144].) The Court used this general principle, along with prior precedent, to elucidate four "principles for analytical adequacy" that are necessary in order to satisfy "CEQA's informational purposes." (*Vineyard Area Citizens, supra,* at p. 430.) The Court did not defer to the agency's determination that the EIR's analysis of water supply impacts was sufficient. Rather, this Court used its independent judgment to determine for itself the level of analysis required to satisfy CEQA's fundamental purposes. (*Vineyard Area Citizens, supra,* at p. 441: an EIR does not serve its purposes where it neglects to explain likely sources of water and "... leaves long term water supply considerations to later stages of the project.")

Similarly, the CEQA Guidelines require an analysis of noise impacts of the project. (Appendix G, "Environmental Checklist Form."[17]) In *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1123, the court held that the lead agency's noise impact analysis was inadequate even though it had addressed the issue and concluded that the increase would not be noticeable. If the court had been using the substantial evidence standard, it likely would have upheld this discussion.

Therefore, we do not agree that the issue can be resolved on the basis suggested by Friant Ranch, which would apply the substantial evidence standard to *every* challenge to an analysis that addresses a required CEQA topic. This interpretation would subvert the courts' proper role in interpreting CEQA and determining what the law requires.

Nor do we agree that the Court of Appeal in this case violated CEQA's prohibition on courts interpreting its provisions "in a manner which imposes procedural or substantive requirements beyond those explicitly stated in this division or in the state guidelines." (Pub. Resources Code § 21083.1.) CEQA requires an EIR to describe *all* significant impacts of the project on the environment. (Pub. Resources Code § 21100(b)(2); *Vineyard Area Citizens, supra,* at p. 428.) Human beings are part of the environment, so CEQA requires EIRs to discuss a project's significant impacts on human health. However, except in certain particular circumstances,[18] neither the CEQA statute nor Guidelines specify the precise level of analysis that agencies must undertake to satisfy the law's requirements. (see, e.g., CEQA Guidelines § 15126.2(a) [EIRs must describe "health and safety problems caused by {a project's} physical changes"].) Accordingly, courts must interpret CEQA as a whole to

[17] Association of Environmental Professionals, 2015 CEQA Statute and Guidelines (2015) p.287.

[18] E.g., Pub. Resources Code § 21151.8(C)(3)(B)(iii) (requiring specific type of health risk analysis for siting schools).

determine whether a particular EIR is sufficient as an informational document. A court determining whether an EIR's discussion of human health impacts is legally sufficient does not constitute imposing a new substantive requirement.[19] Under Friant Ranch's theory, the above-referenced cases holding a CEQA analysis inadequate would have violated the law. This is not a reasonable interpretation.

IV. COURTS MUST SCRUPULOUSLY ENFORCE THE REQUIREMENTS THAT LEAD AGENCIES CONSULT WITH AND OBTAIN COMMENTS FROM AIR DISTRICTS

Courts must "scrupulously enforce" CEQA's legislatively mandated requirements. (*Vineyard Area Citizens, supra*, 40 Cal.4th 412, 435.) Case law has firmly established that lead agencies must consult with the relevant air pollution control district before conducting an initial study, and must provide the districts with notice of the intention to adopt a negative declaration (or EIR). (*Schenck v. County of Sonoma* (2011) 198 Cal.App.4th 949, 958.) As *Schenck* held, neither publishing the notice nor providing it to the State Clearinghouse was a sufficient substitute for sending notice directly to the air district. (*Id.*) Rather, courts "must be satisfied that [administrative] agencies have fully complied with the procedural requirements of CEQA, since only in this way can the important public purposes of CEQA be protected from subversion." *Schenck,* 198 Cal.App.4th at p. 959 (citations omitted).[20]

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[19] We submit that Public Resources Code Section 21083.1 was intended to prevent courts from, for example, holding that an agency must analyze economic impacts of a project where there are no resulting environmental impacts (see CEQA Guidelines § 15131) , or imposing new procedural requirements, such as imposing additional public notice requirements not set forth in CEQA or the Guidelines.

[20] Lead agencies must consult air districts, as public agencies with jurisdiction by law over resources affected by the project, *before* releasing an EIR. (Pub. Resources Code §§ 21104(a); 21153.) Moreover, air

Lead agencies should be aware, therefore, that failure to properly seek and consider input from the relevant air district constitutes legal error which may jeopardize their project approvals. For example, the court in *Fall River Wild Trout Foundation v. County of Shasta,* (1999) 70 Cal.App.4th 482, 492 held that the failure to give notice to a trustee agency (Department of Fish and Game) was prejudicial error requiring reversal. The court explained that the lack of notice prevented the Department from providing any response to the CEQA document. (*Id.* at p. 492.) It therefore prevented relevant information from being presented to the lead agency, which was prejudicial error because it precluded informed decision-making. (*Id.*)[21]

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districts should be considered "state agencies" for purposes of the requirement to consult with "trustee agencies" as set forth in Public Resources Code § 20180.3(a). This Court has long ago held that the districts are not mere "local agencies" whose regulations are superseded by those of a state agency regarding matters of statewide concern, but rather have concurrent jurisdiction over such issues. (*Orange County Air Pollution Control District v. Public Util. Com.* (1971) 4 Cal.3d 945, 951, 954.) Since air pollution is a matter of statewide concern, *Id* at 952, air districts should be entitled to trustee agency status in order to ensure that this vital concern is adequately protected during the CEQA process.

[21] In *Schenck,* the court concluded that failure to give notice to the air district was not prejudicial, but this was partly because the trial court had already corrected the error before the case arrived at the Court of Appeal. The trial court issued a writ of mandate requiring the lead agency to give notice to the air district. The air district responded by concurring with the lead agency that air impacts were not significant. (*Schenck,* 198 Cal.App.4th 949, 960.) We disagree with the *Schenck* court that the failure to give notice to the air district would not have been prejudicial (even in the absence of the trial court writ) merely because the lead agency purported to follow the air district's published CEQA guidelines for significance. (*Id.*, 198 Cal.App.4th at p. 960.) In the first place, absent notice to the air district, it is uncertain whether the lead agency properly followed those guidelines. Moreover, it is not realistic to expect that an air district's published guidelines would necessarily fully address all possible air-quality related issues that can arise with a CEQA project, or that those

Similarly, lead agencies must obtain additional information requested by expert agencies, including those with jurisdiction by law, if that information is necessary to determine a project's impacts. (*Sierra Club v. State Bd. Of Forestry* (1994) 7 Cal.4th 1215, 1236-37.) Approving a project without obtaining that information constitutes a failure to proceed in the manner prescribed by CEQA. (*Id.* at p. 1236.)

Moreover, a lead agency can save significant time and money by consulting with the air district early in the process. For example, the lead agency can learn what the air district recommends as an appropriate analysis on the facts of its case, including what kinds of health impacts analysis may be available, and what models are appropriate for use. This saves the lead agency from the need to do its analysis all over again and possibly needing to recirculate the document after errors are corrected, if new significant impacts are identified. (CEQA Guidelines § 15088.5(a).) At the same time, the air district's expert input can help the lead agency properly determine whether another commenter's request for additional analysis or studies is reasonable or feasible. Finally, the air district can provide input on what mitigation measures would be feasible and effective.

Therefore, we suggest that this Court provide guidance to lead agencies reminding them of the importance of consulting with the relevant air districts regarding these issues. Otherwise, their feasibility decisions may be vulnerable to air district evidence that establishes that there is no substantial evidence to support the lead agency decision not to provide specific analysis. (*See Berkeley Keep Jets Over the Bay, supra,* 91 Cal.App.4th 1344, 1369-1371.)

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guidelines would necessarily be continually modified to reflect new developments. Therefore we believe that, had the trial court not already ordered the lead agency to obtain the air district's views, the failure to give notice would have been prejudicial, as in *Fall River, supra,* 70 Cal.App.4th 482, 492.

CONCLUSION

The SCAQMD respectfully requests this Court *not* to establish a hard-and-fast rule concerning whether CEQA requires a lead agency to correlate identified air quality impacts of a project with resulting health outcomes. Moreover, the question of whether an EIR is "sufficient as an informational document" is a mixed question of fact and law containing two levels of inquiry. Whether a particular proposed analysis is feasible is predominantly a question of fact to be judged by the substantial evidence standard of review. Where the requested analysis is feasible, but the lead agency relies on legal or policy reasons not to provide it, the question of whether the EIR is nevertheless sufficient as an informational document is predominantly a question of law to be judged by the independent judgment standard of review.

Respectfully submitted,

DATED: April 3, 2015

SOUTH COAST AIR QUALITY
MANAGEMENT DISTRICT
KURT R. WIESE, GENERAL COUNSEL
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SOUTH COAST AIR QUALITY MANAGEMENT DISTICT

CERTIFICATE OF WORD COUNT

Pursuant to Rule 8.520(c)(1) of the California Rules of Court, I hereby certify that this brief contains 8,476 words, including footnotes, but excluding the Application, Table of Contents, Table of Authorities, Certificate of Service, this Certificate of Word Count, and signature blocks. I have relied on the word count of the Microsoft Word Vista program used to prepare this Certificate.

DATED: April 3, 2015 Respectfully submitted,

Barbara Baird

PROOF OF SERVICE

I am employed in the County of Los Angeles, California. I am over the age of 18 years and not a party to the within action. My business address is 21865 Copley Drive, Diamond Bar, California 91765.

On April 3, 2015 I served true copies of the following document(s) described as **APPLICATION OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT FOR LEAVE TO FILE BRIEF OF *AMICUS CURIAE* IN SUPPORT OF NEITHER PARTY AND *[PROPOSED]* BRIEF OF *AMICUS CURIAE*** by placing a true copy of the foregoing document(s) in a sealed envelope addressed as set forth on the attached service list as follows:

BY MAIL: I enclosed the document(s) in a sealed envelope or package addressed to the persons at the addresses listed in the Service List and placed the envelope for collection and mailing following our ordinary business practices. I am readily familiar with this District's practice for collection and processing of correspondence for mailing. Under that practice, the correspondence would be deposited with the United States Postal Service, with postage thereon fully prepaid at Diamond Bar, California, in the ordinary course of business. I am aware that on motion of the party served, service is presumed invalid if postal cancellation date or postage meter date is more than one day after date of deposit for mailing in affidavit.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on April 3, 2015 at Diamond Bar, California.

Patricia Anderson

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AIR QUALITY EMISSION REDUCTION AGREEMENT

This Air Quality Emission Reduction Agreement ("Agreement") is entered into as of _____, 2007 by and between Developer Name ("Developer") and the SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT, an air pollution control district formed pursuant to California Health and Safety Code section 40150, et seq. ("District").

RECITALS

WHEREAS, Developer is presently seeking governmental approval of land use entitlements ("Entitlements") which will permit the development of a Project located in the City/County, California, as more particularly described on Exhibit A attached hereto (the "Project"); and

WHEREAS, the Project incorporates the design features specified on Exhibit B attached hereto ("Emission Reduction Design Features"), in order to significantly reduce the air quality impacts associated with the Project; and

WHEREAS, despite incorporation of the Emission Reduction Design Features, without additional emission reductions, the Project would cause impacts on air quality within the geographical boundaries of the San Joaquin Valley Unified Air Pollution Control District, as depicted on Exhibit C attached hereto (the "District Boundaries"); and

WHEREAS, Developer anticipates that mitigation of impacts on air quality resulting from the Project will be either required as a condition to the approval of Developer's Entitlements, or voluntarily imposed by Developer as a means of reducing such impacts; and

WHEREAS, Developer desires to fully comply with all requirements of the California Environmental Quality Act codified at California Public Resources Code section 21000, et seq. ("CEQA"), including all requirements relating to the mitigation of air quality impacts arising from or in connection with the Project; and

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WHEREAS, District is an air pollution control district formed by the counties of Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare, pursuant to California Health and Safety Code section 40150, et seq.; and

WHEREAS, District is responsible for developing and implementing air quality control measures within the District Boundaries, including air quality control measures for stationary sources, transportation sources, and indirect sources; and

WHEREAS, District has determined that with appropriate funding, District can bring about a reduction of emissions from certain projects in types and in sufficient quantities to fully mitigate the net air quality criteria pollutant impacts of the Project as quantified in the Verified Air Quality Assessment (as defined in Section 2.2 below) ("Project's Air Impact"); and

WHEREAS, Developer and District desire to enter into this Agreement in order to develop and implement air quality control measures which will fully mitigate the Project's Air Impact to the extent that the development of such Project will result in no net increase in criteria pollutant emissions over the criteria pollutant emissions which would otherwise exist without the development thereof.

AGREEMENT

NOW THEREFORE, in exchange of the mutual covenants herein contained, Developer and District hereby agree as follows:

1. **Emission Reduction by Developer and District.**

1.1. **Emission Reduction Proposals.** Developer shall identify and propose to District opportunities to reduce emissions to fully mitigate Project's Air Impact, including but not limited to opportunities for removal or retrofitting of stationary, transportation, indirect, and/or mobile pollution source equipment, and/or other opportunities therefore (each, an "**Emission Reduction Proposal**"). Each Emission Reduction Proposal shall be submitted in writing to District, using District approved forms, and shall contain a representation by Developer that the owner/operator of the identified Pollution Source Equipment has expressed interest in entering into a written funding agreement with

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District in District's then standard form ("**Funding Agreement**") requiring removal or replacement of the identified equipment with new equipment under District's "Heavy Duty Engine Emission Reduction Incentive Program", or another emission reduction program adopted by District ("**District Emission Reduction Program**"). Developer shall submit Emission Reduction Proposals to District in sufficient amounts to fully mitigate emissions from each distinct phase of the project. For each phase of the project, Developer shall submit Emission Reduction Proposals to District no later than application for grading permits for, and before generating emissions from, that phase. Any Emission Reduction Shortfall for a given phase shall be addressed according to Section 1.7.2 of this Agreement.

1.2. **District's Verification of Emission Reduction.** As quickly as practicable upon Developer's submission to District of an Emission Reduction Proposal, District shall determine the types and quantities of permanent reduction in emissions which would be realized by the proposed removal or retrofit and shall advise Developer of such determination in writing ("**Emission Reduction Verification**") thereby verifying that in District's considered opinion the removal or retrofit proposed in the Emission Reduction Proposal would result in permanent emission reduction in the locality of the Project in the types and quantities so determined by District.

1.3. **Emission Reduction Proposal Advance.** Developer shall advance to District, on the date of submittal of each Developer's Emission Reduction Proposal, a monetary sum equal to the total estimated cost (as specified in each Developer's Emission Reduction Proposal), until sufficient advance is received by District to fully mitigate the Project's Air Impact ("**Emission Reduction Proposal Advance**").

1.4. **Funding Agreements.** As soon as practicable after District's receipt of Developer's Emission Reduction Proposal Advance, District shall use diligent efforts to enter into Funding Agreements with the owners and/or operators of the pollution source equipment identified in Developer's Emission Reduction Proposal, thereby providing for the removal and/or retrofit of all of such Pollution Source Equipment, and

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providing for District's payment (from the Emission Reduction Proposal Advance) t such owner or operator, of an amount equal to the estimated cost of such opportunity, as specified in Developer's Emission Reduction Proposals. District shall use diligent efforts to enter into Funding Agreements with all of the owners or operators identified in Developer's Emission Reduction Proposals within one hundred eighty (180) days following District's receipt of a complete Emission Reduction Proposal and the Emission Reduction Proposal Advance from Developer.

1.5. **Use of Emission Reduction Proposal Advance.** District shall use the Emission Reduction Proposal Advance to meet its monetary obligations under the Funding Agreements that District shall enter into with the owners of the Pollution Source Equipment identified in Developer's Emission Reduction Proposals.

1.6. **Use of Unused Portions of Emission Reduction Proposal Advance.** In the event Developer is unable to submit to District Emission Reduction Proposals providing for emission reduction in the types and quantities necessary to fully mitigate the Project's Air Impact, or in the event District is unable to enter into Funding Agreements with any of the owners or operators identified in Developer's Emission Reduction Proposals, District shall notify Developer in writing of the additional emission reductions needed to fully mitigate the Project's Air Impact, and Developer shall have a reasonable time, not to exceed one hundred eighty (180) days within which to submit to District additional or supplemental Emission Reduction Proposals in order to provide the necessary additional emission reduction.

1.7. **Unused Advance / Emission Reduction Shortfall / Additional Payment.**

1.7.1. **Unused Advance.** If, despite District's diligent efforts to enter into Funding Agreements with all of the owners or operators identified in Developer's Emission Reduction Proposals (and, if applicable, supplemental Emission Reduction Proposals submitted by Developer), District is unable to enter into Funding Agreements sufficient to fully mitigate the Project's Air Impact, then District shall use any unused portion of Developer's Emission Reduction Proposal Advance to fund emission

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reduction opportunities to mitigate the balance of the Project's Air Impact at District's actual cost of doing so, provided that such actual costs shall not exceed the costs set forth in the following Emission Reduction Cost Schedule:

Emission Reduction Cost Schedule		
Year Paid	NOx or ROG ($/ton)	PM10 ($/ton)
2007	$49,700	$55,940
2008	$65,450	$90,110
Beyond	Prevailing Costs	Prevailing Costs

District is of the considered opinion that the emission reductions listed in the above schedule can be achieved at the corresponding times and costs shown in said schedule. If, at the time of invoicing, the District has not identified Prevailing Costs for post-2008 payments, 2008 costs shall apply.

1.7.2. **Emission Reduction Shortfall/Additional Payment.** In the event the emission reduction brought about by the Funding Agreements entered into between District and the owners or operators identified in Developer's Emission Reduction Proposals (and, if applicable supplemental Emission Reduction Proposals), and that brought about pursuant to Section 1.7.1 above, are not sufficient to fully mitigate the Project's Air Impact ("**Emission Reduction Shortfall**"), then Developer shall be credited for the emission reduction brought about as a result of Funding Agreements entered into between District and the owners or operators identified in Developer's Emission Reduction Proposals and for the emission reduction brought about pursuant to Section 1.7.1 above, and Developer thereafter shall deposit with District, within 30 days of receiving notice of the Emission Reduction Shortfall from District, an additional amount equal to the product of (i) District's cost per ton of emission reduction as shown in the Emission Reduction Cost Schedule set forth in Section 1.7.1 above, multiplied by (ii) the total number of tons of emission reduction necessary to fully mitigate the Project's Air Impact less the total number of tons of emission reduction so credited to Developer. However, in no case shall the amount paid to District and the

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amount of emission reductions achieved per this agreement be less than the amount that would be paid to District or the amount of emission reductions that would be required for this Project according to District Rule 9510 (Indirect Source Review). To allow verification of equivalency of emission reductions and off-site mitigation fee amounts, according to District Rule 9510, Developer shall submit to District an ISR Air Impact Assessment Application, using District forms, no later than concurrent with the Developer's submission of the air quality assessment, as set forth in Section 2.2.

1.8. **Surplus Mitigation.** In addition to the amounts payable under paragraph 1.3, Developer shall deliver to District an additional sum equal to five percent (5%) of the Emission Reduction Proposal Advance. Said additional sum shall be paid under the same schedule as set forth in paragraph 1.3. District shall utilize such additional sum to fund further localized emission reduction opportunities in quantities consistent with the schedule set forth in paragraph 1.7.1.

1.9 **Time of Use.** Any emission reductions brought about by this Agreement prior to the date Developer receives final approval of the Project from all applicable Governmental Authorities shall be credited to the total amount of emission reductions achieved per this agreement.

1.10. **District's Obligation.** The monies paid by Developer under this Agreement shall be used by District to obtain localized emission reductions in the types and quantities necessary to fully mitigate the Project's Air Impact as quantified in the Verified Air Quality Assessment. If necessary, District shall assist Developer in securing emission reductions, consistent with the provisions established in Section 1.7.2.

1.11. **Developer's Obligation.** District acknowledges that, if the Project is not finally approved so that such development is allowed to proceed, Developer has no obligations under this Agreement relative to the respective Project. Developer acknowledges that it must satisfy the terms of this Agreement in order to develop the Project.

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2. **CEQA Compliance/Full Mitigation.** For and in exchange of Developer's payment of funds pursuant to Section 1 above, District shall ensure, by way of entering into, funding and enforcing the Funding Agreements in accordance with the provisions of Section 1.4 above, that the Project's Air Impact is fully mitigated, such that the Project, combined with the emission reductions brought about in accordance with Section 1 above, shall result in no net increase in air quality impacts over those air quality impacts which would otherwise exist without the development of such Project. For the purpose of this agreement, full mitigation means the sum of all NOx, ROG, and PM10 emission reductions achieved by the Emission Reductions Proposals equals, or is greater than, the sum of all NOx, ROG, and PM10 emissions increases calculated as the average annual construction and the peak annual area source and mobile source emissions of NOx, ROG, and PM10 less the average annual emissions that have occurred at the project site during the three years prior to release of the Notice of Preparation. In addition to entering into, funding and enforcing the Funding Agreements in accordance with the provisions of Section 1.4 above, District shall do all of the following:

2.1. **District's Verification of Air Assessment Protocol.** Within ten (10) business days following the date of this Agreement, Developer shall submit to District an air assessment protocol prepared by Developer's air quality consultant reflecting the methodology, including air quality impact modeling, to be utilized in the preparation of the air quality assessment for the Project. Within twenty-one (21) business days following District's receipt of Developer's air assessment protocol, District shall review and comment upon such air assessment protocol, and, after Developer's incorporation of any revisions suggested by District, District shall verify in writing to Developer the correctness of the air assessment protocol which will be utilized in the preparation of the air quality assessment for the Project.

2.2 **District's Verification of Air Quality Assessment.** Following District's Verification of Air Assessment Protocol, Developer shall submit to District an air quality

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assessment prepared by Developer's air quality consultant assessing the air quality impacts of the Project. District shall use its best efforts to review and comment upon Developer's air quality assessment within thirty (30) days following District's receipt of Developer's complete air quality assessment, and, after Developer's incorporation of any and all revisions suggested by District, District shall verify in writing to Developer the correctness of the air quality assessment to be utilized in connection with the CEQA documents for the Project, including (i) the methodology utilized in the preparation of the CEQA document, (ii) the types and quantities of any net air quality impacts associated with the Project, (iii) the appropriateness of the mitigation measures proposed in the CEQA document, and (iv) any other matters which may pertain to such CEQA document and/or any air quality impacts or air quality mitigation measures referenced therein (the "**Verified Air Quality Assessment**").

2.3. **District's Verification of Administrative Draft Environmental Impact Report**. Upon request by Developer, and submission by Developer to District of any administrative Draft Environmental Impact Report, or other applicable CEQA documents for the Project, District shall review, comment upon and, after incorporation of any and all revisions made by District, verify in writing to Developer the correctness of all portions thereof which pertain to air quality impacts, including, (i) the methodology utilized in the preparation of the CEQA document, (ii) the types and quantities of any net air quality impacts associated with the Project, (iii) the appropriateness of the mitigation measures proposed in the CEQA document, and (iv) any other matters which may pertain to such CEQA document and/or any air quality impacts or air quality mitigation measures referenced therein.

2.4 **District's Acknowledgment Regarding Full Mitigation.** At such time as District is provided an opportunity as a commenting agency to comment upon the Draft Environmental Impact Report and Final Environmental Impact Report for the Project, District shall comment in writing as to the correctness of all portions thereof which pertain to air quality impacts, including (i) the methodology utilized in the

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preparation of the CEQA document, (ii) the types and quantities of any net air quality impacts associated with the Project, (iii) the appropriateness of the mitigation measures proposed in the CEQA document, and (iv) any other matters which may pertain to such CEQA document and/or any air quality impacts or air quality mitigation measures referenced therein. District shall at all times fully perform its duties and obligations as a commenting agency, and the provisions of this Section 2.4 shall not be interpreted to the contrary. At such time as District has entered into Funding Agreements pursuant to Section 1.4 above and the owners/operators of equipment to be removed and/or replaced under such agreements have removed and replaced such equipment in accordance with the provisions thereof, District shall verify in writing to Developer and to the lead agency that full mitigation of the Project's Air Impact has been achieved, upon successful fulfillment of all Funding Agreements. District shall ensure that the owners/operators of equipment to be removed and/or replaced pursuant to such Funding Agreements perform all obligations to be performed on the part of such parties under said Funding Agreements. District acknowledges that the Verified Air Quality Assessment and its quantification of the Project's Air Impact will be based on the pending applications for development of the Project and that actual approvals may be for a lesser amount of development. District agrees that Developer's obligations under this Agreement shall be based on the amount of development actually approved, and the final quantification of the Project's Air Impact will be revised accordingly.

2.5. **District's Oversight of Air Quality Mitigation Monitoring Plan.** Upon request of the lead agency having jurisdiction over the Project, District shall oversee that portion of the mitigation monitoring plan adopted by the lead agency for the Project which relates to the mitigation brought about by Section 1 of this Agreement. Alternatively, upon request of that lead agency, District shall cooperate with the lead agency in the oversight of that portion of the mitigation monitoring plan adopted by the lead agency for the Project which relates to the mitigation brought about by Section 1

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of this Agreement.

2.6. **District's Documentation, Record Keeping and Monitoring.** District shall document, keep adequate records on and monitor the emission reduction brought about as a result of this Agreement, and shall from time to time, upon written request by Developer or by the lead agency for the Project, provide to Developer or to the lead agency written reports verifying that emission reduction has been and/or is being brought about so as to fully mitigate the Project's Air Impact.

3. **Subsequent Litigation, Legislation and/or Administrative Action / Credit to Developer.**

3.1. **Subsequent Litigation.** In the event that despite this Agreement, Developer is required as a result of a final judgment or District Approved Settlement (as defined below) in any subsequent third party litigation, to pay monies in addition to the monies to be paid by Developer pursuant to Section 1 above, then, provided that the project total emissions are the same as quantified in the Verified Air Quality Assessment, District shall acknowledge and credit Developer with mitigation of the air quality impacts of the Project in such types and quantities that Developer can establish, to the reasonable satisfaction of District, will result from Developer's payment of such additional monies, and shall reduce any amounts thereafter payable by Developer under this Agreement by an amount equal to the additional monies so paid by Developer. This requirement shall not apply if the additional monies are required to mitigate emissions that exceed those set forth in the Verified Air Quality Assessment. For purposes of this Section 3.1.1, a **"District Approved Settlement"** shall mean a settlement of a lawsuit filed pursuant to CEQA, the National Environmental Protection Act or other applicable environmental law which (i) provides for Developer's payment of monies in exchange for a dismissal of such lawsuit, (ii) provides for the use of such monies by the petitioner in such lawsuit in such a manner as to mitigate adverse air quality impacts of the Project, and (iii) is approved in writing by District.

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3.2. **District Rule 9510.** The performance of Developer's and District's obligations under this Agreement will fully mitigate the Project's Air Impact. Inasmuch as the mitigation provided under this Agreement exceeds the mitigation which would otherwise have been provided under Sections 6.0 and 7.0 of District's Rule 9510, and the Project's mitigated baseline (being zero emissions) is less than the threshold stated in Section 4.3 of said Rule 9510, the Project is exempt from Sections 6.0 and 7.0 of District's Rule 9510. Accordingly, no off-site Emission Reduction Fee will be required in connection with the approval or development of the Project. For each individual project developed at the project site requiring a discretionary approval by the lead agency, Developer shall provide District with a map or diagram indicating its location within the area covered by this Agreement.

4. **Term of Agreement.** This Agreement shall be effective upon the date first written above, and shall terminate upon District's meeting its obligation to implement projects that provide necessary emissions reductions to fully mitigate the Project's Air Impact (the "**Term**"). Developer may, at any time by written notice to District, terminate this Agreement, whereupon, (i) District shall acknowledge in writing to the lead agency that Developer has mitigated air quality impacts of the Project to the extent and in the types and quantities brought about by Funding Agreements theretofore funded by Developer's Emission Reduction Proposal Advance (and if applicable pursuant to Section 1.7.1 above), (ii) District shall refund to Developer any unused portion of Developer's Emission Reduction Proposal Advance less any unpaid administrative fees incurred; and (iii) neither Developer nor District shall have any further rights or obligations under this Agreement. Developer acknowledges that in the absence of this Agreement, the project is subject to all applicable provisions of District Rule 9510 (Indirect Source Review).

5. **Payment of Administrative Fees to District.** Developer agrees to pay to District, in order to reimburse District for its general overhead required for the administration of this Agreement, an administrative fee ("***ERIP Fee***") in an amount

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equal to four percent (4%) of the Emission Reduction Proposal Advance. Such ERIP Fee shall be due and payable upon Developer's delivery of the Emission Reduction Proposal Advance pursuant to Section 1.3 above. In addition to the ERIP Fee, Developer agrees to pay to District, within thirty (30) days following Developer's receipt of District's invoice, administrative fees to reimburse District for staff time spent and materials used by District in the administration of this Agreement, other than that time associated with the ERIP program covered by the ERIP Fee above, including review, verification and preparation of documents, and staff time relating to the performance of District's obligations hereunder, based on a time and materials basis at District's average weighted labor rates.

6. **Representations, Covenants and Warranties.**

6.1. **Developer's Representations, Covenants and Warranties.** Developer represents, covenants and warrants to District, as of the date of this Agreement, and as of the date of Developer's submission to District of any documents contemplated hereunder, as follows:

6.1.1. The undersigned representatives of Developer are duly authorized to execute, deliver and perform this Agreement, and upon Developer's execution and delivery of this Agreement, this Agreement will have been duly authorized by Developer.

6.1.2. Upon execution and delivery of this Agreement by Developer, Developer's obligations under this Agreement shall be legal, valid and binding obligations of Developer, duly enforceable at law and in equity in accordance with the terms and conditions of this Agreement.

6.1.3. There is no lawsuit, legal action, arbitration, legal or administrative proceeding, legislative or quasi-legislative action or claim existing, pending, threatened or anticipated which would render all or any portion of this Agreement invalid, void or unenforceable in accordance with the terms and conditions thereof.

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6.1.4. Other than the execution and delivery of this Agreement by the undersigned representatives of Developer, there are no approvals, consents, confirmations, proceedings, or other actions required by Developer or any third party, entity or agency in order to enter into and carry out the terms, conditions and intent of the parties with respect to this Agreement.

6.2. **District's Representations, Covenants and Warranties.** District represents, covenants and warrants to Developer, as of the date of this Agreement, and as of the date of District's delivery to Developer of any documents contemplated hereunder, as follows:

6.2.1. The undersigned representatives of District are duly authorized to execute, deliver and perform this Agreement, and upon District's execution and delivery of this Agreement, this Agreement will have been duly authorized by District.

6.2.2. Upon execution and delivery of this Agreement by District, District's obligations under this Agreement shall be legal, valid and binding obligations of District, duly enforceable at law and in equity in accordance with the terms and conditions of this Agreement.

6.2.3. There is no lawsuit, legal action, arbitration, legal or administrative proceeding, legislative, quasi-legislative or administrative action or claim existing, pending, threatened or anticipated which would render all or any portion of this Agreement invalid, void or unenforceable in accordance with the terms and conditions thereof.

6.2.4. Other than the execution and delivery of this Agreement by the undersigned representatives of District, there are no approvals, consents, confirmations, proceedings, or other actions required by District or any third party, entity or agency in order to enter into and carry out the terms, conditions and intent of the parties with respect to this Agreement.

6.2.5. No lawsuit, legal action, arbitration, legal or administrative proceeding, legislative or quasi-legislative action or claim existing, pending, threatened or

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anticipated will render invalid, void or unenforceable any right or benefit Developer is to receive under the terms and conditions of this Agreement.

6.2.6. The monies paid by Developer under this Agreement shall be sufficient to ensure that the emission reduction contemplated by this Agreement shall occur, and District shall utilize such monies in such a manner as to ensure that such emission reduction shall occur.

6.2.7. Upon the approval of this Agreement by the governing board of District, the Air Pollution Control Officer of District, or equivalent representative, or a delegee of such officer, shall have the authority to approve, deliver, verify, enter into, acknowledge and/or accept any communication, notice, notification, verification, agreement and/or other document to be issued or entered into by District under the terms and conditions of this Agreement, without further approval of the governing board of District.

7. **Indemnification**. Developer agrees to indemnify, defend and hold harmless District for, from and in connection with any third party claims, losses and/or liabilities arising from or in connection with District's performance of this Agreement, excluding only such claims, losses and/or liabilities which result from or in connection with District's sole negligence, act or omission.

8. **Inurnment**. Developer's rights and obligations under this Agreement, or applicable portions thereof, shall run with the land encompassed by the Project, and shall inure to the benefit of and be binding upon the heirs, successors and assigns of Developer who take title to such lands or applicable portions thereof. Upon Developer's conveyance of all or any portion of the lands encompassed by the Project, the rights and obligations of Developer under this Agreement shall, to the extent applicable to the lands so conveyed, be transferred to the transferee thereof, and Developer shall thereupon be released by District from, all obligations and liabilities so assigned, except for such obligations and liabilities arising prior to such transfer.

9. **Assignment**. Developer shall have the right to assign all or any part of its rights and/or obligations under this Agreement. Upon any such assignment, Developer shall

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deliver to District a written assignment and assumption agreement specifying the fact and extent of the assignment, the name and address of the assignee, and the assignee's assumption of all obligations of Developer thereby assigned. Developer shall have the right to assign all or any part of its rights and/or obligations under this Agreement to a third party for use in connection with the mitigation of air quality impacts resulting from one or more projects other than the Project, so long as (i) the project is located within the District Boundaries, (ii) the air quality impacts of such project(s) will in fact be mitigated, as verified by District, by the emission reductions brought about by this Agreement, and (iii) the project(s) consist of residential, commercial, industrial and/or mixed use real estate projects which incorporate the Emission Reduction Design Features. Upon any such assignment by Developer, District shall enter into an amendment of this Agreement which acknowledges the assignment and conforms the various provisions of this Agreement as may be required to be conformed in order to provide to the assignee the rights and benefits of this Agreement as if such assignee and its project were the original party and project contemplated in this Agreement.

10. **Recitals Incorporated.** The recitals set forth hereinabove are hereby incorporated into this Agreement and acknowledged, agreed to and adopted by the parties to this Agreement.

11. **Further Assurances.** Developer and District agree to execute and deliver any documents and/or perform any acts, which are reasonably necessary in order to carry out the intent of the parties with respect to this Agreement.

12. **No Joint Venture or Partnership.** District and Developer agree that nothing contained in this Agreement or in any document executed in connection with this Agreement shall be construed as making District and Developer joint ventures or partners.

13. **Notices.** Any notices or communications relating to this Agreement shall be given in writing and shall be deemed sufficiently given and served for all purposes

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when delivered, if (a) in person, (b) by facsimile (with the original delivered by other means set forth in this Section 13), (c) by generally recognized overnight courier or (d) by United States Mail, certified or registered mail, return receipt requested, postage prepaid, to the respective addresses set forth below, or to such other addresses as the parties may designate from time to time by providing written notice of the change to the other party.

To Developer: Address & Contact Name	To District: San Joaquin Valley APCD 1990 E. Gettysburg Avenue Fresno, CA 93726 Fax: (559) 230-6061 Attn: Seyed Sadredin Executive Director/APCO
With a copy to: Address & Contact Name	with a copy to:San Joaquin Valley APCD 1990 E. Gettysburg Avenue Fresno, CA 93726 Fax: (559) 230-6061 Attn: Dave Warner Director of Permit Services with a copy to: San Joaquin Valley APCD 1990 E. Gettysburg Avenue Fresno, CA 93726 Fax: (559) 230-6061 Attn: Philip M. Jay District Counsel

14. **Entire Agreement.** The terms of this Agreement, together with all attached exhibits, are intended by the parties as the complete and final expression of their agreement with respect to such terms and exhibits and may not be contradicted by evidence of any prior or contemporaneous agreement. This Agreement specifically supersedes any prior written or oral agreements between the parties with respect to

the subject matter of this Agreement.

15. **Amendments and Waivers.** No addition to or modification of this Agreement shall be effective unless set forth in writing and signed by the party against whom the addition or modification is sought to be enforced. The party benefited by any condition or obligation may waive the same, but such waiver shall not be enforceable by another party unless made in writing and signed by the waiving party.

16. **Invalidity of Provisions.** If any provision of this Agreement as applied to either party or to any circumstance shall be adjudged by a court of competent jurisdiction to be void or unenforceable for any reason, the same shall in no way affect (to the maximum extent permissible by law) any other provision of this Agreement, the application of any such provision under circumstances different from those adjudicated by the court, or the validity or enforceability of this Agreement as a whole. The parties further agree to replace any such invalid, illegal or unenforceable portion with a valid and enforceable provision which will achieve, to the maximum extent legally possible, the economic, business or other purposes of the invalid, illegal or unenforceable portion.

17. **Construction.** Unless otherwise indicated, all Section references are to the sections of this Agreement and all references to days are to calendar days. Whenever, under the terms of this Agreement the time for performance of a covenant or condition falls upon a Saturday, Sunday or California state holiday, the time for performance shall be extended to the next business day. The headings used in this Agreement are provided for convenience only and this Agreement shall be interpreted without reference to any headings. Wherever required by the context, the singular shall include the plural and vice versa, and the masculine gender shall include the feminine or neuter genders, or vice versa. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. The language in all parts of this Agreement shall be construed as a whole in accordance with its fair meaning, and shall not be

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construed against any party solely by virtue of the fact that such party or its counsel was primarily responsible for its preparation.

18. **Governing Law.** This Agreement shall be governed by the laws of the State of California applicable to contracts made and to be performed in California.

19. **No Third-party Beneficiaries.** Nothing in this Agreement, express or implied, is intended to confer any rights or remedies under or by reason of this Agreement on any person other than the parties to it and their respective permitted successors and assigns, nor is anything in this Agreement intended to relieve or discharge any obligation of any third person to any party hereto or give any third person any right of subrogation or action over or against any party to this Agreement.

20. **Exhibits.** The exhibits attached to this Agreement shall be deemed to be a part of this Agreement and are fully incorporated herein by reference.

21. **Force Majeure.** The time within which any party shall be required to perform under this Agreement shall be extended on a day-per-day basis for each day during which such performance is prevented or delayed by reason of events reasonably outside of the control of the performing party, including, without limitation, acts of God, events of destruction, acts of war, civil insurrection, strikes, shortages, governmental delays, moratoria, civil litigation and the like, and/or delays caused by the non-performing party's act or omission.

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IN WITNESS WHEREOF, Developer and District have executed this Agreement and agree that it shall be effective as of the date first written above.

DEVELOPER: Developer Name,

a California limited liability company

By:_____

Name:_____

Title:_____

DISTRICT: **SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT**, an air pollution control district formed pursuant to California Health and Safety Code section 40150, et seq.

///

DISTRICT

San Joaquin Valley Unified Air Pollution Control District

///

By:_____

Councilmember J. Steven Worthley, Chair

Governing Board

///

Recommended for approval:

San Joaquin Valley Unified Air Pollution Control District

///

_____

Seyed Sadredin

Executive Director/APCO

///

///

///

Approved as to legal form:

San Joaquin Valley Unified Air Pollution Control District

_____

Philip M. Jay

District Counsel

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Approved as to accounting form:

San Joaquin Valley Unified Air

Pollution Control District

///

_____

Roger W. McCoy

Director of Administrative Service

For accounting use only:

Program:_____

Account No.:_____

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EXHIBIT A

DESCRIPTION OF THE PROJECT

[INSERT MAP.]

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EXHIBIT B

EMISSION REDUCTION DESIGN FEATURES

The project shall incorporate the following Emission Reduction Design Features:

The project will incorporate the following on-site features:

1. Utilization of land use designs which create walkable communities and encourage pedestrian travel.
2. Utilization of interconnecting sidewalks, walking paths and/or bike paths in order to encourage travel by means other than motor vehicle.
3. Utilization of appropriate landscaping to create reasonable shade canopies for streets, parkways and parking areas.
4. Utilization of roadway designs, which enhance pedestrian safety by appropriate signaling, signage and separation from traffic.
5. Design requirements, which incorporate natural gas hookups and electrical outlets on patios.
6. Design requirements, which prohibit the installation and use of wood burning stoves and wood burning fireplaces.

Prior to issuance of grading permits for the Project, Developer shall prepare and submit to District dust control plans for the areas to be graded, in accordance with District Regulation VIII. The plan shall be prepared consistent with District Regulation VIII and must be reviewed and approved by the District prior to commencement of grading activities. Each contractor working on the Project site shall implement the dust control measures outlined in the approved dust control plan. The dust control measures selected shall be incorporated as a note on each grading plan.

District maintains New Source Review requirements that direct owners/operators of certain types of stationary equipment to obtain an Authority to Construct ("ATC") and Permits to Operate ("PTO") from the District. As part of this process, the need for emission control equipment is assessed and the District determines whether a Health Risk Assessment ("HRA") must be prepared.

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Owners/operators of all stationary sources for which such approvals are required should show proof of compliance with District Rules and Regulations prior to issuance of certificates of occupancy.

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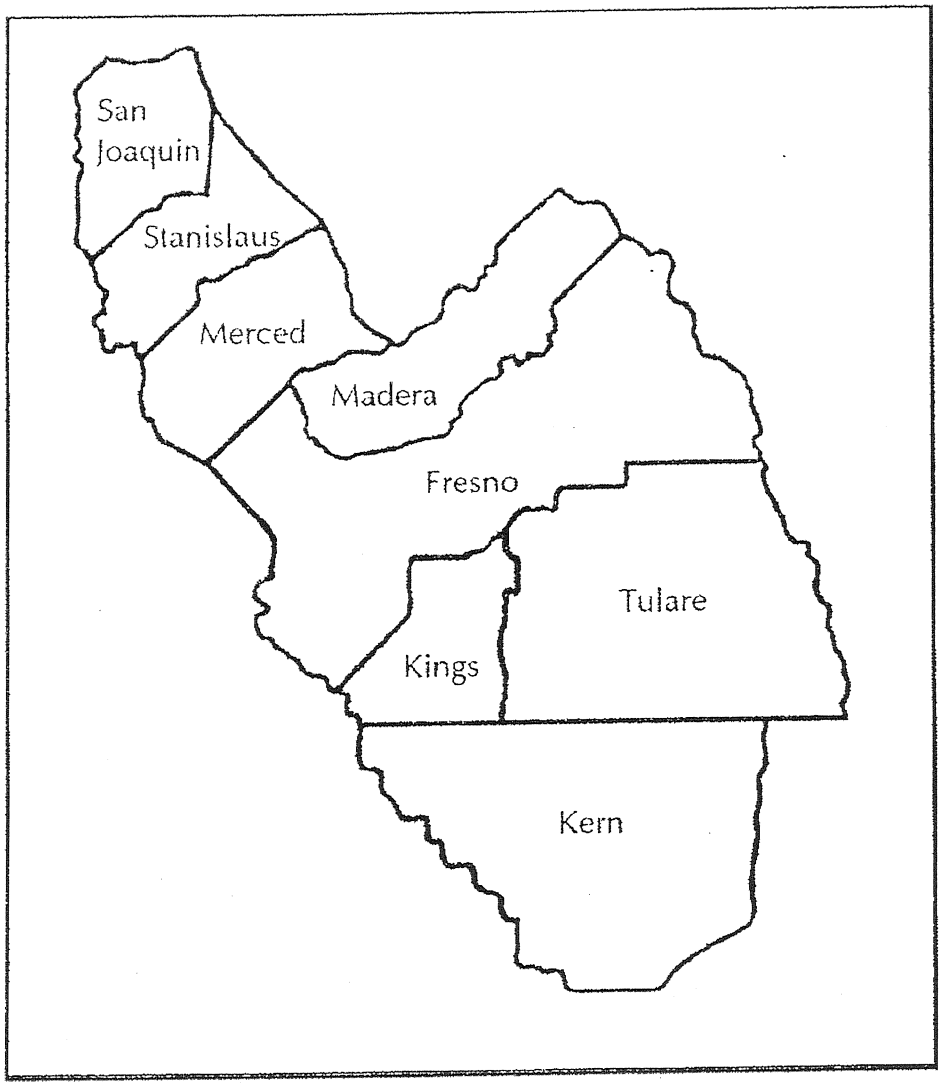
EXHIBIT C

DISTRICT BOUNDARIES



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San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

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Vacant
Small City, Southern Region

Seyed Sadredin
Executive Director
Air Pollution Control Officer

Northern Region Office
4800 Enterprise Way
Modesto, CA 95356-8718
(209) 557-6400 • FAX (209) 557-6475

Central Region Office
1990 East Gettysburg Avenue
Fresno, CA 93726-0244
(559) 230-6000 • FAX (559) 230-6061

Southern Region Office
2700 M Street, Suite 275
Bakersfield, CA 93301-2373
(661) 326-6900 • FAX (661) 326-6985

www.valleyair.org

DATE: June 19, 2008

TO: SJVUAPCD Governing Board

FROM: Seyed Sadredin, Executive Director/APCO
Project Coordinator: Arnaud Marjollet

RE: RECEIVE AND FILE THE "2008 ANNUAL REPORT ON THE DISTRICT'S INDIRECT SOURCE REVIEW PROGRAM"

RECOMMENDATION:

Receive and file the "2008 Annual Report on the District's Indirect Source Review Program" (see attachment A).

BACKGROUND:

District Rule 9510, Indirect Source Review (ISR), was adopted by the District's Board to reduce the impacts of growth in emissions resulting from new land development in the San Joaquin Valley. The rule's intent, requirements, and administrative procedures are generally described in this report, which was prepared pursuant to Rule 9510 to describe emission reductions achieved and mitigation fees received through implementation of the ISR program.

DISCUSSION:

District Rule 9510 applies to new development projects that emit emissions of at least two tons of nitrogen oxides (NOx) or two tons of particulate matter smaller than ten microns in aerodynamic diameter (PM10) per year.

Developers of projects subject to Rule 9510 must reduce emissions occurring during construction and operational phases, or pay specified mitigation fees. To minimize emissions and to minimize the applicable mitigation fee, developers have begun voluntarily incorporating many air-friendly design changes into their proposals.

For instance, significant reductions in emissions have been generated via the use of cleaner construction equipment. For large distribution centers, proponents have voluntarily proposed to use cleaner truck fleets. In addition, many lesser but still cumulatively significant reductions in emissions have been garnered by a whole range of effective design principles, like installation of solar power, integrated mixed-use development design, bike lanes, high-efficiency housing design, and many others.

If a developer does not achieve the sufficient emission reductions through onsite measures, the rule provides a mechanism by which the developer can pay an offsite mitigation fee to the District. One hundred percent of all offsite mitigation fees received by the District are to be used by the District's existing Emission Reduction Incentive Program (ERIP) to fund emission reduction projects, achieving emission reductions in behalf of the project. Additionally, if a project is subject to off-site emission reduction fees, the developer is required to pay an administrative fee equal to four percent (4%) of the required off-site fees. This fee is to cover the District's cost of administering the off-site emission reduction program.

Section III of this year's report summarizes District Implementation of Rule 9510 and Section IV summarizes funds received and expended, emission reductions realized, and overall cost-effectiveness of funded projects. Appendix A of the report provides a list of all emission reduction projects funded by the ISR program.

Attachment
2008 Annual Report on the District's Indirect Source Review Program (13 pages)

San Joaquin Valley Air Pollution Control District
Meeting of the Governing Board
June 19, 2008

RECEIVE AND FILE THE "2008 ANNUAL REPORT ON THE DISTRICT'S INDIRECT SOURCE REVIEW PROGRAM"

Attachment:
2008 Annual Report on the District's Indirect Source Review Program
(12 pages)

The above attachment has been included with the agenda packets distributed to members of the Governing Board. It has not been included with other agenda packets. A copy of this document is available for review and/or purchase from the San Joaquin Valley Unified Air Pollution Control District.



San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

2008 Annual Report on the District's Indirect Source Review Program

Reporting Period: March 1, 2007 to February 29, 2008

SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT GOVERNING BOARD
2008 Annual Report on the District's Indirect Source Review Program

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Supervisor, Tulare County

EXECUTIVE DIRECTOR / AIR POLLUTION CONTROL OFFICER

SEYED SADREDIN

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I. EXECUTIVE SUMMARY

This *"2008 Annual Report on the District's Indirect Source Review Program"* was prepared by the San Joaquin Valley Unified Air Pollution Control District. District Rule 9510, Indirect Source Review (ISR), was adopted by the District's Governing Board to reduce the impacts of growth in emissions resulting from new land development in the San Joaquin Valley. The rule's intent, requirements, and administrative procedures are described in this report, as are the emission reductions achieved and mitigation fees received during 2007-2008 through implementation of the ISR program.

District Rule 9510 applies to new development projects that emit emissions of at least two tons of nitrogen oxides (NOx) or two tons of particulate matter smaller than ten microns in aerodynamic diameter (PM10) per year. The rule contains provisions exempting traditional stationary source projects that are subject to the District's stationary source permitting requirements.

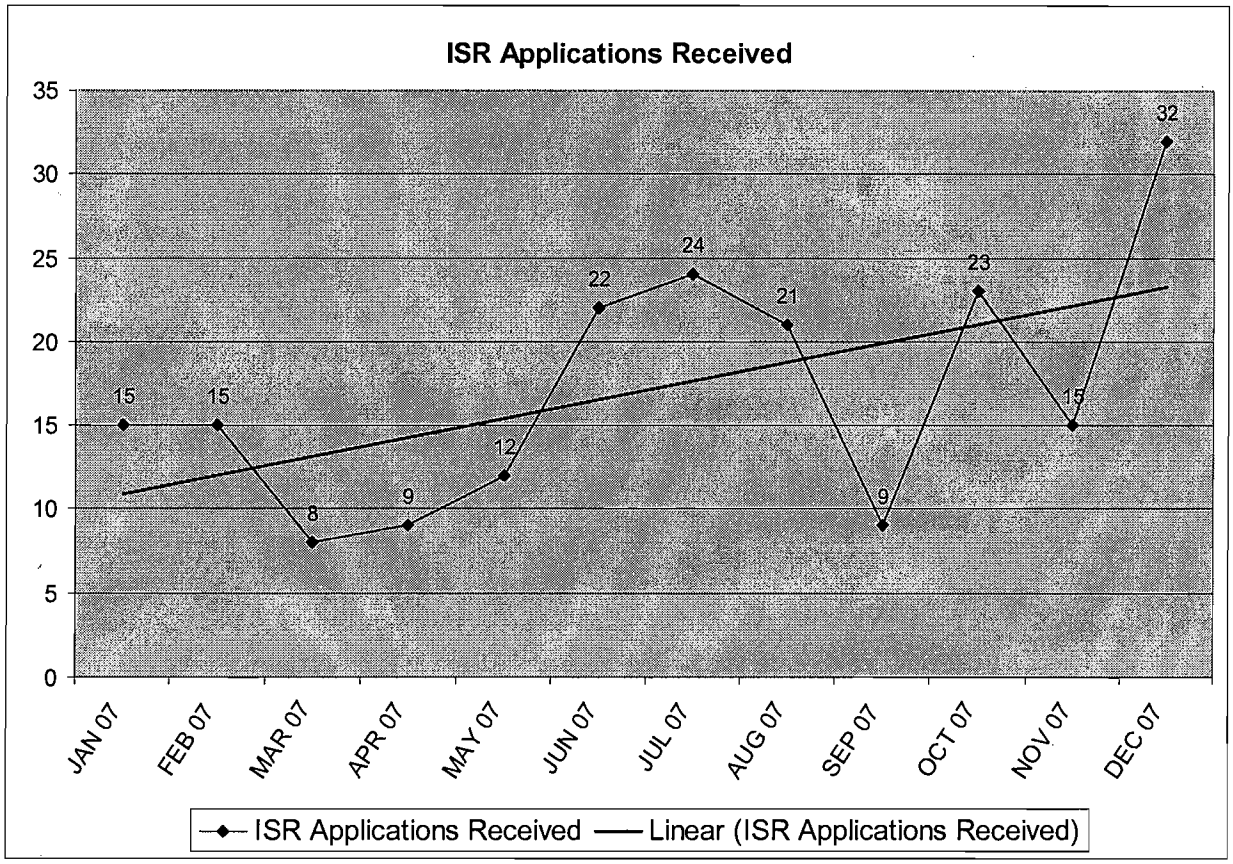
Developers of projects subject to Rule 9510 must reduce emissions occurring during construction and operational phases, or pay specified mitigation fees. To minimize emissions and to minimize the applicable mitigation fee, developers have begun voluntarily incorporating many air-friendly design changes into their proposals. For instance, significant reductions in emissions have been generated via the use of cleaner construction equipment. For large distribution centers, proponents have voluntarily proposed to use cleaner truck fleets. In addition, many lesser but still cumulatively significant reductions in emissions have been garnered by a whole range of effective design principles, like installation of solar power, integrated mixed-use development design, bike lanes, high-efficiency housing design, and many others.

If a developer cannot achieve the required emission reductions through onsite measures, the rule provides a mechanism by which the developer can pay an offsite mitigation fee to the District. One hundred percent of all offsite mitigation fees received by the District are to be used by the District's existing Emission Reduction Incentive Program (ERIP) to fund emission reduction projects, achieving emission reductions in behalf of the project. Additionally, if a project is subject to off-site emission reduction fees, the developer is required to pay an administrative fee equal to four percent (4%) of the required off-site fees. This fee is to cover the District's cost of administering the off-site emission reduction program.

Despite legal challenges[1] and slowed growth in the building industry, especially in the residential development sector, the ISR program had considerable success during this reporting period. As compared with the 2006-2007 reporting period, the ISR program experienced a 46% increase in Air Impact Assessment (AIA) applications received (194 applications received this year versus 133 last year) and a 244% increase in payment of

[1] On June 27, 2006 a lawsuit was filed by various building industries challenging the validity of District Rule 9510. On March 25, 2008 the Fresno County Superior Court ruled in favor of the District on all accounts. An appeal of that decision was filed May 22, 2008. There is a companion case pending in Federal Court which claims District Rule 9510 is preempted by federal tailpipe control standards. Initial indications of the outcome of this case may become apparent in the fall of 2008.

off-site mitigation fees ($5,716,032 received this year compared to $1,660,072 last year).



This increase continued throughout the year, as seen by the graph above, and is attributable to major efforts in District outreach and implementation of measures to improve linkages between the ISR program and District Compliance functions. Outreach included coordinating and holding multiple meetings with key planning agency staff throughout the San Joaquin Valley, conducting public workshops on how to comply with ISR and providing land use agencies training on the use of URBEMIS.

For the 2007-2008 ISR annual reporting period, the District's ISR accounts held a beginning balance of $5,090,869. During this reporting period, the District received off-site mitigation fees totaling $5,392,453 resulting in a grand total of $10,483,322 in off-site mitigation fees. The District funded off-site emission reduction projects totaling $3,125,191, leaving an unexpended balance of $7,358,131.

Implementation of District Rule 9510 resulted in projected combined on-site and off-site emission reductions totaling 2,078 tons of nitrogen oxides (NOx) and 1,087 tons of fine particulate matter (PM10). Off-site emission reduction projects funded by the ISR program achieved emission reductions representing 252 of NOx and 9 tons of PM10, with an average cost effectiveness of $11,928 per ton of reduced emissions.

II. INTRODUCTION

The District's population increased by 22% between 1990 and 2000, and California's Department of Finance has projected that the San Joaquin Valley Air Basin (SJVAB) will experience an overall increase in population of 24% between 2000 and 2010, and an additional 26% increase between 2010 and 2020. Population growth results in increased area source emissions from activities such as increased consumer product use, fuel combustion, and landscape maintenance. Additionally, the total number of vehicle miles traveled (VMT) increases at an even faster rate than the population growth rate. The District experienced a 9% increase in VMT in just three years, between 1999 and 2002, and we expect to see an additional 27% increase in VMT from 2002 to 2010.

The projected growth in these so called "indirect source" emissions erodes the benefits of emission reductions achieved through the District's stationary source program and the state and federal mobile source controls. The District has longstanding statutory authority to regulate indirect sources of air pollution. Pursuant to this authority, the District made a federally enforceable commitment to regulate indirect sources when it adopted its PM10 Attainment Plan in June 2003. Subsequently, the California State Legislature passed Senate Bill 709, Florez, in the fall of 2003, which Governor Gray Davis subsequently signed and codified into the Health and Safety Code in §40604. This additional legislation required the District to adopt, by regulation, a schedule of fees to be assessed on area wide or indirect sources of emissions that are regulated by the District.

District Rule 9510 (Indirect Source Review) was adopted by the District's Board on December 15, 2005, and became effective March 1, 2006. Rule 9510 was adopted by the District's Board to reduce the impacts of growth in emissions resulting from new land development in the San Joaquin Valley. Although the rule does not directly regulate VMT, it is designed to regulate the air impacts associated with new development. Rule 9510 applies to residential and non-residential development projects, including transportation and transit projects, which equal or exceed established applicability thresholds. Rule 9510 establishes emission reduction requirements for NOx and PM10 pollutants. Emission reductions required by the rule that are not achieved through on-site emission reduction measures are subject to off-site emission reduction fees. These fees are used by the District to fund emission reduction projects, mitigating the project's potential impact on air quality in the SJVAB.

This report was prepared pursuant to provisions of Rule 9510 that require the District to prepare an annual report regarding expenditure of received funds and achieved emission reductions. Pursuant to Rule 9520, Section 10.4, the annual report should include the following:

- Total amount of Off-Site Fees received;
- Total monies spent;
- Total monies remaining;
- Any refunds distributed;
- A list of all projects funded;

- Total emissions reductions realized; and
- The overall cost-effectiveness factor for the projects funded.

III. IMPLEMENTATION

District Rule 9510 (Indirect Source Review)

District Rule 9510 applies to new development projects that emit emissions of at least two tons of NOx or two tons of PM10 per year. Developers of projects subject to Rule 9510 are required to reduce emissions occurring during construction and operational phases. During construction, exhaust emissions of NOx and PM10 are to be reduced by 20% and 45% respectively, compared to the statewide average for construction equipment. Construction exhaust emissions can be reduced through installation and use of aftermarket devices, and through use of construction equipment that is newer than the statewide average. Operational emissions of NOx and PM10 are to be reduced by 33.3% and 50%, respectively, of the project's baseline for 10 years.

Operational emissions can be reduced by incorporating design elements that reduce onsite emissions, and the District has seen some very positive clean-air technologies and techniques employed by developers to reduce indirect emissions. For instance, significant reductions in emissions have been generated via the use of cleaner construction equipment. For large distribution centers, proponents have voluntarily proposed to use cleaner truck fleets. In addition, many lesser but still cumulatively significant reductions in emissions have been garnered by a whole range of effective design principles, like installation of solar power, integrated mixed-use development design, bike lanes, high-efficiency housing design, and many others.

If, after implementing such onsite measures, a developer cannot achieve the required emission reductions, the rule provides a mechanism by which the developer can pay an offsite mitigation fee to the District. One hundred percent of all offsite mitigation fees received by the District are to be used by the District's existing Emission Reduction Incentive Program (ERIP) to fund emission reduction projects, achieving emission reductions on behalf of the project. To recover the District's costs for administering the requirements of Rule 9510, the District's Board adopted Rule 3180 (Administrative Fees for Indirect Source Review). Provisions of Rule 3180 establish an application filing fee structure of $432 for residential and $648 for non-residential projects. Additionally, if a project is subject to off-site emission reduction fees, the developer is required to pay an administrative fee equal to four percent (4%) of the required off-site fees. This fee is to cover the District's cost of administering the off-site emission reduction program.

Development Mitigation Contracts

A Development Mitigation Contract (DMC) is an air quality mitigation measure by which a developer voluntarily enters into a contractual agreement with the District to reduce a development project's impact on air quality beyond that achieved by compliance with District Rule 9510. By fully mitigating the project's impact on air quality, a developer

can address one of the issues that have led to California Environmental Quality Act (CEQA) legal challenges to development projects within the SJVAB.

Implementation of a DMC is complementary to ISR; project emissions are characterized, mitigation funds are paid to the District, the District administers the funds to secure the required emission reduction projects. A prerequisite for the District to enter into a DMC is that the DMC will exceed the air quality benefits achieved by compliance with Rule 9510. Therefore, developers who enter into a DMC are considered in compliance with District Rule 9510. This report therefore includes revenues and emission reductions resulting from DMCs. During this reporting period, the District received no new off-site mitigation fees from development mitigation contracts. However, DMC funds carried forward from the previous reporting period were used to fund off-site emission reduction projects.

IV. 2007–2008 ANALYSIS

Table -1: Summary of ISR Program for 2007 to 2008

		Total ISR Program
Beginning Balance	**$**	**5,090,869**
Total Application Fees Received	$	115,869
Total Administrative Fees Received	$	207,710
Total Amount Off-Site Fees Received	$	5,392,453
Total Fees Received	$	5,716,032
Grand Total of Available Off-Site Fees	**$**	**10,483,322**
Total Amount Spent (Contracted)	**$**	**3,125,191**
Total Balance of Available Off-Site Fees	$	7,358,131
Total Amount Refunded	$	0
Grant Total Balance of Available Off-Site Fees	**$**	**7,358,131**

		NOx	*PM10*	*Total*
Total Off-Site Achieved Emission Reductions	***Tons***	251.56	9.09	**260.65**
Emission Reductions Cost Effectiveness *(average based on projects funded)*	*$/Ton*			**11,928**
Total ON-SITE Projected Emission Reductions	*Tons*	1,009.61	305.20	**1,314.81**
Total OFF-SITE Projected Emission Reductions	*Tons*	1,067.91	781.78	**1,849.69**
Total Projected Emission Reductions	***Tons***	2,077.52	1,086.78	**3,164.50**

Total Application Fees Received

District Rule 3180 (Administrative Fees for Indirect Source Review) establishes application fees of $432 and $648 respectively for non-residential ISR applications. The District may also charge for additional staff time required to process an application. As presented in Table-1, the District received application fees totaling $115,869.

Total Administrative Fees Received

District Rule 3180 (Administrative Fees for Indirect Source Review) establishes a four percent (4%) administrative fee to cover the District's costs of operating an off-site emissions reduction program. As presented in Table-1, the District received administrative fees totaling $207,710.

Total Amount of Off-site Fees Received

Provisions within Rule 9510 allow applicants to defer payment of off-site mitigation fees. The payment schedule must provide assurance that reductions from off-site emission reduction projects can be obtained reasonably contemporaneous with emission increases associated with the project. As presented in Table-1, the District received off-site fees totaling $5,392,453. This total does not include fees that have been deferred, nor does it include payments that have been invoiced, but not yet received. As compared to $1,543,697 presented in last year's annual report, this represents a 249% increase in off-site fees received by the District.

A balance of $5,090,869 in off-site mitigation fees was carried forward from the previous reporting period, resulting in $10,483,322 available to fund off-site mitigation projects. Please note that last year's annual report showed a remaining off-site mitigation fee balance of $3,368,308. This amount included $1,722,561 representing funds which had been committed to projects, but not contracted at the time of the annual report.

Total Expenditure of Off-site Fees Received

The District uses off-site fees to fund quantifiable and enforceable off-site emission reduction projects, reducing surplus emissions of NOx and PM10. With the exception of $131,000 voluntarily released by a developer, expenditure of off-site mitigation fees has been limited to fees collected through Development Mitigation Contracts. Of the $131,000 that was available to the District, an emissions reduction project representing $31,000 was funded, and the balance of $100,000 is currently contracted and will be reported in the next year ISR Annual Report.

As presented in Table-1, funds totaling of $3,125,191 were dispersed during this reporting period, leaving a balance of $7,358,131.

Total Emission Reductions Realized

The District funded 25 emission reduction projects for a total of 81 emission sources. These projects consisted primarily of re-powering various type of diesel powered industrial portable equipment such as top grinder, oil drill rig, plastic granulator and agricultural irrigation pumps, with either cleaner diesel engines or by conversion to electric motors. The projects funded achieved total emission reductions of 252 tons of NOx and 9 tons of PM10, with a total of 261 tons combined. The same projects also reduced emissions of Reactive Organic Gases (ROG) by 31 tons. A complete list of all projects funded is presented in Appendix B.

Projected Emission Reductions

Projected emission reductions are a combination of emission reductions to be achieved in the future through implementation of design elements at full project build out and through funding off-site emission reductions projects, using off-site mitigation fees.

For this reporting period, implementation of District Rule 9510 resulted in combined projected on-site and off-site emission reductions totaling 2,078 tons of NOx and 1,087 tons of PM10.

Overall Cost-effectiveness of Funded Projects

Average overall cost-effectiveness is calculated based on total tons of emissions reduced, NOx plus PM10, divided by total funds spent. During this reporting period, the District achieved emission reductions totaling 261 tons and expended funds totaling $3,125,191. As presented in Table-1, average cost-effectiveness is calculated to be $11,928 dollars per ton. This represents a 7% increase, as compared to last year's cost-effectiveness of $11,133 dollars per ton. The District anticipates that cost effectiveness will continue to increase as the most cost-effective projects are funded first.

Appendix A - List of all emission reduction projects funded by the ISR program

APPENDIX A

List of all emission reduction projects funded by the ISR program

EMISSION REDUCTIONS PROJECTS
ISR Annual Report / March 2007 – Feb 2008

Project Name	Date Rec'd	Date Executed	Executed Contract Amount	Amount Paid	Amount UnPaid	Balance	Status	Count Installed	Count Projected	Project Type	Nox Tons	PM10 Tons	ROG Tons
VERA													
Old River Ranch		18-May-07	$25,000	$21,992	$0	$3,008	Closed	1		AG Engine	1.70	0.06	0.21
Old River Ranch		10-Apr-07	$115,567	$0	$115,567	$0	Outstanding		6	AG Engine	1.98	-0.06	0
Old River Ranch		21-Mar-07	$90,000	$90,000	$0	$0	Closed	3		AG Engine	3.15	0.07	0.31
Old River Ranch		30-Apr-07	$22,278	$19,789	$0	$2,489	Closed	1		AG Engine	1.91	0.07	0.26
Old River Ranch		23-Apr-07	$82,719	$82,719	$0	$0	Closed	3		AG Engine	8.52	0.33	1.08
Old River Ranch		23-Apr-07	$20,000	$20,000	$0	$0	Closed	1		AG Engine	1.19	0.01	0.09
Old River Ranch		16-Apr-07	$30,000	$30,000	$0	$0	Closed	2		AG Engine	1.48	0.08	0.26
	Dec-08		**$385,564**	**$264,500**	**$115,567**	**$5,497**		**11**	**6**		**19.93**	**0.56**	**2.21**
Lennar Communities	Feb-08	26-Sep-07	**$16,496**	**$14,920**	**$0**	**$1,576**	**Closed**	**1**		Ag Engine	**1.07**	**0**	**0.18**
Castle & Cooke/ West Ming	May-08	14-Nov-07	**$131,128**	**$131,128**	**$0**	**$0**	**Closed**	**3**		Off Road - Portable Grain Grinders, Pellet Mill Equipment	**36.34**	**1.3**	**4.37**
Castle & Cooke/ Gateway Village		31-May-07	$1,232,390	$484,073			Closed	12		Ag Engine	41.84	1.46	5.42
Castle & Cooke/ Gateway Village					$748,317		Outstanding		8		18.84	0.65	2.39
	Oct-08		**$1,232,390**	**$484,073**	**$748,317**	**$0**		**12**	**8**		**60.68**	**2.11**	**7.81**
Panama 99 Prop. LLC/HWY 99		04-Apr-07	$151,421	$79,985			Closed	2		Off Road - Air Compressors, Drill Units Hydraulic Drill Equipment	4.35	0.16	0.54
Panama 99 Prop. LLC/HWY 99					$71,436		Outstanding		2		6.25	0.26	0.83
Panama 99 Prop. LLC/HWY 99		25-Jun-07	$103,274		$103,274		Outstanding		3	Off Road - Drill Service Pumps	8.26	0.35	1.07
Panama 99 Prop. LLC/HWY 99		19-Jun-07	$41,192	$39,368	$0		Closed	1		Ag Engine	4.48	0.15	0.51
Panama 99 Prop. LLC/HWY 99		14-Nov-07	$47,705	$47,705	$0		Closed	1		Off-Road - Portable Grain Equipment	12.29	0.41	1.42
	Oct-08		**$343,592**	**$167,058**	**$174,710**	**$1,824**		**4**	**5**		**35.63**	**1.33**	**4.37**
Castle & Cooke /Stockdale Ranch		11-Jun-07	$49,428	$49,428	$0	$0	Closed	1		Off Road - Plastic Granulator	4.70	0.17	0.52
Castle & Cooke /Stockdale Ranch		31-May-07	$100,987	$100,987	$0	$0	Closed	3		Off Road - Sprayer	5.22	0.18	0.6
Castle & Cooke /Stockdale Ranch		19-Jun-07	$67,025	$67,025	$0	$0	Closed	3		Off Road - Hydraulic Power Pack	6.38	0.27	0.94
Castle & Cooke /Stockdale Ranch		31-May-07	$48,394	$48,394	$0	$0	Closed	1		Off Road - Pump Engine	3.00	0.10	0.34
Castle & Cooke /Stockdale Ranch		20-Aug-07	$27,910	$0	$27,910	$0	Outstanding		1	Off Road - Drill Rig	1.10	0.05	0.15
Castle & Cooke /Stockdale Ranch		31-May-07	$275,651	$217,842	$0	$57,809	Closed	7		Off Road - Generator, Mud Pump, Drill Rig, Draw Work	24.28	0.91	2.96
Castle & Cooke /Stockdale Ranch				$0	$57,809	($57,809)	Outstanding		1		15.88	0.53	1.82
Castle & Cooke /Stockdale Ranch		31-May-07	$140,916	$0	$140,916	$0	Outstanding		4	Ag Engine	12.51	0.43	1.48
Castle & Cooke /Stockdale Ranch		02-May-07	$25,857	$25,857	$0	$0	Closed	1		Ag Engine	1.60	0.06	0.21
Castle & Cooke /Stockdale Ranch		06-Jun-07	$171,600	$0	$171,600	$0	Outstanding		5	AG Engine	17.17	0.59	2.12
Castle & Cooke /Stockdale Ranch		31-May-07	$77,253	$77,253	$0	$0	Closed	3		AG Engine	5.01	0.21	0.69
	Oct-08		**$985,021**	**$586,786**	**$398,235**	**$0**		**19**	**11**		**96.85**	**3.50**	**11.8**
ISR													
ISR Mitigation		02-Oct-07	$31,000	$0	$31,000	$0	Outstanding		1	Park and Ride Subsidy	1.06	0.29	0.34
	Sep-08		**$31,000**	**$0**	**$31,000**	**$0**			**1**		**1.06**	**0.29**	**0.34**
		Totals	**$3,125,191**	**$1,648,465**	**$1,467,829**	**$8,897**		50	Projects	Achieved	**168.51**	**6.00**	**20.91**
								31	Projects	Projected	**83.05**	**3.09**	**10.20**
											251.56	**9.09**	**31.1**

AIR QUALITY EMISSION REDUCTION AGREEMENT

This Air Quality Emission Reduction Agreement ("Agreement") is entered into as of _____, 2007 by and between Developer Name ("Developer") and the SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT, an air pollution control district formed pursuant to California Health and Safety Code section 40150, et seq. ("District").

RECITALS

WHEREAS, Developer is presently seeking governmental approval of land use entitlements ("Entitlements") which will permit the development of a Project located in the City/County, California, as more particularly described on Exhibit A attached hereto (the "Project"); and

WHEREAS, the Project incorporates the design features specified on Exhibit B attached hereto ("Emission Reduction Design Features"), in order to significantly reduce the air quality impacts associated with the Project; and

WHEREAS, despite incorporation of the Emission Reduction Design Features, without additional emission reductions, the Project would cause impacts on air quality within the geographical boundaries of the San Joaquin Valley Unified Air Pollution Control District, as depicted on Exhibit C attached hereto (the "District Boundaries"); and

WHEREAS, Developer anticipates that mitigation of impacts on air quality resulting from the Project will be either required as a condition to the approval of Developer's Entitlements, or voluntarily imposed by Developer as a means of reducing such impacts; and

WHEREAS, Developer desires to fully comply with all requirements of the California Environmental Quality Act codified at California Public Resources Code section 21000, et seq. ("CEQA"), including all requirements relating to the mitigation of air quality impacts arising from or in connection with the Project; and

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WHEREAS, District is an air pollution control district formed by the counties of Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare, pursuant to California Health and Safety Code section 40150, et seq.; and

WHEREAS, District is responsible for developing and implementing air quality control measures within the District Boundaries, including air quality control measures for stationary sources, transportation sources, and indirect sources; and

WHEREAS, District has determined that with appropriate funding, District can bring about a reduction of emissions from certain projects in types and in sufficient quantities to fully mitigate the net air quality criteria pollutant impacts of the Project as quantified in the Verified Air Quality Assessment (as defined in Section 2.2 below) ("Project's Air Impact"); and

WHEREAS, Developer and District desire to enter into this Agreement in order to develop and implement air quality control measures which will fully mitigate the Project's Air Impact to the extent that the development of such Project will result in no net increase in criteria pollutant emissions over the criteria pollutant emissions which would otherwise exist without the development thereof.

AGREEMENT

NOW THEREFORE, in exchange of the mutual covenants herein contained, Developer and District hereby agree as follows:

1. **Emission Reduction by Developer and District.**

1.1. **Emission Reduction Proposals**. Developer shall identify and propose to District opportunities to reduce emissions to fully mitigate Project's Air Impact, including but not limited to opportunities for removal or retrofitting of stationary, transportation, indirect, and/or mobile pollution source equipment, and/or other opportunities therefore (each, an "**Emission Reduction Proposal**"). Each Emission Reduction Proposal shall be submitted in writing to District, using District approved forms, and shall contain a representation by Developer that the owner/operator of the identified Pollution Source Equipment has expressed interest in entering into a written funding agreement with

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District in District's then standard form ("**Funding Agreement**") requiring removal or replacement of the identified equipment with new equipment under District's "Heavy Duty Engine Emission Reduction Incentive Program", or another emission reduction program adopted by District ("**District Emission Reduction Program**"). Developer shall submit Emission Reduction Proposals to District in sufficient amounts to fully mitigate emissions from each distinct phase of the project. For each phase of the project, Developer shall submit Emission Reduction Proposals to District no later than application for grading permits for, and before generating emissions from, that phase. Any Emission Reduction Shortfall for a given phase shall be addressed according to Section 1.7.2 of this Agreement.

1.2. **District's Verification of Emission Reduction.** As quickly as practicable upon Developer's submission to District of an Emission Reduction Proposal, District shall determine the types and quantities of permanent reduction in emissions which would be realized by the proposed removal or retrofit and shall advise Developer of such determination in writing ("**Emission Reduction Verification**") thereby verifying that in District's considered opinion the removal or retrofit proposed in the Emission Reduction Proposal would result in permanent emission reduction in the locality of the Project in the types and quantities so determined by District.

1.3. **Emission Reduction Proposal Advance.** Developer shall advance to District, on the date of submittal of each Developer's Emission Reduction Proposal, a monetary sum equal to the total estimated cost (as specified in each Developer's Emission Reduction Proposal), until sufficient advance is received by District to fully mitigate the Project's Air Impact ("**Emission Reduction Proposal Advance**").

1.4. **Funding Agreements.** As soon as practicable after District's receipt of Developer's Emission Reduction Proposal Advance, District shall use diligent efforts to enter into Funding Agreements with the owners and/or operators of the pollution source equipment identified in Developer's Emission Reduction Proposal, thereby providing for the removal and/or retrofit of all of such Pollution Source Equipment, and

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providing for District's payment (from the Emission Reduction Proposal Advance) to such owner or operator, of an amount equal to the estimated cost of such opportunity, as specified in Developer's Emission Reduction Proposals. District shall use diligent efforts to enter into Funding Agreements with all of the owners or operators identified in Developer's Emission Reduction Proposals within one hundred eighty (180) days following District's receipt of a complete Emission Reduction Proposal and the Emission Reduction Proposal Advance from Developer.

1.5. **Use of Emission Reduction Proposal Advance**. District shall use the Emission Reduction Proposal Advance to meet its monetary obligations under the Funding Agreements that District shall enter into with the owners of the Pollution Source Equipment identified in Developer's Emission Reduction Proposals.

1.6. **Use of Unused Portions of Emission Reduction Proposal Advance.** In the event Developer is unable to submit to District Emission Reduction Proposals providing for emission reduction in the types and quantities necessary to fully mitigate the Project's Air Impact, or in the event District is unable to enter into Funding Agreements with any of the owners or operators identified in Developer's Emission Reduction Proposals, District shall notify Developer in writing of the additional emission reductions needed to fully mitigate the Project's Air Impact, and Developer shall have a reasonable time, not to exceed one hundred eighty (180) days within which to submit to District additional or supplemental Emission Reduction Proposals in order to provide the necessary additional emission reduction.

1.7. **Unused Advance / Emission Reduction Shortfall / Additional Payment.**

1.7.1. **Unused Advance.** If, despite District's diligent efforts to enter into Funding Agreements with all of the owners or operators identified in Developer's Emission Reduction Proposals (and, if applicable, supplemental Emission Reduction Proposals submitted by Developer), District is unable to enter into Funding Agreements sufficient to fully mitigate the Project's Air Impact, then District shall use any unused portion of Developer's Emission Reduction Proposal Advance to fund emission

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reduction opportunities to mitigate the balance of the Project's Air Impact at District's actual cost of doing so, provided that such actual costs shall not exceed the costs set forth in the following Emission Reduction Cost Schedule:

Emission Reduction Cost Schedule		
Year Paid	NOx or ROG ($/ton)	PM10 ($/ton)
2007	$49,700	$55,940
2008	$65,450	$90,110
Beyond	Prevailing Costs	Prevailing Costs

District is of the considered opinion that the emission reductions listed in the above schedule can be achieved at the corresponding times and costs shown in said schedule. If, at the time of invoicing, the District has not identified Prevailing Costs for post-2008 payments, 2008 costs shall apply.

1.7.2. **Emission Reduction Shortfall/Additional Payment.** In the event the emission reduction brought about by the Funding Agreements entered into between District and the owners or operators identified in Developer's Emission Reduction Proposals (and, if applicable supplemental Emission Reduction Proposals), and that brought about pursuant to Section 1.7.1 above, are not sufficient to fully mitigate the Project's Air Impact ("**Emission Reduction Shortfall**"), then Developer shall be credited for the emission reduction brought about as a result of Funding Agreements entered into between District and the owners or operators identified in Developer's Emission Reduction Proposals and for the emission reduction brought about pursuant to Section 1.7.1 above, and Developer thereafter shall deposit with District, within 30 days of receiving notice of the Emission Reduction Shortfall from District, an additional amount equal to the product of (i) District's cost per ton of emission reduction as shown in the Emission Reduction Cost Schedule set forth in Section 1.7.1 above, multiplied by (ii) the total number of tons of emission reduction necessary to fully mitigate the Project's Air Impact less the total number of tons of emission reduction so credited to Developer. However, in no case shall the amount paid to District and the

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amount of emission reductions achieved per this agreement be less than the amount that would be paid to District or the amount of emission reductions that would be required for this Project according to District Rule 9510 (Indirect Source Review). To allow verification of equivalency of emission reductions and off-site mitigation fee amounts, according to District Rule 9510, Developer shall submit to District an ISR Air Impact Assessment Application, using District forms, no later than concurrent with the Developer's submission of the air quality assessment, as set forth in Section 2.2.

1.8. **Surplus Mitigation.** In addition to the amounts payable under paragraph 1.3, Developer shall deliver to District an additional sum equal to five percent (5%) of the Emission Reduction Proposal Advance. Said additional sum shall be paid under the same schedule as set forth in paragraph 1.3. District shall utilize such additional sum to fund further localized emission reduction opportunities in quantities consistent with the schedule set forth in paragraph 1.7.1.

1.9 **Time of Use**. Any emission reductions brought about by this Agreement prior to the date Developer receives final approval of the Project from all applicable Governmental Authorities shall be credited to the total amount of emission reductions achieved per this agreement.

1.10. **District's Obligation**. The monies paid by Developer under this Agreement shall be used by District to obtain localized emission reductions in the types and quantities necessary to fully mitigate the Project's Air Impact as quantified in the Verified Air Quality Assessment. If necessary, District shall assist Developer in securing emission reductions, consistent with the provisions established in Section 1.7.2.

1.11. **Developer's Obligation**. District acknowledges that, if the Project is not finally approved so that such development is allowed to proceed, Developer has no obligations under this Agreement relative to the respective Project. Developer acknowledges that it must satisfy the terms of this Agreement in order to develop the Project.

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2. **CEQA Compliance/Full Mitigation.** For and in exchange of Developer's payment of funds pursuant to Section 1 above, District shall ensure, by way of entering into, funding and enforcing the Funding Agreements in accordance with the provisions of Section 1.4 above, that the Project's Air Impact is fully mitigated, such that the Project, combined with the emission reductions brought about in accordance with Section 1 above, shall result in no net increase in air quality impacts over those air quality impacts which would otherwise exist without the development of such Project. For the purpose of this agreement, full mitigation means the sum of all NOx, ROG, and PM10 emission reductions achieved by the Emission Reductions Proposals equals, or is greater than, the sum of all NOx, ROG, and PM10 emissions increases calculated as the average annual construction and the peak annual area source and mobile source emissions of NOx, ROG, and PM10 less the average annual emissions that have occurred at the project site during the three years prior to release of the Notice of Preparation. In addition to entering into, funding and enforcing the Funding Agreements in accordance with the provisions of Section 1.4 above, District shall do all of the following:

2.1. **District's Verification of Air Assessment Protocol.** Within ten (10) business days following the date of this Agreement, Developer shall submit to District an air assessment protocol prepared by Developer's air quality consultant reflecting the methodology, including air quality impact modeling, to be utilized in the preparation of the air quality assessment for the Project. Within twenty-one (21) business days following District's receipt of Developer's air assessment protocol, District shall review and comment upon such air assessment protocol, and, after Developer's incorporation of any revisions suggested by District, District shall verify in writing to Developer the correctness of the air assessment protocol which will be utilized in the preparation of the air quality assessment for the Project.

2.2 **District's Verification of Air Quality Assessment.** Following District's Verification of Air Assessment Protocol, Developer shall submit to District an air quality

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assessment prepared by Developer's air quality consultant assessing the air quality impacts of the Project. District shall use its best efforts to review and comment upon Developer's air quality assessment within thirty (30) days following District's receipt of Developer's complete air quality assessment, and, after Developer's incorporation of any and all revisions suggested by District, District shall verify in writing to Developer the correctness of the air quality assessment to be utilized in connection with the CEQA documents for the Project, including (i) the methodology utilized in the preparation of the CEQA document, (ii) the types and quantities of any net air quality impacts associated with the Project, (iii) the appropriateness of the mitigation measures proposed in the CEQA document, and (iv) any other matters which may pertain to such CEQA document and/or any air quality impacts or air quality mitigation measures referenced therein (the "**Verified Air Quality Assessment**").

2.3. **District's Verification of Administrative Draft Environmental Impact Report**. Upon request by Developer, and submission by Developer to District of any administrative Draft Environmental Impact Report, or other applicable CEQA documents for the Project, District shall review, comment upon and, after incorporation of any and all revisions made by District, verify in writing to Developer the correctness of all portions thereof which pertain to air quality impacts, including, (i) the methodology utilized in the preparation of the CEQA document, (ii) the types and quantities of any net air quality impacts associated with the Project, (iii) the appropriateness of the mitigation measures proposed in the CEQA document, and (iv) any other matters which may pertain to such CEQA document and/or any air quality impacts or air quality mitigation measures referenced therein.

2.4 **District's Acknowledgment Regarding Full Mitigation**. At such time as District is provided an opportunity as a commenting agency to comment upon the Draft Environmental Impact Report and Final Environmental Impact Report for the Project, District shall comment in writing as to the correctness of all portions thereof which pertain to air quality impacts, including (i) the methodology utilized in the

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preparation of the CEQA document, (ii) the types and quantities of any net air quality impacts associated with the Project, (iii) the appropriateness of the mitigation measures proposed in the CEQA document, and (iv) any other matters which may pertain to such CEQA document and/or any air quality impacts or air quality mitigation measures referenced therein. District shall at all times fully perform its duties and obligations as a commenting agency, and the provisions of this Section 2.4 shall not be interpreted to the contrary. At such time as District has entered into Funding Agreements pursuant to Section 1.4 above and the owners/operators of equipment to be removed and/or replaced under such agreements have removed and replaced such equipment in accordance with the provisions thereof, District shall verify in writing to Developer and to the lead agency that full mitigation of the Project's Air Impact has been achieved, upon successful fulfillment of all Funding Agreements. District shall ensure that the owners/operators of equipment to be removed and/or replaced pursuant to such Funding Agreements perform all obligations to be performed on the part of such parties under said Funding Agreements. District acknowledges that the Verified Air Quality Assessment and its quantification of the Project's Air Impact will be based on the pending applications for development of the Project and that actual approvals may be for a lesser amount of development. District agrees that Developer's obligations under this Agreement shall be based on the amount of development actually approved, and the final quantification of the Project's Air Impact will be revised accordingly.

2.5. **District's Oversight of Air Quality Mitigation Monitoring Plan.** Upon request of the lead agency having jurisdiction over the Project, District shall oversee that portion of the mitigation monitoring plan adopted by the lead agency for the Project which relates to the mitigation brought about by Section 1 of this Agreement. Alternatively, upon request of that lead agency, District shall cooperate with the lead agency in the oversight of that portion of the mitigation monitoring plan adopted by the lead agency for the Project which relates to the mitigation brought about by Section 1

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of this Agreement.

2.6. **District's Documentation, Record Keeping and Monitoring**. District shall document, keep adequate records on and monitor the emission reduction brought about as a result of this Agreement, and shall from time to time, upon written request by Developer or by the lead agency for the Project, provide to Developer or to the lead agency written reports verifying that emission reduction has been and/or is being brought about so as to fully mitigate the Project's Air Impact.

3. **Subsequent Litigation, Legislation and/or Administrative Action / Credit to Developer**.

3.1. **Subsequent Litigation**. In the event that despite this Agreement, Developer is required as a result of a final judgment or District Approved Settlement (as defined below) in any subsequent third party litigation, to pay monies in addition to the monies to be paid by Developer pursuant to Section 1 above, then, provided that the project total emissions are the same as quantified in the Verified Air Quality Assessment, District shall acknowledge and credit Developer with mitigation of the air quality impacts of the Project in such types and quantities that Developer can establish, to the reasonable satisfaction of District, will result from Developer's payment of such additional monies, and shall reduce any amounts thereafter payable by Developer under this Agreement by an amount equal to the additional monies so paid by Developer. This requirement shall not apply if the additional monies are required to mitigate emissions that exceed those set forth in the Verified Air Quality Assessment. For purposes of this Section 3.1.1, a "**District Approved Settlement**" shall mean a settlement of a lawsuit filed pursuant to CEQA, the National Environmental Protection Act or other applicable environmental law which (i) provides for Developer's payment of monies in exchange for a dismissal of such lawsuit, (ii) provides for the use of such monies by the petitioner in such lawsuit in such a manner as to mitigate adverse air quality impacts of the Project, and (iii) is approved in writing by District.

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3.2. **District Rule 9510.** The performance of Developer's and District's obligations under this Agreement will fully mitigate the Project's Air Impact. Inasmuch as the mitigation provided under this Agreement exceeds the mitigation which would otherwise have been provided under Sections 6.0 and 7.0 of District's Rule 9510, and the Project's mitigated baseline (being zero emissions) is less than the threshold stated in Section 4.3 of said Rule 9510, the Project is exempt from Sections 6.0 and 7.0 of District's Rule 9510. Accordingly, no off-site Emission Reduction Fee will be required in connection with the approval or development of the Project. For each individual project developed at the project site requiring a discretionary approval by the lead agency, Developer shall provide District with a map or diagram indicating its location within the area covered by this Agreement.

4. **Term of Agreement.** This Agreement shall be effective upon the date first written above, and shall terminate upon District's meeting its obligation to implement projects that provide necessary emissions reductions to fully mitigate the Project's Air Impact (the "**Term**"). Developer may, at any time by written notice to District, terminate this Agreement, whereupon, (i) District shall acknowledge in writing to the lead agency that Developer has mitigated air quality impacts of the Project to the extent and in the types and quantities brought about by Funding Agreements theretofore funded by Developer's Emission Reduction Proposal Advance (and if applicable pursuant to Section 1.7.1 above), (ii) District shall refund to Developer any unused portion of Developer's Emission Reduction Proposal Advance less any unpaid administrative fees incurred; and (iii) neither Developer nor District shall have any further rights or obligations under this Agreement. Developer acknowledges that in the absence of this Agreement, the project is subject to all applicable provisions of District Rule 9510 (Indirect Source Review).

5. **Payment of Administrative Fees to District.** Developer agrees to pay to District, in order to reimburse District for its general overhead required for the administration of this Agreement, an administrative fee ("***ERIP Fee***") in an amount

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equal to four percent (4%) of the Emission Reduction Proposal Advance. Such ERIP Fee shall be due and payable upon Developer's delivery of the Emission Reduction Proposal Advance pursuant to Section 1.3 above. In addition to the ERIP Fee, Developer agrees to pay to District, within thirty (30) days following Developer's receipt of District's invoice, administrative fees to reimburse District for staff time spent and materials used by District in the administration of this Agreement, other than that time associated with the ERIP program covered by the ERIP Fee above, including review, verification and preparation of documents, and staff time relating to the performance of District's obligations hereunder, based on a time and materials basis at District's average weighted labor rates.

6. **Representations, Covenants and Warranties.**

6.1. **Developer's Representations, Covenants and Warranties.** Developer represents, covenants and warrants to District, as of the date of this Agreement, and as of the date of Developer's submission to District of any documents contemplated hereunder, as follows:

6.1.1. The undersigned representatives of Developer are duly authorized to execute, deliver and perform this Agreement, and upon Developer's execution and delivery of this Agreement, this Agreement will have been duly authorized by Developer.

6.1.2. Upon execution and delivery of this Agreement by Developer, Developer's obligations under this Agreement shall be legal, valid and binding obligations of Developer, duly enforceable at law and in equity in accordance with the terms and conditions of this Agreement.

6.1.3. There is no lawsuit, legal action, arbitration, legal or administrative proceeding, legislative or quasi-legislative action or claim existing, pending, threatened or anticipated which would render all or any portion of this Agreement invalid, void or unenforceable in accordance with the terms and conditions thereof.

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6.1.4. Other than the execution and delivery of this Agreement by the undersigned representatives of Developer, there are no approvals, consents, confirmations, proceedings, or other actions required by Developer or any third party, entity or agency in order to enter into and carry out the terms, conditions and intent of the parties with respect to this Agreement.

6.2. **District's Representations, Covenants and Warranties.** District represents, covenants and warrants to Developer, as of the date of this Agreement, and as of the date of District's delivery to Developer of any documents contemplated hereunder, as follows:

6.2.1. The undersigned representatives of District are duly authorized to execute, deliver and perform this Agreement, and upon District's execution and delivery of this Agreement, this Agreement will have been duly authorized by District.

6.2.2. Upon execution and delivery of this Agreement by District, District's obligations under this Agreement shall be legal, valid and binding obligations of District, duly enforceable at law and in equity in accordance with the terms and conditions of this Agreement.

6.2.3. There is no lawsuit, legal action, arbitration, legal or administrative proceeding, legislative, quasi-legislative or administrative action or claim existing, pending, threatened or anticipated which would render all or any portion of this Agreement invalid, void or unenforceable in accordance with the terms and conditions thereof.

6.2.4. Other than the execution and delivery of this Agreement by the undersigned representatives of District, there are no approvals, consents, confirmations, proceedings, or other actions required by District or any third party, entity or agency in order to enter into and carry out the terms, conditions and intent of the parties with respect to this Agreement.

6.2.5. No lawsuit, legal action, arbitration, legal or administrative proceeding, legislative or quasi-legislative action or claim existing, pending, threatened or

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anticipated will render invalid, void or unenforceable any right or benefit Developer is to receive under the terms and conditions of this Agreement.

6.2.6. The monies paid by Developer under this Agreement shall be sufficient to ensure that the emission reduction contemplated by this Agreement shall occur, and District shall utilize such monies in such a manner as to ensure that such emission reduction shall occur.

6.2.7. Upon the approval of this Agreement by the governing board of District, the Air Pollution Control Officer of District, or equivalent representative, or a delegee of such officer, shall have the authority to approve, deliver, verify, enter into, acknowledge and/or accept any communication, notice, notification, verification, agreement and/or other document to be issued or entered into by District under the terms and conditions of this Agreement, without further approval of the governing board of District.

7. **Indemnification**. Developer agrees to indemnify, defend and hold harmless District for, from and in connection with any third party claims, losses and/or liabilities arising from or in connection with District's performance of this Agreement, excluding only such claims, losses and/or liabilities which result from or in connection with District's sole negligence, act or omission.

8. **Inurnment**. Developer's rights and obligations under this Agreement, or applicable portions thereof, shall run with the land encompassed by the Project, and shall inure to the benefit of and be binding upon the heirs, successors and assigns of Developer who take title to such lands or applicable portions thereof. Upon Developer's conveyance of all or any portion of the lands encompassed by the Project, the rights and obligations of Developer under this Agreement shall, to the extent applicable to the lands so conveyed, be transferred to the transferee thereof, and Developer shall thereupon be released by District from, all obligations and liabilities so assigned, except for such obligations and liabilities arising prior to such transfer.

9. **Assignment**. Developer shall have the right to assign all or any part of its rights and/or obligations under this Agreement. Upon any such assignment, Developer shall

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deliver to District a written assignment and assumption agreement specifying the fact and extent of the assignment, the name and address of the assignee, and the assignee's assumption of all obligations of Developer thereby assigned. Developer shall have the right to assign all or any part of its rights and/or obligations under this Agreement to a third party for use in connection with the mitigation of air quality impacts resulting from one or more projects other than the Project, so long as (i) the project is located within the District Boundaries, (ii) the air quality impacts of such project(s) will in fact be mitigated, as verified by District, by the emission reductions brought about by this Agreement, and (iii) the project(s) consist of residential, commercial, industrial and/or mixed use real estate projects which incorporate the Emission Reduction Design Features. Upon any such assignment by Developer, District shall enter into an amendment of this Agreement which acknowledges the assignment and conforms the various provisions of this Agreement as may be required to be conformed in order to provide to the assignee the rights and benefits of this Agreement as if such assignee and its project were the original party and project contemplated in this Agreement.

10. **Recitals Incorporated**. The recitals set forth hereinabove are hereby incorporated into this Agreement and acknowledged, agreed to and adopted by the parties to this Agreement.

11. **Further Assurances**. Developer and District agree to execute and deliver any documents and/or perform any acts, which are reasonably necessary in order to carry out the intent of the parties with respect to this Agreement.

12. **No Joint Venture or Partnership**. District and Developer agree that nothing contained in this Agreement or in any document executed in connection with this Agreement shall be construed as making District and Developer joint ventures or partners.

13. **Notices**. Any notices or communications relating to this Agreement shall be given in writing and shall be deemed sufficiently given and served for all purposes

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when delivered, if (a) in person, (b) by facsimile (with the original delivered by other means set forth in this Section 13), (c) by generally recognized overnight courier or (d) by United States Mail, certified or registered mail, return receipt requested, postage prepaid, to the respective addresses set forth below, or to such other addresses as the parties may designate from time to time by providing written notice of the change to the other party.

To Developer: Address & Contact Name	To District: San Joaquin Valley APCD 1990 E. Gettysburg Avenue Fresno, CA 93726 Fax: (559) 230-6061 Attn: Seyed Sadredin Executive Director/APCO
With a copy to: Address & Contact Name	with a copy to:San Joaquin Valley APCD 1990 E. Gettysburg Avenue Fresno, CA 93726 Fax: (559) 230-6061 Attn: Dave Warner Director of Permit Services with a copy to: San Joaquin Valley APCD 1990 E. Gettysburg Avenue Fresno, CA 93726 Fax: (559) 230-6061 Attn: Philip M. Jay District Counsel

14. **Entire Agreement.** The terms of this Agreement, together with all attached exhibits, are intended by the parties as the complete and final expression of their agreement with respect to such terms and exhibits and may not be contradicted by evidence of any prior or contemporaneous agreement. This Agreement specifically supersedes any prior written or oral agreements between the parties with respect to

the subject matter of this Agreement.

15. **Amendments and Waivers.** No addition to or modification of this Agreement shall be effective unless set forth in writing and signed by the party against whom the addition or modification is sought to be enforced. The party benefited by any condition or obligation may waive the same, but such waiver shall not be enforceable by another party unless made in writing and signed by the waiving party.

16. **Invalidity of Provisions.** If any provision of this Agreement as applied to either party or to any circumstance shall be adjudged by a court of competent jurisdiction to be void or unenforceable for any reason, the same shall in no way affect (to the maximum extent permissible by law) any other provision of this Agreement, the application of any such provision under circumstances different from those adjudicated by the court, or the validity or enforceability of this Agreement as a whole. The parties further agree to replace any such invalid, illegal or unenforceable portion with a valid and enforceable provision which will achieve, to the maximum extent legally possible, the economic, business or other purposes of the invalid, illegal or unenforceable portion.

17. **Construction.** Unless otherwise indicated, all Section references are to the sections of this Agreement and all references to days are to calendar days. Whenever, under the terms of this Agreement the time for performance of a covenant or condition falls upon a Saturday, Sunday or California state holiday, the time for performance shall be extended to the next business day. The headings used in this Agreement are provided for convenience only and this Agreement shall be interpreted without reference to any headings. Wherever required by the context, the singular shall include the plural and vice versa, and the masculine gender shall include the feminine or neuter genders, or vice versa. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. The language in all parts of this Agreement shall be construed as a whole in accordance with its fair meaning, and shall not be

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construed against any party solely by virtue of the fact that such party or its counsel was primarily responsible for its preparation.

18. **Governing Law**. This Agreement shall be governed by the laws of the State of California applicable to contracts made and to be performed in California.

19. **No Third-party Beneficiaries**. Nothing in this Agreement, express or implied, is intended to confer any rights or remedies under or by reason of this Agreement on any person other than the parties to it and their respective permitted successors and assigns, nor is anything in this Agreement intended to relieve or discharge any obligation of any third person to any party hereto or give any third person any right of subrogation or action over or against any party to this Agreement.

20. **Exhibits**. The exhibits attached to this Agreement shall be deemed to be a part of this Agreement and are fully incorporated herein by reference.

21. **Force Majeure**. The time within which any party shall be required to perform under this Agreement shall be extended on a day-per-day basis for each day during which such performance is prevented or delayed by reason of events reasonably outside of the control of the performing party, including, without limitation, acts of God, events of destruction, acts of war, civil insurrection, strikes, shortages, governmental delays, moratoria, civil litigation and the like, and/or delays caused by the non-performing party's act or omission.

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IN WITNESS WHEREOF, Developer and District have executed this Agreement and agree that it shall be effective as of the date first written above.

DEVELOPER: Developer Name,

a California limited liability company

By:_____

Name:_____

Title:_____

DISTRICT: **SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT**, an air pollution control district formed pursuant to California Health and Safety Code section 40150, et seq.

///

DISTRICT

San Joaquin Valley Unified Air Pollution Control District

///

By:_____

Councilmember J. Steven Worthley, Chair

Governing Board

///

Recommended for approval:

San Joaquin Valley Unified Air Pollution Control District

///

_____

Seyed Sadredin

Executive Director/APCO

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Approved as to legal form:

San Joaquin Valley Unified Air Pollution Control District

_____

Philip M. Jay

District Counsel

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Approved as to accounting form:

San Joaquin Valley Unified Air

Pollution Control District

///

_____

Roger W. McCoy

Director of Administrative Service

For accounting use only:

Program:_____

Account No.:_____

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EXHIBIT A

DESCRIPTION OF THE PROJECT

[INSERT MAP.]

EXHIBIT B

EMISSION REDUCTION DESIGN FEATURES

The project shall incorporate the following Emission Reduction Design Features:

The project will incorporate the following on-site features:

1. Utilization of land use designs which create walkable communities and encourage pedestrian travel.
2. Utilization of interconnecting sidewalks, walking paths and/or bike paths in order to encourage travel by means other than motor vehicle.
3. Utilization of appropriate landscaping to create reasonable shade canopies for streets, parkways and parking areas.
4. Utilization of roadway designs, which enhance pedestrian safety by appropriate signaling, signage and separation from traffic.
5. Design requirements, which incorporate natural gas hookups and electrical outlets on patios.
6. Design requirements, which prohibit the installation and use of wood burning stoves and wood burning fireplaces.

Prior to issuance of grading permits for the Project, Developer shall prepare and submit to District dust control plans for the areas to be graded, in accordance with District Regulation VIII. The plan shall be prepared consistent with District Regulation VIII and must be reviewed and approved by the District prior to commencement of grading activities. Each contractor working on the Project site shall implement the dust control measures outlined in the approved dust control plan. The dust control measures selected shall be incorporated as a note on each grading plan.

District maintains New Source Review requirements that direct owners/operators of certain types of stationary equipment to obtain an Authority to Construct ("ATC") and Permits to Operate ("PTO") from the District. As part of this process, the need for emission control equipment is assessed and the District determines whether a Health Risk Assessment ("HRA") must be prepared.

Owners/operators of all stationary sources for which such approvals are required should show proof of compliance with District Rules and Regulations prior to issuance of certificates of occupancy.

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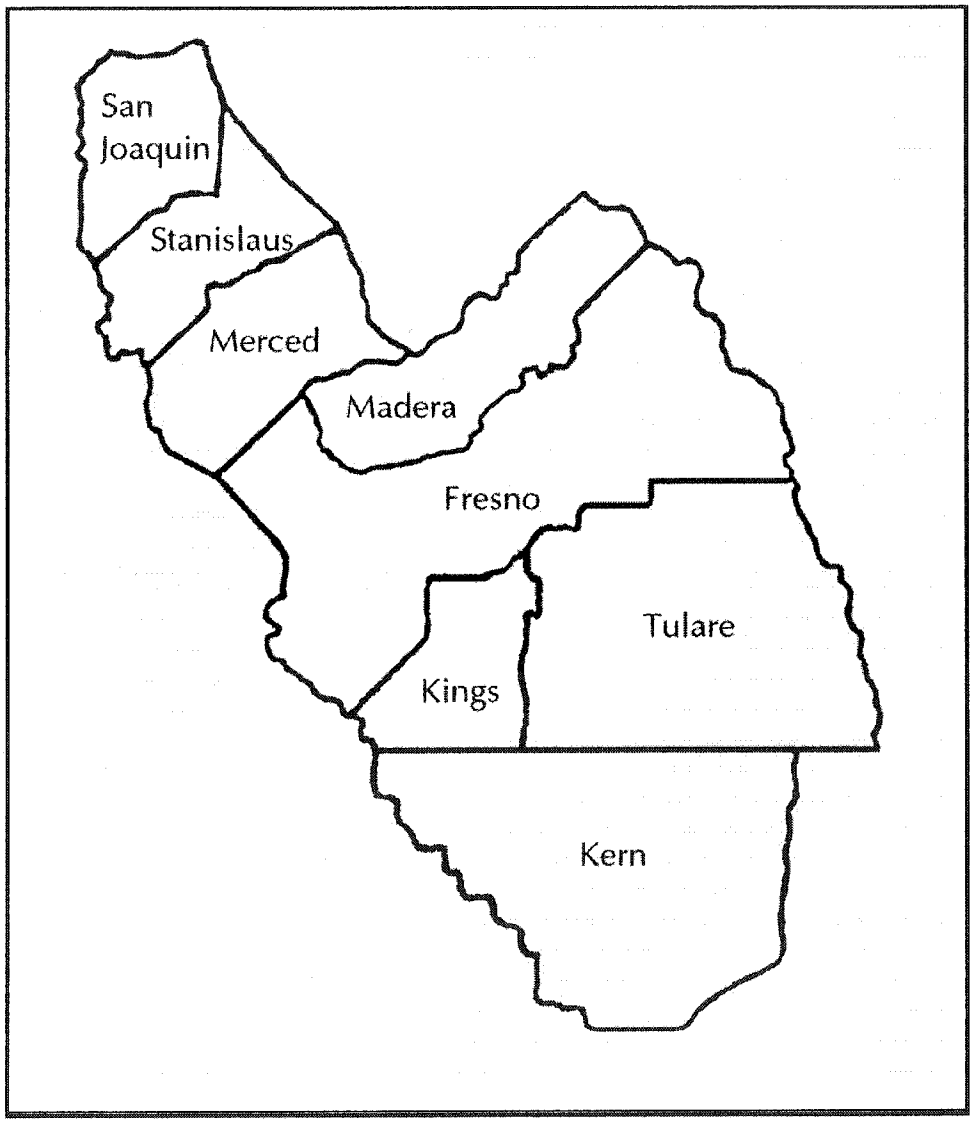
EXHIBIT C

DISTRICT BOUNDARIES



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San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT®



AIR TOXICS

2023 Annual Report

March 21, 2024

SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT
GOVERNING BOARD

CHAIR: VITO CHIESA
Supervisor, Stanislaus County

VICE CHAIR: DEBORAH LEWIS
Councilmember, City of Los Banos

MEMBERS:

DAVID COUCH
Supervisor, Kern County

ROSA ESCUTIA-BRAATON
Councilmember, City of Modesto

BOBBY MACAULAY Supervisor,
Madera County

BUDDY MENDES
Supervisor, Fresno County

TANIA PACHECO-WERNER, PHD
Appointed by Governor

LLOYD PAREIRA
Supervisor, Merced County

ALVARO PRECIADO
Mayor, City of Avenal

GILBERTO REYNA
Councilmember, City of Wasco

ROBERT RICKMAN
Supervisor, San Joaquin County

RUSTY ROBINSON
Supervisor, Kings County

ALEXANDER C. SHERRIFFS, M.D.
Appointed by Governor

AMY SHUKLIAN
Supervisor, Tulare County

LIZ WYNN
Councilmember, City of Visalia

EXECUTIVE DIRECTOR/AIR POLLUTION CONTROL OFFICER:

SAMIR SHEIKH

Executive Summary

The San Joaquin Valley Air Pollution Control District (District) is a public health agency whose mission is to improve the health and quality of life for all Valley residents through efficient, effective and entrepreneurial air quality-management strategies. The District has spent nearly three decades implementing and integrating a wide variety of methods reducing toxic air contaminant emissions in the San Joaquin Valley. Based on the latest California Toxics Inventory (CTI) available from CARB, 14% of all air toxics in the Valley are now emitted from stationary sources of pollution under the direct control and regulation of the District, while 52% comes from mobile sources such as cars and trucks, and the remaining 34% is emitted from area-wide sources like road dust, paints, solvents, and other consumer products. Mobile and area-wide sources of emissions are generally under the regulatory authority of the State of California and the federal government.

The District's integrated approach to addressing and reducing risks from toxic air contaminants has taken three main paths: reducing air toxic emissions from existing stationary sources of emissions; preventing the creation of new or modified stationary sources of significant risk; and finding creative and cooperative methods of reducing risk from emissions sources that the District does not typically regulate. This approach has resulted in dramatic reductions in emissions of air toxics from sources in the San Joaquin Valley.

Under Assembly Bill (AB) 2588 (Air Toxics Hot Spots Information and Assessment Act), the District works with facilities to quantify emissions of air toxics, determines the health risk caused by those emissions, reports emissions and any significant risks through written public reports and neighborhood public meetings, and as required, takes steps to reduce such risks. As a result of these ongoing efforts, and the resulting emissions reductions, no Valley facility currently poses a significant risk under this program.

The State's Hot Spots Act, however, is only one part of the District's comprehensive program to regulate air toxics. To achieve maximum efficiency and effectiveness, the District operates an integrated air toxics program that harmonizes local, state, and federal mandates wherever possible.

A number of regulations have also been adopted by the District, the state, and the federal government, and implemented through the District's integrated air toxics program, to directly reduce existing emissions from specific types of facilities and sources of air toxic contaminants. For example, the toxic air contaminant emissions from emissions sources like dry cleaners, chrome platers, gas stations, and diesel internal combustion engines have drastically decreased in the San Joaquin Valley since the implementation of the District's air toxic program.

In addition to the above efforts to minimize emissions, the District also performs comprehensive and conservative toxic emission evaluations and air dispersion modeling before issuing permits to new and modified stationary sources of emissions. This assures the District minimizes the increase those sources add to the existing toxic load and any

potentially significant public health impacts associated with the release of those airborne toxic emissions.

Under its integrated air toxics program, the District has also implemented numerous methods of reducing emissions from mobile sources and other sources of emissions that the District does not have the authority to regulate. For instance, the District developed the first Indirect Source Review rule in the nation, designed to reduce emissions from construction equipment and mobile sources associated with new land use development projects. The District also provides assistance and guidance to the cities and counties in the San Joaquin Valley so that they can be assured that land-use decisions are based on a full understanding of the potential for increasing emissions of air toxics, and new air toxics risks can be avoided. One of the most effective methods of reducing emissions of air toxics from emissions sources not directly regulated by the District has been the incentive grant programs that have leveraged billions of dollars in reducing emissions from diesel internal combustion engines on trucks, tractors and agricultural irrigation operations.

This 2023 Annual Air Toxics Report describes the District's ongoing efforts to regulate and minimize air toxic emissions. An electronic version of this report may be found at: http://www.valleyair.org/busind/pto/air_toxics_annual_reports.htm.

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Summary of Toxic Air Contaminants in the San Joaquin Valley

The United States Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) have identified over 1,700 substances that are emitted into the air that may affect human health. Some of these substances are considered to be carcinogens, while others are known to have short-term acute or long-term chronic health impacts. As part of ongoing efforts to identify and assess potential health risks to the public, the District has collected and compiled air toxics emissions data from industrial and commercial sources of air pollution throughout the Valley. The State has developed similar inventories for mobile sources of air pollution. These District and State inventories have been combined into the CARB's California Toxic Inventory (CTI), which provides emission estimates available for hazardous air pollutants of concern from all sources. A summary of the latest available CTI data for key pollutants is presented in Table 1 below.

Table 1. Primary San Joaquin Valley Hazardous Air Pollutant Emissions

Pollutant	Inventory (tons/yr)
Acetaldehyde	3,512
Diesel Particulate Matter	2,520
Formaldehyde	2,318
Benzene	1,020
Perchloroethylene	448
1,3-Butadiene	269
Methylene Chloride	247
p-Dichlorobenzene	130
Carbon Tetrachloride	0
Chromium, Hexavalent	0

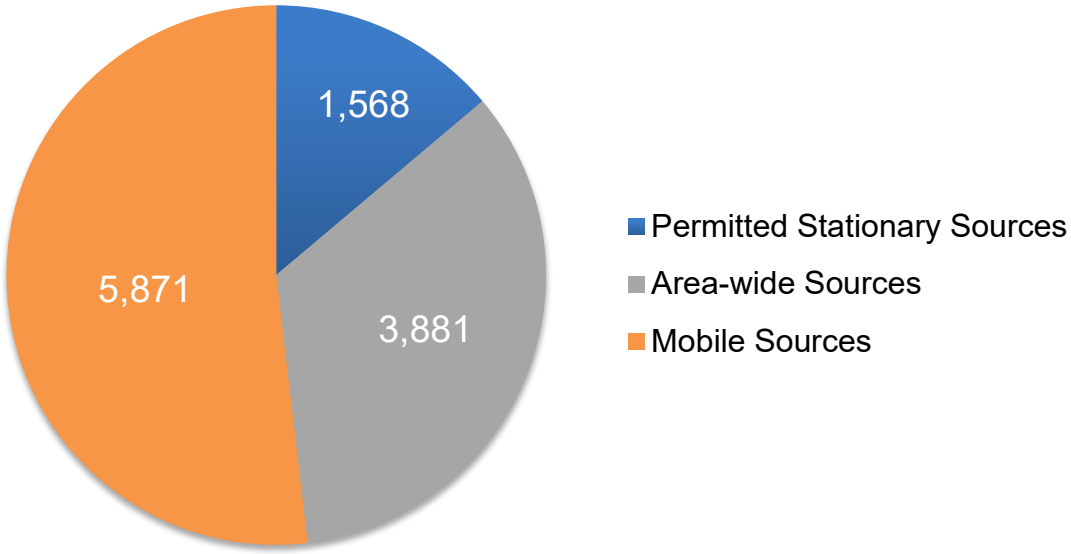
A more detailed summary of CTI emission estimates for the San Joaquin Valley is provided in Table C1 in Appendix C.

Toxic Air Contaminants (TACs), otherwise known as air toxics, are emitted from mobile sources (e.g., cars, trucks, buses, tractors, etc.), which are primarily regulated by the State and EPA; area sources (e.g., consumer products), which are regulated by the State, EPA, and the District; and from stationary sources regulated primarily by the District. Figure 1 below shows a comparison of mobile, area, and stationary source emissions of hazardous air pollutants in the San Joaquin Valley. Of these sources, approximately 86% of hazardous air pollutant emissions occurring in the Valley are from mobile sources and area sources.

Stationary sources include point source emissions provided by facility operators and/or air districts and aggregated point source emissions estimated by CARB and/or air districts.

This stationary source information is included in the CTI pursuant to the Air Toxics "Hot Spots" Act of 1987 (AB 2588). Area-wide sources are those that emit over an unspecified area. This could include paved roads, unpaved roads, or consumer product emitting sources.

Figure 1. Air Toxics Emissions (tons/year) in the San Joaquin Valley (per CARB's CTI)



California Air Toxics Assessment

The California Air Toxics Assessment (CATA)[1] is a tool that uses detailed emission inventory data from CARB, meteorological data, and an integrated modeling approach to assess health risk for air basins located throughout California. Based on risk data collected between 2012 and 2017, CATA shows an average percent reduction in cancer risk of 55% over that time period in the San Joaquin Valley Air Basin, with the majority of the cancer risk reduction from diesel particulate matter (DPM) emissions. The vast majority of the remaining cancer risk in the Valley is coming from mobile DPM emission sources under federal and state jurisdiction.

Most of the reductions seen across the air basins are attributed to reductions in on-road mobile emissions in the past years due to implementation of the state's on-road truck and bus rule and other programs. Note, the 2017 data includes wildfire emissions, which are a large contributor of certain TACs like formaldehyde and acetaldehyde but were not available for the 2012 data.

Prior to the 2017 CATA study, an initial statewide air toxics study was conducted, which covered a 2012 base year. For both years, DPM sources were the major contributor to the overall risk, and the main driver of the risk reductions from 2012 to 2017. Table 2

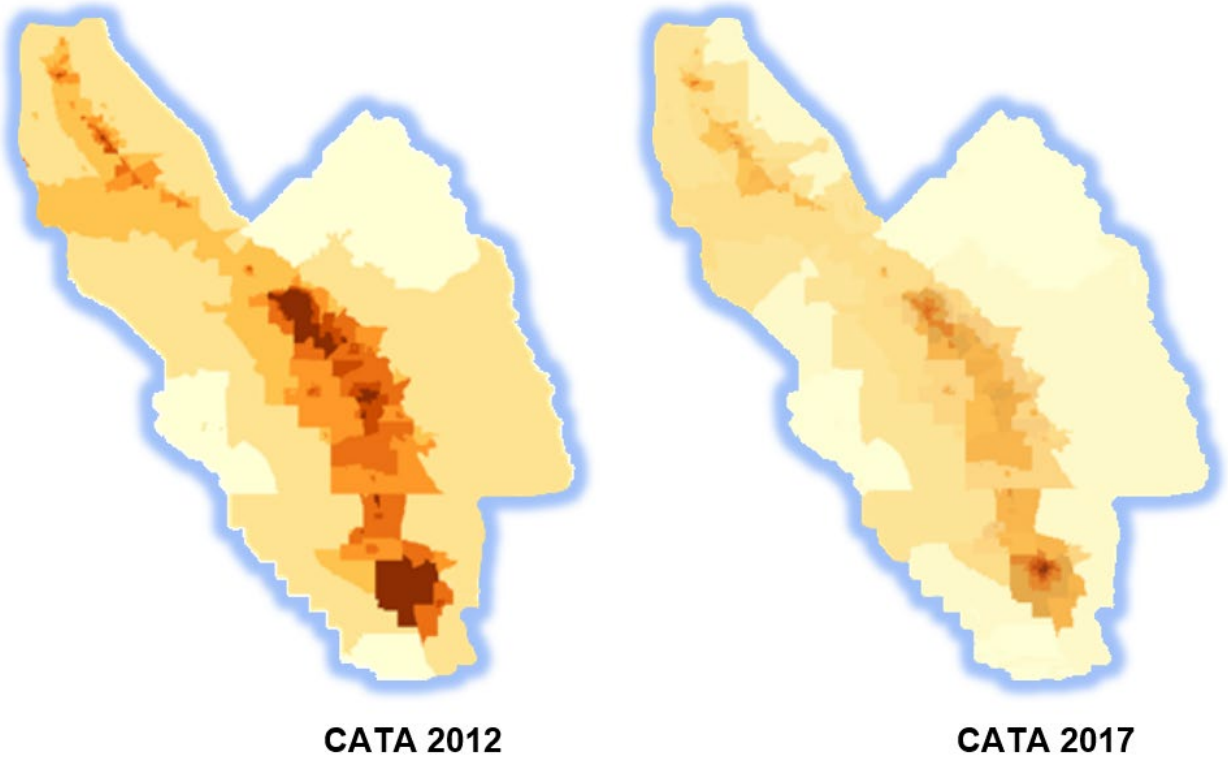
[1] https://california-air-toxics-assessment-californiaarb.hub.arcgis.com/

below presents the population-weighted averages of census tract total cancer risks in 2017 and 2012 in the six major air basins in California (from CARB's CATA Technical Report, 2023).[2] Note that the total population in the six modeling domains where exposure and cancer risk are estimated is 36,727,572, which accounted for around 99% of the total population in California.

Table 2. Population-Weighted Total Air Toxics Cancer Risk in the Six Major Air Basins (per CARB's CATA Technical Report, 2023)

Air Basin	2012 Average Risk (chances per million)	2017 Average Risk (chances per million)	Risk Change from 2012 (%)
Sacramento Valley	597	356	-40.3
San Joaquin Valley	**1,063**	**474**	**-55.4**
San Diego	803	486	-39.5
Bay Area	871	510	-41.4
Imperial	806	671	-16.7
South Coast	1,244	830	-33.3

Figure 2. Cancer Risk Trends in the San Joaquin Valley (per CARB's CATA)



[2] https://california-air-toxics-assessment-californiaarb.hub.arcgis.com/documents/9cce94a930314324a4101b5b1a549b7c/explore

As shown in Figures 3 and 4 below, for the 2017 CATA year, DPM remained the primary driver for cancer risk in the Valley, with on-road mobile being the highest contributing source.

Figure 3. Cancer Risk Contributions by Air Toxics in SJV (per CARB's CATA Technical Report, 2023)

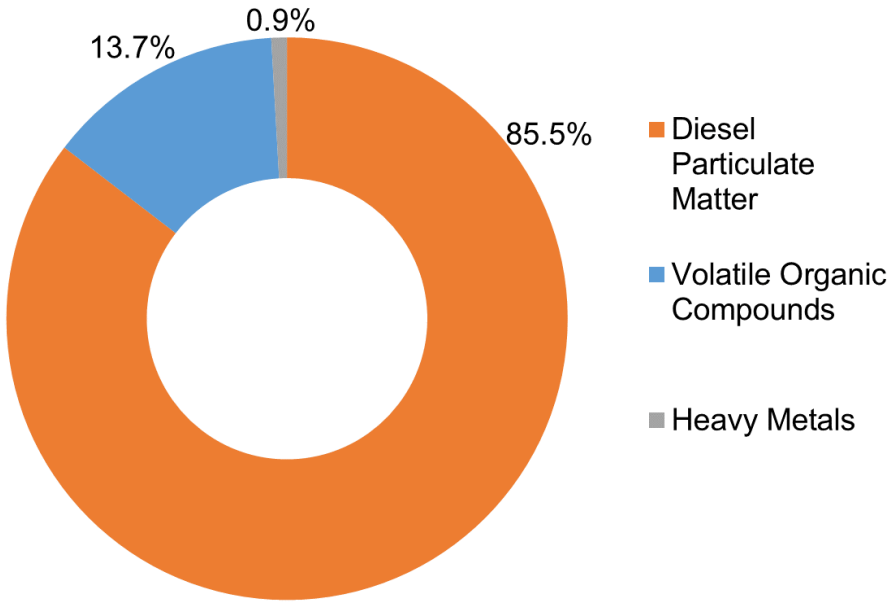
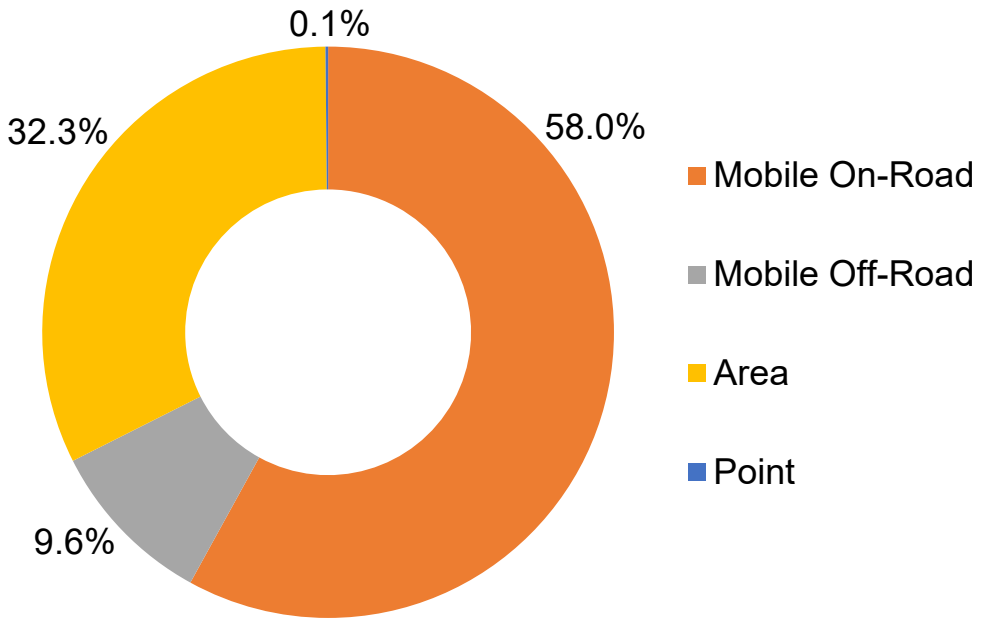


Figure 4. Diesel Particulate Matter (DPM) Population-Weighted Cancer Risk by Emission Source in SJV (per CARB's CATA Technical Report, 2023)



Note, in Figure 4 above, the emission source categories include the following specific emission activities:

- Mobile On-Road includes diesel trucks and buses,
- Mobile Off-Road includes diesel locomotives, transport refrigeration units, commercial harbor craft,
- Area Sources include mobile off-road equipment for agricultural-related activities, construction-related activities, forklifts, gen-sets, air compressors, etc.,
- Point Sources include stationary sources subject to AB 2588.

Federal EPA Air Toxics Screening Assessment

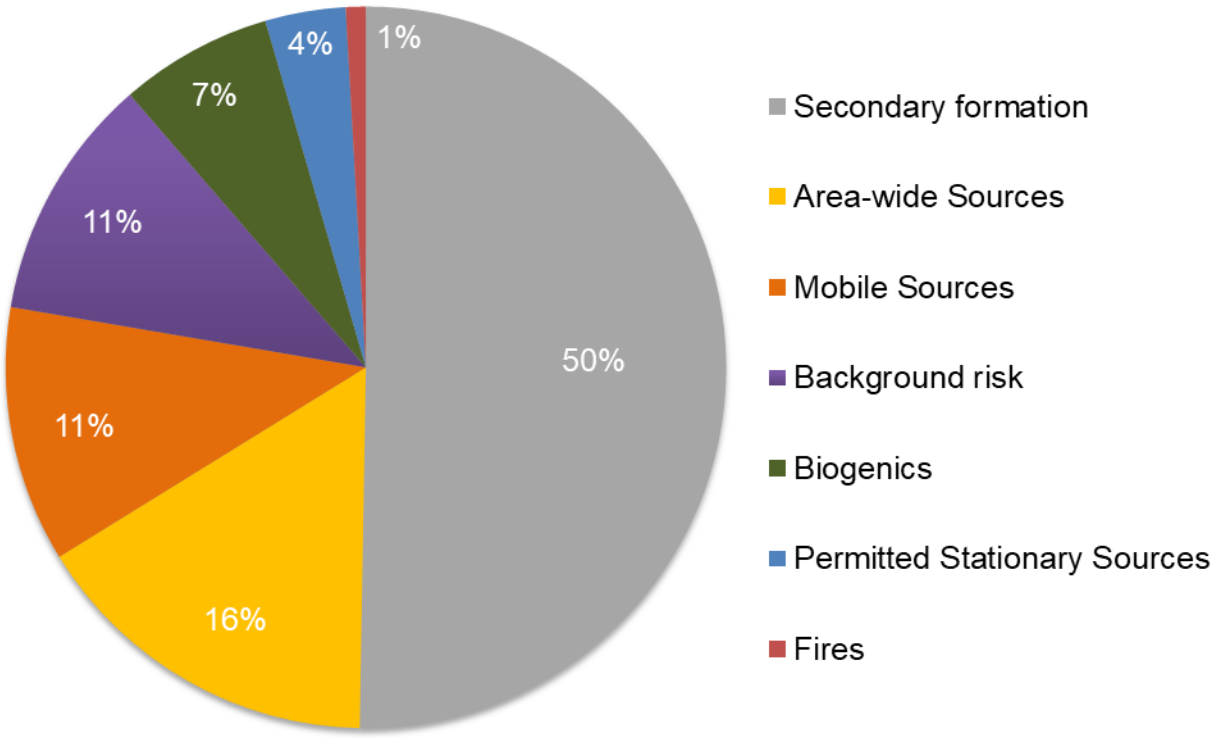
The federal Environmental Protection Agency (EPA) Air Toxics Screening Assessment (AirToxScreen), formerly known as The National Air Toxics Assessment (NATA), is a screening tool to provide communities with information about health risks from air toxics. AirToxScreen is part of EPA's approach to air toxics that provides updated data and risk analyses on an annual basis, helping state, local and tribal air agencies, EPA, and the public more easily identify existing and emerging air toxics issues. State and air district toxic emissions inventory data are compiled to create a national emissions inventory of air toxic sources, which is used by EPA to generate the AirToxScreen Mapping Tool. The AirToxScreen Mapping Tool can be found at: https://www.epa.gov/AirToxScreen/airtoxscreen-mapping-tool.

EPA's AirToxScreen calculates public health risk using a four step process. First, national emission inventories are compiled to identify all types and quantities of air toxic sources. Secondly and thirdly, those emissions are input into photochemical and steady-state air dispersion models to estimate long-term ambient air concentrations and population exposures across the United States. Finally, exposed concentrations are multiplied by corresponding air toxic's unit risk factors to estimate cancer risk and the public health impacts from breathing air toxics.

AirToxScreen estimates cancer risk from a variety of sources including secondary formation, background risk, area-wide sources, mobile sources, biogenics, fires, and permitted stationary sources. Secondary formation are the processes where emissions react in the atmosphere to form other substances. Background concentrations are emissions that exist in the air and accumulate from non-specific naturally occurring or distant sources. Biogenic emissions come from specific natural sources, like plants and trees. Fire emissions come from prescribed wildfires and agricultural burning. AirToxScreen estimated the cancer risk associated with common sources and toxic pollutants emitted during the 2019 inventory data year. Based on those emissions, the 2019 AirToxScreen identifies 25 elevated cancer risk areas in the country as having a cancer risk score of greater than 100 in a million. None of the 25 elevated cancer risk areas are located within the San Joaquin Valley. In the Valley, the average cancer risk from air toxic emissions is 28 in a million, compared to the national average of 30 in a million. As shown in Figure 5 below, about 77% of the total cancer risk in the San Joaquin

Valley came from secondary formation, area-wide, and mobile source emissions in 2019, while only 4% of the total cancer risk came from stationary source emissions.

Figure 5. Cancer Risk by Source in the San Joaquin Valley (per EPA's AirToxScreen)



Of the cancer risk data from AirToxScreen, exposure to formaldehyde is responsible for 60% of the total cancer risk in the San Joaquin Valley. Other chemicals contributing to the calculated cancer risk include carbon tetrachloride (11%), benzene (7.2%), acetaldehyde (6.9%), naphthalene (3.2%), and 1,3-butadiene (2.2%). It is important to note, diesel particulate matter (DPM) emissions are not included as an air toxic in EPA's AirToxScreen cancer risk data.

Assembly Bill (AB) 617 - Community Air Protection Program

The implementation of AB 617 (C. Garcia, 2017) has brought additional clean air resources and strategies to Valley communities. Despite the significant reductions in emissions of criteria and toxic air pollutants that have already been achieved across the Valley, there remain many Valley communities that are disproportionately burdened by the cumulative effects of various environmental and socioeconomic factors. AB 617 requires the expedited implementation of advanced control technologies for existing stationary source facilities; development and implementation of community-specific air quality monitoring networks; development and implementation of community emission reduction programs; enhanced reporting of facility emissions inventory data, and the creation of publically

accessible online clearinghouses of emission control technology determinations. Resources available through this legislation have allowed the District and Community Steering Committees, through a comprehensive public outreach and community engagement process, to develop programs for community protection and develop a robust plan for reducing local exposure to fine particulate matter and toxic air contaminants in Valley communities.

Criteria Air Pollutant and Toxics Air Contaminants Reporting Regulation

AB 617 requires CARB to develop a uniform statewide system of annual reporting of emissions of criteria air pollutants and toxic air contaminants for certain categories of stationary sources. The bill requires stationary sources to report their annual emissions of criteria air pollutants and toxic air contaminants. In order to implement these reporting requirements, CARB developed the "Regulation for the Reporting of Criteria Air Pollutants and Toxic Air Contaminants" (CTR) to implement statewide annual reporting of criteria air pollutant and toxic air contaminant emissions data from facilities, and was adopted in support of mandates under AB 617, AB 197, and AB 2588. For Valley permitted facilities, the District will implement this regulation on behalf of the state through the District's existing annual emission inventory and air toxics processes. Emissions inventory data is critical to understanding the sources of emissions that may contribute to adverse health risks or other impacts at the local, regional, and statewide level. In 2023, more than 6,700 facilities reported their emissions inventory-related data, including process rates, types of fuels used, materials received and processed. Utilizing this information, the District quantified the criteria and toxic emissions for these facilities and transmitted the inventory to CARB. Facility emissions reported under the state's CTR regulation are visualized in CARB's Pollution Mapping tool. The tool provides an interactive platform where users can select facilities by name, location, or industrial sector; view their reported emissions using maps, charts and tabular formats; and download data. It can be found at: https://ww3.arb.ca.gov/ei/tools/pollution_map/.

Summary of California's Air Toxics "Hot Spots" Information and Assessment Act

Background

The *Air Toxics "Hot Spots" Information and Assessment Act* (AB 2588, 1987, Connelly) was enacted in September 1987 and later strengthened in 1992. Under this act, stationary sources are required to report the types and quantities of certain toxic substances their facilities routinely release into the air. The goals of AB 2588 are:

- to identify Valley facilities that release toxic air contaminants as a result of their day to day operations
- to collect and quantify emission data
- to identify facilities causing localized impacts
- to determine facility-wide health risks
- to notify nearby residents and businesses of significant risk facilities in their vicinity
- to require that significant-risk facilities reduce their risks below the level of significance in accordance with the provisions of the "Emissions Inventory Criteria and Guidelines Report" adopted by the Air Resources Board

The District's implementation of AB 2588 has minimized health risks to the public associated with the release of air toxic emission from sources located within the San Joaquin Valley. Under this right-to-know law, the District has worked with facilities to quantify air toxic emissions, determine the potential health risk associated with those emissions, and report any risk determined to be significant by the District through written public reports and neighborhood public meetings. A flowchart summarizing the AB 2588 implementation process is provided in Appendix C.

Assessing the Risk to the Public

The State Air Toxics "Hot Spots" Act requires the District to compile an inventory of toxic emissions from Valley facilities, prioritize facilities for health risk, evaluate public health risks for facilities ranked as high priority, and notify individuals who may be impacted by any significant health risks. Although Hot Spots is primarily a public right-to-know and notification program, the public awareness achieved through the Hot Spots program has led many Valley businesses to voluntarily reduce their toxic emissions to ease community concerns.

Implementation

The District utilizes the applicability criteria outlined in CARB's Emission Inventory Criteria and Guidelines Regulation (EICGR) to determine which facilities are evaluated under the program. Facilities are subject to quantifying and reporting their toxic emissions if one or more of the criteria below is met:

- Emit 10 or more tons per year of criteria pollutants (particulate matter, oxides of nitrogen, oxides of sulfur, or organic gasses)
- Emit less than 10 tons per year of criteria pollutants, but meet one or more of the classes listed in Appendix E of the EICGR
- Emit toxic substances that have been added to Appendix A of the EICGR
- Emit toxic substances that have new health risk values published by the state's Office of Environmental Health Hazard Assessment (OEHHA)
- Increase of potential health risk from the previously evaluated level due to an increase in actual emissions, change to a state-established risk value, threshold, or other calculation or methodology changes.

The District's implementation of the AB 2588 Hot Spots Program incorporates the state's guidelines for evaluating health risks from stationary sources in the Valley. Facilities determined to be subject to the Air Toxics "Hot Spots" program are required to prepare a Toxic Emission Inventory Plan (Plan) and a Toxic Emission Inventory Report (Report) in order to provide site-specific inventories of air emissions of toxic substances.

In 2016, the District began the outreach and reassessment of facilities by following the phased processing schedule outlined in AB 2588, which was originally implemented in the late 80's and early 90's. AB 2588 subjected three major categories (or phases) of facilities to the regulation based upon their level of annual emissions. The AB 2588 regulation also allows for "Industry-wide" toxics emissions inventory, which consist of facilities that are small businesses where emissions can be generally characterized such as gasoline dispensing facilities, auto body coating facilities, etc. These industry-wide facilities are being addressed under the fourth assessment phase. Similar to industry-wide facilities, small single source facilities, such those with only diesel internal combustion engines (DICE), are also being assessed in the fourth phase of the implementation schedule. The fourth phase also includes auto body shops and agricultural facilities. The following summary outlines each phase within the District's implementation plan:

First phase:	Phase I Facilities (≥ 25 tons emissions per year)
Second phase:	Phase II Facilities (10 ≤ tons emissions per year < 25)
Third phase:	Phase III Facilities (< 10 tons emissions per year)
Fourth phase:	Phase IV Facilities (Industry-wide such as Gas Stations, Auto Body Shops; DICE only, Agricultural facilities)

AB 2588 Evaluation Process

Toxic Emission Inventory Plans and Reports

Under this act, facilities are required to prepare Toxic Emission Inventory Plans and Reports to develop site-specific inventories of air emissions from toxic substances. Plans provide an outline and methodology for calculating toxic emissions for all permitted and non-permitted stationary sources operated at the facility. This is reviewed and approved by the District prior to emission quantification. Reports Include calculations of facility's toxic emissions using site-specific process rates and emission factors in order to perform a "Prioritization" of the facility's air toxic emissions.

Prioritization

AB 2588 requires air districts to prioritize facilities to determine a facility's status within the program. In establishing priorities, the air districts are to consider the potency, toxicity, quantity, and volume of hazardous materials released from the facility, the proximity of the facility to potential receptors, and any other factors that the district determines may indicate that the facility may pose a significant health risk. The District uses the prioritization methodology outlined in the California Air Pollution Control Officers Association (CAPCOA) *Facility Prioritization Guidelines* to prioritize facilities under AB 2588. Utilizing the facility's approved Plan and Report, a facility's priority status is determined using the prioritization thresholds listed in District Policy APR 1906, as identified in Table 3 below.

Table 3: AB 2588 Prioritization Thresholds and Categories

Prioritization Thresholds	Priority Category	Category Requirements
≤ 1	Low Priority	Facility is conditionally exempt from further AB 2588 requirements
>1 and ≤ 10	Intermediate Priority	Facility is required to provide an update summary on a quadrennial basis
> 10	High Priority	Facility is required to perform a Health Risk Assessment

Health Risk Assessment

Facilities that classify as "High" priority are required to perform a Health Risk Assessment (HRA) to determine whether its toxic emissions are expected to pose a significant risk to nearby residents and workers. Under AB 2588, the District and the Office of Environmental Health Hazard Assessment's (OEHHA) review each HRA. HRAs performed under the program are required to use the methodologies and procedures outlined in District guidelines and OEHHA's 2015 Air Toxic Hot Spots Program "*Guidance Manual for Preparation of Health Risk Assessments*". A facility's status under the program is determined using established health risk thresholds as identified in Table 4 below:

Table 4: AB 2588 Health Risk Assessment Thresholds

Health Risk Thresholds	Risk Category	Category Requirements
Cancer risk < 1 in a million, and Total hazard index of < 0.1	Low Risk	Facility is conditionally exempt from further AB 2588 requirements
1 ≤ Cancer risk <10 in a million, or 0.1 ≤ Total hazard index ≤ 1.0	Intermediate Risk	Facility is required to provide an update summary on a quadrennial basis
Cancer risk ≥ 10 in a million, or Total hazard index of > 1.0	Public Notification Required	Facility is required to go through the public notification process
Cancer risk > 100 in a million, or Total hazard index of > 5.0	Risk Reduction	Facility is required to go through the public notification process and prepare a Risk Reduction Plan

Public Notification

Facilities that are determined to pose a potential health risk to nearby residents or workers by exceeding the District's public notification risk thresholds are required to notify those exposed persons, through the District's Public Notification process. This process allows the District to inform the public of their potential exposure to toxic substances routinely released into the air from facilities and the potential health risks associated with those exposures. Additionally, this process allows any public questions or concerns regarding exposure and health risk associated with the facility's toxic emissions to be heard and discussed.

Risk Reduction Audit and Plan

Facilities that pose health risks above District action levels are required to submit risk reduction audits and plans (RRAP) to reduce their risk. The District's review of completeness of any facility RRAP includes a substantive analysis of the emission reduction measures included in the plan, and the ability of those measures to achieve emission reduction goals as quickly as feasible. If the District determines that the RRAP does not meet those requirements, the District shall return the audit and plan to the facility to remedy the deficiencies identified by the District. No District permitted facilities have been determined to pose risks in excess of the risk reduction action levels.

Update Summary Facilities

Intermediate Priority and Intermediate Risk facilities are subject to the regulation's Update Summary reporting process. At least once every four years, these facilities must provide their annual activity and resulting emissions inventory in order to provide the District with updated facility information and to determine whether any operational changes at the facility have the potential to affect the facility's health risk status under the program. Operational changes could consist of increasing process rates, or by operating new or modified equipment at the facility.

In addition, each Update Summary provided by facilities undergoes an assessment based on their toxic weighted emissions (TWE). These TWE values are aggregated into three risk categories: cancer, chronic, and acute, and are compared over the four-year update summary inventory cycle. This comparative analysis addresses any updates from OEHHA regarding risk factors or reference exposure levels on a pollutant-by-pollutant basis during the quadrennial period. Using the TWE allows a more refined evaluation to determine whether a facility needs to submit an updated Plan, because it factors the toxicity of air toxic emissions and assesses their impacts accordingly.

It is important to note that changes to the facility that require a District permit or permit modification must be approved by the District prior to being implemented. Based on the information submittal, the District determines if an updated AB 2588 assessment is required (reinstatement).

Industry-wide and Small Single Source Facilities

Under the state's regulation, common types of smaller commercial facilities where the air toxics emissions from individual facilities can easily and generically be characterized and calculated, qualify for a more streamlined assessment process referred to as "industry-wide." These facility industry-wide classes include gasoline dispensing facilities, dry cleaning operations, and automotive coating facilities.

Similar in concept to the industry-wide facilities, smaller operations operating only a single type of emission unit, cannot qualify as industry-wide, and where the emissions can easily and generically be characterized and calculated, qualify for a more streamlined assessment process referred to as "small single source" facilities. Small single sources include facilities only operating a diesel-fired emergency IC engine.

CARB's Recent Updates to AB 2588 Guidance

Recent Amendments to the Emission Inventory Criteria and Guidelines Regulation

Amendments were made to the Emission Inventory Criteria and Guidelines Regulation (EICGR) and approved by the Office of Administrative Law on March 21, 2022. CARB amended the EICGR to collect more comprehensive emission data across the state. The primary amendments to the EICGR include:

- Updated reporting requirements for diesel engines
- Added factors in determining facility exemptions, reinstatements, and update reporting provisions
- Increased the number of reportable substances in Appendix A from approximately 700 to over 1,700 substances
- Established a phase-in schedule for evaluating newly added substances, consistent with the CTR Regulation's emissions inventory schedule
- Added new source test requirements for certain source types

Gasoline Service Station Industrywide Risk Assessment Guidance

To assist air districts in assessing Gasoline Dispensing Facilities (GDF) as required under AB 2588, CARB and California Air Pollution Control Officers Association (CAPCOA) prepared an updated standardized Gasoline Service Station Industrywide Risk Assessment Guidance in 2022. This guidance provides a framework for air districts to use when evaluating the public health risks from GDFs. This guidance replaces the 1997 Gasoline Service Station Industrywide Risk Assessment Guidelines that was previously used by air districts for their health risk evaluations. Changes in the 2022 technical guidance include new health risk methodologies, updated emission factors for gas stations, and new information on the toxic chemicals in gasoline. Due to the significant changes in the methodology and the state-wide effort to evaluate GDFs under AB 2588, the District recently evaluated the Valley's permitted GDF facilities (approximately 1,500 facilities).

Air Toxics Hot Spot Assessments Summary

The District has finalized 7,425 AB 2588 facility assessments from 2016 - 2023. Table 5 below identifies the number of facilities assessed in 2023 through a prioritization analysis (after completion of a Plan and Report), applicability exemption determination, or a health risk assessment (after completion of a prioritization).

Table 5: Summary of Facilities Assessed Under AB 2588 in 2023

AB 2588 Category	Number of Facilities Assessed in 2023
Low/Exempt Priority	213
Low/Exempt Risk	7
Intermediate Priority	238
Intermediate Risk	31
High Priority	10
Public Notification Required	0
Risk Reduction	0
Total	**499**

A detailed list of the facilities evaluated in 2023 and their current status under AB 2588 can be found in Appendix A, along with maps that visually display the location of those facilities that were evaluated as intermediate priority, high priority, and intermediate risk.

The District also re-evaluated 95 facilities subject to the update summary reporting process in 2023 to determine whether reinstatement into the program is required in order to perform an updated AB 2588 facility assessment. A detailed list of those facilities and associated reinstatement status can be found in Appendix B.

Table 6: Summary of Quadrennial Reporting (Update Summaries)

AB 2588 Category	Number of Facilities Assessed in 2023
Needs Reassessment	6
Continued Quadrennial Reporting Cycle	89
Total	**95**

Preventing Creation of Significant Health Risk

The overall goal of the District's integrated approach to air toxics emissions in the San Joaquin Valley aims to maximize public health improvements and minimize public exposure to air toxic emissions. The integrated air toxics program assists in preventing, minimizing, and reducing health risks through a variety of programs.



New or Modified Stationary Source Evaluations

One goal of District risk management review efforts is to minimize the increase that new and modified stationary sources add to the existing toxic load and any potentially significant public health impacts associated with the release of those airborne toxic emissions. In order to achieve this goal, the District evaluates the health risk of stationary sources as part of the District's permitting process and engineering evaluation.

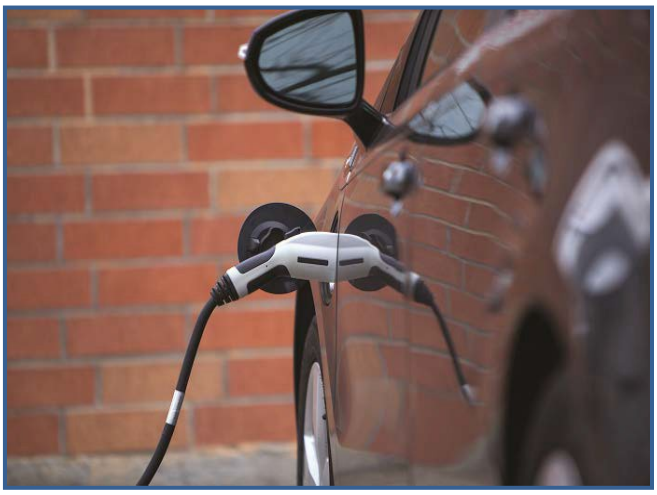
Under the District's risk management policy, Toxic Best Available Control Technology must be applied to all units that may pose greater than de minimis levels of risk (i.e., a cancer risk greater than one in one million). Projects that would pose significant impacts to nearby residences or businesses (i.e., by causing an increased cumulative facility cancer risk of 20-in-a-million or greater) are not approvable. When a project is determined not to be approvable as proposed, District staff will work with the applicant to find approvable low-risk alternatives, such as installing air toxic emissions control devices or limiting the operation of the proposed equipment. Under this program, the District has performed over 16,800 Risk Management Reviews for facilities throughout the District. As a consequence, no permit for a new or modified operation has been approved since the program was initiated in 1995 that would have created a significant health impact through increases in air toxic emissions.

Air Toxics "Hot Spots" Information and Assessment Act

As noted earlier in this report, this law is designed to provide information on the extent of emissions from existing stationary sources and the potential public health impacts of those emissions. Facilities are required to calculate and report to the District their actual emissions of air toxic emissions. Facilities with health risk assessment score above public notice thresholds must disclose their impacts to nearby residents that may be impacted. Facilities that exceed a higher risk reduction action threshold must go even further and reduce emissions of air toxics. No Valley facility currently poses a significant risk under the "Hot Spots" program utilizing state/OEHHA guidance, while at the beginning of the implementation of the program, in 1989, 16 facilities were classified "Significant Risk Facilities."

Incentive-Based Programs

To assist in reducing air toxic emissions throughout the Valley, more than $6 billion in public and private funding has been invested in clean-air projects through the District's voluntary incentive programs. In total, these programs have reduced more than 271,300 tons of harmful emissions. Carcinogenic diesel particulate matter (DPM) emissions have been significantly reduced in the Valley, where District voluntary incentives programs have provided critical funding toward replacing more than 35,000 older, high-polluting heavy-duty diesel engines with zero emission electric motors or cleaner burning engines equipped with the latest emissions control technologies. In addition, these incentive programs provide critical funding to replace older, higher-polluting school buses, light-duty passenger vehicles, residential wood burning devices, and numerous others. Through the District's first-of-its-kind Ag Burn Alternatives Grant program, the District provides funding to support the Valley's ongoing phase-out of agricultural open burning and the development of innovative alternatives to open burning.



In 2017, AB 617 initiated a statewide effort to monitor and reduce localized air pollution, and highly improve public health, in communities that experience disproportionate burdens from exposure to air pollutants through new community-focused and community-driven actions. The communities of Shafter, South Central Fresno, Stockton and Arvin/Lamont were selected to receive clean air resources available under AB 617 through the Community Air Protection Program. This program includes a substantial investment of community-level funding through a wide variety of voluntary incentive funding measures, including the Tune-In & Tune-Up program and the Fireplace & Woodstove Change-Out Program. The Tune-In & Tune-Up program provides incentives for primarily low-income

District residents to perform much-needed smog related repairs to their personal vehicles. In some cases, the District is even able to offer greater incentives for residents to replace their old, high polluting vehicle with a much cleaner and much newer vehicle. Through the Fireplace & Woodstove Change-Out Program, the District is able to provide funding for District residents to replace, older, high polluting residential wood burning devices with new, clean burning devices or natural gas inserts. Through this program, the District offers a higher incentive for the District's low-income population.

Attainment Plans and Control Strategies

Within the District's *2018 $PM_{2.5}$ Plan*, the District prioritized strategies achieving the greatest public health benefits while satisfying applicable attainment planning requirements. The District also analyzed the health benefits that would result from implementation of the plan. Several examples of prioritized control strategies included in the *2018 $PM_{2.5}$ Plan* include new measures to further reduce $PM_{2.5}$ emissions, with rules since being adopted to reduce harmful emissions from residential wood burning (Rule 4901) and industrial sources. These measures reduce some of the most harmful types of particulate matter, particularly where these reductions are most needed in urban, highly populated areas. Additionally, as part of the District's *2022 Ozone Plan,* the District adopted strategies to further reduce harmful volatile organic compound (VOC) emissions from oil and natural gas sources and petroleum refining (Rules 4401, 4409, 4455, 4623, and 4624). Through ongoing attainment planning efforts, the District continues to prioritize programs and strategies that reduce harmful emissions and result in public health benefits.

Indirect Source Review Rule

The District's Indirect Source Review (ISR) rule, in place since 2005, achieves combustion-related NOx and PM10 emission reductions from the construction and operation of new development projects through the incorporation of clean-air design features and on-site mitigation measures. The focus of these emissions reductions are from development-related mobile source heavy duty off-road diesel equipment and heavy duty on-road diesel trucks, which emit diesel particulate matter, one of the most potent carcinogens.

California Environmental Quality Act and Health Risk Assessments

The California Environmental Quality Act (CEQA) requires public agencies to evaluate environmental impacts from a development project and all feasible alternatives or mitigation measures that can substantially reduce or avoid those impacts. Generally, the main responsibility for satisfying CEQA requirements, or "lead agency" role, falls under the responsibility of city or county planning agencies.

From a health risk perspective, land use decisions are critical to improving and preventing degradation of air quality within the San Joaquin Valley, as land use patterns greatly influence potential exposure of sensitive receptors to sources of air pollution. Under

CEQA, land use agencies must evaluate the potential significance of health risks associated with development projects. The District provides support to land use agencies when making air quality impact determinations by assisting in the review of health risk assessments performed for the project.

Outreach and Education



As we move forward in achieving our mission, the District shall continue its ongoing efforts to educate the public about air quality, and the significant clean air investments and air quality progress that have been made in the Valley.

The District's information and educational programs include the Real-Time Air Quality Advisory Network (RAAN), Web-based Archived Air Quality (WAAQ) System, and Healthy Air Living Schools program.

RAAN uses real-time data from air monitoring stations throughout the Valley to provide hour-by-hour air quality updates to schools and other subscribers. WAAQS was implemented in 2015 and takes RAAN a step further by providing neighborhood-by-neighborhood historical air quality data for any address in the Valley air basin. Valley residents can use this information to make informed decisions and plan outdoor activities for times with the best air quality, reducing potential air quality health risks. As a high priority area of focus, the District has continued working to expand the Healthy Air Living Schools initiative to deliver an extensive set of tools and information, including the recent launch of school-based Real-Time Electronic Air-quality Displays (READ), to enable Valley schools to understand and respond to air quality conditions and protect the health of students.

Air Toxics Regulations

In addition, the District implements a variety of state, federal, and District rules reducing and regulating the emissions of toxic air pollutants. Such regulations have generated significant reductions in air toxics from a wide variety of sources, from requiring the gradual phase-out of perchloroethylene used at dry cleaners and mandating emissions controls at chrome platers, to a large number of rules aimed at reducing particulate emissions from diesel internal combustion engines.

Due to this diverse set of risk reduction efforts, approximately 14% of all air toxics in the San Joaquin Valley are now emitted from stationary sources of pollution under the direct

control and regulation of the District, while 52% comes from mobile sources such as cars and trucks, and the remaining 34% is emitted from area-wide sources like road dust, paints, solvents, and other consumer products (per CTI). Mobile and area-wide sources of emissions are generally under the regulatory authority of the State of California and the federal government.

Diesel Particulate Matter (DPM) Risk Reduction

CARB identified particulate matter emissions from diesel-fueled engines as a toxic air contaminant with the potential to pose a significant cancer risk to the public. Historically the cancer risk from the exhaust of diesel internal combustion engines has been determined to be far higher than the estimated cancer risk from all other sources of air pollution combined. Because of the high level of risk associated with diesel exhaust, and because of the prevalence of the engines, the State chose not to address diesel exhaust using the existing risk management guidance. Instead, the State decided to establish an advisory committee of interested parties, and developed a comprehensive risk management plan that would result in significant reductions in emissions of diesel particulate matter. CARB adopted the Risk Reduction Plan to Reduce Particulate Matter Emissions from mobile and stationary Diesel-fueled Engines.

Several of the following Air Toxic Control Measures (ATCMs) were developed as a part of ARB's diesel exhaust risk reduction efforts, which continue to be developed. Related information is available on CARB's ATCM website at: https://ww2.arb.ca.gov/resources/documents/airborne-toxic-control-measures.

ATCM Portable Diesel-Fueled Engines

The purpose of the CARB adopted Portable Diesel ATCM is to protect public health by controlling particulate matter (PM) emissions from diesel fueled portable engines rated at 50 horsepower and greater operating in California. All existing portable diesel engines were required to be certified by January 1, 2010, and all new portable engines were required to meet the latest certification standards. In addition, the ATCM contains stringent diesel PM fleet standards that apply after 2010.

The latest version of the ATCM became effective on November 30, 2018 and contains stringent emissions standards and operational requirements that impact new and existing portable diesel engines. The District has been implementing the requirements of the Portable ATCM in the review of applications for District Portable Registrations and permits for portable diesel engines. This ATCM is expected to continue to result in a substantial reduction in Valley diesel PM emissions over the next several years.

ATCM Stationary Diesel-Fueled Engines

The purpose of the CARB adopted Stationary Diesel ATCM is to protect public health by controlling particulate matter (PM) and criteria pollutant emissions from stationary diesel fueled portable engines rated at 50 horsepower and greater operating in California.

This ATCM is satisfied via Rule 4702 (Internal Combustion Engines) in combination with the District's permitting or Permit-Exempt Equipment Registration (PEER) program. These District programs have collectively been found by the CARB to be equivalent to the

Stationary ATCM for stationary agricultural engines. This ATCM and District Rule 4702 are expected to continue to result in a substantial reduction in Valley diesel PM emissions over the next several years.

CARB Control Measure for In Use Off-road Diesel Vehicle Rule

The purpose of the CARB adopted an off-road diesel vehicle rule is to reduce diesel PM and oxides of nitrogen (NO_X) emissions from in-use (existing) off-road heavy-duty diesel vehicles. The regulation applies to self-propelled diesel-fueled vehicles that cannot be registered and licensed to drive on-road. Examples include loaders, crawler tractors, skid steers, backhoes, forklifts, and airport ground support equipment. Vehicles with engines less than 25 horsepower are exempt. The regulation is expected to reduce diesel exhaust emissions by over 1,600 tons per year statewide between 2010 and 2030.

Diesel Particulate Matter Control Measure for On-road Heavy-duty Diesel-fueled Vehicles Owned or Operated by Public Agencies and Utilities

The purpose of the CARB adopted control measure will reduce emissions from on-road heavy duty vehicles over several deadlines, with the first groups of vehicles required to be in compliance by December 31, 2007. This control measure is particularly effective because it reduces diesel PM emissions in the heart of residential communities where municipal and utility vehicles frequently conduct business, and where the public is significantly impacted by diesel PM emissions.

ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling

CARB initially adopted an ATCM to reduce emissions of toxics and criteria pollutants by limiting idling of new and in-use sleeper berth-equipped diesel trucks. The emission performance requirements require technologies used as alternatives to idling the truck's main engine. The new engine requirements required 2008 and newer model year heavy-duty diesel engines to be equipped with non-programmable engine shutdown systems that automatically shut down the engine after five minutes of idling or, alternatively, meet a more stringent NO_X idling emission standard. Beginning January 1, 2008, in-use truck requirements require operators of both in-state and out-of-state registered sleeper berth equipped trucks to manually shut down their engine when idling more than five minutes at any location within California. Each year heavy-duty diesel truck idling contributes to hundreds of pounds of PM as well as other pollutants to the Valley. The District Incentive Program has subsidized truck stop support equipment to reduce diesel truck idling along the main goods movement corridors. Tests conducted by the District and CARB have determined that an idling truck can consume up to a gallon of diesel fuel an hour. The idling of heavy-duty trucks, at the time of delivery, represents a high percentage of emissions around developed areas in the Valley.

ATCM for Transport Refrigeration Units

The purpose of the CARB adopted ATCM is to reduce emissions of diesel PM from Transport Refrigeration Units (TRUs). TRUs are refrigeration systems powered by diesel internal combustion engines designed to refrigerate or heat perishable products that are transported in various containers, including semi-trailers, truck vans, shipping containers, and rail cars. Although TRU engines are relatively small, ranging from 9 to 36 horsepower, significant numbers of these engines congregate at distribution centers, truck stops, and

other facilities, resulting in the potential for health risks to those that live and work nearby. CARB estimated that diesel PM emissions from TRUs will be reduced by 83% by 2040. CARB has recently developed amendments to this ATCM. Related information is available on their TRU ATCM website at https://ww2.arb.ca.gov/our-work/programs/transport-refrigeration-unit.

ATCM for Hexavalent Chromium for Decorative and Hard Chrome Plating and Chromic Acid Anodizing Facilities

The purpose of the CARB adopted ATCM is to established new, more stringent emission limitations that depend upon size and nearness to sensitive receptors, limited the use of chemical fume suppressants, and adopted new housekeeping, education, monitoring, recordkeeping, and reporting requirements.

CARB amended the ATCM in 2023 to establish enhanced best management practices (e.g. building enclosures, limits, source testing, etc.) for all chrome plating facilities using hexavalent chrome. The stated goal of the amended ATCM is eliminating toxic hexavalent chromium emissions from the chrome plating industry in California over time. The amendments phase out the use of hexavalent chromium from chrome plating operations for all new chrome plating facilities in California. The amendments went into effect January 1, 2024.

There are numerous expected benefits from the revised ATCM, including eliminating hexavalent chromium emissions from California's chrome plating industry, reducing the potential cancer risk to individual residents and off-site workers near chrome plating facilities, and reducing occupational exposures for on-site workers.

ATCM for Perchloroethylene Emissions from Dry Cleaning Operations

The purpose of the CARB adopted ATCM is to phase out the use of perc dry cleaning machines and related equipment by January 1, 2023. In addition, the amendments will put in place revisions to the Curriculum for the Environmental Training Program for Perc Dry Cleaning Operations (Training Curriculum). There were changes to the operational requirements for dry cleaners as well. For example, the revised ATCM requires that owners/operators maintain a spare set of gaskets on-site. Also, the trained operator must now be on-site whenever the machine is operated. These amendments became effective upon final approval by the Office of Administrative Law on December 27, 2007. The District adopted the revised ATCM in 2008 by reference.

ATCM for Composite Wood Products

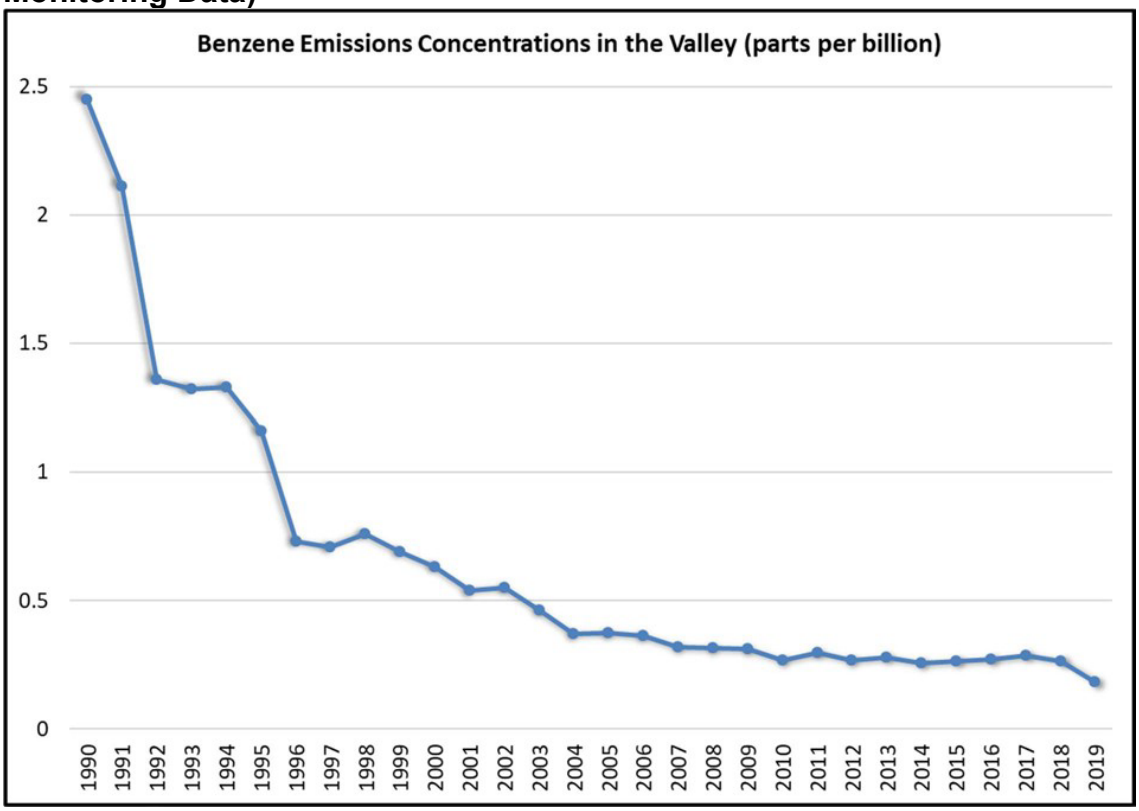
The purpose of the CARB approved ATCM is to reduce formaldehyde emissions from composite wood products including hardwood plywood, particleboard, medium density fiberboard, thin medium density fiberboard, and also furniture and other finished products made with composite wood products Formaldehyde is produced on a large scale worldwide. One major use includes the production of wood binding adhesives and resins. CARB developed a modified version of the Composite Wood Product ATCM that was released for a 15-day public comment period on January 31, 2008, and was approved April 18, 2008, by the Office of Administrative Law. Further amendments to this ATCM

were approved in May of 2012.

ATCM for Benzene from Retail Service Stations

CARB adopted the ATCM for Emissions of Benzene from Retail Service Stations. The ATCM reflects the use of best available control technology, which requires the installation of CARB-certified Phase I and II vapor recovery control equipment at all retail service stations. The ATCM is designed to reduce benzene and total hydrocarbon emissions from uncontrolled stations by 95 percent. Figure 6 shows the trend of benzene emissions in the Valley.

Figure 6. Benzene Emissions Trend, San Joaquin Valley (CARB Annual Toxics Monitoring Data)



ATCMs Adopted by the District as Regulations

- District Rule 7011: Chromium Plating And Chromic Acid Anodizing Facilities
- District Rule 7012: Hexavalent Chromium - Cooling Towers
- District Rule 7021: Ethylene Oxide - Sterilizers and Aerators
- District Rule 7031: Dioxin - Medical Waste Incinerators
- District Rule 7041: Fluorides - Phosphoric Acid Plants
- District Rule 7050: Asbestos - Containing Material for Surfacing Applications
- District Rule 7060: Toxic Metals from Non-Ferrous Metal Melting
- District Rule 7070: Perchloroethylene from Dry Cleaning Operations

Other ATCMs are implemented primarily through the permitting process. These include

the ATCM for Stationary Compression Ignition Engines and the ATCM for Diesel Particulate Matter from Portable Engines Rated at 50 Horsepower and Greater.

Reducing Health Risk through Enforcement Delegation

On July 1, 2008, the District began enforcing California Air Resources Board's ATCM to Limit School Bus Idling and Idling at Schools and ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling, during timeframes in which state funding is available to support these efforts. The purpose of these ATCMs is to reduce toxic and criteria air pollutants by limiting idling time. By enforcing these requirements in the Valley, the District is able to directly reduce public exposure from toxic emissions, especially in sensitive areas.

The District was delegated the responsibility of enforcing the U.S. EPA's NESHAP for asbestos, a known carcinogen, and as a result performs hundreds of inspections of construction projects that have the possibility of disturbing asbestos containing materials. By ensuring that these materials are removed and handled correctly, the probability of harmful releases of asbestos is significantly reduced.

Implementation of Federal Air Toxics Mandates

EPA has issued NESHAPs through Part 61 and Part 63 of Title 40 of the Code of Federal Regulations (CFR). The Part 61 NESHAPs were issued prior to the adoption of the Federal Clean Air Act Amendments of 1990. Those NESHAPs are specific to a particular hazardous air pollutant (HAP). Due to little activity in adopting NESHAPs, the 1990 amendments to the Federal Clean Air Act established a new procedure for developing NESHAPs. A list of 189 HAPs was established. EPA identified industries that emitted those HAPs and established a prioritized list of over 70 source categories for which Maximum Achievable Control Technology (MACT) standards would be promulgated. These MACT standards apply to major sources of HAPs, defined as sources with emissions greater than 10 tons per year of a single HAP, or 25 tons per year of combined HAPs. Many of these sourcecategories are already subject to state and local regulation, which have traditionally been more stringent than the federal regulations. EPA has already adopted MACT standards to address the majority of the source categories identified.

In addition to the MACT standards for major sources, EPA is also required to adopt NESHAPs standards to reduce the health risk associated with area (non-major) sources of HAPs. As the result of a lawsuit, EPA was under court order to promulgate area source NESHAPs for 4 categories of sources by December 15, 2006; for 6 categories by June 15, 2007; and for 10 categories each 6 months thereafter until June 15, 2009. Similar to the MACT standards for major sources, many of the area sources subject to these standards are already subject to state and local regulation. Area source NESHAPs have already been promulgated for Oil and Natural Gas Production Facilities; Polyvinyl Chloride and Copolymers Production, Primary Copper Smelting, Secondary Copper Smelting, and Primary Nonferrous Metals - Zinc, Cadmium, and Beryllium; Acrylic and Modacrylic Fibers Production, Carbon Black Production, Chemical Manufacturing: Chromium Compounds, Flexible Polyurethane Foam Production and Fabrication, Lead Acid Battery

Manufacturing, and Wood Preserving; Clay Ceramics Manufacturing, Glass Manufacturing, and Secondary Nonferrous Metals Processing; Electric Arc Furnace Steelmaking Facilities; and Hospital Ethylene Oxide Sterilizers. See Appendix D for the current status of the District's implementation of NESHAPs.

An amendment to 40 CFR part 63, subpart ZZZZ (control of HAPs from reciprocating internal combustion engines) was proposed on June 6, 2012, and was finalized by EPA on January 14, 2013. This regulation requires reductions in hazardous air pollutants from stationary internal combustion engines over the next several years, and requires significant recordkeeping and monitoring of the engines affected. The District is currently developing processes and policies to assist those facilities affected to comply with the new requirements.

Many other amendments to existing NESHAPs were finalized in 2012: Chemical Manufacturing, Hard & Decorative Chrome electroplating and HCL supplements, Polyvinyl Chloride, Nitric Acid Plants, Petroleum Refineries process heaters and flares, etc. While these NESHAPs have lesser applicability in California and the San Joaquin Valley then the engine NESHAP discussed above, the District will identify, notify, and assist those facilities affected.

In December 2021, EPA issued a decision extending Toxic Release Inventory (TRI) reporting for ethylene oxide to 29 facilities across the country. These facilities were required to begin tracking their chemical activities, releases and other waste management quantities starting in January 2022 and submit TRI data to EPA in 2023. None of these facilities are located within the San Joaquin Valley.

On July 25, 2023, EPA announced proposed updates to the Air Emissions Reporting Requirements (AERR) to improve EPA's collection of certain emissions data critical for performing air quality and risk analyses, among other regulatory and non-regulatory activities. This proposed action would allow for EPA to annually collect (starting in 2027), HAP emissions data for point sources including non-major sources. The proposed amendments would ensure that EPA has sufficient information to identify and solve air quality and exposure problems and ensure that communities have the data needed to understand significant environmental risks that may be impacting them. Due to numerous requests to extend the comment period given the complexity and length of the proposed rulemaking, EPA extended the comment period for the proposed revisions to November 17, 2023. The District is following this development and will incorporate any updates into the Integrated Toxics Program as necessary.

The District currently is delegated authority by EPA to implement and enforce NESHAPs through two mechanisms. First, all major sources of HAPs are required to obtain Title V operating permits. The NESHAP requirements for these major sources are included in the Title V permits for which the District is delegated authority by EPA. Second, the District is delegated authority to implement and enforce all area source NESHAPs that are included in District Rule 4002, most recently amended on May 20, 2004. Under the District's Air Toxics Program and federal regulations, there are several options for

implementing new NESHAP requirements. These options are discussed in more detail below. The District will choose the most appropriate option for implementing each Federal standard, and will hold public workshops to obtain public input on the implementation of these additional standards.

- Straight Delegation: Accepting delegation of the federal standard as written by amending Rule 4002 or by agreeing to automatic delegation with an option of opting-out for specific NESHAPs using an approach developed by the (CAPCOA);
- Rule Adjustment: Proposing minor changes to the federal MACT rule that make the adjusted rule no less stringent than the federal standard;
- Rule Substitution: Substituting one or more existing, new, or amended District rules for the federal standard (It should be noted that California Districts have been delegated authority for the chrome plating and dry cleaning NESHAPs because EPA has agreed that the ATCMs for those source categories are equivalent to the NESHAPs.);
- Streamlining Multiple Applicable Requirements: Minimizing duplicative requirements by placing the more stringent emission limit or workplace practice standard on the permit along with the corresponding monitoring, recordkeeping, and reporting requirements;
- Program Substitution: Using existing programs to assure compliance with the requirements of federal standards;
- No Delegation: Using existing programs to reduce the emissions of hazardous air pollutants without delegation of federal standards.

The NESHAPs for which the District has received delegation through Rule 4002 are listed in Table E1 in Appendix E. All current NESHAPs for which the District has not received delegation through Rule 4002 are listed in Table E2 in Appendix E.

Regardless of the status and type of delegation, the District believes strongly in working with the affected sources to make them aware of the requirements in a timely manner, and then help them understand and comply with these public health protective regulations.

Air Dispersion Modeling



Air quality models use mathematical techniques to simulate the physical and chemical processes that affect air pollutants as they disperse and react in the atmosphere. These models form the backbone of the air toxics management process, as they are used to assess the potential exposure of the public to various toxic emissions. Using inputs of meteorological data and source parameter information such as emission rates and stack height, models predict ambient concentrations of primary pollutants that are emitted. Models are also important to the air quality management process because they determine compliance with National/State Ambient Air Quality Standards (NAAQS/SAAQS), and other regulatory requirements such as New Source Review (NSR).

EPA Regulatory Model (AERMOD)

The American Meteorological Society/Environmental Protection Agency Regulatory Model Improvement Committee (AERMIC) was formed to introduce state-of-the-art modeling concepts into the EPA's air quality models. Through AERMIC, a modeling system, AERMOD, was developed to incorporate air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources, and both simple and complex terrain.

With the promulgation of AERMOD as the preferred air dispersion model in EPA's *Guideline on Air Quality Models* (signed by the EPA Administrator on October 21, 2005 and published November 9, 2005 in the *Federal Register*), AERMOD is used for appropriate application as a replacement for ISCST3 since November 9, 2006.

Meteorological Data

The District makes available meteorological data from both the National Climatological

Data Center (NCDC) and the Fifth-Generation Penn State/National Center for Atmospheric Research Mesoscale Model (MM5). The NCDC data were collected at major airports in the San Joaquin Valley. The MM5 data were derived from a numerical model for locations in the valley where there are no airports. These locations are primarily in the western part of the Valley. All processed data is freely available for download on the District's web page at:
https://www.valleyair.org/busind/pto/Tox_Resources/AirQualityMonitoring.htm

Appendices

Appendix A: Facilities Assessed Under AB 2588 in 2023
Appendix B: Update Summary Facilities
Appendix C: Toxic Emissions Summary
Appendix D: AB 2588 District Implementation Flow Chart
Appendix E: Current Status of NESHAP Delegation

Appendix A. Facilities Assessed under AB 2588 in 2023

Appendix A includes a detailed list of the facilities assessed under AB 2588 in 2023. Table A1 Includes facilities prioritized and Table A2 Includes the facilities with completed health risk assessments.

In addition to the tables listed below, Appendix A also includes maps that visually show the locations of all facilities that were evaluated in 2023.

Table A1. Facilities Prioritized in 2023

Region	Facility ID	Facility Name	City	Prioritization Score	Prioritization Category
N	7856	Family Pet Mortuary	Turlock	47.8	High
N	1252	Foster Food Products	Livingston	33.8	High
N	3028	Westland Technologies, Inc.	Modesto	30.8	High
N	2369	Arrow Infrastructure Holding IA LLC	Stockton	29.9	High
C	841	Dos Palos Cooperative Gin Inc.	Chowchilla	29.1	High
C	9232	Modern Custom Fabrication, Inc.	Fresno	23.0	High
S	8848	Peters-Loyd Funeral Services	Porterville	20.7	High
S	1135	AERA Energy LLC	Kern County	19.8	High
S	1128	Chevron USA Inc.	Kern County	19.7	High
N	2174	Silgan Containers Mfr. Corp.	Riverbank	18.1	High
S	2777	California Resources Production Corp.	Bakersfield	9.89	Intermediate
N	3302	City of Modesto	Modesto	9.44	Intermediate
N	3510	City of Lodi (Water Well #16)	Lodi	9.41	Intermediate
C	2886	Pacific Gas & Electric Co.	Fresno	9.32	Intermediate
N	704	Dynatect Ro-Lab Inc.	Tracy	9.08	Intermediate
N	2868	Pacific Bell Telephone Co (dba AT&T CA)	Riverbank	9.04	Intermediate
C	3098	Comcast Cable Communications Inc.	Madera	8.94	Intermediate
S	8712	Kern Asphalt Paving & Sealing Co Inc.	Bakersfield	8.93	Intermediate
S	3344	Level 3 Communications	Dinuba	8.82	Intermediate
N	3305	City of Modesto	Modesto	8.73	Intermediate
S	91	Mt Poso Cogeneration Co LLC	Bakersfield	8.65	Intermediate
N	7365	Pelican Renewables LLC	Stockton	8.57	Intermediate
N	1662	Gallo Glass Company	Modesto	8.56	Intermediate
N	2873	Pacific Bell Telephone Co (dba AT&T CA)	Los Banos	8.56	Intermediate
N	3458	Applied Aerospace Structures Corp.	Stockton	8.55	Intermediate
C	214	California State Prison –	Corcoran	8.32	Intermediate

Region	Facility ID	Facility Name	City	Prioritization Score	Prioritization Category
		Corcoran			
C	7501	Signature Flight Support	Fresno	8.27	Intermediate
C	3572	Level 3 Communications LLC	Fresno	8.23	Intermediate
C	1647	Pacific Bell Telephone Co (dba AT&T CA)	Selma	8.21	Intermediate
S	2486	Pacific Bell Telephone Co (dba AT&T CA	Dinuba	8.06	Intermediate
C	4071	Algonquin Power Sanger LLC	Sanger	8.03	Intermediate
N	4522	City of Merced	Merced	7.95	Intermediate
S	568	Rosewood Retirement Community	Bakersfield	7.88	Intermediate
N	8942	World Class Distribution, Inc.	Stockton	7.86	Intermediate
S	3546	California Water Service	Bakersfield	7.82	Intermediate
C	2055	The Ponderosa Telephone Co.	Friant	7.61	Intermediate
N	2564	Stockton Municipal Utility	Stockton	7.51	Intermediate
S	8690	Dirt Worx Inc.	Bakersfield	7.47	Intermediate
C	205	California Water Service Co.	Selma	7.35	Intermediate
N	4527	City of Merced	Merced	7.35	Intermediate
S	2474	California Water Service Co.	Bakersfield	7.33	Intermediate
C	9419	Crestwood Kingsburg Healing Center	Kingsburg	7.08	Intermediate
C	1627	Fresno County Build Maintenance Division	Fresno	7.08	Intermediate
N	4666	Dale Commons MSL LLC	Modesto	6.94	Intermediate
N	9211	San Joaquin County	Stockton	6.89	Intermediate
N	9754	Amazon.Com Services LLC	Stockton	6.85	Intermediate
S	1469	California Water Service Co.	Bakersfield	6.85	Intermediate
N	3038	Monschein Industries Inc.	Riverbank	6.84	Intermediate
N	4956	City of Newman	Newman	6.78	Intermediate
S	8561	J.P. Oil Company, LLC	Shafter	6.76	Intermediate
S	18	Kern County General Services	Lamont	6.70	Intermediate
N	3306	City of Modesto	Modesto	6.66	Intermediate
N	811	Stockton RWCF	Stockton	6.63	Intermediate
N	2885	City of Modesto	Modesto	6.54	Intermediate
N	558	Diamond Pet Foods-Lathrop	Lathrop	6.47	Intermediate
C	2054	The Ponderosa Telephone Co.	Shaver Lake	6.42	Intermediate
C	3321	City of Fresno Water Division	Fresno	6.29	Intermediate
N	9482	Keyes Community Services District	Keyes	6.28	Intermediate
N	10034	Amazon.Com Services LLC - SCK6	Tracy	6.21	Intermediate
S	1915	Tulare City Water Division	Tulare	6.13	Intermediate

Region	Facility ID	Facility Name	City	Prioritization Score	Prioritization Category
S	6817	Lowe's HIW Inc.	Tulare	6.07	Intermediate
S	2609	The Cardinal Group LLC	Bakersfield	6.00	Intermediate
N	1647	Martin Marietta CA A&P, LLC - Merced HMA	Merced	5.96	Intermediate
N	3087	City of Modesto	Modesto	5.83	Intermediate
C	3318	City of Fresno Water Division	Fresno	5.80	Intermediate
S	9681	Chevron Cogeneration Company	Bakersfield	5.80	Intermediate
S	1131	Chevron USA Inc.	Kern County	5.80	Intermediate
S	88	Kern River Cogeneration Facility	Bakersfield	5.8	Intermediate
S	511	Sycamore Cogeneration Facility	Bakersfield	5.8	Intermediate
N	4724	City of Atwater	Atwater	5.76	Intermediate
N	4723	City of Atwater	Atwater	5.74	Intermediate
S	2634	Kern County Supt of Schools	Bakersfield	5.73	Intermediate
N	3086	City of Modesto	Modesto	5.61	Intermediate
S	9156	Alliance Ready Mix, Inc.	Shafter	5.49	Intermediate
N	2456	City of Stockton/CB Richard Ellis Inc.	Stockton	5.47	Intermediate
C	9905	EZ-Trip	Madera	5.43	Intermediate
C	1059	Saint Agnes Medical Center	Fresno	5.25	Intermediate
S	2568	Pacific Bell Telephone Co (dba AT&T CA)	Earlimart	5.21	Intermediate
C	3615	City of Fresno	Fresno	5.11	Intermediate
C	930	Pacific Gas & Electric Co.	Fresno	5.07	Intermediate
N	4519	City of Merced	Merced	5.02	Intermediate
N	4016	Comcast Cable Communications Inc.	Stockton	5.01	Intermediate
S	2493	California Water Service Co.	Bakersfield	5.01	Intermediate
S	4275	City of Wasco	Wasco	4.93	Intermediate
S	2300	California Water Service Co.	Bakersfield	4.89	Intermediate
S	3391	Verizon Wireless - Woodmere	Bakersfield	4.80	Intermediate
C	3368	AT&T Mobility	Madera	4.69	Intermediate
C	1764	Madera Valley Water Company	Madera	4.64	Intermediate
N	3842	City of Stockton, California	Stockton	4.61	Intermediate
N	2022	Sutter Valley Hospitals dba Memorial Medical	Modesto	4.59	Intermediate
C	3008	MCI	Fresno	4.52	Intermediate
C	3026	Frontier California Inc.	Reedley	4.48	Intermediate
N	8553	New Bethany	Los Banos	4.37	Intermediate
N	4727	City of Atwater	Atwater	4.36	Intermediate
N	4728	City of Atwater	Atwater	4.36	Intermediate

Region	Facility ID	Facility Name	City	Prioritization Score	Prioritization Category
N	3482	City of Ripon	Ripon	4.27	Intermediate
C	216	California Air National Guard	Fresno	4.17	Intermediate
N	4824	Los Banos Police Department	Los Banos	4.08	Intermediate
N	4472	City of Modesto	Modesto	4.06	Intermediate
N	4725	City of Atwater	Atwater	4.02	Intermediate
N	1670	Georgia-Pacific Corrugated LLC	Modesto	4.00	Intermediate
N	2875	Pacific Bell Telephone Co (dba AT&T CA)	Gustine	3.92	Intermediate
S	6527	Visalia Eye Center	Visalia	3.89	Intermediate
C	8864	City of Fresno	Fresno	3.86	Intermediate
C	9728	JT Atwal Petroleum Inc.	Fresno	3.84	Intermediate
N	1758	Berry Seed & Feed Company	Keyes	3.71	Intermediate
N	4521	City of Merced	Merced	3.70	Intermediate
S	1160	Pacific Bell Telephone Co dba AT&T CA	Frazier Park	3.58	Intermediate
C	2953	City of Selma Fire Dept.	Selma	3.57	Intermediate
S	3897	Centennial Asphalt Company	Bakersfield	3.56	Intermediate
S	8857	FJM Inc.	Fellows	3.56	Intermediate
N	2859	Pacific Bell Telephone Co (dba AT&T CA)	Newman	3.51	Intermediate
N	3932	Plymouth Square	Stockton	3.43	Intermediate
S	1167	Pacific Bell Telephone Co (dba AT&T CA)	Shafter	3.42	Intermediate
C	9490	Jammu Petroleum Inc.	Fresno	3.40	Intermediate
N	9517	Lakha Corporation	Atwater	3.39	Intermediate
C	8863	City of Fresno	Fresno	3.36	Intermediate
C	1607	Bear Communications	Squaw Valley	3.28	Intermediate
N	8880	Fedex Freight Inc. – STK	Stockton	3.18	Intermediate
S	9576	California Water Service Co.	Bakersfield	3.12	Intermediate
N	2860	Pacific Bell Telephone Co. (dba AT&T CA)	Crows Landing	3.11	Intermediate
N	2866	Pacific Bell Telephone Co. (dba AT&T CA)	Waterford	3.07	Intermediate
C	933	Pacific Gas & Electric Co.	Fresno	3.03	Intermediate
S	1470	California Water Service Co.	Bakersfield	3.02	Intermediate
C	2684	City of Corcoran Public Works	Corcoran	2.98	Intermediate
N	4181	City of Modesto	Grayson	2.96	Intermediate
S	1494	California Water Service Co.	Bakersfield	2.92	Intermediate
S	9230	City of Tulare, Public Works, Water Dept.	Tulare	2.91	Intermediate
S	1164	Pacific Bell Telephone Co. dba AT&T CA	Mettler	2.89	Intermediate

Region	Facility ID	Facility Name	City	Prioritization Score	Prioritization Category
N	4017	Comcast Cable Communications Inc.	Stockton	2.85	Intermediate
N	608	Pacific Gas & Electric Co.	Holt	2.81	Intermediate
N	7341	City of Patterson	Patterson	2.81	Intermediate
N	4653	City of Tracy	Tracy	2.81	Intermediate
S	9727	City of Delano	Delano	2.77	Intermediate
N	4525	City of Merced	Merced	2.73	Intermediate
N	7499	Travelcenters of America Operating Corp.	Livingston	2.72	Intermediate
S	6161	Level 3 Communications	Tulare	2.68	Intermediate
N	2874	Pacific Bell Telephone Co. (dba AT&T CA)	Planada	2.64	Intermediate
S	2483	Pacific Bell Telephone Co. (dba AT&T CA)	Woodlake	2.64	Intermediate
S	2847	California Water Service Co.	Bakersfield	2.62	Intermediate
S	1158	Pacific Bell Telephone Co. (dba AT&T CA)	Lebec	2.59	Intermediate
C	3296	Comcast Cable Communications Inc.	Fresno	2.59	Intermediate
N	9641	City of Modesto	Modesto	2.58	Intermediate
S	2476	Pacific Bell Telephone Co. (dba AT&T CA)	Pixley	2.58	Intermediate
N	2877	Pacific Bell Telephone Co. (dba AT&T CA)	Le Grand	2.54	Intermediate
C	2877	Del Rey Community Ser District	Del Rey	2.51	Intermediate
N	9919	Jim Todd C/O Todd Energy Corporation	Los Banos	2.47	Intermediate
S	2479	Pacific Bell Telephone Co. (dba AT&T CA)	Terra Bella	2.46	Intermediate
S	3035	California Water Service Co.	Bakersfield	2.45	Intermediate
C	3104	Housing Authority City of Madera	Madera	2.45	Intermediate
C	8773	New Cingular Wireless PCS, LLC dba AT&T	Chowchilla	2.45	Intermediate
S	2475	Pacific Bell Telephone Co. (dba AT&T CA)	Orosi	2.41	Intermediate
S	8762	Sully's Food Stores LLC	Bakersfield	2.39	Intermediate
S	2234	California Resources Elk Hills LLC	Tupman	2.38	Intermediate
S	9168	Elk Hills Power LLC	Tupman	2.38	Intermediate
N	9297	City of Oakdale	Oakdale	2.36	Intermediate
C	1649	Pacific Bell Telephone Co. (dba AT&T CA)	Avenal	2.34	Intermediate
S	2487	Pacific Bell Telephone Co. (dba AT&T CA)	Farmersville	2.33	Intermediate
C	1955	Biola Community Services Dist.	Biola	2.27	Intermediate

Region	Facility ID	Facility Name	City	Prioritization Score	Prioritization Category
N	9555	BP Products North America Inc.	Modesto	2.26	Intermediate
S	8912	Sullivan Petroleum LLC	Bakersfield	2.25	Intermediate
C	2876	Malaga County Water District	Fresno	2.22	Intermediate
S	267	California Water Service Co	Visalia	2.18	Intermediate
S	6276	MCI	Bakersfield	2.12	Intermediate
C	1614	Fresno County Build Maintenance Div.	Fresno	2.10	Intermediate
S	4202	Housing Authority of the County of Kern	Bakersfield	2.08	Intermediate
N	4182	City of Modesto	Del Rio	2.07	Intermediate
S	3991	Foster Farms- Traver Feedmill	Traver	2.04	Intermediate
C	1648	Pacific Bell Telephone Co dba AT&T CA)	Stratford	2.03	Intermediate
C	9635	SCI California Funeral Services, Inc.	Reedley	2.02	Intermediate
S	8013	Sullivan Petroleum LLC	Bakersfield	2.01	Intermediate
C	9034	California Highway Patrol	Fresno	2.00	Intermediate
N	9529	Fam Autobody	Stockton	1.98	Intermediate
N	9686	San Joaquin County Office of Education	Stockton	1.98	Intermediate
S	1471	California Water Service Co.	Bakersfield	1.98	Intermediate
S	8351	Hope Elementary School	Porterville	1.95	Intermediate
S	1760	VSS Emultech	Bakersfield	1.95	Intermediate
N	2867	Pacific Bell Telephone Co. (dba AT&T CA)	Turlock	1.92	Intermediate
S	2489	Pacific Bell Telephone Co. (dba AT&T CA)	Ivanhoe	1.92	Intermediate
S	8918	Timothy Van Beek, SP dba Two Fiets	Tipton	1.91	Intermediate
N	9893	Westley Property LLC	Westley	1.89	Intermediate
C	3204	City of Fresno Water Division	Fresno	1.85	Intermediate
C	1664	Pacific Bell Telephone Co (dba AT&T CA)	Lemoore	1.85	Intermediate
C	3783	Cocola Broadcasting Companies	Fresno	1.84	Intermediate
N	8255	Linden County Water District	Linden	1.82	Intermediate
N	7839	Doctors Behavioral Health Center	Modesto	1.76	Intermediate
N	9927	ATC Sequoia LLC	Modesto	1.75	Intermediate
S	3675	Home Depot #6687	Bakersfield	1.73	Intermediate
C	3581	Millbrook Fresno LLC Dba Cottonwood Center	Fresno	1.73	Intermediate
N	9208	San Joaquin County	French Camp	1.68	Intermediate
S	2645	Horizon Nut LLC	Tulare	1.67	Intermediate

Region	Facility ID	Facility Name	City	Prioritization Score	Prioritization Category
S	2478	Pacific Bell Telephone Co. (dba AT&T CA)	Springville	1.67	Intermediate
C	3163	Kfsn-Tv/ABC Inc.	Meadow Lakes	1.66	Intermediate
C	3440	Sinclair Television-Fresno LLC-Kmph-TV	Fresno	1.66	Intermediate
C	9199	California Rock Crusher	Various Unspecified	1.65	Intermediate
S	9664	City of Shafter	Shafter	1.61	Intermediate
N	9993	Denair Community Service District	Denair	1.60	Intermediate
C	3316	City of Fresno Water Division	Fresno	1.57	Intermediate
N	9792	Home Depot USA, Inc.	Tracy	1.56	Intermediate
N	4730	City of Atwater	Atwater	1.51	Intermediate
N	474	Leprino Foods	Tracy	1.51	Intermediate
S	691	Bakersfield City C/O Cal Water	Bakersfield	1.50	Intermediate
N	9645	City of Lathrop	Lathrop	1.47	Intermediate
C	1951	California Water Service Co.	Selma	1.44	Intermediate
C	1952	California Water Service Co.	Selma	1.44	Intermediate
N	9912	Cepheid	Lodi	1.44	Intermediate
C	3552	City of Madera	Madera	1.44	Intermediate
N	2929	City of Stockton	Stockton	1.41	Intermediate
N	2861	Pacific Bell Telephone Co. (dba AT&T CA)	Knights Ferry	1.40	Intermediate
N	3521	City of Modesto, Public Works	Modesto	1.37	Intermediate
C	2438	City of Sanger	Sanger	1.36	Intermediate
C	195	CA State Prison - Avenal	Avenal	1.34	Intermediate
N	4149	Keyes Community Services Dist.	Keyes	1.34	Intermediate
C	954	Prison Industry Authority - Avenal	Avenal	1.34	Intermediate
S	614	California Water Service Co.	Visalia	1.33	Intermediate
C	2042	J.W. Myers Inc.-Chevron	Madera	1.33	Intermediate
N	8803	Walmart Store #5843	Patterson	1.33	Intermediate
N	2942	City of Ripon	Ripon	1.33	Intermediate
S	2924	Wasco City Westside Pump Station	Wasco	1.31	Intermediate
C	2882	County of Kings	Kettleman City	1.31	Intermediate
C	544	Fresno County Service Area #31	Shaver Lake	1.31	Intermediate
N	9817	7-Eleven Store #41187	Stockton	1.30	Intermediate
S	3857	California Water Service Co.	Bakersfield	1.28	Intermediate
N	3995	City of Escalon	Escalon	1.28	Intermediate
N	9478	City of Modesto	Modesto	1.28	Intermediate

Region	Facility ID	Facility Name	City	Prioritization Score	Prioritization Category
C	7868	Home Garden Community Service District	Hanford	1.28	Intermediate
N	9935	Amazon.com Services LLC-SCK9	Stockton	1.26	Intermediate
S	2485	Pacific Bell Telephone Co. (dba AT&T CA)	Camp Nelson	1.23	Intermediate
N	8102	Anthony Souza	Tracy	1.22	Intermediate
S	6860	California Water Service Co.	Bakersfield	1.22	Intermediate
C	2361	Madera Valley Water Company	Madera	1.20	Intermediate
N	7386	City of Ripon - Public Works	Ripon	1.19	Intermediate
S	799	California Water Service Co.	Visalia	1.19	Intermediate
S	9805	American Towers LLC	Bakersfield	1.19	Intermediate
N	1910	Crystal Creamery, Inc.	Modesto	1.17	Intermediate
S	6541	California Water Service Co.	Bakersfield	1.16	Intermediate
S	9141	El Centro Corner Petroleum LLC	Visalia	1.16	Intermediate
C	7569	Kuldeep Dhaliwal	Coalinga	1.11	Intermediate
S	9760	American Towers LLC	Bakersfield	1.09	Intermediate
S	258	California Water Service Co.	Visalia	1.09	Intermediate
N	9420	Department of Transportation	Los Banos	1.08	Intermediate
S	1377	California Water Service Co.	Bakersfield	1.07	Intermediate
S	3234	KGET-TV 17	Bakersfield	1.06	Intermediate
C	3705	Lowe's HIW Inc. #795	Fresno	1.06	Intermediate
C	1646	Pacific Bell dba SBC	Parlier	1.04	Intermediate
C	1814	Pacific Bell Telephone Co. (dba AT&T CA)	Chowchilla	1.04	Intermediate
N	9872	City of Newman	Newman	1.03	Intermediate
N	2010	George W. Lowry, Inc.	Modesto	1.03	Intermediate
C	1662	Pacific Bell Telephone Co. (dba AT&T CA)	Kingsburg	1.02	Intermediate
C	8740	Kings Nursing & Rehabilitation Center	Hanford	1.00	Exempt/Low
N	3973	Level 3 Communications LLC	Modesto	0.99	Exempt/Low
N	4585	The Dimare Company	Newman	0.98	Exempt/Low
N	7480	Canary Renewables Corp.	Stockton	0.97	Exempt/Low
S	1475	California Water Service Co.	Bakersfield	0.96	Exempt/Low
C	3885	City of Fresno, Police Dept.	Fresno	0.95	Exempt/Low
N	3692	Pacific Bell Telephone Co. (dba AT&T CA)	Lockeford	0.94	Exempt/Low
S	8521	Express Messenger Systems Inc.	Visalia	0.92	Exempt/Low
S	1689	Quality Refinishing	Bakersfield	0.92	Exempt/Low
S	1491	California Water Service Co.	Bakersfield	0.91	Exempt/Low

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S	9656	Rocket #0255	Goshen	0.90	Exempt/Low
S	4124	California Water Service	Bakersfield	0.90	Exempt/Low
S	2481	Pacific Bell Telephone Co. (dba AT&T CA)	Tipton	0.88	Exempt/Low
N	1248	Foster Poultry Farms-Kopro	Livingston	0.88	Exempt/Low
S	266	California Water Service Co.	Visalia	0.87	Exempt/Low
N	3673	City of Ripon	Ripon	0.84	Exempt/Low
S	3315	Porterville Fire Dept.	Porterville	0.83	Exempt/Low
C	3030	Frontier California Inc.	Squaw Valley	0.82	Exempt/Low
C	3327	Qwest Communications Co LLC/Centurylink	Fresno	0.81	Exempt/Low
C	3250	KGPE Television	Auberry	0.81	Exempt/Low
N	3113	San Joaquin Co. Public Works	Manteca	0.79	Exempt/Low
C	1661	Pacific Bell Telephone Co. (dba AT&T CA)	Huron	0.79	Exempt/Low
C	1667	Pacific Bell Telephone Co. (dba AT&T CA)	Madera	0.77	Exempt/Low
S	268	California Water Service Co.	Visalia	0.77	Exempt/Low
S	183	Crop Production Services Inc.	Alpaugh	0.77	Exempt/Low
C	1654	Pacific Bell Telephone Co. (dba AT&T CA)	Del Rey	0.76	Exempt/Low
C	1651	Pacific Bell Telephone Co. (dba AT&T CA)	Caruthers	0.72	Exempt/Low
C	9930	Amazon.com Services LLC	Fresno	0.72	Exempt/Low
S	265	California Water Service Co.	Visalia	0.72	Exempt/Low
C	4168	City of San Joaquin	San Joaquin	0.70	Exempt/Low
N	4009	Level 3 Communications LLC	Winton	0.70	Exempt/Low
N	5404	JCPenney Company	Merced	0.69	Exempt/Low
S	2480	Pacific Bell dba SBC	Three Rivers	0.69	Exempt/Low
N	4530	City of Merced	Merced	0.67	Exempt/Low
N	5088	JCPenney Company	Modesto	0.66	Exempt/Low
N	472	Lawrence Livermore Natl Security, LLC	Tracy	0.65	Exempt/Low
N	4183	City of Waterford	Waterford	0.64	Exempt/Low
C	1645	Pacific Bell Telephone Co. (dba AT&T CA)	Riverdale	0.64	Exempt/Low
N	9730	Vanguard of California	Stockton	0.63	Exempt/Low
N	3555	Pacific Bell Telephone Co. (dba AT&T CA)	Manteca	0.62	Exempt/Low
S	2484	Pacific Bell Telephone Co. (dba AT&T CA)	Ash Mountain	0.61	Exempt/Low
C	2179	Sierra Unified School District	Prather	0.61	Exempt/Low
N	9059	New Cingular Wireless Pcs LLC	El Nido	0.607	Exempt/Low

Region	Facility ID	Facility Name	City	Prioritization Score	Prioritization Category
		dba AT&T			
S	7131	AT&T Corp	Mckittrick	0.604	Exempt/Low
C	1663	Pacific Bell Telephone Co (dba AT&T CA)	Laton	0.569	Exempt/Low
N	4289	MCI Worldcom	Turlock	0.562	Exempt/Low
C	4261	Seaboard Energy California, LLC	Madera	0.56	Exempt/Low
C	9418	Del Rey CSD	Del Rey	0.553	Exempt/Low
C	70	Burrows & Castadio Inc.	Lemoore	0.548	Exempt/Low
N	4358	City of Livingston	Livingston	0.541	Exempt/Low
N	9679	Pacific Gas & Electric Company	Merced	0.533	Exempt/Low
S	263	California Water Service Co.	Visalia	0.532	Exempt/Low
N	3817	Covanta Stanislaus, Inc.	Crows Landing	0.526	Exempt/Low
S	2418	Jeffries Brothers Inc.	Buttonwillow	0.52	Exempt/Low
N	9850	7-Eleven, Inc.	Stockton	0.511	Exempt/Low
S	9698	7-Eleven, Inc. #41516	Bakersfield	0.511	Exempt/Low
C	9075	New Cingular Wireless Pcs, LLC dba AT&T	Firebaugh	0.506	Exempt/Low
N	4096	MCI World Com Corp	Lodi	0.503	Exempt/Low
C	3240	Hanford Mall	Hanford	0.497	Exempt/Low
S	3708	California Water Service Co.	Bakersfield	0.494	Exempt/Low
N	3691	Pacific Bell Telephone Co. (dba AT&T CA)	Thornton	0.493	Exempt/Low
S	1375	Ming Property LLC	Bakersfield	0.488	Exempt/Low
C	8894	Fedex Ground	Fresno	0.473	Exempt/Low
N	7768	Modesto Irrigation District	Modesto	0.467	Exempt/Low
N	9180	City of Lathrop - Lathrop Well #10	Lathrop	0.459	Exempt/Low
C	8188	State of California Dept. of Transportation	Miramonte	0.452	Exempt/Low
C	9091	Eriksson LLC	Riverdale	0.449	Exempt/Low
C	1650	Pacific Bell Telephone Co. (dba AT&T CA)	Burrel	0.448	Exempt/Low
S	1487	California Water Service Co.	Bakersfield	0.44	Exempt/Low
N	4306	City of Los Banos	Los Banos	0.438	Exempt/Low
C	3502	Sears Roebuck & Co. #1098	Clovis	0.423	Exempt/Low
N	3996	Level 3 Communications LLC	Tracy	0.403	Exempt/Low
S	3977	California Water Service Co	Bakersfield	0.399	Exempt/Low
N	4603	City of Manteca	Manteca	0.392	Exempt/Low
N	2909	Pacific Bell Telephone Co (Dba AT&T CA)	Modesto	0.382	Exempt/Low
C	7256	Garry Packing, Inc.	Del Rey	0.365	Exempt/Low

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N	4742	Hilmar County Water District	Hilmar	0.365	Exempt/Low
S	4266	City of Bakersfield / CA Water Services	Bakersfield	0.358	Exempt/Low
C	1644	Pacific Bell Telephone Co. (dba AT&T CA)	Orange Cove	0.354	Exempt/Low
C	2124	Biola Community Services Dist.	Biola	0.344	Exempt/Low
C	973	Fig Garden Packing Inc.	Fresno	0.334	Exempt/Low
N	5024	City of Los Banos Fire Department	Los Banos	0.333	Exempt/Low
N	4334	City of Manteca	Manteca	0.33	Exempt/Low
S	5256	California Water Service Co	Visalia	0.327	Exempt/Low
S	4226	Golden Empire Concrete Products	Bakersfield	0.322	Exempt/Low
N	9861	Prologis	Tracy	0.318	Exempt/Low
S	2951	Taft City Wastewater Plant	Taft	0.305	Exempt/Low
S	8652	Verizon Wireless Tulare	Tulare	0.296	Exempt/Low
C	4057	Cocola Broadcasting Companies LLC	Auberry	0.274	Exempt/Low
N	9373	City of Livingston	Livingston	0.259	Exempt/Low
N	3516	City of Modesto	Modesto	0.254	Exempt/Low
C	1987	Ponderosa Paint Co., Inc.	Fresno	0.254	Exempt/Low
S	3547	California Water Service	Bakersfield	0.25	Exempt/Low
N	4097	Level 3 Communications LLC	Stockton	0.245	Exempt/Low
C	3425	Comcast Cable Communications Inc.	Clovis	0.241	Exempt/Low
N	8549	Department of Transportation	Terminous	0.24	Exempt/Low
C	1868	Manheim Central CA/TRA-Central CA	Fresno	0.24	Exempt/Low
N	3344	MCI Telecommunications Corp.	Manteca	0.24	Exempt/Low
N	9381	Oak Ridge Winery LLC	Lodi	0.24	Exempt/Low
S	8711	Verizon Wireless - "Belridge & Hwy 33"	Lost Hills	0.237	Exempt/Low
C	3038	County of Fresno	Clovis	0.236	Exempt/Low
C	9248	Faraday & Future, Inc.	Hanford	0.232	Exempt/Low
N	4515	Central Valley Broadcasting	Merced	0.225	Exempt/Low
N	3263	City of Lathrop	Lathrop	0.212	Exempt/Low
C	9397	A1 Blasting	Various Unspecified	0.211	Exempt/Low
C	3546	Madera County	Madera	0.207	Exempt/Low
N	9530	City of Manteca	Manteca	0.204	Exempt/Low
S	1495	California Water Service Co.	Bakersfield	0.199	Exempt/Low
C	2404	Lotus Communications, Corp	Fresno	0.195	Exempt/Low
C	3847	City of Clovis	Clovis	0.191	Exempt/Low

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N	4108	City of Los Banos	Los Banos	0.191	Exempt/Low
N	9585	McFadden Construction	Stockton	0.182	Exempt/Low
C	1656	Pacific Bell Telephone Co. (dba AT&T CA)	Five Points	0.177	Exempt/Low
S	3925	City of Delano CCF	Delano	0.176	Exempt/Low
S	9165	M.O Dion & Sons, Inc.	Bakersfield	0.172	Exempt/Low
S	7254	Goertzen Quality Gypsum	Bakersfield	0.171	Exempt/Low
C	9426	Superior Soils Supplements, LLC	Mendota	0.166	Exempt/Low
S	264	California Water Service Co.	Visalia	0.158	Exempt/Low
S	4248	California Water Services Co. Station 218	Bakersfield	0.158	Exempt/Low
N	5977	City of Turlock	Turlock	0.158	Exempt/Low
C	3710	City of Huron	Huron	0.156	Exempt/Low
N	3784	Kohl's Department Stores Inc.	Merced	0.151	Exempt/Low
C	3517	Clovis Unified School District	Clovis	0.149	Exempt/Low
C	3000	Clovis Unified School District	Clovis	0.144	Exempt/Low
N	1980	Evergreen Beverage Packaging	Turlock	0.141	Exempt/Low
C	9338	Gar Bennett, LLC	Reedley	0.14	Exempt/Low
C	3081	Quail Lake LLC	Clovis	0.134	Exempt/Low
N	9075	City of Tracy Utilities Dept.	Tracy	0.129	Exempt/Low
C	4044	Fresno Unified School District	Fresno	0.125	Exempt/Low
S	3503	KTFF - Telefutura	Tulare	0.119	Exempt/Low
C	3527	Educational Employees C.U.	Fresno	0.115	Exempt/Low
C	9024	New Cingular Wireless Pcs, LLC dba AT&T	Fresno	0.112	Exempt/Low
N	3397	San Joaquin County Svc Area 31	Lodi	0.11	Exempt/Low
N	9073	New Cingular Wireless Pcs LLC dba AT&T	Gustine	0.109	Exempt/Low
S	6533	City of Dinuba	Dinuba	0.0891	Exempt/Low
C	351	City of Clovis	Clovis	0.0849	Exempt/Low
S	1196	Plains Pipeline LP	Kern	0.0817	Exempt/Low
C	3511	Educational Employee Federal Credit Union	Fresno	0.081	Exempt/Low
C	3379	Ross Aviation Investment, LLC	Fresno	0.0776	Exempt/Low
N	3948	City of Riverbank	Riverbank	0.077	Exempt/Low
N	4652	Winton Water And Sanitary District	Winton	0.072	Exempt/Low
N	9371	Mcmanis Family Vineyards	Ripon	0.0719	Exempt/Low
N	4109	City of Los Banos	Los Banos	0.0636	Exempt/Low
S	3159	Plains Pipeline LP	Bakersfield	0.0622	Exempt/Low

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N	8949	City of Tracy Dept. of Emergency Services	Tracy	0.062	Exempt/Low
C	9097	California Resources Production Corp.	Fresno	0.0464	Exempt/Low
C	7958	City of Firebaugh	Firebaugh	0.0456	Exempt/Low
N	8643	Graham Packaging LC LP Plant 0176	Modesto	0.041	Exempt/Low
S	9447	Porterville Rock And Recycle	Porterville	0.0402	Exempt/Low
N	3944	Salida Sanitary District	Salida	0.0398	Exempt/Low
N	7676	City of Dos Palos	Dos Palos	0.0383	Exempt/Low
N	7895	City of Oakdale	Oakdale	0.0352	Exempt/Low
N	7675	City of Dos Palos	Dos Palos	0.0342	Exempt/Low
N	3735	City of Tracy	Tracy	0.034	Exempt/Low
C	3791	CVIN LLC	Kettleman City	0.03	Exempt/Low
C	2906	City of Clovis	Clovis	0.0262	Exempt/Low
N	9524	Lathrop-Manteca Fire Station 35	Lathrop	0.0203	Exempt/Low
S	3624	Frontier California Inc.	Kings Canyon National Park	0.0161	Exempt/Low
S	3283	Terra Bella Irrigation Dist.	Terra Bella	0.0159	Exempt/Low
S	3559	Delaware North Parks Services	Sequoia National Park	0.014	Exempt/Low
N	4083	City of Riverbank	Riverbank	0.013	Exempt/Low
N	1004	CSREH Charter 540 E Main, LLC	Stockton	0.0127	Exempt/Low
S	7653	Edison Beneficial Reuse	Bakersfield	0.0124	Exempt/Low
S	8216	Kern County Fire Department Station #65	Bakersfield	0.00532	Exempt/Low
C	3196	Pacific Gas & Electric Co.	Shaver Lake	0.00332	Exempt/Low
S	9018	City of Woodlake	Woodlake	0.003	Exempt/Low
N	3383	David J. M. Field	Farmington	0.003	Exempt/Low
C	2875	Malaga County Water District	Fresno	0.00289	Exempt/Low
N	3380	David J. M. Field	Patterson	0.002	Exempt/Low
C	9548	Left Mendota 1, LLC	Mendota	0.00149	Exempt/Low
N	8950	City of Tracy Dept. of Emergency Services	Tracy	0.001	Exempt/Low
N	3663	Kabariti's AM/PM	Lathrop	0	Exempt/Low
S	1480	California Water Service Co.	Bakersfield	0	Exempt/Low
S	1492	California Water Service Co.	Bakersfield	0	Exempt/Low
N	7985	Cardoza Enterprises	Manteca	0	Exempt/Low
N	9782	Carriage Services Inc.	Manteca	0	Exempt/Low
N	4729	City of Atwater	Atwater	0	Exempt/Low

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C	2904	City of Clovis	Clovis	0	Exempt/Low
C	2905	City of Clovis	Clovis	0	Exempt/Low
C	2907	City of Clovis	Clovis	0	Exempt/Low
C	3590	City of Clovis-Public Utility	Clovis	0	Exempt/Low
C	3266	City of Fresno Water Division	Fresno	0	Exempt/Low
C	3315	City of Fresno Water Division	Fresno	0	Exempt/Low
C	3317	City of Fresno Water Division	Fresno	0	Exempt/Low
C	3319	City of Fresno Water Division	Fresno	0	Exempt/Low
C	3320	City of Fresno Water Division	Fresno	0	Exempt/Low
N	4551	City of Gustine	Gustine	0	Exempt/Low
N	4360	City of Livingston	Livingston	0	Exempt/Low
N	4465	City of Lodi Station #13	Lodi	0	Exempt/Low
N	4107	City of Los Banos	Los Banos	0	Exempt/Low
C	3751	City of Parlier	Parlier	0	Exempt/Low
C	3753	City of Parlier	Parlier	0	Exempt/Low
N	7384	City of Ripon- Public Works	Ripon	0	Exempt/Low
N	3959	City of Riverbank	Riverbank	0	Exempt/Low
N	3960	City of Riverbank	Riverbank	0	Exempt/Low
N	3961	City of Riverbank	Riverbank	0	Exempt/Low
C	9725	City of Sanger	Sanger	0	Exempt/Low
N	5976	City of Turlock	Turlock	0	Exempt/Low
N	5979	City of Turlock	Turlock	0	Exempt/Low
C	2307	CLF Fresno Business Trust	Fresno	0	Exempt/Low
C	3282	County of Kings	Hanford	0	Exempt/Low
S	2025	Earlimart Public Utility Dist.	Earlimart	0	Exempt/Low
N	3255	Lowe's Home Centers, LLC	Tracy	0	Exempt/Low
S	7506	Nelson's Ace Hardware	Visalia	0	Exempt/Low
C	916	Patton Sheet Metal	Fresno	0	Exempt/Low
S	3438	Sinclair Television-Fresno LLC-KMPH-TV	Sequoia National Forest	0	Exempt/Low
S	3456	Sinclair Television-Fresno LLC-KMPH-TV	Springville	0	Exempt/Low
N	8045	Strand Ace Hardware, Inc.	Modesto	0	Exempt/Low
N	10041	Tripoint Building 5, LLC	Lathrop	0	Exempt/Low
N	10040	Tripoint Building 7, LLC	Lathrop	0	Exempt/Low
S	7448	Tulare Co RMA Delft Colony Water	Dinuba	0	Exempt/Low
S	7447	Tulare County RMA - Solid Waste	Exeter	0	Exempt/Low

Region	Facility ID	Facility Name	City	Prioritization Score	Prioritization Category
C	3630	XPO Logistics Freight, Inc.- UKC	Kettleman City	0	Exempt/Low

Table A2. Facilities with Health Risk Assessments Performed in 2023

Region	Facility ID	Facility Name	City	Cancer Score	Acute Score	Chronic Score	Risk Category
S	3149	Frontier California Inc.	Lindsay	8.89	0.00	0.00	Intermediate Risk
N	3357	City of Lathrop	Lathrop	8.67	0.00	0.00	Intermediate Risk
N	3577	West Valley Mall	Tracy	8.16	0.00	0.01	Intermediate Risk
S	1173	Pacific Bell Telephone Co. (dba AT&T CA)	Oildale	7.86	0.00	0.00	Intermediate Risk
N	3550	City of Modesto	Modesto	7.75	0.00	0.00	Intermediate Risk
N	3649	Pacific Bell Telephone Co. (dba AT&T Ca)	Stockton	6.97	0.00	0.00	Intermediate Risk
C	1933	City of Fresno Water Division	Fresno	5.99	0.00	0.00	Intermediate Risk
S	3347	Level 3 Communications	Delano	5.86	0.00	0.00	Intermediate Risk
C	2500	Comcast Cable Communications Inc.	Hanford	5.66	0.00	0.00	Intermediate Risk
C	2948	Comcast Cable Communications Inc.	Reedley	5.62	0.00	0.00	Intermediate Risk
S	3203	Valley Strong Credit Union	Bakersfield	4.93	0.00	0.00	Intermediate Risk
S	12	Judicial Council of California JCC 15-C1	Bakersfield	4.71	0.00	0.00	Intermediate Risk
S	3984	Bowman Asphalt Inc.	Bakersfield	4.71	0.54	0.11	Intermediate Risk
C	6923	Ampersand Chowchilla Biomass LLC	Chowchilla	4.68	0.09	0.16	Intermediate Risk
S	13	Kern County General Services	Bakersfield	4.63	0.00	0.00	Intermediate Risk
S	3526	City of Porterville	Porterville	4.48	0.00	0.00	Intermediate Risk
N	7617	USA Waste of California, Inc.	Lathrop	3.84	0.89	0.05	Intermediate Risk
N	624	Park View Mausoleum & Crematory	Manteca	3.65	0.11	0.34	Intermediate Risk
S	1482	California Water Service Co.	Bakersfield	2.95	0.00	0.00	Intermediate Risk
S	6847	Kern County Water Agency	Bakersfield	2.39	0.00	0.00	Intermediate Risk
N	3165	City of Modesto	Modesto	2.29	0.00	0.00	Intermediate Risk
N	3509	City of Lodi (Water Well #9)	Lodi	2.26	0.00	0.00	Intermediate Risk
S	2198	Pacific Bell Telephone Co. dba AT&T CA	Tulare	2.18	0.00	0.00	Intermediate Risk
N	4520	City of Merced	Merced	1.96	0.00	0.00	Intermediate Risk
S	3343	Level 3 Communications	Arvin	1.96	0.00	0.00	Intermediate Risk

Region	Facility ID	Facility Name	City	Cancer Score	Acute Score	Chronic Score	Risk Category
S	3362	City of Shafter	Shafter	1.91	0.00	0.00	Intermediate Risk
N	3304	City of Modesto	Modesto	1.56	0.00	0.00	Intermediate Risk
N	3164	City of Modesto	Modesto	1.50	0.00	0.00	Intermediate Risk
N	3998	Remembrance Cremation Center	Atwater	1.40	0.14	0.11	Intermediate Risk
N	3511	City of Lodi (Water Well #7)	Lodi	1.37	0.00	0.00	Intermediate Risk
N	3541	Federal Aviation Admin	Stockton	1.31	0.00	0.00	Intermediate Risk
N	3085	City of Modesto	Modesto	0.88	0.00	0.00	Exempt/Low Risk
C	2950	Geil Enterprises Inc.	Fresno	0.77	0.00	0.00	Exempt/Low Risk
N	7771	Modesto Irrigation District	Modesto	0.70	0.00	0.00	Exempt/Low Risk
S	3530	County of Tulare Resource Mgmt.	Visalia	0.68	0.00	0.00	Exempt/Low Risk
S	3704	Level 3 Communications LLC	Bakersfield	0.29	0.00	0.00	Exempt/Low Risk
N	2907	Pacific Bell Telephone Co. (dba AT&T CA)	Modesto	0.28	0.00	0.00	Exempt/Low Risk
N	3863	City of Lodi	Lodi	0.24	0.00	0.00	Exempt/Low Risk

Figure A1. Map of Intermediate Facilities Assessed in 2023

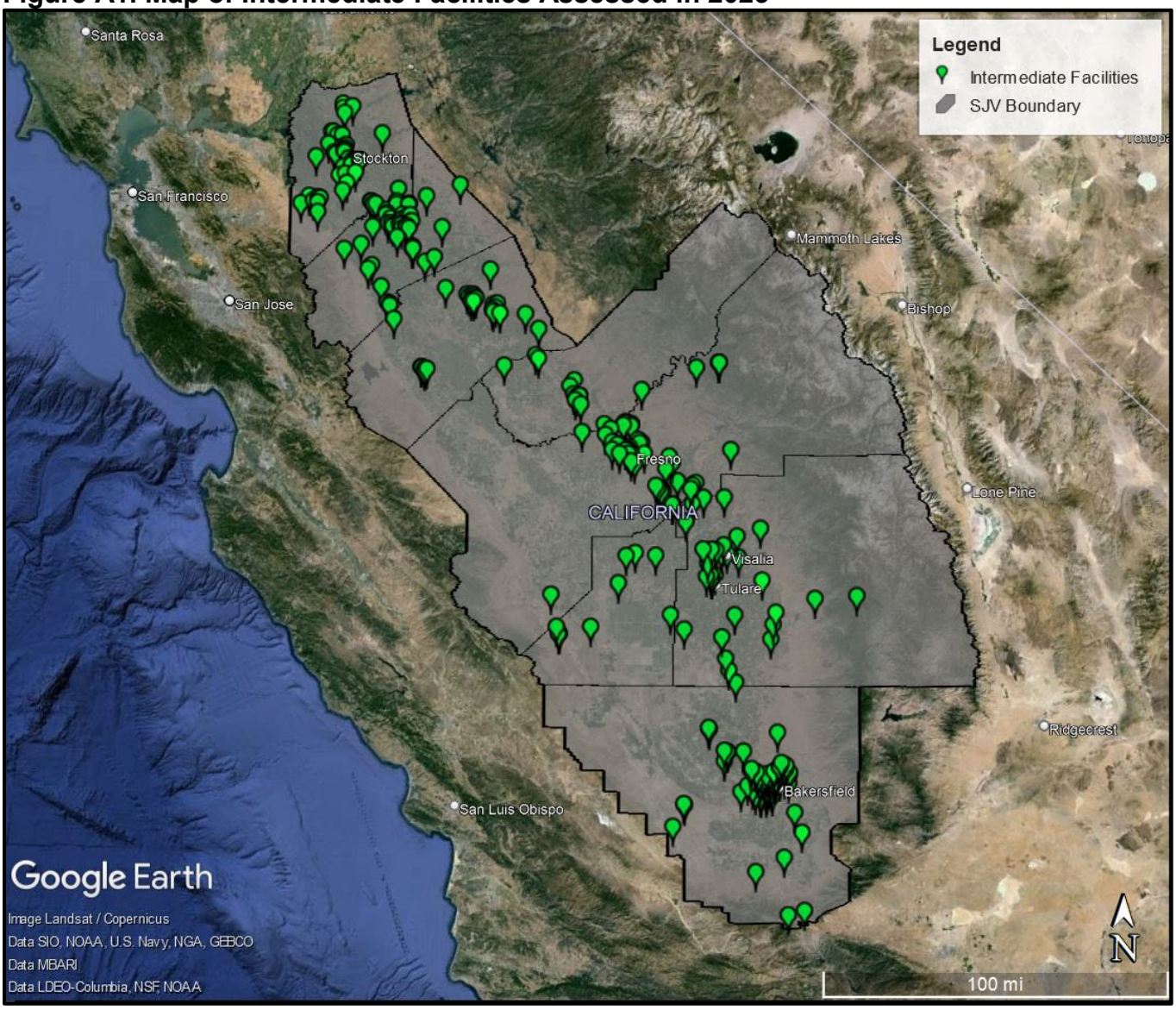
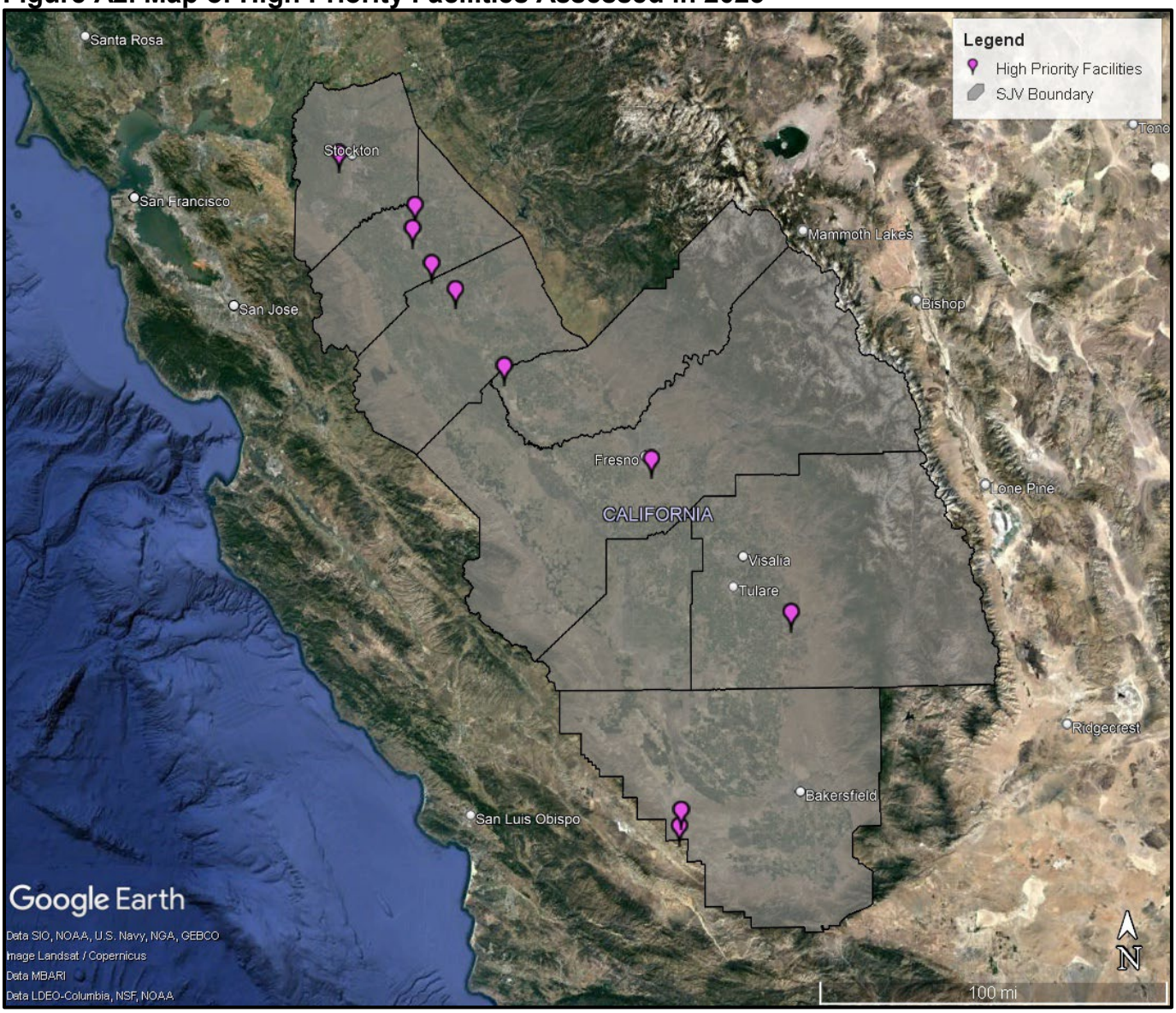


Figure A2. Map of High Priority Facilities Assessed in 2023



Appendix B. Update Summary Facilities Evaluated

Appendix B includes facilities that were re-evaluated as an update summary project.

Table B1. Update Summary Facilities Assessed in 2023

Region	Facility ID	Facility Name	City	Reinstatement Required
C	4071	Algonquin Power Sanger LLC	Sanger	Yes
N	7856	Family Pet Mortuary	Turlock	Yes
S	3991	Foster Farms- Traver Feedmill	Traver	Yes
S	3860	GMC Roofing & Paper Products	Shafter	Yes
S	8132	Golden Valley Crematory	Bakersfield	Yes
S	301	R B & J Industries Inc.	Dinuba	Yes
C	7832	Advanced Drainage System Inc.	Madera	No
N	4408	Aero Turbine Inc.	Stockton	No
N	1166	Andersen Nut Company	Gustine	No
S	3232	Bakersfield Metropolitan Landfill at Bena	Edison	No
S	3435	Best Buy	Dinuba	No
S	1876	Bluescope Buildings North America Inc.	Visalia	No
C	7542	Buttonwillow Warehouse Co	Corcoran	No
S	864	Cal Dept. of Corrections Delano	Delano	No
S	559	Cal Dept. of Corrections Wasco	Wasco	No
N	1363	California Dairies, Inc.	Los Banos	No
S	382	California Resources Elk Hills LLC	Kern	No
S	1738	California Resources Production Corp.	Kern	No
S	8282	California Resources Production Corp.	Kern	No
S	8454	California Resources Production Corp.	Kern	No
N	1788	California State University	Turlock	No
S	97	Carrage Funeral Services of California	Bakersfield	No
C	628	Cbus Ops dba Mission Bell Winery	Madera	No
N	2321	Cbus Ops Inc (dba Woodbridge Winery)	Acampo	No
C	252	Central Cal Women's Facility	Chowchilla	No
N	2518	Chemical Transfer Co., Inc.	Stockton	No
C	9095	Chevron Pipe Line Company	Kettleman Hills	No
N	3266	Chinchiolo Stemilt California LLC	Stockton	No
C	3913	City of Clovis	Clovis	No
N	7827	City of Modesto Composting Facility	Modesto	No
C	343	Clovis Unified School District	Clovis	No
C	4051	Coalinga State Hospital	Coalinga	No
N	230	Con-Fab California LLC	Lathrop	No
C	4163	Del Rey Packing	Del Rey	No
S	8504	Delano Rock And Asphalt LLC	Delano	No

Region	Facility ID	Facility Name	City	Reinstatement Required
N	283	Deuel Vocational Institute	Tracy	No
S	879	Dreyer's Grand Ice Cream	Bakersfield	No
S	2821	Drilling & Production Co.	Kern County	No
N	3386	E & J Gallo Winery	Modesto	No
N	7478	E&J Gallo – Spirits	Modesto	No
N	4939	E&J Gallo Winery - Turner Road Vinters	Lodi	No
C	3733	Evergreen Cremation Service of California	Fresno	No
N	4070	Foothill Sanitary Landfill	Linden	No
N	3838	Frazier Nut Farms, Inc.	Waterford	No
N	3309	G3 Enterprises, Label Division	Modesto	No
C	2265	Gary V. Burrows Inc.	Corcoran	No
C	7218	Golden State Crematory Inc.	Fresno	No
S	724	Grade 6 Oil, LLC - Western Power & Steam	Bakersfield	No
S	3078	Griffith Co.	Tejon Ranch	No
S	381	Heck Cellars	Digiorgio	No
N	7416	Helena Agri-Enterprises, LLC	Modesto	No
N	8533	Highway 59 Composting Facility	Merced	No
N	2140	Hunt & Sons Inc.	Newman	No
N	1380	Hunt & Sons Inc.	Atwater	No
N	2307	Hunt N Sons Inc.	Modesto	No
N	421	International Paper	Tracy	No
C	1713	J W Myers, Incorporated	Coarsegold	No
N	1161	J.R. Simplot / French Camp	French Camp	No
S	6458	Kern County Water Agency	Bakersfield	No
S	4128	Kern Valley State Prison	Delano	No
C	724	Kings County Public Works Dept.	Hanford	No
C	234	Kraft Heinz Foods Company	Fresno	No
N	2000	Lakewood Memorial Park	Hughson	No
C	848	Moore Quality Galvanizing	Madera	No
C	2341	NAS Lemoore	Lemoore	No
S	3434	Newby Rubber Inc.	Bakersfield	No
N	139	Nutrien Ag Solutions	Stockton	No
C	629	O'neill Beverages Co LLC	Parlier	No
S	3636	Pastoria Energy Facility LLC	Lebec	No
S	71	Plains LPG Services LP	Shafter	No
S	185	Porterville Developmental Center	Porterville	No
N	1646	QG Printing Ii LLC	Merced	No
S	4254	Salser & Dillard Funeral Chapel	Visalia	No
C	3029	San Joaquin Figs	Fresno	No

Region	Facility ID	Facility Name	City	Reinstatement Required
N	1655	Santa Fe Aggregates, Inc.	Winton	No
C	1080	Scelzi Enterprises Inc.	Fresno	No
N	9137	Shepard Bros, Inc.	Stockton	No
N	1717	Silgan Container Corp.	Modesto	No
C	393	Silvas Oil Company, Inc.	Fresno	No
N	2177	Sky Trek Aviation Fuels Inc.	Modesto	No
N	4986	State of California, Dept. of Trans	Stockton	No
N	913	Stockton Metropolitan Airport	Stockton	No
N	571	Stockton Port District	Stockton	No
N	4058	Stockton Rubber Mfg. Co., Inc.	Linden	No
N	810	Stockton Tri Industries, LLC	Stockton	No
N	825	Stockton Wood Shavings Company	French Camp	No
S	1602	The Boeing Co.	Taft	No
N	956	The Wine Group, Inc.	Ripon	No
N	3187	Tracy Material Recovery	Tracy	No
S	548	Tulare City Wastewater Plant	Tulare	No
N	754	US Army Garrison Presidio of Monterey	Lathrop	No
N	8114	Valley Custom Powder Coating	Lathrop	No
N	2820	Vanderlans & Sons, Inc.	Lodi	No
C	1344	Vie-Del Winery #1	Fresno	No
N	7989	Wilbur-Ellis Company - Manteca	Manteca	No

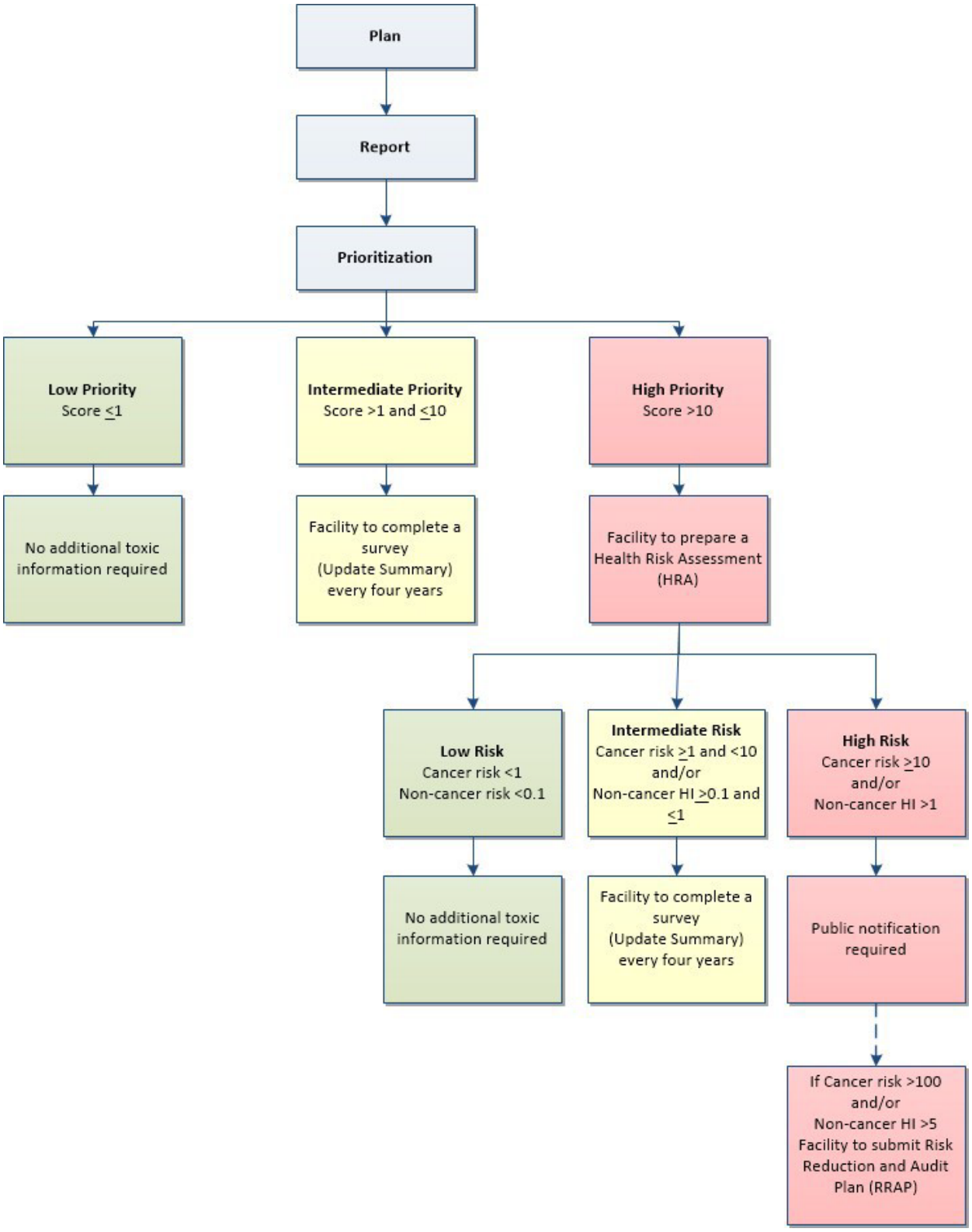
Appendix C. Toxics Emissions Summary

Emissions for eight counties of San Joaquin Valley from the latest California Air Resources Board California Toxics Inventory (CTI).

Table C1. Toxic Emissions Summary

Pollutant	CTI (tons/yr)
Acetaldehyde	3,512
Diesel Particulate Matter	2,520
Formaldehyde	2,318
Benzene	1,020
Perchloroethylene	448
1,3-Butadiene	269
Methylene Chloride	247
PAHs	238
Manganese	217
Acrolein	153
p-Dichlorobenzene	130
Styrene	96
Trichloroethylene	46
Chromium	34
Lead	28
Nickel	18
Acrylonitrile	7
Vinyl Chloride	7
Arsenic	5
Cadmium	3
Mercury	2
Chloroform	2
Ethylene Oxide	0
Ethylene Dichloride	0
Beryllium	0
Carbon Tetrachloride	0
Dioxins/Benzofurans	0
Chromium, Hexavalent	0

Appendix D. AB 2588 District Implementation Flow Chart



Appendix E. Current Status of NESHAP Delegation

National Emission Standards for Hazardous Air Pollutants (NESHAP) for which authority has been delegated to the District are included in District Rule 4002. This rule incorporates the NESHAPs from Part 61, Chapter I, Subchapter C, Title 40, Code of Federal Regulations (Table E.1), and the NESHAPs for Source Categories from Part 63, Chapter I, Subchapter C, Title 40, Code of Federal Regulations (Table E.2).

Table E1. District Delegated NESHAPs from Part 61, Chapter I, Subchapter C, Title 40, Code of Federal Regulations.

Subpart	Description
A	General Provisions
C	National Emission Standard for Beryllium
D	National Emission Standard for Beryllium Rocket Motor Firing
E	National Emission Standard for Mercury
F	National Emission Standard for Vinyl Chloride
J	National Emission Standard for Equipment Leaks (Fugitive Emission Sources) of Benzene
L	National Emission Standard for Benzene Emissions from Coke By-Product Recovery Plants
M	National Emission Standard for Asbestos
N	National Emission Standard for Inorganic Arsenic Emissions from Glass Manufacturing Plants
O	National Emission Standard for Inorganic Arsenic Emissions from Primary Copper Smelters
P	National Emission Standard for Inorganic Arsenic Emissions from Arsenic Trioxide and Metallic Arsenic Production Facilities
V	National Emission Standard for Equipment Leaks (Fugitive Emission Sources)
Y	National Emission Standard for Benzene Emissions from Benzene Storage Vessels
BB	National Emission Standard for Benzene Emissions from Benzene Transfer Operations
FF	National Emission Standard for Benzene Waste Operations

Table E2. District Delegated NESHAPs from Part 63, Chapter I, Subchapter C, Title 40, Code of Federal Regulations.

Subpart	Description
A	General Provisions
F-I	National Emission Standards for Organic Hazardous Air Pollutants From the Synthetic Organic Chemical Manufacturing Industry
J	National Emission Standards for Hazardous Air Pollutants from Polyvinyl Chloride and Copolymers Production
L	National Emission Standards for Coke Oven Batteries
R	National Emission Standards for Gasoline Distribution Facilities (Bulk Gasoline Terminals and Pipeline Breakout Stations)
S	National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry
T	National Emission Standards for Halogenated Solvent Cleaning (except §63.462 - Batch cold cleaning machine standards)
U	National Emission Standards for Hazardous Air Pollutant Emissions: Group I Polymers and Resins
W	National Emission Standards for Hazardous Air Pollutants for Epoxy Resins Production and Non-Nylon Polyamides Production
X	National Emission Standards for Hazardous Air Pollutants from Secondary Lead Smelting
Y	National Emission Standards for Marine Tank Vessel Loading Operations AA National Emission Standards for Hazardous Air Pollutants From Phosphoric Acid Manufacturing Plants
BB	National Emission Standards for Hazardous Air Pollutants from Phosphate Fertilizers Production Plants
CC	National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries
DD	National Emission Standards for Hazardous Air Pollutants from Off-Site Waste and Recovery Operations
EE	National Emission Standards for Magnetic Tape Manufacturing Operations
GG	National Emission Standards for Aerospace Manufacturing and Rework Facilities
HH	National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities
II	National Emission Standards for Shipbuilding and Ship Repair (Surface Coating)
JJ	National Emission Standards for Wood Furniture Manufacturing Operations
KK	National Emission Standards for the Printing and Publishing Industry
LL	National Emission Standards for Hazardous Air Pollutants for Primary Aluminum Reduction Plants
MM	National Emission Standards for Hazardous Air Pollutants from Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills
YY	National Emission Standards for Hazardous Air Pollutants: Generic Maximum Achievable Control Technology (Generic MACT)
CCC	National Emission Standards for Hazardous Air Pollutants for Steel Pickling--HCl Process Facilities and Hydrochloric Acid Regeneration Plants
DDD	National Emission Standards for Hazardous Air Pollutants for Mineral Wool Production
GGG	National Emission Standards for Hazardous Air Pollutants from Pharmaceutical Production
HHH	National Emission Standards for Hazardous Air Pollutants from Natural Gas Transmission and Storage Facilities
III	National Emission Standards for Hazardous Air Pollutants for Flexible Polyurethane Foam Production

Subpart	Description
JJJ	National Emission Standards for Hazardous Air Pollutant Emissions: Group IV Polymers and Resins
LLL	National Emission Standards for Hazardous Air Pollutants for Source Categories; Portland Cement Manufacturing Industry
MMM	National Emission Standards for Hazardous Air Pollutants: Pesticide Active Ingredient Production
NNN	National Emission Standards for Hazardous Air Pollutants for Source Categories; Wool Fiberglass Manufacturing
OOO	National Emission Standards for Hazardous Air Pollutant Emissions: Manufacture of Amino/Phenolic Resins
PPP	National Emission Standards for Hazardous Air Pollutants for Polyether Polyols Production
QQQ	National Emission Standards for Hazardous Air Pollutants from Primary Copper Smelting
RRR	National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production
TTT	National Emission Standards for Hazardous Air Pollutants for Primary Lead Smelting
UUU	National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units
VVV	National Emission Standards for Hazardous Air Pollutants: Publicly Owned Treatment Works
XXX	National Emission Standards for Hazardous Air Pollutants for Ferroalloys Production: Ferromanganese and Silicomanganese
AAAA	National Emission Standards for Hazardous Air Pollutants from Municipal Solid Waste Landfills
CCCC	National Emission Standards for Hazardous Air Pollutants from Manufacturing of Nutritional Yeast
EEEE	National Emission Standards for Hazardous Air Pollutants from Organic Liquids Distribution (Non-Gasoline)
FFFF	National Emission Standards for Hazardous Air Pollutants from Miscellaneous Organic Chemical Manufacturing
GGGG	National Emission Standards for Hazardous Air Pollutants from Solvent Extraction for Vegetable Oil Production
HHHH	National Emission Standards for Hazardous Air Pollutants from Wet- Formed Fiberglass Mat Production
JJJJ	National Emission Standards for Hazardous Air Pollutants from Paper and Other Web Coating
KKKK	National Emission Standards for Hazardous Air Pollutants from Surface Coating of Metal Cans
MMMM	National Emission Standards for Hazardous Air Pollutants from Surface Coating of Miscellaneous Metal Parts and Products
NNNN	National Emission Standards for Hazardous Air Pollutants from Surface Coating of Large Appliances
OOOO	National Emission Standards for Hazardous Air Pollutants from Printing, Coating, and Dyeing of Fabrics and Other Textiles
PPPP	National Emission Standards for Hazardous Air Pollutants from Surface Coating of Plastic Parts and Products
QQQQ	National Emission Standards for Hazardous Air Pollutants from Surface Coating of Wood Building Products
RRRR	National Emission Standards for Hazardous Air Pollutants from Surface Coating of Metal Furniture

Subpart	Description
SSSS	National Emission Standards for Hazardous Air Pollutants from Surface Coating of Metal Coil
TTTT	National Emission Standards for Hazardous Air Pollutants from Leather Finishing Operations
UUUU	National Emission Standards for Hazardous Air Pollutants from Cellulose Product Manufacturing
VVVV	National Emission Standards for Hazardous Air Pollutants from Boat Manufacturing
WWWW	National Emission Standards for Hazardous Air Pollutants from Reinforced Plastic Composites Production
XXXX	National Emission Standards for Hazardous Air Pollutants from f Rubber Tire Manufacturing
YYYY	National Emission Standards for Hazardous Air Pollutants from Stationary Combustion Turbines
AAAAA	National Emission Standards for Hazardous Air Pollutants from Lime Manufacturing Plants
BBBBB	National Emission Standards for Hazardous Air Pollutants from Semiconductor Manufacturing
CCCCC	National Emission Standards for Hazardous Air Pollutants from Coke Ovens: Pushing, Quenching, and Battery Stacks
EEEEE	National Emission Standards for Hazardous Air Pollutants from Iron and Steel Foundries
FFFFF	National Emission Standards for Hazardous Air Pollutants from Integrated Iron and Steel Manufacturing
GGGGG	National Emission Standards for Hazardous Air Pollutants from Site Remediation
HHHHH	National Emission Standards for Hazardous Air Pollutants from Miscellaneous Coating Manufacturing
IIIII	National Emission Standards for Hazardous Air Pollutants from Mercury Emissions from Mercury Cell Chlor-Alkali Plants
JJJJJ	National Emission Standards for Hazardous Air Pollutants from Brick and Structural Clay Products Manufacturing
KKKKK	National Emission Standards for Hazardous Air Pollutants from Clay Ceramics Manufacturing
LLLLL	National Emission Standards for Hazardous Air Pollutants from Asphalt Processing and Asphalt Roofing Manufacturing
MMMMM	National Emission Standards for Hazardous Air Pollutants from Flexible Polyurethane Foam Fabrication Operations
PPPPP	National Emission Standards for Hazardous Air Pollutants from Engine Test Cells/Stands
QQQQQ	National Emission Standards for Hazardous Air Pollutants from Friction Materials Manufacturing Facilities
RRRRR	National Emission Standards for Hazardous Air Pollutants from Taconite Iron Ore Processing
SSSSS	National Emission Standards for Hazardous Air Pollutants from Refractory Products Manufacturing
TTTTT	National Emission Standards for Hazardous Air Pollutants from Primary Magnesium Refining

SAN JOAQUIN VALLEY UNIFIED AIR POLLUTION CONTROL DISTRICT

FINAL DRAFT STAFF REPORT

December 15, 2005

Rule 9510 – Indirect Source Review (ISR)
Rule 3180 – Administrative Fees for Indirect Source Review

Prepared by: Chrystal Meier, Air Quality Specialist
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Scott Nester, Planning Director

I. SUMMARY

A. Reasons for Rule Development and Implementation

The San Joaquin Valley Air Basin (SJVAB) is classified as a nonattainment area for the state and federal health based ambient ozone and PM10 standards by the California Air Resources Board (ARB) and the U.S. Environmental Protection Agency (EPA). The SJVAB is currently classified as serious nonattainment for the 24-hour and annual National Ambient Air Quality Standards (NAAQS) for particulate matter 10 microns in size and smaller (PM10), serious nonattainment for the new federal 8-hour ozone standard, non-attainment for the new federal PM2.5 standard, and severe nonattainment for the 1-hour state ozone standard.

Legislation

SB 709, Florez, was passed by the state legislature, was signed by Governor Gray Davis, and codified into the Health and Safety Code in §40604 in 2003. This requires the San Joaquin Valley Air Pollution Control District to adopt, by regulation, a schedule of fees to be assessed on areawide or indirect sources of emissions.

PM10 Plan Commitment.

The San Joaquin Valley Unified Air Pollution Control District (District) adopted its 2003 PM10 Plan on June 19, 2003, which projects attainment of the NAAQS for PM10 at the earliest practicable date of December 31, 2010. As part of its PM10 attainment strategy, the District is required to reduce directly emitted PM10 and the PM10 precursor oxides of nitrogen (NOx). The 2003 PM10 Plan commits the District to develop new rules or amend existing rules to achieve these emission reductions. The Indirect Source Rule (ISR) is one of the commitments contained in the 2003 PM10 Plan

to meet these requirements. The ISR commitment will be implemented through Rule 3180 and Rule 9510. Indirect sources are land uses that attract or generate motor vehicle trips.

Ozone Plan Commitment.

Emission reductions from Rule 9510 are also important for attaining state and federal ozone standards. As an extreme nonattainment area, the SJVAB was required by the Federal Clean Air Act (CAA) to attain the NAAQS for ozone by November 15, 2010. In order to achieve attainment by 2010, the Extreme Ozone Attainment Demonstration Plan contained commitments to reduce a precursor of ozone, NOx and volatile organic compounds (VOC). These commitments included NOx reductions from indirect sources. Although the federal one-hour standard has been revoked, the plan commitments must still be implemented to ensure progress is made toward attaining the new more stringent 8-hour ozone standard. By 2007, the District will be required to prepare a plan to comply with the federal 8-hour ozone standard that is expected to require additional reductions. Additionally, the California Clean Air Act (CCAA) requires the District to adopt all feasible control measures to attain the standards.

Health Impacts of Non-Attainment

Since 1996 there have been more than 800 new scientific studies published that associate the effects of airborne particulates on human health. Overall the studies validate earlier research and confirm the relationship between particulate air pollution, illness, hospitalization and premature death. Infants and children, particularly asthmatic children, are especially sensitive to the effects of fine particulate pollutions. For additional information on particulate health impacts see the 2003 PM10 Plan, Chapter 1.

Ozone research has produced strong evidence that correlates exposure to ozone and adverse health effects. In humans, ozone can irritate and inflame the respiratory tract, particularly during heavy physical activity, which results in heavy coughing, throat irritation, and breathing difficulties. For additional information on ozone health impacts see the District's Extreme Ozone Attainment Demonstration Plan, Section 2.3.

B. District Authority and Limitations

Authority

The primary provision of state law giving the District authority to regulate indirect source emissions is part of the California Clean Air Act legislation adopted in 1988. The provision, incorporated into Health and Safety Code, Section 40716, states that "a district may adopt and implement regulations to … reduce or mitigate emissions from indirect and areawide sources of air pollution." To further clarify, a California Attorney General opinion issued in 1993 states that

> *"a district's regulations may require the developer of an indirect source to submit the plans to the district for review and comment prior to the issuance of a permit for construction by a city or county. A district may also require the owner of an indirect source to adopt reasonable post-construction measures to mitigate particular indirect effects of the facility's operation. Such regulations could be enforced through an action for civil penalties…"*

Indirect source mitigation programs are also consistent with ARB's interpretation of the CCAA all feasible measures requirement:

> *"every feasible measure to mean that, at a minimum, a district consider regulations that have been successfully implemented elsewhere. They should also consider going beyond what has already been accomplished by evaluating new technologies and innovative approaches that may offer potential emission reductions. Further, districts should consider not only technological factors, but also social, environmental, economic (e.g., cost-effectiveness), and energy factors which prevail in the district, along with the resources realistically available to the district to adopt, implement, and enforce the measures."*

Health and Safety Code 42311(g) allows districts to adopt a schedule of fees on areawide or indirect sources which are regulated, but for which permits are not issued, to cover the costs of District programs related to this source. SB 709, Florez, was passed by the state legislature, was signed by Governor Gray Davis, and codified into the Health and Safety Code in §40604 in 2003. This requires the San Joaquin Valley Air Pollution Control District to adopt, by regulation, a schedule of fees to be assessed on areawide or indirect sources of emissions.

Finally, the District has the authority to control indirect sources, defined in the Clean Air Act (CAA §110(a)(5)(C)) as, "… a facility, building, structure, installation, real property, road, or highway which attracts, or may attract, mobile sources of pollution"(emphasis added). This authority comes from the CAA §110(a)(5)(A)(i):

> *"Any State may include in a State implementation plan … any indirect source review program."*

Analysis of Nexus Applicability

The District analyzed the applicability of Nexus requirements for Rule 9510 and 3180. The District's legal council's analysis found that the Rule and supporting documentation likely meets the federal 'reasonable relationship test'. In addition, the analysis found that the California Mitigation Fee Act (CGC §66000 et seq.) does not apply to Rule 9510 and 3180. The analysis similarly found that California Proposition 13 and 218 do not apply to Rules 9510 and 3180.

California's Mitigation Fee Act (CGC §66000 et seq.) establishes authority and limitations on fees or taxes charged, "by a local agency to the applicant in connection *with approval of a development project*." CGC §66001 (a) states, "In any action establishing, increasing, or imposing a fee *as a condition of approval* of a development project by a local agency on or after January 1, 1989, the local agency shall do all of the following," and §66001 (b), "In any action imposing a fee *as condition of approval* of a development project. (Italics added)." The District cannot impose on the local land-use authority and will not be approving or disapproving development projects. As such, the District cannot place 'conditions of approval' on a project. Therefore, the Mitigation Fee Act does not apply to the ISR Rule. The District does not consider the action of approving or disapproving an air quality analysis and assessment of fees as a discretionary action.

Limitations

The District will not be approving development projects, but the air impact assessments associated with development projects. In this approval, the District will assess air impacts, the amount of reduction required by the rule, the amount of applicant-specified on-site emission reductions, and the amount of off-site emissions reductions needed, if any. The District recognizes the land-use authority of SJVAB Cities and Counties and does not have land-use authority itself.

II. RULE DEVELOPMENT PROCESS

As part of the rule development process for this project, District staff held public scoping meetings in Fresno, Modesto, and Bakersfield in October 2003. At the scoping meetings, District staff presented the objectives of the proposed rulemaking project, collected information, and received comments from interested parties, local agencies, the building industry, real estate associations, consultants, and trade associations. The comments received were incorporated into the draft rules and staff report. In March of 2004, the District presented a draft Rule 9510, and several other documents. In June of 2005, the District presented draft Rule 9510 and draft Rule 3180, as well as associated appendices. The comments received were incorporated into the draft rules and staff report. In addition, District staff held a public workshop September 1, 2005 and solicited input on the draft rule and associated documents. The District received comments from interested parties and affected entities. Information obtained throughout this workshop process was used to develop and modify the draft rules and staff report.

Pursuant to state law, District staff is required to perform an assessment of the socioeconomic impacts prior to the adoption, amendment, or repeal of a rule that will have significant air quality benefits or that will strengthen emission limitations. As a part of the District's socioeconomic analysis process, District staff held a Focus Group meeting on August 11, 2005 to assist in the collection of socioeconomic data for the

implementation of the new proposed program. The Focus Group consisted of a limited number of representatives from interested groups.

Final drafts of the proposed rules, staff report, emission reductions analysis, cost effectiveness analysis, on-site emission reduction checklist, socioeconomic analysis, and rule consistency analysis, will be published prior to a public hearing by the Governing Board to consider the adoption of proposed Rules 3180 and 9510. The tentative schedule for the public hearing to consider the adoption of the newly proposed rules by the District Governing Board is for December 15, 2005.

III. BACKGROUND

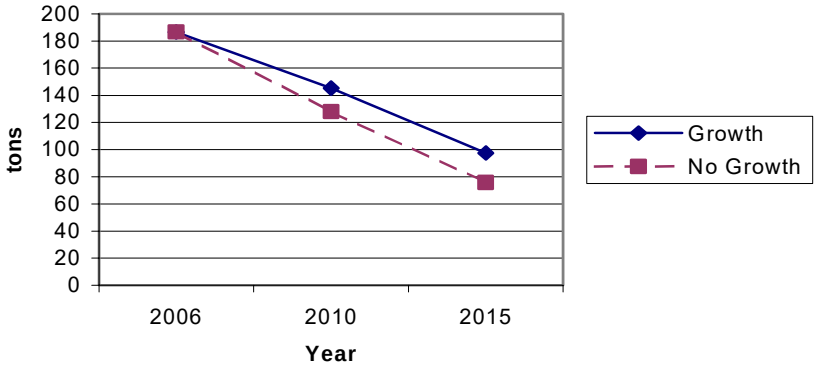
A. Growth and Emissions

The District exceeds state and federal air quality standards for ozone and PM10, despite significant reduction of air pollution from both mobile and stationary sources, primarily because of increases in population and vehicle miles traveled (VMT) in the SJVAB.

Reductions

Federal, state and local efforts have led to approximately 30 percent reduction in smog precursors and a ten percent reduction in PM10 (overall) in the SJVAB since 1990[1]. Significant reductions from stationary sources have been achieved, so that mobile sources now produce 69 percent of all NOx emissions in the District. Today's new cars pollute about 90 percent less than models produced 25 years ago due to California's strict vehicle emissions standards. By 2003, the average new car in California will pollute 75 percent less than 1994 models[2]. Although these standards will continue to greatly improve air quality, large increases in population and driving partially reduce the benefits of cleaner motor vehicles. The following chart shows how much lower the emissions from motor vehicles would be if growth were not to occur.

Figure 1
Difference in NOx Emissions for All Vehicle Types



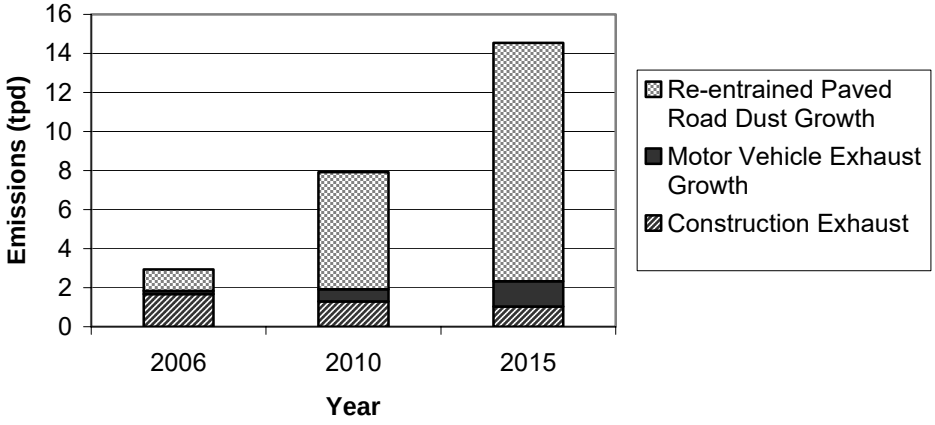
Population Growth

The SJVAB has experienced a large increase in population in the past several decades. The total population in the District increased by 22% between 1990 and 2000, and California's Department of Finance is projecting that the SJVAB will see an overall increase in population of 24% between 2000 and 2010. Each county varies, with the highest expected growth in terms of percentage increase in Madera, and the lowest expected growth in Fresno, but in terms of numbers of people, Fresno is expected to see the largest increase[3]. With increased population there is an increase in emissions from area sources, such as consumer products, fuel combustion, landscape maintenance equipment, etc.

VMT Growth

The total number of vehicle miles traveled (VMT) in the District has increased at a faster rate than population growth. The District witnessed a nine percent increase between 1999 and 2002, and is expecting a 27 percent increase from 2002 to 2010[4]. Entrained and re-entrained paved road dust and corresponding PM10 emissions, increase as VMT increases. The ozone and PM10 precursor NOx, also increases as VMT increases.

Figure 2
PM10 Emissions from Development



Increased Emissions From Growth

The past and projected increases in population, associated development and construction emissions and vehicle miles traveled, and the slower than expected introduction of technological advances in automobile and truck emission controls, have significantly slowed progress toward attainment. The ISR program can reduce and offset some of the growth in emissions and is required for attainment of the federal ozone and PM10 standards by the dates required in ozone and PM10 attainment plans.

B. Existing Indirect Source Programs

The District identified several examples of air pollution agencies in California that are currently reviewing land use projects for indirect source impacts and/or collecting mitigation fees in their districts. Five air pollution agencies have adopted and implemented an indirect source rule or policy. The methods and authority over development projects vary from air district to air district. Brief descriptions of these programs are provided below.

Mendocino County Air Quality Management District (AQMD) outlines their permitting process for indirect sources in Rule 1-200. The rule requires any indirect source to obtain an Authority to Construct (ATC) prior to starting construction. When Mendocino AQMD receives an application, they perform a California Environmental Quality Act (CEQA) determination. The ATC is not issued until a Notice of Determination is completed and filed.

Great Basin Unified Air Pollution Control District (APCD) also has an indirect source permit rule in place, Rule 216. This rule defines indirect sources as a secondary source, which is any structure, building, facility, equipment, installation, operation, or aggregation thereof. The application and associated informational documents are reviewed, and an analysis on expected emissions and air quality impact is performed. Public notice is published, and the general public is allowed to review and comment. The District then considers comments and imposes conditions on the approval of the permit or denies a permit if it is determined that the secondary source will contribute to a violation of any air quality standard. The fees imposed on secondary sources in Great Basin are outlined in Rule 301. Those fees are based on the size of the commercial unit and the number of parking spaces, or the number of residential dwelling units.

Colusa County APCD has an indirect source fee rule, Rule 4.8. The fees are assessed for building permit applicants during the city or county's permit process. The fees are based on the square footage of commercial or industrial projects, or by residential unit. The city or county may retain an administrative fee of ten percent. The fees are used to offset the District's costs, and any excess is used to mitigate air quality impacts.

Placer County APCD has instituted a "Policy Regarding Land Use Air Quality Mitigation Funds." During CEQA review, the APCD assesses total emissions that are estimated to occur during the ozone season from a particular project. The emissions are estimated by utilizing URBEMIS, which will be mentioned later in this staff report. After estimating emissions during the ozone season from URBEMIS, Placer County APCD requires 40% mitigation of a project's impact or to below a significance threshold, either on-site, off-site, by paying a fee, or a combination of those options.

Shasta County AQMD has adopted Rule 3:16, which allows Shasta County to place reasonable conditions on any fugitive, indirect or non-traditional source. At the current time, Shasta County utilizes the rule to mitigate the impact of new residential dirt roads by requiring paving or paying a fee. Their Resolution 84-2 authorizes an in-lieu buy out schedule for road paving, which is currently set at $800 per parcel below 1,000 feet in elevation.

In addition to the above examples, numerous government agencies in the SJVAB have created impact fee programs that have proved useful in drafting this program. The most common are transportation/transit impact fees for cities such as Bakersfield, Lathrop, and Visalia. The City of Stockton and the City of Turlock also have air quality impact fee programs in place.

C. Program Options

The District considered several options for the initial approach to the ISR program. The options were developed to coincide with the normal development process as a condition of application completeness during the environmental review with a city/county, or while compiling conditions of permit approval as part of the cities/counties development processes.

District Permit Program: This option would require permit applicants to obtain a permit from the District prior to paying the city/county's building permit fees. The District could require applicants to provide specific documents needed to determine the emissions from the project using URBEMIS. The District could then require on-site emission reduction measures as conditions of approval of the permit and/or calculate a fee. Under this option, the District could collect the off-site fee prior to issuing the District permit or defer the fee until the city/county issued the building permit.

City/County Review & Administration: This option would allow the city/county to review the emissions generation of an applicant's project, likely using URBEMIS. Under this option, the city/county would collect the off-site fee, if any, and transfer the fee to the District's off-site fund account(s). The city/county could also operate the entire program including expenditure of funds on emission reduction projects if the city/county adopted a program at least as effective at reducing emissions as the District's rule.

District Review & City/County Administration: Under this option, the District would require the applicant to provide documents necessary to perform an emissions generation analysis, likely using URBEMIS. The District would calculate the off-site fee amount based on total emissions and identify credits for specific on-site emission reduction measures included in the project. Prior to authorization of a building permit, the city/county would review the list, check which on-site measures have been incorporated into the project, and collect the fee, if any.

Simple Fee: This option would allow cities/counties to charge an off-site fee based on certain criteria, such as size or number of units. If this option was pursued, most likely the per unit fee would be based on the Institute of Transportation Engineers (ITE) trip generation rates for the different land uses and emissions calculated by URBEMIS. Under this option, the city or county would assess and collect the fee. An appeal program or a rebate program would be a possibility to give credit for any on-site measures that were performed or incorporated into the design of the project.

District Review & Administration: Under this option, the District would require the applicant to provide documents necessary to perform an emissions generation analysis, likely using URBEMIS. The District would calculate a required reduction amount based on total emissions and identify credits for specific on-site emission reduction measures included in the project. Required reductions not achieved by voluntary on-site measures would be achieved off-site through an offset fee. Offsite reductions would be subject to criteria including (but not limited to) being quantifiable and surplus. The District would conduct annual reporting to analyze the effectiveness of the off-site emission reduction program.

The District chose to pursue the 'District Review & Administration' option for several factors. Primarily, the District chose to craft the ISR rules to be compatible with local land-use authorities decision-making processes, and to have the ability to be worked into CEQA documents at the Lead Agencies' discretion. The District includes the options for voluntary on-site emission reduction measures that would allow a reduction in off-site fees.

IV. PROPOSED REGULATIONS

A. Proposed Rule 9510

The purpose of proposed Rule 9510 is to reduce emissions of NOx and PM10 from new development projects. The rule applies to development projects that will seek to gain a discretionary approval for projects that, upon full build-out will include any one of the following: 50 residential units, 2,000 square feet of commercial space, 25,000 square feet of industrial space, 20,000 square feet of medical office space, 39,000 square feet of general office space, 9,000 square feet of educational space, 10,000 square feet of government space, 20,000 square feet of recreational space, or 9,000 square feet of uncategorized space. The rule also applies to transportation projects whose construction exhaust emissions will result in a total of two tons per year of NOx and PM10 combined. However, there are several sources that are exempt. These include transportation projects that meet certain conditions, reconstruction projects that result from a natural disaster, development project's whose primary functions are from District permitted stationary sources. Also, development projects that have a mitigated baseline below two tons per year for NOx and PM10 shall be exempt from the

mitigation requirements of the rule. Anti-circumvention language was added to prevent piecemealing of development projects.

Applicability

Rule 9510 applies to any applicant that applies for a final discretionary approval for a development project which will include any of the following: 50 residential units; 2,000 square feet (sf) of commercial space; 25,000 sf of light industrial space; 100,000 sf of heavy industrial space; 20,000 sf of medical office space; 39,000 sf of general office space; 9,000 sf of educational space; 10,000 sf of government space; 20,000 sf of recreational space; 9,000 sf of space not identified, and; transportation and transit projects where construction exhaust emissions results in a total of 2 tons of NOx and PM10 combined.

Exemptions

Transportation and Transit projects are only subject to the construction emission reduction requirements of the rule. Development projects subject to the rule that reduce their operational emissions to less than 2 tons per year of NOx and PM10 each not subject to the rule's operational or construction emission reductions requirements.

Reconstruction of a development that was damaged or destroyed that is rebuilt to essentially the same use and intensity is similarly not subject the rule's requirements. In addition, development projects whose primary functions are regulated by District permits are exempt. Those stationary source projects are exempted because the projects' primary emissions are from stationary sources that are currently regulated by District rules and permitting requirements.

Application

Rule 9510 requires applicants of new development projects to submit an Air Impact Assessment (AIA) application to the District prior to or at the project's application for a final discretionary approval with a public agency. The application would include the information necessary for the District to perform an assessment, project location and description, an on-site emission reduction checklist, and an assessment by the applicant (if desired). An AIA would consist of inputting project data into an APCO-approved model to estimate emissions, and inputting on-site emission reduction measures that are components of the project design and/or other project specifics to calculate emissions reductions. This will be performed by the District and may be performed by the applicant. The emissions and emissions reduction outputs will be used to calculate the amount of on-site emission reduction is achieved, and what the off-site emission reduction fee would be, if any. Proposed Rule 9510 specifies the use of an APCO-approved model (Draft Rule 9510 Section 3.2), which in most cases will be URBEMIS. In the event that URBEMIS is not suitable for the proposed land use (i.e. does not have ITE trip rate), the District may approve another model, or review and approve off-line with project-specific calculations. If project-specific data is entered into

the APCO-approved model and overrides defaults, the applicant shall document and justify those project-specific inputs.

On-Site Emission Reduction Checklist
The measures listed in the checklist have a known quantification methodology in URBEMIS 8.7. The methodologies can be found in the URBEMIS User's Guide, available at South Coast AQMD's website http://www.aqmd.gov/ceqa/urbemis.html. The on-site emission reduction checklist shall identify which measures have been voluntarily selected by the applicant, the enforcement mechanisms available for those measures, and the reasons for not selecting the remaining measures. All measures selected that are above District or State requirements, regardless of enforcement mechanism, will count towards emission reductions for the project, in accordance with the methodologies in URBEMIS. The measures for the On-Site Emission Reduction Checklist can be found in Appendix C.

On-Site Enhancing Measures
The District has identified several measures that are known to have an air quality benefit. However, at this time they do not have a quantification methodology for project-level emission reductions. These measures still have a beneficial air quality impact. For this reason, the District will maintain a list of 'On-Site Enhancing Measures' and make it available to applicants. There are no requirements on selection of measures from the On-Site Enhancing Measures list. As emission reduction methodologies are determined for these and other new measures, they can be incorporated into URBEMIS. The list is available in Appendix C.

Monitoring and Reporting Schedule
For projects that select on-site measures that do not already have an enforcement mechanism, a proposed SJVAPCD On-Site Monitoring and Reporting Schedule (MRS) will be completed. The District will provide a standard form for the MRS, and the applicant is responsible for completing the MRS. The District will then work with the applicant to finalize the MRS. Draft Rule 9510 §5.4 discusses the components of a MRS.

Fee Deferral Schedule
In addition to the AIA application, the applicant may propose a Fee Deferral Schedule at the time of application or during application review in anticipation of a possible off-site fee, or within 15 days of receiving an off-site fee invoice. The District will provide the Fee Deferral Schedule format. The applicant can choose the schedule of payments, but all fees for a development or phase thereof must be received *prior* to construction of that development or phase thereof. Draft Rule 9510 §5.5 discusses the components of a FDS.

Completeness Finding
The District will have 10 days to determine whether or not the application is complete. After the District deems the application complete, the District has 30 days to approve

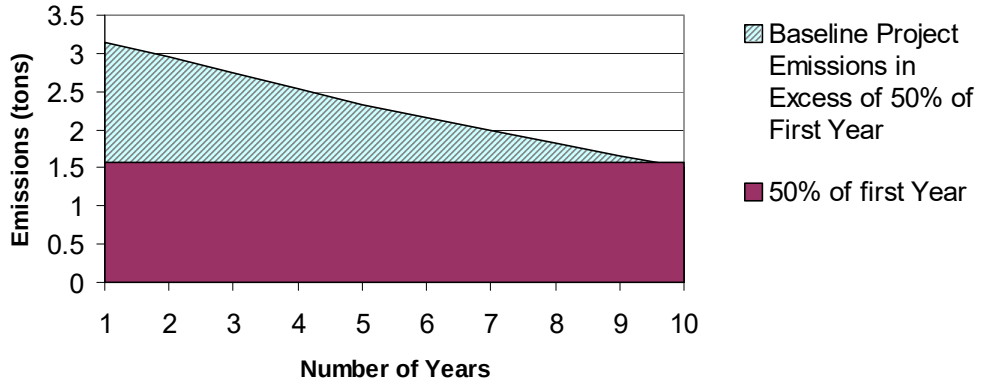
the application and notify the applicant of the estimated fee amounts. In addition, the application and MRS will be submitted to the applicable public agency for voluntary review. The public agency may provide comment at their discretion. The applicant may have the assessment modified to incorporate more on-site measures, if desired. Once the proposed MRS is approved, the District and the applicant shall finalize the MRS. If there are changes to the project that will impact the emissions total or schedule of build-out, the applicant shall notify the District of that change within 60 days of said changes, or prior to the start of project construction, whichever is first. As stated above, if a project mitigates to less than two tons of operational NOx and PM10, it will not be subject to the required emission reductions stated in the draft Rule 9510 §4.3.

Required Emission Reductions

Proposed Rule 9510 would require applicants to reduce NOx and PM10 emissions. The rule is designed to reduce the impact of the development projects to the extent needed for the District to reach attainment of ozone and PM10 standards. The District calculated the level of reduction needed on a per-project basis that would achieve the emission reduction committed to in the PM10 and ozone attainment plans. Draft Rule 9510 Section 6.0, et seq., describes the required emission reductions.

Although the majority of the NOx emissions associated with a project are due to motor vehicles, there is a decline in NOx emissions over time due to ARB's tailpipe controls. The NOx mitigation fee is structured to account for a 50% decline in annual NOx emissions from motor vehicles over ten years. Thus, the rule requires mitigation of the cumulative NOx emissions in excess of 50% of the project's operational baseline emissions (the emissions at the first year of buildout) until the project's emissions reach half of the project's first-year baseline emissions, which is approximately 10 years. This method ensures that a project does not over-mitigate its emissions. Draft Rule 9510 Sections 3.8 defines baseline emissions. Rule 9510 Sections 3.10 and 3.27 define construction baseline and operational baseline, respectively. Rule 9510 Section 3.20 defines 'mitigated baseline'. Project emissions and the required mitigation can be visually represented as follows:

Figure 3
NOx Project Emissions and Reductions Compared to 50% of the First Year Emissions



In essence, the NOx mitigation required for Rule 9510 is represented above by the triangle, which is equal to one third of total project emissions during the first ten years. The applicant can reduce the emissions represented by that triangle by using on-site mitigation measures, by paying the District a fee to fund emission reduction projects off-site, or through a combination of the two. The fee amount would decrease or be eliminated depending on the amount of on-site mitigation incorporated by the applicant into the design of the project.

The PM10 mitigation requirement is different from NOx. Operational PM10 emissions from a project do not decline over time – they remain constant. Accordingly, Rule 9510 will require mitigation equal to half of the emissions for the first year after build-out for 10 years (the same period of time required for NOx mitigation).

Proposed Rule 9510 would also require applicants to reduce NOx and PM10 construction equipment emissions. The rule requirement is to reduce construction NOx emissions by 20% and PM10 emissions by 45% beyond the statewide average. In determining the level of reduction for construction emissions, the District researched what other air districts had set, and found those targets are achievable. There are several options available for controlling NOx and PM10 emissions from equipment used for construction on-site. Options can include, utilizing newer equipment, altering fuel type, modifying an engine, or using exhaust after-treatment devices, to meet the rule requirements. New equipment can provide a high percentage of emissions reductions, depending on the horsepower and the year of the equipment. The reductions are achievable with existing technology with a mix of newer equipment and retrofit devices, and will allow applicants applying moderate effort to pay no fee on construction.

Achieving Emission Reductions

If on-site mitigation measures are chosen by the applicant, the applicant shall submit a MRS to the District for the those on-site mitigation measures that do not have built in enforcement mechanisms. All on-site emission reductions measures that are above District and State requirements will be credited to emission reductions for the project. The MRS will identify enforcement mechanisms, which may include identifying specific funding mechanisms, as well as monitoring, recordkeeping and reporting. The Proposed MRS shall be forwarded by the District to the public agency for review. It is important to note that the percent reduction achieved onsite results in a greater reduction of the NOx fee. While on-site mitigation is not required, the "bigger bang for the buck" is achieved with as much on-site mitigation as possible. For example, when onsite NOx reductions exceed the excess emissions above 50% of the first year's baseline, the NOx fee becomes zero. Additionally, if the onsite measures reduce the NOx and PM10 to less than 2 tons per year each at buildout (baseline), no additional reductions are required. See Table 1 for examples of on-site emission reductions and the associated off-site fee reduction. See Table 2 for a list of simple measures that small projects can achieve, and a list for larger projects. If the emission reductions required by the rule are not fully achieved on-site, off-site fees would be required.

The use of off-site fees is strictly limited to procurement of off-site emission reductions. Absolutely no off-site funds may be used for District staffing or budget. The District shall provide annual reporting per draft Rule 9510 Section 10.4. Annual reports shall include, at a minimum: the total amount of off-site fees received; the total monies spent; total monies remaining; any refunds distributed; a list of all projects funded; the total emission reductions realized, and; the overall cost-effectiveness factor for the projects funded.

Off-site mitigation would consist of paying a fee to fund emission reduction projects for required emission reductions that are not reduced on-site. Rule 9510 contains pollutant-specific fee formulas in Section 7.0, et seq. Appendix B shows how those formulas were developed. The off-site fees are strictly tonnage based. This means that all projects are treated equally, and assessed on the amount of emissions associated with the project. The fee formula applies equally to all applicable projects, accounts for the amount of on-site emission reductions. The fee would be payable in 60 days upon notification of fee amount, unless the applicant has arranged a FDS with the District.

Both the NOx and the PM10 fee formulas include a Cost of Reductions for one ton of that pollutant. These values were determined based on historical grant programs with the district and project fund use, and represents an average value for a range. Appendix E contains a greater description of how those values were derived.

Rule 9510 directs the District to administer the fee use to achieve emissions reductions that the fees were based on, in a cost-effective manner. There are numerous emissions

reduction projects available. Potential projects are as follows: projects currently qualifying for the District's Heavy-Duty Engine Incentive Program including, alternative fuel low-emission school buses, transit buses, and other vehicles, diesel engine retrofits and repowers for trucks, PM efficient street sweepers powered by natural gas, agricultural water pumping engine replacements, locomotive repower/retrofits, electric forklifts, etc. Other potential projects include gross polluter replacement, biomass subsidies, electric vehicle or lawn equipment rebates, truck refrigeration unit plug-ins at distribution centers, woodstove replacement/retirement, video-teleconferencing systems, and telecommuting start-up costs. Potential PM10 reduction programs include paving or treating unpaved traffic surfaces and shoulders and PM10 efficient street sweeper purchases. Some projects will achieve reductions of NOx and PM10. The funds will be managed by a grant-like program and allocated as applications are received. If a sufficient amount of applications to fund projects are not received, the District will consider a directive program that would be approved by the Governing Board. The District recognizes the sensitivity of the geographic distribution of the funds. Any emissions reduction project will provide a localized benefit to the area of fee origin.

Table 1
On-Site Reductions and Associated Operational Off-Site Fee Reductions.

Example Project 150 Single-Family Units in 2006 <u>On-Site Package</u> - Increased Density (from 50 to 30 acres) - No Wood Stoves - Increased Energy Efficiency by 10% - Located near local-Serving Retail - Bus Service Nearby - Traditional Street Design - Sidewalks on Both Sides of Street - Bikelanes on 20% of streets - 10% of units Deed-Restricted Below Market Rate	On-Site Emission Reduction (%)		Operational Off-Site Fee Reduction (%)	
	NOx 12%	PM10 36%	NOx 36%	PM10 72%
Example Project 200 Multi-Family Units 40,000 sf Strip Mall 60,000 sf General Office <u>On-Site Package</u> - No Wood Stoves - Increased Energy Efficiency by 10% - Located near local-Serving Retail - Bus Service Nearby - Traditional Street Design - Sidewalks on Both Sides of Street - Bikelanes on 20% of streets - 5% of units Deed-Restricted Below Market Rate - Commercial and Retail implement Transportation Demand Measures - Commercial and Retail Reduce Parking Supply	On-Site Emission Reduction (%)		Operational Off-Site Fee Reduction (%)	
	NOx 23%	PM10 29%	NOx 68%	PM10 59%

Table 2
Basic On-Site Measures for Small and Large Projects.

Small Projects	Large Projects
All Land Uses: Traditional Street Design Increased Energy Efficiency Include Sidewalks on all streets Locate near mass transit stops Locate near a mix of uses Residential: No Fireplaces or Woodstoves Locate near local serving retail Locate near jobs Non Residential: Reduce parking supply Locate near residences Implement Transportation Demand Measures Include Bike Racks	Same as Small Projects, Plus: All Land Uses: Include a mix of uses Install Bike Paths or Bike Lanes and/or Pedestrian paths

AIA Approval

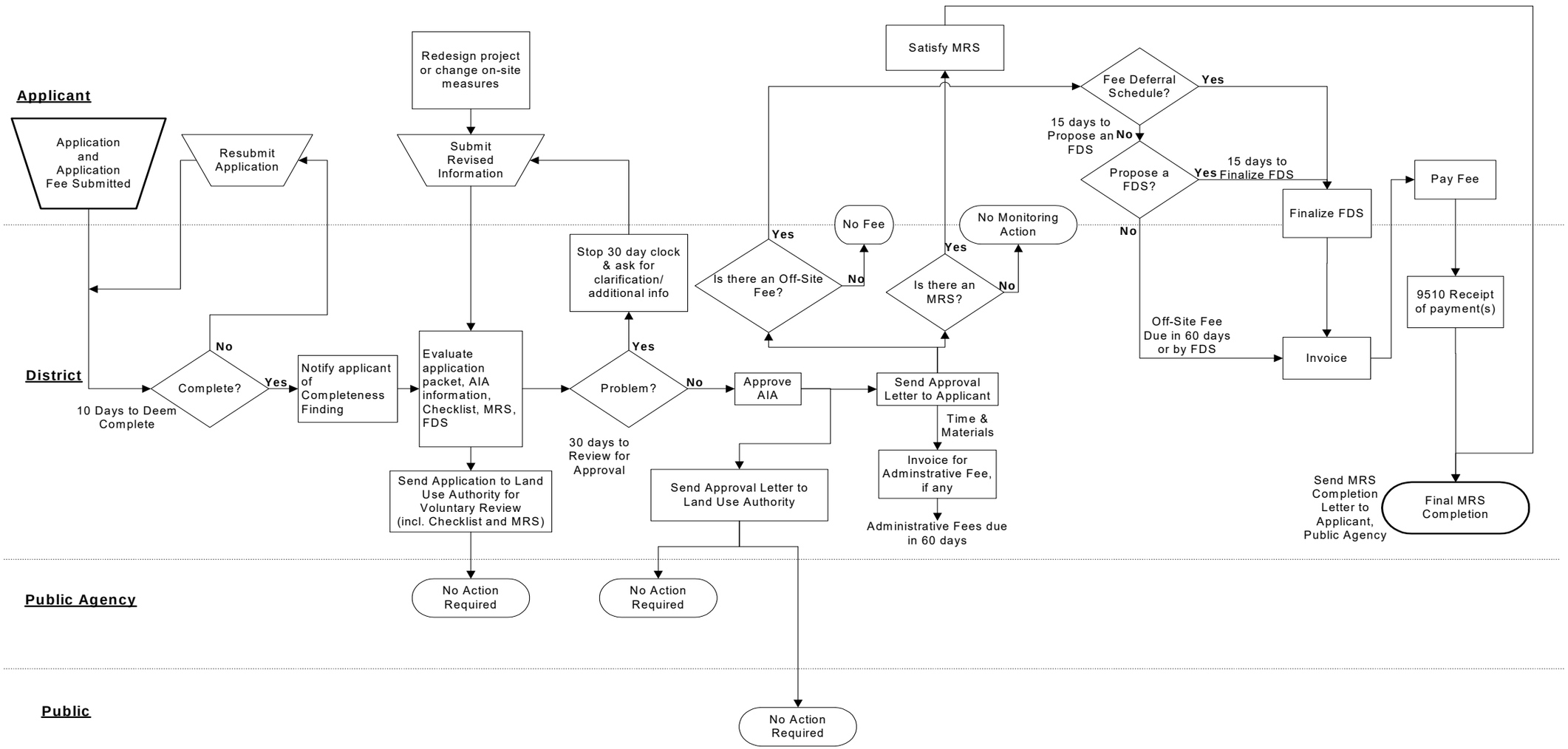
The District will provide a decision on the AIA application within 30 days of finding the application complete. The District will approve the AIA application or disapprove the AIA application. It is important to note that the District will not be approving a permit or other discretionary action as a result of Rule 9510. In addition, the District will not be approving or disapproving the development project itself, but the Air Impact Assessment application for that project. The authority for land-use decisions lies with the local land-use agency. The AIA application approval is ministerial and will not involve conditions of approval.

MRS Maintenance

For those projects that have a MRS with the District, the applicant is responsible for implementing those measures identified. The District is responsible for monitoring and receiving reports for on-site emission reduction measures. The District shall provide a tentative compliance letter to the applicant, public agency and public upon request. Upon completion of the last MRS requirement, the District shall provide a letter of MRS completion to the public agency and applicant. The District shall also make the letter available to the public.

If the applicant committed to on-site construction emission reductions, the applicant is responsible for submitting the construction equipment schedule to the District prior to applying to the public agency for a grading permit. At that time, the District will verify construction emissions for the project. If the on-site emission reductions specified by the applicant are not achieved, the District shall assess and invoice for off-site fees required by the rule.

ISR Application Flow Chart



B. Proposed Rule 3180

The purpose of proposed Rule 3180 is to recover the costs of administering Rule 9510. The proposed rule includes a non-refundable application-filing fee to be paid when an application is submitted to the District. Once an application and the application fee are received, district staff will log the total staff hours spent on the project using the District's automated Labor Information System. The application evaluation fee will comprise those hours at a weighted average labor rate, minus the application-filing fee, so that only the cost of the actual hours spent on the project will be recovered.

Rule 3180 also contains a fee equal to 4% of the offsite emission reduction fees to recover the cost of administering off-site emission reduction projects. The 4% would be payable when the offsite emission reduction fees are collected.

C. Program Implementation - Streamlining

The process identified in Rule 9510 may be completed prior to or concurrent with the City/County permit review process. Specifically, Rule 9510 has been designed for non-interference with the City/County land-use and California Environmental Quality Act (CEQA) processes. However, information from the ISR process may be used by a Lead Agency in environmental documents, at their discretion. Currently, air quality impact assessments are usually required for projects with potentially significant air impacts. Since the NOx and PM10 pollutants will be addressed through ISR, it will not place an added burden to the applicant, and should provide a foundation for or replace the ozone precursor and PM10 emission analysis included in that environmental document. The On-Site Emission Reduction Checklist will help applicants identify quantifiable mitigation alternatives and provide justification for feasibility or infeasibility. The MRS will identify enforcement mechanisms for on-site emission reduction measures that were selected by the applicant.

The District will provide information on the District's website, such as application forms and guidance documents. The District will revise its Guidelines for Assessing and Mitigating the Air Quality Impacts (GAMAQI) document as needed. In addition, the District will work with Cities and Counties on additional measures to facilitate communication and streamlining of the application and review process.

Finally, the ISR program is set up to allow the applicant to provide the AIA. However, the applicant is not required to provide modeling or emissions calculations. The District will prepare the AIA based on the project-specific information provided in the AIA application. The District will not charge a specific fee for modeling, but will invoice for any time and materials beyond that covered by the application filing fee. The application filing fee was estimated based on the average time expected to review and AIA application and conduct emissions calculations/modeling for the project.

D. Use for Environmental Review – CEQA

The ISR program operation is not subject to CEQA requirements. The review conducted on applications for the program is a ministerial action not subject to CEQA, per PRC §21080 *Division Application to Discretionary Projects; Nonapplication; Negative Declarations; Environmental Impact Report Preparation* (b)(1):

> *(b) This division does not apply to any of the following activities:*
> *(1)Ministerial projects proposed to be carried out or approved by public agencies.*

The ISR Program will require an amount of emission reductions from certain development projects subject to the rule. Implementation and compliance with the rule will reduce the cumulative NOx and PM10 impacts of anticipated growth to less than significant because the reductions attributed to this program were identified in two attainment plans as necessary to achieve the applicable standards. CEQA Guidance document § 15064 (h)(3) states-

> A lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with requirements in a previously approved plan … which provides specific requirements that will avoid or substantially lessen the cumulative problem (e.g. … air quality plan).

The GAMAQI will be updated with any necessary changes to District CEQA policy and provides a suitable location for changes to defaults and guidance on model usage.

E. APCO- Approved Models

Proposed Rule 9510 specifies the use of an APCO-approved model, which in most cases will be URBEMIS. URBEMIS stands for "Urban Emissions Model." URBEMIS was originally developed by the California Air Resources Board (ARB) as a modeling tool to assist local public agencies with estimating air quality impacts from land use projects when preparing a CEQA environmental analysis. The model was developed to estimate construction, area source, and operational air pollution emissions from vehicles from a wide variety of land use development projects in California, such as residential neighborhoods, shopping centers, office buildings, etc. Originally designed as a 'sketch planning' tool for CEQA project review, it has been continuously enhanced with each new version to provide greater capability and accuracy. URBEMIS is used statewide by air agencies and public agencies and contains air basin-specific information. URBEMIS has substantial flexibility to accommodate project specific travel and vehicle information when available. The model also includes a mitigation component that allows the user to select specific measures and quantify emission reductions associated with the selected measures[5].

The District undertook an extensive effort to ensure that URBEMIS is the right tool for this program. The District hired a consultant, TY Lin International/CCS, to review

available land use emissions models, recommend which model is most suitable for this program, and identify areas of improvement. The consultant recommended URBEMIS as the best tool for ISR for several reasons, including:

- URBEMIS contains the latest California-specific emission factors with motor vehicle emission factors based on EMFAC2002,
- URBEMIS is the only model that contains emissions calculations for PM10
- URBEMIS contains emissions calculations for area sources
- URBEMIS contains motor vehicle activity based on trip rates from the Institute of Transportation Engineers (ITE)
  ITE rates are nationally accepted, are widely used and have withstood legal challenges.
- URBEMIS does not require large amounts of input for an emissions estimate (it is easy to use)
- URBEMIS inputs are objective and quantifiable.
  For Example- For sidewalk coverage, the input fields include percent of streets with sidewalks on both sides and the percent of streets with sidewalks on one side.
- URBEMIS contains the flexibility to modify defaults if project-specific information is known.
- URBEMIS is free.

TY Lin International/CCS made recommendations on the improvements to the area-wide mitigation component and hired a sub consultant, Nelson/Nygaard, to make detailed recommendations for improvements to the operational mitigation component. Nelson/Nygaard researched the latest studies on land use, what design features consistently reduced vehicle activity (and consequently emissions) in the real world and by how much. Nelson/Nygaard then created emissions reduction calculation methodologies based on those studies and submitted a report to the District. The District then initiated an extensive statewide effort to update the URBEMIS model with the resulting recommendations. The District, TY Lin International/CCS, and Nelson/Nygaard met with the URBEMIS working group, which is a group of representatives from air districts throughout the state of California, as well as the California Department of Transportation (CalTrans), and presented the recommended changes to URBEMIS. Once the URBEMIS Working Group made recommendations that were incorporated into the report, the report was then peer reviewed by several well respected researchers in the field of land use and travel activity. The peer review comments were incorporated into the report and approved. The final report was incorporated into URBEMIS 8.7, released to the public, and is included in this document as Appendix D.

The URBEMIS model would require, at minimum, the following inputs: type of land use, number of units, and any mitigation measures selected. However, there are numerous defaults that can be modified if more precise information on the project is available.

These can include: trip rate(s), emission factors and usage rates for specified area source emissions, year of project use, fleet characteristics in terms of percentage of and fuel use of vehicle types, trip speeds, trip lengths, trip percentages, ambient seasonal temperatures, variable start percentages, and emission reduction inputs. Emission reduction inputs can include increased density, zero hearth options, percent energy efficiency beyond Title 24, percent of landscape equipment electrically powered, number of housing units and study area employment (job to housing ratio), the presence of local serving retail, the number of transit stops, intersections per square mile, percentage of streets with sidewalks, percentage of bike lane coverage, percentage of housing units below market rate, numerous transportation demand management measures, number of actual parking spaces, and controls on fleets. Based on those inputs, the model calculates total area source emissions, total vehicle emissions, total overall emissions and total reduced emissions in terms of lbs/summer day, lbs/winter day, or tons/year.

In addition to the benefits of URBEMIS, this model was chosen over other potential models for various reasons. A different option was to use transportation models used by the COGs for conformity purposes. Transportation models, while appropriate for their current use, are not appropriate for ISR for the following reasons:

- There is not one model used valley-wide.
    - *There are eight different models. Some cover only one county, others cover multiple counties.*
- The eight models do not use the same modeling basis, making for inconsistencies of software if multiple models are used.
- The analysis requires subjective inputs.
- Certain trips are not accounted for in the transportation model.
  For example- While URBEMIS will account for the very-short trips associated with new gas stations (passby trips), transportation models do not include the short drives into gas stations.
- The transportation models include deviations from known trips.
    - *They do not account for 10-15% of trips on Arterial Streets*
    - *They do not account for 15-35% of trips on Collector Streets*
    - *Trips on local streets are not included*
- The trip types come from old, 1970's data that is only periodically updated.
- Does not include new area emissions, which are wholly attributable to new developments.
- Transportation modeling requires many inputs, and is not easily used by an average applicant.
- Transportation modeling is not free

It is the view of the District that URBEMIS is the best tool available. As stated above, URBEMIS has a solid, proven basis (EMFAC2002, ITE, peer-reviewed quantification), is flexible and allows changes to various calculation inputs when project-specific information is known. Comments received by the District pointed out that URBEMIS

contains some information that may need refinement. Particularly, the fleet mix and the on-road silt-loading factor. The District agrees that new, more accurate information should be incorporated into URBEMIS when that information becomes available Concerning the on-road silt-loading factor, the District concurs with the air basin specific factor received in comments and will be recommending using the factor of .031 for analyses prepared for the rule and will incorporate that factor into the San Joaquin Valley portion of URBEMIS. To remedy the fleet-mix issue, the District has hired a consultant (VRPA) to investigate and recommend new land-use specific fleet mixes. In addition, the District is participating in a statewide effort to improve the construction portion of URBEMIS. In the interim detailed guidance and sample construction inputs will be provided by the District to assist applicants.

F. Other Issues

The 2003 PM10 Plan also included a one-ton per day PM10 emission reduction commitment for Metropolitan Bakersfield by 2010. That commitment is being addressed through a "task force" composed of staff from the City of Bakersfield, Kern County, and the District. The task force is identifying the projects that would provide the greatest impact on ambient PM10 levels in the area.

Input from the public during the scoping meetings and from written comments suggested that the proposed indirect source rules should include existing sources as well. There are several types of land uses that generate significant trips that could be considered: event centers, distribution centers, and regional shopping centers. The District has performed some preliminary research on distribution centers and warehouses. There are well over 2600 distribution facilities in the SJVAB, with an average size of 800,000 sq ft, according to District estimates. The District will continue to consider regulations on these types of sources for some time in the near future.

The District will work to coordinate the ISR program with the public agency land-use approval process. The District will be coordinating review with the public agency through-

1. Making the ISR process concurrent with or prior to the public agency process;
2. Forwarding a copy of the AIA application (upon determination of completeness), a copy of the AIA approval package (upon approval), and a letter of Final Compliance to the public agency for voluntary review and commenting;
3. Communicating with the public agency when necessary during the application review process; and
4. Incorporating ISR AIA data into the District's CEQA commenting process.
5. Providing a letter of project status to the public agency upon request.

In addition, the application and approval will be made available to the public.

V. EMISSIONS AND EMISSIONS REDUCTIONS

The District committed to reduce the PM10 and NOx emissions from indirect sources in the 2003 PM10 Plan and the Extreme Ozone Attainment Demonstration Plan, which could be achieved by on-site emission reduction and/or emission based fees that would be used to fund off-site emissions reduction projects. Both plans contained emissions reduction commitments from growth that were necessary to demonstrate attainment. Appendix B contains an estimate of total emissions and emissions reductions expected from new development projects by 2010, which are 5.4 tons per day of NOx and 5.8 tons per day of PM10.

The ISR program is expected to achieve the emission reductions committed to in the PM10 and ozone plans. However, the District realizes that those emission reductions may not be achieved for a variety of reasons. If the emission reductions are not achieved because growth becomes less than that forecast in the emission inventories, the District will not need to adjust the program to make up the reductions. This is because the need for emission reductions was based on the projected growth. If growth occurs at a level less than that predicted, then the level of emission reductions needed will similarly be reduced. However, if other circumstances are encountered and the emission reductions are not achieved, the District will have to make a SIP revision, possibly substituting another measure for the remainder of emission reductions required or adjusting the off-site mitigation fee program to obtain greater reductions.

The District based its estimate of emission reductions achievable by the ISR program on total growth in the emission inventory that is subject to the rule accounting for rule mitigation requirements, exemptions and applicability thresholds. The District considered using a bottoms-up estimate of emissions based on the number of projects and units expected each year. Statistics on residential development were available for this type of analysis; however, due to the wide variety of uses and limited data on the numbers and sizes of non-residential uses, a comprehensive bottom-up analysis was not feasible.

VI. COST EFFECTIVENESS – OFF-SITE EMISSION REDUCTION PROJECTS

District staff has prepared a draft cost effectiveness analysis of the estimated costs of emission reductions required in the proposed Draft Rule 9510. The cost effectiveness analysis is attached to this staff report and labeled Appendix E. This analysis details the types, quantities and costs of projects available for funding from the off-site fees collected by the District, and provides an example mix of projects to demonstrate how the fees may be used. The District shall use 100% of the off-site funds received for

emission reduction projects. No off-site funds may be used for the District's budget, staffing or other administration.

Off-Site fund use accountability is written into the Draft Rule 9510. The District shall provide annual reporting per draft Rule 9510 Section 10.4. Annual reports shall include, at a minimum: the total amount of off-site fees received; the total monies spent; total monies remaining; any refunds distributed; a list of all projects funded; the total emission reductions realized, and; the overall cost-effectiveness factor for the projects funded. Annual reports shall be made available to the public.

For off-site emission reduction projects, the duration of the contract will vary depending on the project. Some contracts will be completed upon installation, while others may require reporting for 5 years or longer. For example, a road-paving project would have a contract that is completed upon installation, whereas an engine contract typically contains a 5-year reporting requirement.

VII. SOCIOECONOMIC IMPACT ANALYSIS

Pursuant to state law, the District is required to analyze the socioeconomic impacts of any proposed rule or rule amendment that significantly affects air quality or strengthens an emission limitation. The provisions of Draft Rules 9510 and 3180 will reduce PM10 and NOx, emissions by requiring pollutant specific mitigation through measures incorporated in to the design of a new project, and/or paying a fee to fund emissions reduction projects; therefore, District staff solicited volunteers from affected entities to participate as members of the socioeconomic focus group for these rules. District staff held a focus group meeting, to identify the socioeconomic impacts of the draft rules. District staff will use the socioeconomic analysis to further refine the draft rules. The socioeconomic report was released to the public for comment and review and was presented at the final workshop. The report was incorporated into this staff report as Appendix F. The final socioeconomic report will be presented to the District Governing Board at the public hearing for adopting the proposed rules.

The implementation of ISR fees may have socioeconomic impacts on certain development types that are summarized below and described in the socioeconomic impact analysis. Although impacts may occur, the program has been designed to minimize economic impacts and to allow options to developers that minimize their fees. However, the District recognizes that some businesses and individuals will be impacted, but believes that the impact is justified by the benefits of the rule to the Valley. The rule is designed to reduce emissions of pollutants contributing to poor air quality in the entire air basin and will provide a health benefit through its implementation. The District is required to attain federal air quality standards by specific dates with reductions contained in District attainment plans. These plans rely on reductions from ISR that if not achieved will result in sanctions that would cause a far greater impact to the Valley's economy than

implementing the rule. If ISR were not adopted, rules on other industries with as great or greater economic impacts would still be required.

A. RESULTS

SINGLE-FAMILY RESIDENTIAL. The Socio found a less-than-significant impact on Single-Family Residential project applicants for 2006, 2007 and 2008. The Socio found a minor increase in the price Single-Family Residential buyers would find in the average Valley City for 2006, 2007 and 2008. See Appendix F Tables 19-21 and associated text.

MULTI-FAMILY RESIDENTIAL. The Socio found a less-than-significant impact on Multi-Family Residential project applicants for the average Valley city for 2006, 2007 and 2008. The Socio found a minor increase in the price Multi-Family Residential buyers and renters would find in the average Valley City for 2006, 2007 and 2008. Multi-family residential development in small and medium sized bedroom communities is projected to experience a significant impact in 2007 and 2008. Small rural/farming communities could have a significant impact in 2008. The reason for the greater impact in these particular areas is the lower overall cost of housing in those areas making the fee a higher percentage of the housing cost. This impact is mitigated to some extent by the rule threshold of 50 units and 2 tons per year of emissions. Many projects in those areas are small. Some locations qualifying as bedroom communities are seeing very rapid growth in housing stock that is as expensive or more expensive than in the large urban areas. This trend may also limit the areas of impact. Due to the ability of the developer to pass on or absorb at least part of the cost and for consumers to amortize the cost in a mortgage or through rents, the District believes that this impact is not significant. See Appendix F Tables 23-25 and associated text.

INDUSTRIAL. The Socio found a less-than-significant impact on industrial project applicants for 2006 and 2008. The Socio found a less-than-significant impact on industrial renters in 2006 and 2008. See Appendix F Tables 28 and 29 and associated text.

OFFICE. The Socio found a less-than-significant impact on office project applicants for 2006 and 2008. The Socio found a less-than-significant impact on office renters in 2006 and 2008. See Appendix F Tables 28 and 29 and associated text.

COMMERCIAL. The Socio found a less-than-significant impact on industrial project applicants for 2006, but a significant impact in 2008. The Socio found a less-than-significant impact on commercial renters in 2006, but a significant impact in 2008. Commercial uses with a small footprint but high trips due to customer turnover experience the greatest impact. Commercial and other development types may reduce their fees with on-site measures. Many measures are available that may be required for other purposes and add no cost to the development, but can add amenities and value to the project. This would provide a mechanism to reduce the impact of the fee. Overall, the District concludes that with mitigation options and the ability to pass costs

on to project tenants, this impact should not be considered significant. See Appendix F Tables 28 and 29 and associated text.

PROSPECTIVE HOME-BUYERS AND SMALL BUSINESSES. Socio Section 6.4 addresses the impact on small business and includes a discussion of potential disproportionate impact on home-buyers and small business. The socio concludes that the increased costs due to the fees would have a temporary impact while the consumer responds to the costs with changes in purchasing decisions or increases income.

VIII. ENVIRONMENTAL IMPACTS

Pursuant to state law, District staff has conducted an initial study to identify any possible environmental impacts of this program and prepared a proposed negative declaration for draft Rules 9510 and 3180. The 30-day comment period for the proposed negative declaration ends on December 5, 2005. The District Governing Board will consider approving the negative declaration at the December 15, 2005 public hearing for the rules.

IX. RULE CONSISTENCY ANALYSIS

Pursuant to the California Health and Safety Code, Section 40727.2, District staff has prepared a rule consistency analysis of the program and is included in this staff report as Appendix G. The Rule consistency analysis shows the rule is non-duplicative, and consistent with existing District, state and federal rules.

X. REFERENCES

1. California Air Resources Board, Emissions Inventory, www.arb.ca.gov.

2. California Air Resources Board, *Status Report,* 1994

3. California Department of Finance, Population Projections, www.dof.ca.gov/HTML/DEMOGRAP/projco.pdf

4. 2003 PM10 Plan, Appendix B

5. South Coast AQMD website, Frequently Asked CEQA Questions, http://www.aqmd.gov/ceqa/faq.html

APPENDIX A

Responses to Comments on Proposed Rule 9510 (Indirect Source Review) and Rule 3180 (Administrative Fees for Indirect Source Review)

December 15, 2005

SUMMARY OF COMMENTS AND RESPONSES ON THE RECEIVE AND FILE OF DRAFT RULE NOVEMBER 17, 2005

Public Comment
Date November 5, 2005
Multiple Letters- Signed by

Kaaren Page	Betty Sanderson	Theresa Stump
Stephen Page	J Wesley Sanderson	Bill Moffit
Warren A. Minna	Georgette Theotig	Deb See
Nancy Faisselman	Isabel Stierle	Rosmarie Grabski
Nany Bacon	Li?? Wa???	Monte Harper
		Emid Harper

As a resident of the San Joaquin Valley, I am very well aware that the Valley is rated as '*extreme non-attainment*' when it comes to meeting federal air quality standards. We must take bold steps to clean up our air while allowing reasonable housing growth.

The best way to reach this goal is through your proposed Indirect Source Rule Package (Rules 9510 and 3180) that the District is sponsoring. This is accomplished two ways: allowing housing and commercial developments to be designed to reduce air pollution and to charge a fee for that air pollution that cannot be eliminated, with the fees being used to fund other projects that reduce air pollution.

1. **COMMENT:** I support a strong version of the rule that offers a real chance to improve the air in the valley and at the same time allow developers to use innovative design features to reduce our dependency on automobile transportation.

Our lungs, our health, and our children deserve no less.

RESPONSE: Comment Noted

California State Department of Housing and Community Development:
Date: November 29, 2005

Thank you for the continued opportunity to comment on the San Joaquin Valley Air Pollution Control District's (District) proposed Draft Rules 9510 and 3180 (Rules). The Department has reviewed the draft Rules as revised November 17, 2005 and the District's "Response to Comments" found in Appendix A of the draft Rules. The Department appreciates the District addressing some of the issues raised in the

comment letters of July 25, 2005 and September 15, 2005. However, as discussed below, the Department continues to have a number of concerns with the revised draft of the Rules.

Proposed Rule 9510 does not comply with the "clarity," "consistency," and "nonduplication" requirements set forth in Health and Safety Code Section 40727, and an adequate nexus has not been established to support these rules. In addition,

2. **COMMENT: The proposed inclusion, followed by the deletion of, an exemption for housing directly assisted by federal, State, or local government is of particular concern.** The District's response to comment #92 indicated the government supported housing exemption (affordable housing) was removed "based on the District's internal analysis of applicability and impacts….". Although affordable housing qualifies as a mitigation measure, it is unclear how the URBEMIS model assesses and credits affordable housing. Affordable housing is often a catalyst for the type of transit-oriented development that is encouraged by the District's policy recommendations as described in District's *Air Quality Guidelines for General Plans*. According to the Air Resources Board's study, *The Land Use – Air Quality Linkage*, densities found in affordable housing developments are generally high enough to provide the ridership needed to support transit service (page 15).

RESPONSE: As stated in the November 17th Staff Report (p. 11) and in the September 1, 2005 Response to Comments, the methodology for emission reduction is detailed in the URBEMIS User's Guide (http://www.aqmd.gov/ceqa/urbemis.html). Basically, the trip reduction benefit of below-market-rate housing will be credited to a development that includes this feature. In addition, Appendix D- Recommended Changes to URBEMIS details the research supporting the emission reduction and the methodology for the reduction on pages D-38 through 39 and includes the following statement:

> *… Thus, the total reduction is as follows:*
>
> *Trip reduction = % units that are BMR * 0.04*
>
> *A development with 20% BMR units would thus gain a 0.8% reduction. A development with 100% BMR units would gain a 4% reduction.*

3. **COMMENT:** There is also insufficient information in the draft Rule analyses to discern whether and to what extent affordable housing developments, despite qualifying for some mitigation credits, might be subject to fees for off-site emissions reductions. This has the potential to render projected affordability levels or the projects themselves, infeasible as proposed. Affordable housing development proposals, are already subject to significant development constraints despite their acknowledged benefit potential relative to air quality.

Applying Rule 9510 to these projects would subject them to an additional and ambiguous permit requirement. This effect would be inconsistent with State laws which require affirmative actions to promote affordable housing opportunities. Accordingly, the Department urges the District to reinstate the exemption for housing projects in which at least 49 percent of the units are reserved for lower-income households and which are directly assisted by federal, State, or local government.

RESPONSE: The staff report and socio-economic impact analysis recognize that any fee would increase costs, but that market forces so far outweigh the effect of the fee that they render it insignificant. The District disagrees that the rule is contrary to state law promoting affordable housing. Rule 9510 is being adopted to reduce the air quality impacts of new development, including housing projects serving all market segments. Since the rule contains provisions to reduce potential fees for developments that contain affordable housing, it encourages affordable housing to be included in more projects.

4. **COMMENT:** Having deleted the exemption, the District must now amend those documents that were based on the exemption being part of the project. This includes the CEQA initial study which describes the project as exempting some sources including “certain low-income housing projects” (page 4). By removing the exemption, the District has redefined the project.

RESPONSE: The District does not concur that removing the low-income housing exemption substantially changes the project analyzed in the CEQA initial study. First, the socioeconomic impact analysis that is the basis of the initial study discussion on impacts on housing and population indicated that low-income households were already unable to afford new homes and rental units affected by the rule. The revised socioeconomic impact analysis was based on the latest rule version and arrived at the same conclusions regarding impacts with and without the exemption. Therefore, the impacts examined in the initial study are also the same. Second, by removing the exemption for "certain low-income housing projects", the language of the Rule would result in a slight reduction in air quality impacts, as some additional housing projects would now be subject to the Rule. The change in language does not substantively affect the analysis of environmental impacts. On the contrary, the language change would result in an environmental benefit.

5. **COMMENT: Although the District does have the authority to implement regulations to accomplish the reduction or mitigation of emission from indirect sources, it does not have the authority to operate a permitting system for the operation or construction of these sources and has failed to show the required nexus.** The proposed Rules would impose an (off-site) fee

on development projects which are unable to incorporate on-site measures adequate to reduce indirect emissions to a specified level. The fee is determined via an application (Air Impact Assessment Application (AIA)) which is required to be approved by the District before a final discretionary permit is issued for the construction of the development project. Unless the AIA application is submitted, the project cannot go forward without the developer incurring civil penalties. In such circumstances, contrary to the assertions of the staff analyses, a fee is being imposed as a condition of approval of a development project. A 1993 Attorney General Opinion explained that "the Legislature has recognized indirect sources as essentially different from other sources of pollution and consequently has made them exempt from ordinary permitting requirements" (Ops. Cal. Atty. Gen. 92-519). The opinion goes on to clarify that "permits may not be required of indirect sources under either the general permitting authority (Government Code Section 42300) or the special permitting authority provision relating to the attainment of State ambient air quality standards (Government Code Sections 40910-40926). Further, the imposition of fees as a condition of permit approval is subject to the nexus requirements of Government Code Section 66000 et. seq. and the District has failed to show the "reasonable relationship" nexus as required.

RESPONSE: The author is mistaken about the nature of the ISR program and how the rule is designed to be implemented. The rule is consistent with the Attorney General opinion cited in that it does not require permits. Under the commenters theory, any fee is a de facto permit. Developers are subject to civil penalties if they fail to follow any District regulation. For example, failure to comply with Regulation VIII – Fugitive Dust Rules during construction or Rule 4901 – Residential Wood Combustion fireplace installation limitations may result in civil penalties. Similarly, failure to comply with the mitigation requirements of Rule 9510 may result in civil penalties, but cannot stop a development from being constructed. The District will not be implementing a permitting system for the operation or construction of projects. The ISR program will not be a permitting system, have discretionary actions, or have any land-use authority. The author states:

> The fee is determined via an application (Air Impact Assessment Application (AIA)) which is required to be approved by the District before a final discretionary permit is issued for the construction of the development project.

However, this is not the case. The application is required, but is not tied to the *issuance* of a discretionary permit. The purpose of the application is to provide information necessary to determine if a fee must be paid and the amount of the payment if one is required. The application must be submitted concurrent with the *application* to the local land use authority for a final discretionary permit. This timing is to allow the applicant to take credit for reducing project air impacts during the local agencies approval process. The District does not require completion *prior to* issuance of a permit by the local agency, nor does the District

have the authority to stop the project from being issued a final discretionary permit by the local agency.

The District's action is ministerial, and does not involve conditions of approval. All projects are subject to the same requirements, and must fulfill the requirements. The District does have the authority to enact penalties for non-compliance; however, this does not make the actions of the District discretionary or make the program a permitting program. Further, the fee is only enacted if a project is, "unable to incorporate on-site measures adequate to reduce indirect emissions to a specified level". The required emission reduction applies to all applicable projects equally, and must be satisfied. The project applicant has the *option* to reduce the fee through on-site measures. There is no discretion on the part of the District. The author's statements on applicability of laws regulating permitting actions do not apply to the ISR program, as it is not a permitting program.

The District continues to assert that Rule 9510 is not subject to Government Code Section 66000 et. Seq. Regarding the reasonable relationship requirement, the District has clearly made this demonstration. The air quality impacts of construction, area source and indirect source emissions from development projects and the methods used to quantify these impacts are clearly identified in the staff report and are undeniably contributing to the air basin's serious air quality problems. The emission reduction projects that will be utilized to mitigate a portion of these impacts are also clearly identified. Sufficient checks and balances are in place in the rule through an elected Governing Board and EPA oversight of this state implementation commitment to ensure that the mitigation funds will be used effectively on the impacts created by the development projects.

6. COMMENT: The consistency analysis (Appendix G) fails to include analysis and findings relative to other State laws and regulations, including directly related provisions of the California Environmental Quality Act (CEQA). The District already has existing procedures for permit review pursuant to CEQA, which are put forth in its "Guide for Assessing and Mitigating Air Quality Impacts". Proposed Rule 9510 should be subjected to a rule consistency analysis with this guide, as well as requirements for air quality analysis and mitigation pursuant to CEQA which is undertaken in the permitting process of local governments. The Department remains concerned about the duplication of assessment and potential duplication of mitigations pursuant to CEQA and the proposed Rule 9510. The District's decision to modify its CEQA handbook *after* the adoption of the proposed rules (G-2) is inconsistent with the requirement of Health and Safety Code 40727.

RESPONSE: The Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI) identified by the author is a voluntary guidance document for use by lead agencies addressing air quality in CEQA documents and is in no way regulatory. Under CEQA, for most development projects the District is a commenting agency. As a commenting agency the District provides comments to the Lead Agency to the following aspects: the potential significance of air quality impacts of a project; applicable District Rules; potential mitigation measures; and if an analysis is provided to the District, the adequacy and accuracy of that analysis. Requesting comments from the District is voluntary by the Lead Agency, and comments and mitigation measures suggested by the District are non-binding. CEQA requires *disclosure* of environmental effects for discretionary actions by a public agency, and requires reasonable and feasible mitigation of effects that are determined to be significant. Nowhere within CEQA can the District require a reduction in emissions from a development project. Voluntary CEQA commenting is not parallel to an ISR program. Mitigation required by CEQA is not the same in intent, requirements, or in practice with the emission reduction requirements of the ISR program. ISR is not duplicative of any mitigation required by the lead agency since the rule provides for credit for all measures and features included in the project that reduce emissions when project emissions are calculated. The District disagrees that modifying the District's GAMAQI after adoption is inconsistent with the California Health and Safety Code (CH&SC) Section 40272 for all the reasons stated above.

CH&SC Section 40272(b)(4) states:

> **"Consistency" means that the regulation is in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations.**

CH&SC Section 40272(b)(5) states:

> "Nonduplication" means that a regulation **does not impose the same requirements** as an existing state or federal regulation unless a district finds that the requirements are necessary or proper to execute the powers and duties granted to, and imposed upon, a district.

CH&SC Section 40727.2(a) states:

> **…** the district shall identify all existing **federal air pollution control requirements,** including, but not limited to, emission control standards constituting best available control technology for new or modified equipment, **that apply to the same equipment or source type as the rule or regulation proposed for adoption or modification by the district…**
>
> ***And***
>
> **…**The analysis shall also identify **any of that district's existing or proposed rules and regulations that apply to the same equipment or source type, and all air pollution control requirements and guidelines that apply to the same**

equipment or source type and of which the district has been informed pursuant to subdivision (b)

CH&SC Section 40727.2(h) states:

Nothing in this section limits the existing authority of districts to determine the form, content, and stringency of their rules and regulations. In implementing this section, it is the intent of the Legislature that the districts retain their existing authority and flexibility to tailor their air pollution emission control requirements to local circumstances.

The District has performed the analysis required by CH&SC 40727 et. seq, in Appendix G: Rule Consistency Analysis. First, no person has identified any existing federal or state requirement or guideline that applies to the same type of source that the District is proposing to regulate per CH&SC Section 40272(b). Second, the District identified few District rules for consistency analysis, and no US EPA rules or guidelines that apply to development projects in terms of New Source Performance Standards, Control Technique Guidelines, Maximum Achievable Control Technology or National Emission Standards for Hazardous Pollutants.

The District has found that the proposed ISR program is consistent with existing District rules, and has determined that there is no conflict or duplication with existing state law and CEQA.

7. COMMENT: The direct and indirect costs imposed by the Rules on the residential development process will result in increased housing costs. The preparation of the AIA (which not only calls for a detailed Urban Emissions analysis (URBEMIS)), but also for ongoing monitoring of selected mitigation measures), is likely to result in increased costs. In some instances, despite the assessment of the socio-economic analysis, the mitigation fees could have a detrimental impact on the economic feasibility of developers of market-rate mixed-use and workforce housing. These types of developments are already financially burdened since they typically have a more difficult time obtaining financing and quickly bringing a project into the market place.

RESPONSE: The cost of the preparation of a typical AIA is included in the application-filing fee— $400 for residential projects and $600 for non-residential projects, regardless of number of units. Worst case for a 50 unit residential subdivision would be $80 per housing unit. The modeling required for an AIA will be done by the District if not provided by the applicant. Monitoring of mitigation measures selected will only occur for measures that are not already required by another public agency, and the costs will be born out of the administrative fees from the rule (assessed at 4% of the off-site fee amount). Therefore, there are no costs additional to those discussed in the Socioeconomic Analysis.

8. COMMENT: By proposing to control emissions through fees that will be used to fund other projects, the District would be treating housing developments as direct sources when they are in fact indirect sources. The CEQA initial study for the proposed rules describes the project's purpose as being to "reduce emissions of NOx and PM 10 from new development projects" (page 4). If the fees collected under the Rules are a mechanism to control emissions from new development projects, then the District is adopting a market-based incentive program and is subject to the Economic Incentive Program (EIP) requirements, as was asserted by the Environmental Protection Agency (EPA) in their comments. Market-based programs may only be used for direct sources. "An EIP is a regulatory program that achieves an air quality objective by providing market-based incentives or information to ***emission sources*** (emphasis in original). By providing information or flexibility in how sources meet an emission reduction target, an EIP empowers sources to find the means that are most suitable and most cost-effective for their particular circumstances. By setting a price on pollution and pollution reductions through a fee-based approach or a trading program, some sources can realize an economic reductions for less than the cost imposed by a fee (*Improving Air Quality with EIP, EPA-452/R-01-001, January 2001 at 23)*. The proposed Rules allow a developer to either use the on-site emissions controls or to pay a fee and thus "realize an economic gain or avoid additional costs by making the reductions for less than the cost imposed by a fee." The District has failed to show the proposed Rules are consistent with EPA's EIP guidance and is treating new developments as direct sources.

RESPONSE: The District disagrees that EIP guidance applies. Although there are similar elements in EIPs, Rule 9510 contains both voluntary elements (onsite mitigation) and mandatory elements (mitigation fees) that preclude the use of the EIP guidance in its entirety. Still, the rule meets the SIP submittal criteria that apply to all rules of being surplus, enforceable, quantifiable, and permanent for the time required in the SIP and meets the fundamental EIP principles of integrity, equity, and environmental benefit.

9. COMMENT: It is impractical, and an excessive and unnecessary burden for applicants to be required to include justification of mitigation measures not selected, as is proposed by Section. 5.3.2. The on-site checklist contains a number of emission reduction measures, which will often be inapplicable. As a result, Section 5.3.2 should be deleted. As proposed, the provision implies, for example, that all 18 of the on-site measures listed in Appendix C for residential projects (or 39 if the "on-site enhancing measures" also required justification) could be applicable for all projects. Measures which would not be routinely feasible or applicable, include but are not limited to:

- An on-site bike lane would not likely be warranted or feasible on the site of a 50-unit apartment building (R-7) nor would an apartment building involve the design of street patterns (R-10).

- "Reduce Wood Fireplaces and/or Woodstove above that required by District Rule 4901" would not be applicable to most new apartment buildings (R-14).

- All new subdivisions cannot be sited within half a mile of an existing transit stop, and it is beyond the ability of applicants to have a transit stop added within a half a mile of a new subdivision (R-2), independent of where the project is located.

RESPONSE: The District does not agree with the author's statement that it is impractical, excessive and/or an unnecessary burden to include justification. The purpose of the justification is to encourage developers to examine the potential measures more closely and not immediately reject a measure without considering its feasibility. Onsite measures have permanent air quality benefits and typically create value and provide other benefits to the development. Measures included as mitigation measures in the lead agencies CEQA document, as most are expected to be, will not require District long term monitoring. If a measure is impractical or not applicable to a project, the applicant needs only to state that in the justification. The District does not see how this is an undue burden. Finally, onsite measures are implemented voluntarily by the developer and are not required by Rule 9510.

10. **COMMENT:** As a result of these concerns, the Department respectfully requests that the District not adopt the Draft Rules as proposed and continue to work with all interested parties on needed revisions. Thank you for your consideration of these concerns. For further discussion or to set-up a meeting, please contact Linda Wheaton, Assistant Deputy Director, at (916) 327-2642.

RESPONSE: Comment Noted.

City of Porterville
Date: November 29, 2005

11. **COMMENT:** The City of Porterville appreciates and encourages the District's efforts to improve air quality in our Valley, however, the District staff report does not clearly define how the additional fees acquired through adoption of the DESIGN program would result in a quantifiable improvement to air quality in the San Joaquin Valley air basin beyond the measures already in place. Further, neither rule dictates a funding source to compensate local jurisdictions for the

additional efforts resulting from approval. Please provide clarification of these points in the final rules. Thank you for the opportunity to comment.

RESPONSE: First, Appendix B – Emission Reduction Analysis, Attachments 2 and 3 show the tonnage of offsite reductions that are estimated to occur as a result of the adoption of the ISR rules. By 2010, it is estimated that the ISR will achieve 5.4 tons per day (tpd) reduction of NOx, and 5.8 tpd reduction of PM10 from growth. The amount of off-site reductions (from the fees) are 4.7 tpd and 4 tpd of NOx and PM10, respectively. These estimates are based on the amount of reduction required by the rule, and assume an amount of that reduction is achieved on-site. The off-site fees will be used to achieve this reduction, as specified in Appendix E: Cost Effectiveness Analysis, which states how much in off-site fees is expected and how that money will be spent to achieve quantifiable reductions. Specifically, Appendix E: Cost Effectiveness Analysis, Attachment 1 (p. E-13 through E-33) details potential projects, the amount of reduction achievable, the cost of those reductions and a potential spending plan.

Second, the rule does not dictate a funding source to compensate local jurisdictions because there are no requirements placed on local jurisdictions. The local jurisdiction is not required to review, assess or otherwise act on ISR projects. The District is committed to including local jurisdictions in the process through informing them of projects and project-specific information received by the District, and District actions on those projects just as it does now when it provides comments on local agency CEQA referrals. However, neither the ISR rules nor the administrative process require 'additional efforts' from local agencies.

Visalia Unified School District
Date: October 25, 2005

On behalf of the Visalia Unified School District ("the School District"), I respectfully submit the following comments and questions to Draft Rules 9510 and 3180 of the San Joaquin Valley Air Pollution Control District ("the Valley Air District"). I am unclear about several items in the Valley Air District's proposed fee and plan to decrease emissions' impact from new development in the area. The School District's main concern is that the Draft Rules lack sufficient clarity to allow the School District to analyze what the potential impact of the new fees may be and whether the fees would actually be applicable to our projects. The School District is particularly concerned because any fees that must be paid as a result of the enactment of the Draft Rules will reduce the School District's financial ability to provide classrooms to students in these newly developed areas.

12. COMMENT: Applicability of Draft Rules to the School District

It is unclear whether the Draft Rules apply to the School District's construction of new schools. Section 2.1 of Draft Rule 9510 states that the rule applies "to any developer that seeks to gain a final discretionary approval for a development project… of … 9,0000 square feet of educational space." The Draft Rules define "developer" as any person or entity that undertakes a development project. Also, the definition of a "development project" includes any project that it "subject to a discretionary approval by a public agency" where the discretionary approval "requires the exercise of judgment or deliberation."

The school District takes the position that the Draft Rules do not apply to it because it does not operate as a "developer" and the School District school construction projects are not development projects since they are not "subject to the discretionary approval by a public agency." However, according to the Draft Rules, if a developer is constructing a school facility on behalf of the School District, then due to the definitions in the Draft Rules, the fee may be applicable.

RESPONSE: If the approval to site and construct a new school is not subject to a discretionary permit, then the author is correct that the ISR rules would not apply. Otherwise, schools have many options available in onsite measures that would substantial reduce any potential fee.

13. COMMENT: Fee Calculation

In addition to the question of the fee's applicability, the formula to be used in calculating the air impact mitigation fee is extremely confusing. A more straightforward formula from which the estimates of fees can be made would prove beneficial to those impacted by the Draft Rules. If these Draft Rules are intended to apply to the School District's development of new schools, a more concise formula would help us in the planning and estimating process.

RESPONSE: Although the fee formula is somewhat complex, it is the most accurate and equitable way to assess fees based on emissions to achieve the emission reduction committed to in the District's SIP. The District has found that using an excel file to calculate fees is easy and accurate. The District will make a calculator with the formula built in available to the public prior to implementation. Prior to that, the District is willing help applicants and agencies create an excel file that calculates emission reductions required and fees required.

14. COMMENT: Requirement of Nexus

The School District has reviewed comments to the Draft Rules submitted by other associations that are impacted by these rules. One major problem noted by many of the commentators related to the fact that the Draft Rules fail to comply with the nexus test required by AB 1600, enacted as Government Code

Sections 66000 et seq, and as required by case law such as in *Ehrlich v. City of Culver City* (1996) 12 Cal4th 854.

Similarly, we would like to express our concerns that the fees proposed do not appear to demonstrate a reasonable relationship to the cost of implementing the air pollution mitigation program. It appears to us that there is a huge disparity between the cost of implementing the mitigation program and the fees to be collected. Further, the Draft Rules and supporting analyses are largely silent on the actual mitigation measures to be funded that will reduce emissions' impact resulting from a given project. It would be helpful if the Valley Air District provided details of the actual measures and projects that will be undertaken to reduce emissions' impact as well as the benefits accruing to the public as a result of these measures.

RESPONSE: Please refer to the September 1, 2005 Response to Comment #125 about the analysis of nexus applicability that the District performed. The District disagrees that there is a disparity between the fees to be collected, estimated as up to $103 million between 2006 and 2008, and the cost of achieving off-site reductions. In Appendix E: Cost Effectiveness Analysis, Attachment 1 (p. E-13 through E-33) details potential projects, the amount of reduction achievable, the cost of those reductions and a potential spending plan.

15. COMMENT: Notice to Those Impacted by Draft Rules

Although the School District is within the San Joaquin Valley Air Basin and is subject to the jurisdiction of the Valley Air District, we feel we were not provided with adequate notice of the Draft Rules. If the Draft Rules are held to apply to the School District, the fees imposed will greatly impact our ability to plan for the development of new classrooms and educational facilities. Therefore, in the future, we request written notice of proposed rules and regulations that are intended to apply to the School District.

RESPONSE: The District regrets that the School District did not receive notice of the proposed rules; however, this rule was noticed in accordance with all legal requirements. The District will add the School District to the ISR mailing list. In addition, the District suggests that the School District visit the District website at http://www.valleyair.org/lists/list.htm. The School District can receive District news, workshop notices, and other important information for this or other plans via e-mail by subscribing to one of the District's e-mail notification lists. The e-mail notification lists are setup and maintained by the end user and not by District staff. Individuals may add or delete their names from these lists at anytime.

California League of Food Processors (CLFP)
Date: November 22, 2005

16. **COMMENT:** First, CLFP supports the amendments proposed by the District that would exempt canning and food processing from Rule 9510. Most of the primary activities performed by food processors are already regulated by the District and are subject to Rule 2201 (New and Modified Stationary Source Review Rule) and Rule 2010 (Permit Rule), so the proposed exemption will avoid redundant or confusing new regulations.

RESPONSE: Comment Noted

17. **COMMENT:** Second, CLFP and other organizations have expressed concern to the District regarding the cumulative cost of complying with the various new air pollution control requirements imposed on manufacturers in recent years. The food processing industry is one of the major sources of employment in the San Joaquin Valley and the firms operate in a very competitive economic environment. The financial resources available for complying with new regulations are very limited. CLFP appreciates that the District has responded to industry concerns by recognizing the cumulative impact of air regulations and the major investments made in stationary source emission controls.

RESPONSE: Comment Noted

California Building Industry Association
Date: November 29, 2005

On behalf of the California Building Industry Association (CBIA) and its Affiliate Associations located in the San Joaquin Valley, I am entering into the formal record comments on the proposed Draft Rules 9510 and 3180 (the "ISR"). CBIA member companies provide housing that is the cornerstone of quality of life in the San Joaquin Valley.

18. **COMMENT:** The Federal Clean Air Act, 42 U.S.C. Section 7410 (a)(2)(F), requires that approvable control measures provide quantifiable, surplus, enforceable, permanent, and adequately supported reductions in air emissions. The proposed Draft ISR does not provide sufficient analysis or findings to establish that the proposed Indirect Source Mitigation Program meets these criteria. Indeed, the document barely addresses these fundamental topics. Because these criteria have not been met, the Indirect Source Mitigation Program does not meet the Federal Clean Air Act test for full approval and inclusion in the State Implementation Plan ("SIP").

Indirect Source programs, on the scale proposed by the San Joaquin Valley Air District, have not been adopted or implemented successfully anywhere in the United States. We note that USEPA has never approved a proposed indirect source rule for emission reduction credit.

RESPONSE: The District has complied with the cited Clean Air Act section. EPA has recognized that areas with a long history of air regulation must pursue new and innovative ways to reach emission reduction requirements since the stationary sources in many cases are already in their second or third retrofit requirement with rapidly diminishing air quality returns. This had led EPA to produce guidance on voluntary and emerging measures and for taking SIP credit for mobile source incentive programs. Although Rule 9510 is unique, it still meets all control measure approvability criteria. See also the District's response to EPA's comment letter on the September 1, 2005 draft.

19. COMMENT: The expected emissions benefits are not properly quantified. The URBEMIS model-based approach proposed to calculate project travel and emission impacts is inconsistent with the SIP inventory methodology. The SIP emissions inventory used the California Air Resources Board's EMFAC-2002 model to establish the NOX and PM10 emission reductions targeted by the ISR rules. One of the key components of EMFAC is a regional travel demand model ("TDM"). The TDM is used to calculate regional travel impacts such as vehicle miles traveled ("VMTs") and trips within the SIP inventory. The SIP calculations that identify further emission reductions needed for the San Joaquin Valley to attain federal ambient air quality standards are, in turn, based on vehicle travel activity forecasts from TDMs.

New project impacts determined under the ISR rules should be calculated in a manner consistent with the SIP targets to ensure no over- or under-compliance. There is an inconsistency between the way URBEMIS and TDMs calculate new or net added vehicle miles traveled (VMT) and vehicle trips. The fundamental difference between TDMs and URBEMIS is that TDMs robustly account for the interaction effects between multiple land uses, while URBEMIS does not.

Interaction effects refer to the fact that when considered together, each individual land use (or project) "competes" with others for vehicle trips. Where these land uses are located within a metropolitan area or county and how well the regional roadway network provides access to each land use affects the number of trips taken and their length (and thus VMT). For example, locating a new shopping center near an existing residential area would likely shorten the length of existing shopping trips taken from the residential area (and thus reduce VMT). It may also increase the number of shopping trips from the residential area due to its proximity compared to the location of existing shopping centers.

The Draft ISR relies primarily on URBEMIS to calculate project level impacts, even though the District's own modeling consultant has stated that this model was designed to be a "sketch planning" tool, and was never intended to provide a detailed numerical analysis of project level air quality impacts. If the travel activity (VMT and trips) of all the URBEMIS-based individual ISR project analyses were added together, they would overstate the net travel impacts determined when jointly simulating the same new projects using a TDM. This conclusion is based on a side-by-side comparison of impacts of a hypothetical but typical new residential project performed by Sierra/Dowling using URBEMIS and the Fresno County TDM. Correcting the existing biases in the URBEMIS default assumptions does not change this result because URBEMIS treats each new project and its interaction with existing land uses and other new projects separately.

The District has attempted to account for this fundamental difference between TDMs and URBEMIS by applying a 50% discount factor in the NOx and PM10 fee formulas to require mitigation of only half or one direction of two way trips between a new project and existing land uses. While in concept this approach could eliminate the double counting problem, simply slicing URBEMIS impacts in half does not demonstrate SIP consistency.

On top of this fundamental discrepancy with the SIP methodology, URBEMIS overstates residential project emissions by over 70% as a result of multiple technical shortcomings. On this basis alone, URBEMIS cannot be considered a reliable and accurate gauge of project emissions. URBEMIS' technical problems as an emission estimation tool are documented in detail in Sierra Research's comment letter of July 22, 2005.

RESPONSE: The author states that the "emission reduction benefits are not properly quantified". The District assumes the author is discussing the emission reduction benefits from implementation of the rule, which were properly quantified in Appendix B: Emission Reduction Analysis, using the known growth data (provided to the state by the COGs), and applying a standard rule penetration, estimated on-site emission reduction achievement, and applying the emission reduction requirements to the growth emissions. This analysis is considered 'top-down' and is standard practice. The analysis did not rely on URBEMIS, a project-level model or 'bottom-up' analysis, for valley-wide emissions estimates from valley-wide growth.

The District has repeatedly addressed the "70%" overestimation cited by the author as a distortion of fact. The District has stated that project-specific data is acceptable when available and has committed to addressing the few issues that have been raised concerning URBEMIS default values, and will provide guidance on those items prior to ISR implementation.

The District could not find any reference in the Clean Air Act or in EPA guidance that prescribes implementation to use the same methodology as the SIP. Indeed, the District did not find any reference prescribing a model or methodology to assess mobile and area emissions from development projects. The author's assertion that the methodology itself must be the same for the SIP and implementation is not based on any statute, guidance, or on historical methods of rule implementation. What is important is that the rule achieves the amount of reduction committed to in the SIP, and that the model produce consistent and repeatable results and be based on widely accepted inputs and methods, all of which apply to URBEMIS.

The author mischaracterizes the fee formula's use of a 50 percent baseline as a discount factor used to correct a deficiency in URBEMIS. URBEMIS correctly uses ITE trip generation rates to show the impact of all trips associated with a development project including those generated and those attracted to the site. The purpose of the 50% of the baseline in the fee formula is to meet the nexus requirements and to meet the intent of Health and Safety Code 40717.5(a)(1) for Districts to… "make reasonable and feasible efforts to assign responsibility for existing and new vehicle trips in a manner that equitably distributes responsibility among indirect sources." By basing the fee on half the emissions, the District is ensuring that only trips from the project site are assigned responsibility. Furthermore, URBEMIS has the capability to account for reductions for passby trips where someone stops on their way to their primary destination and diverted linked trips where the trip length is shortened to account for trips that although not directly on the route to the primary destination, still result in a shorter trip length than would occur if someone went there directly. Finally, URBEMIS can accept project specific trip generation information based on market studies and local traffic studies when a proposed project may produce different results than would be expected using default trip information. We believe this a reasonable and feasible effort to meet the Health and Safety Code requirements.

The District believes the best model should be used based on the needs and parameters of the project. For SIP inventory purposes, regional TDMs are the most appropriate model for estimating emissions. However, as admitted by Sierra Research (letter November 29, 2005, Comment #29 below), TDMs are regional models that are inappropriate for project-level analysis and TDMs contain their own flaws. These flaws are ignored in the author's 'URBEMIS vs. TDM' discussion. For instance, TDMs do not account for some trips on arterial and collector streets. TDMs require a large amount of data input, are not easily used, were not developed to estimate land-use impacts, and are not available to the public. Simply, TDMs are too broad of tools to accurately estimate the emissions from individual projects. A side-by-side comparison of a project-level analysis using URBEMIS and a TDM would be misleading, as a regional TDM was never meant to be, nor should be, used to estimate and individual project's emissions.

URBEMIS uses emissions factors derived from EMFAC2002, the same model used in the SIP. Several issues raised with URBEMIS (silt loading, fleet mix) will be remedied prior to implementation. URBEMIS is maintained by a statewide working group of technical experts and air districts. URBEMIS is used in CEQA analysis across the state, and is commonly used for Environmental Impact Reports (EIRs) to assess project-specific air quality impacts. URBEMIS has been used by the District and applicants in assessing air emissions for Mitigation Agreements, as well as other agencies to assess air impacts for mitigation settlements. The District has more than adequately shown URBEMIS to be the best model for the job.

The 'fundamental flaw' raised by the author simply does not exist. It has been well demonstrated that URBEMIS is the best program for ISR's needs, and it is widely recognized across the state by other air districts, local land use agencies, and other agencies as an appropriate tool for assessing specific project-level air impacts. It is the District's assessment that the author compares TDMs to URBEMIS in raising 'SIP methodology consistency' as a 'fundamental flaw' to discredit URBEMIS; and, since TDM's are inappropriate for project-level analysis, leave the District with no available model to use.

20. COMMENT: There is no discussion of whether the emissions are surplus. New development is already controlled by existing and proposed District rules, some of which overlap the ISR proposal. Dozens of cities and counties with the San Joaquin Air Basin have adopted ordnances creating local traffic mitigation and congestion relief programs, funded by fees on new development and, in the case of several counties, increased sales taxes. In addition, large scale developments, such as planned communities, are increasingly entering into air quality mitigation agreements within the context of the environmental review process mandated by the California Environmental Quality Act ("CEQA"). All of these measures address the same concerns as the Draft ISR, improved traffic flow and reduction of tail pipe emissions.

The failure of the Draft ISR and the supporting documentation to discuss or quantify the emissions reductions attributable to these other programs undercut the ability of the measure to provide surplus and quantifiable emission reductions as required by statute.

RESPONSE: The emissions growth estimates used to develop the rule are from the District's emission inventory that includes the benefit of all adopted local, state, and federal regulations and so are surplus to adopted control programs and regulations. Local regulations that have been adopted as transportation control measures currently have no emission reductions claimed in the District's SIP. Congestion relief measures and other transportation impact fees are

required just to keep emissions from exceeding emission budgets and do not provide additional SIP creditable reductions. Local programs and ordinances that do provide a surplus benefit will now be able to provide credit to their communities through the onsite mitigation component of the rule and will reduce the fees paid by developments contributing to those programs. In addition, reductions obtained through CEQA measures and Development Mitigation Agreements will be credited toward the emission reduction requirements of the rule.

There are no existing or proposed District rules that overlap the proposed ISR program. Appendix G: Rule Consistency Analysis describes other District rules and analyzes potential for inconsistency—none were found.

21. COMMENT: The proposed Indirect Source Mitigation Program does not contain an enforceable commitment. The permitting process in the Draft ISR operates independently of any other relevant regulatory process. Numerous parties have commented that the air quality impacts attributable to new development are also subject to CEQA. Early attempts by the Air District to reconcile or streamline the ISR with the normal environmental review process have been abandoned for the time being, replaced with a statement that the Air District will revise its existing Air Quality CEQA Guidelines at some future date to minimize conflicts between the two processes. By separating the Air District permit process from CEQA, the Air District has removed any responsibility for enforcement from local agencies with the land use authority necessary to enforce on-site mitigation measures.

RESPONSE: First, the ISR program is not a permitting program. Second, the ISR program is enforceable, the same as all other District Rules, and does not need to rely on 'other relevant regulatory process' and does not conflict with other regulatory processes. This enforcement authority comes from state law. In fact, most of the District's rules "operate independently of any other relevant regulatory process" as they are stand-alone rules not dependant on other regulations. Please see District Rule 1040 (Enforcement).

The District does not need to revise the Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI) in order to make the rule enforceable. The District will be revising the GAMAQI in order to clarify for those undergoing the CEQA process how ISR will affect their projects. This is no different than how the GAMAQI currently addresses other applicable rules. For instance, Regulation VIII (Fugitive PM10 Prohibitions) is discussed in the text of the GAMAQI. However, the GAMAQI discussion does *create* the enforcement of Regulation VIII, but acts to inform lead agencies, consultants, project applicants, and the public.

22. **COMMENT:** In addition, no legal nexus between the proposed mitigation program and the fees imposed on individual development projects has been established. The cost and ultimate success of the mitigation measures are speculative. The Air District's proposed mitigation program, based upon after-the-fact grant applications and the funding of primarily off-site mitigation, has not worked well in other situations, such as the South Coast Air Quality Management District's Mobile Source Reduction Commitment program. Until nexus can be demonstrated, no enforceable commitment is possible. The language of SB 709 did not repeal the independent, Constitutionally-based requirement that that "rough proportionality" between the impact created and the cost of its mitigation be established. This comment has been made several times, both in writing and testimony, and the Air District has never fully responded to this issue.

The Air District cites the USEPA approved PM10 and Ozone Attainment Plans along with SB 709 as authority that it must impose ISR. In doing so, the District is arguing backward from a conclusion, sidestepping the fundamental issue of whether an enforceable commitment exists. Such backstops are not a substitute for establishing whether an enforceable commitment exists for purposes of the Federal Clean Air Act.

RESPONSE: Although the District believes it has adequately responded to each comment regarding nexus 'rough proportionality', here is a synopsis of how the District makes this demonstration:

> The District developed an estimate of growth in mobile source emissions from new development by using the SIP emission inventory growth-only projections. This allows us to estimate the amount future emissions will increase only accounting for growth. This information was used as the basis for the ISR control measure in the 2003 PM10 Plan. Construction and area source emissions are entirely the responsibility of the development project. The emissions attributable to growth were then reduced to account for projects that will be exempt from the rule. The mitigation requirements were then applied to the emissions subject to the rule to determine the potential emission reductions. The emission reductions are cumulative since each year additional mitigation is accomplished and the benefits from prior years continue to provide a benefit. This information is provided in Appendix B of the staff report.
>
> Once the overall emission reduction target for the ISR control measure was identified, the next step was to determine the method to calculate the fair share of the emissions attributable to individual projects. As has been thoroughly discussed elsewhere, it is not appropriate to use the SIP inventory method to calculate emissions from individual projects. URBEMIS was identified as the best tool for conducting project level estimates. See Appendix D of the staff report.

With the emission estimation tool selected, the District then used URBEMIS to estimate emissions from a variety of different land use projects using basic default inputs. The basic factors used to estimate project mobile emissions are the number of vehicle trips, the length of the trips, and the average vehicle fleet emission rates. Based on comments received on early drafts, the District replaced default values for PM10 silt loading values, and activated the commercial passby trips component. The purpose of this analysis was to estimate the potential emissions and fees from an individual development. The results were then used in socioeconomic impact analysis to determine the potential impacts of worst-case fee amounts.

The next step in determining rough proportionality is to verify that the individual project impact is roughly proportional to the mitigation achieved with the fees that are collected. This is accomplished by using an emission based fee formula to determine the amount of funds collected and a fixed cost of reductions for the emission reductions to be purchased by the District. The cost of reductions was developed for future years based on recent cost-effectiveness history with District grant programs, a determination that the reductions will be continue to surplus to any adopted regulations, the emission inventory for the sources, and the technical and economic feasibility of the projects. This analysis is adequate to confirm that the District will be able to maintain rough proportionality between the emissions generated and the emissions reduced through the fees.

The District has several options for corrective actions should the average cost of reductions achieved by the ISR Program be significantly higher or lower than predicted. Since staff will be continuously monitoring the projects funded, we will be able to identify early if costs are on target. If costs of reductions are coming in high, the first option would be to focus the project mix on more cost-effective projects until the average approaches the target amount. If insufficient low cost off-site projects are available, the cost of reductions could be increased by amending the rule. If costs of reductions are coming in low and it appears that the lower-than-expected cost-effectiveness can be sustained, the fee amount may be lowered. The District may also modify the incentive amounts offered to attract preferred, highly cost-effective projects where potential applicants may be reluctant to participate when the incentive amount offered may be inadequate to cover costs of implementing the project. Modified incentive amounts could also be used if the District has difficulty attracting sufficient projects.

The comparison to mobile source emission reduction credit programs is not valid. The reason those programs have not been highly successful is because stationary sources needing ERCs have been able to obtain those reductions at lower costs using traditional banked ERCs than could be achieved by mobile source reductions. Grant programs throughout the state have been extremely successful in obtaining emission reductions from a wide variety of sources. Since ISR reductions can be obtained from any source of surplus, quantifiable, and enforceable reductions, it can be expected to do even better than the existing grant programs in attracting projects.

23. COMMENT: There is no finding that the benefits of the proposed measures will be permanent.

The Draft ISR assumes that the measures will be in effect for ten years. Because of the passive nature of many of the on-site mitigation measures, there is no guarantee that purchasers of newly developed property will leave those mitigation measures in place. Likewise, there is no documentation that the emission reductions associated with the proposed control measures will persist throughout the life of the SIP. As discussed previously, the benefits are speculative, have not been quantified and documented, and as a result the longevity of the benefits are equally speculative.

RESPONSE: The ISR program differentiates between onsite and off-site measures when demonstrating the permanence of the reductions for SIP purposes. The onsite measures are most closely related to measures covered by EPA's Voluntary and Emerging Measures Policy. This policy recognizes that land use measures are highly desirable, but more difficult to quantify than traditional measures. Once the project is constructed with the onsite features in place, the benefits continue indefinitely into the future. Measures like density, mix of uses, and pedestrian infrastructure are not likely to be eliminated after development. All on-site measures that are not required by the lead agency will be enforced by the District to ensure that the emission reduction benefits will occur for the full duration of ten years. Offsite projects funded with mitigation fees only take credit for SIP reductions during the life of the project. This is accounted for in the emission reduction spreadsheet in Appendix B. Offsite projects meet EPA SIP criteria for permanence. Applicants are under contract to utilize the cleaner equipment through the term of the contract. When the new equipment, device, or paved road reaches the end of its useful life, the new purchase must comply with regulations in place at that time and will use cleaner technology in many cases.

As the District has repeatedly demonstrated, the benefits are not speculative, have been quantified and documented. Please refer to the *entire* Staff Report, Appendix B: Emission Reduction Analysis, Appendix D: Recommended Changes to URBEMIS, and Appendix E: Cost Effectiveness Analysis.

24. COMMENT: The proposed Indirect Source Mitigation Program is not adequately supported. The Air District's socio-economic analysis focused on the narrowest viewpoint available, the impact on residential builders, and did not even attempt to analyze the larger impacts on other business sectors, employment, public services, etc. The proposed rulemaking provides no information on the commitments from other agencies that are necessary to implement the various measures. Finally, there is no indication that the proposed requirements have been integrated into local development plans.

RESPONSE: First, there are no "commitments from other agencies that are necessary" to implement ISR. Therefore, the District did not include "commitments from other agencies" as there are none.

The author mistakenly states that the socioeconomic analysis, "focused on the narrowest viewpoint available." The author is posing that the District did not thoroughly or adequately address the socioeconomic impacts of the ISR program, which is untrue. The socioeconomic analysis included analysis on the impacts to homebuilders, homebuyers, renters, low-income housing and housing affordability. In addition it analyzed the impacts to commercial, office and industrial builders, buyers and renters, and small businesses. The mitigation fees are spent on projects in the San Joaquin Valley that provide benefits to the Valley's economy as described in the revised socioeconomic impacts report.

ISR has been designed to work synergistically with the local development approval process. Developers may use mitigation measures and local requirements of the local development process to reduce their Rule 9510 fees, but are not required to do so. The proposed requirements of ISR, a prescribed amount of emission reduction for particular development projects, do not need to be integrated into local development plans, but may be used to demonstrate that air quality impacts of the project have been reduced. Developers wanting to use Rule 9510 as support for their air quality impact study for the local development approval process can time their application to the District such that it will fit seamlessly with the normal CEQA timelines. For the 'mitigation program', there are no up-front requirements for all projects. Applicants that voluntarily commit to certain measures that are not already requirements by other agencies must enter into an agreement with the District that details the schedule of monitoring and reporting for the District to enforce implementation of those measures. The 'mitigation program' requirements are to implement those measures the applicant has voluntarily committed to. The only possible conflict with local development plans is if a measure is not allowed by the local agency: in that instance, the District would remove that measure from the ISR project, and reassess emissions. Thereby avoiding conflicts with the local agency.

25. COMMENT: In summary, for the reasons stated above, the Draft ISR continues to be fundamentally flawed, and is unlikely to satisfy the requirements of the Federal Clean Air Act. As a result, the Air District will have a difficult time convincing USEPA that the ISR control measure will contribute to the emission reduction goals set forth in the SIP and the District should look to other measures to obtain PM10 and NOx reductions.

RESPONSE: As stated in Response to Comment #18, the EPA is supportive of the rule, and has not raised the 'flaws' that the author claims are present. The emission reduction goals in the SIP will primarily be achieved through grant and incentive programs that have been in operation for over a decade and that meet all SIP submittal criteria. Credit for new grant and incentive programs will follow the same SIP criteria and will comply with the same standards for quantification and verification as the existing programs. Each new program will go through a public review process and be approved by the District's Governing Board. The voluntary onsite measures will only be credited to the extent that they meet the criteria of EPA's Voluntary and Emerging Measures Policy.

Sierra Research – On Behalf of CBIA

Date: November 29, 2005

On behalf of the California Building Industry Association (CBIA), Sierra Research (Sierra) is pleased to submit the following comments on the revised draft Indirect Source Rules (ISR) 9510 and 3180 released by the San Joaquin Valley Unified Air Pollution Control District (District) earlier in November.

Our comments in this letter rebut District responses to earlier comments submitted by Sierra in September. As directed by CBIA, our comments focus on technical and modeling issues related to the use of the URBEMIS model under the proposed rules based on our independent review of the model and its underlying assumptions. In this review we were assisted by Dowling Associates, Inc. (Dowling), a transportation planning firm with extensive travel demand modeling experience supporting a number of the San Joaquin Valley Transportation Planning Agencies (TPAs).

Our rebuttal covers the following two issues:

1. URBEMIS modeling assumptions substantially overestimate residential project emissions. A combination of unresolved technical problems result in overstating both residential PM10 and NOx project emissions, and therefore ISR fees, by over 70%.

2. Rule 9510 consistency with SIP emissions inventory has not been demonstrated. The SIP travel model projects a different amount of travel (and therefore emissions and fees) from each project than URBEMIS calculates. Our Fresno County test case shows that URBEMIS produces higher project emissions than does the SIP methodology.

A detailed discussion of each of these unresolved issues is provided in Attachment A.

26. COMMENT: Summary

The following table summarizes each of the technical modeling issues identified by Sierra/Dowling during the ISR rulemaking process, their impacts, and the District's response to each issue.

Status of District Responses to Sierra/Dowling ISR Comments		
Issue	Emissions Bias	District Response
Residential Fleet Mix	NOx high by **20%**	Will fix, revised fleet mix to be determined
Silt Loading Factors	PM_{10} high by **50%**	Will fix
Average Vehicle Trip Lengths	NOx and PM_{10} high by **20-30%**	Will fix, unsure of approach
Residential Fleet Age Distribution	Exhaust NOx and PM_{10} high by over **20%**	Not convinced data provided warrant a revision
SIP Consistency	NOx and PM_{10} likely **high by unknown amount**	Handled by 50% fee discount?

Although the District has indicated a willingness to address some of the modeling issues we have identified, we believe the responses to our earlier comments on URBEMIS model issues are incomplete (in that corrections will not be made until after ISR adoption) or mildly dismissive (e.g., not willing to consider how revised residential age distribution impacts will be addressed). Some of the unresolved issues are fundamental and still need to be addressed before these rules can go forward

Furthermore, the District has not proven that the URBEMIS-based ISR approach will result in emission reductions that match SIP targets. From a policy standpoint, we believe this burden-of-proof lies with the District and that SIP consistency cannot simply be asserted.

These technical problems result in major discrepancies in estimating emissions and corresponding fees under Rule 9510. Thus, we respectfully recommend that the District delay its scheduled December 15 hearing on ISR adoption until these issues are fully resolved.

If you have any questions about the information presented above or in Attachment A, please feel free to contact Bob Dulla or me at (916) 444-6666.

RESPONSE: The District has determined that all items that the author raises have been adequately addressed. See the following Comments and Response to Comments #27 through #29.

ATTACHMENT A
UNRESOLVED RULE 9510 TECHNICAL ISSUES
THAT RESULT IN OVERSTATED EMISSIONS

27. COMMENT: URBEMIS Modeling Assumptions Substantially Overestimate Residential Project Emissions - In responses to our comments, the District acknowledged that many of the default modeling assumptions in the URBEMIS model do not accurately represent conditions in the San Joaquin Valley when applied to residential projects. These incorrect model defaults identified by Sierra and Dowling substantially overestimate residential project emissions by a minimum of 70% for both pollutants targeted under the ISR rules, oxides of nitrogen (NOx) and "fine" particulate matter (PM10).

The District's response to these URBEMIS model default issues is incomplete. In acknowledging these problems, the District responds only that these faulty model assumptions will be corrected in a future version of URBEMIS that will be released (presumably without opportunity for public review) after the ISR rules are adopted.

Although the District has indicated that a small part of these model corrections will be made prior to rule implementation, no timetable has been provided for revising URBEMIS, nor has it been made clear that these revisions will be publicly reviewed. The District has been aware of these modeling issues since July, yet no further action has been taken. The District's approach does not guarantee the release of a revised and fully reviewed model before implementation.

RESPONSE: The District does not "acknowledge that ***many*** (emphasis added) of the defaults… do not accurately represent conditions in the San Joaquin Valley". The District does acknowledge that a there are a few items that need refinement, specifically the on-road silt loading factor (easily adjusted by a known amount) and the fleet mix (less easily adjusted). The District had already hired a consultant to analyze and recommend a revised fleet mix, and results are expected prior to rule implementation. The author's assertion that "no further action has been taken" is misinformed and false. In addition to researching the fleet mix, the District is participating in the URBEMIS statewide working group (see paragraph below for more information). The model defaults ***do not*** overestimate residential project emissions "by a minimum of 70% for both pollutants". This claim is false, and the District has repeatedly addressed this claim.

The author is incorrect in his assertion that the District will make changes to URBEMIS "without opportunity for public review" and therefore without any review or safeguards. Changes to URBEMIS are made through a statewide working group that includes other air districts, model experts, technical experts and other public agencies such as CalTrans. As consultants such as Sierra Research use URBEMIS, they often find areas for improvement and correction. Any proposed changes impacting the statewide use of the model must be vetted through this group. The District cannot, nor does it propose to, make 'closed door', questionable changes to the URBEMIS model. If an applicant or a consultant can find better input data or another model that more accurately characterizes the emissions from their project, the District will consider them. If they apply broadly, the District is committed to make those changes available to all users. Sierra should recognize that all modeling is based on incremental improvement. The District will use the best information currently available and commits to continuous improvement in its emission estimating techniques and models.

The author states that a "small part" of issues will be addressed. The District finds only three items raised that are legitimate and only two that are substantial, one of which (silt loading) has been resolved, and the other (fleet mix) is currently being researched. As for a "guaranteed release" of a revised program prior to implementation, these *two* issues can be addressed through guidance. A revised program is not necessary to account for the refined default changes. As stated above, the District is participating in the URBEMIS statewide working group, which is currently expecting to release a revised program in more than one year. The District is committed to making URBEMIS as accurate as possible, and is working towards that goal. Any change that can be made through District guidance will be implemented quickly.

In addition, the silt loading factor issue was raised by Sierra Research, which proposed a new factor, and the District agreed that the proposed factor was more accurate. This revised factor has been publicly discussed, and has been included in ISR documentation.

28. **COMMENT:** In addition, the District did not act on the evidence presented by Sierra/Dowling based on U.S. Census and Caltrans Travel Survey data—that new residential developments exhibit newer vehicle fleet age distributions (and therefore have lower average emissions). The District's response indicates a need for further survey data to warrant revising the URBEMIS default vehicle age distribution when applied to new residential projects.

Would data from a third-party survey that gathered information on vehicles per household and age from a random sample of "new" residential households in the

San Joaquin Valley be sufficient to warrant a revision if it showed a similar shift toward newer vehicles in the existing Sierra/Dowling analysis? And if so, how will this be accomplished? The District suggests the possibility of an age correction factor to address the fact that the EMFAC model emission factors used by URBEMIS cannot easily be modified to account for a revised age distribution. Who would develop this age correction factor and how would it be developed?

RESPONSE: The District did not act on the survey data because we are not yet convinced that it is more accurate than the information currently used in URBEMIS, which is an age distribution from EMFAC2002 (See September 1, 2005 Response to Comments #121 through #153). As pointed out in your previous comment letter, providing a project-specific fleet-mix age for each land use type would not be easy and would not be possible to automate in the current models used to quantify project emissions. We are not sure if the survey data described is adequate for this purpose. Since Sierra previously stated that it wants any changes vetted through a public process, the District will first pass this information to the URBEMIS Working Group for assessment. If consensus is reached that a major overhaul to URBEMIS is needed to account for fleet age differences, then the District will work to raise the necessary resources to develop the model. The new model would need to be submitted to EPA for approval. The fleet age distribution currently in use is adequate for the ISR program until such a time as a model capable of using this information becomes available.

29. COMMENT: Rule 9510 Consistency with SIP Emissions Inventory Has Not Been Demonstrated We continue to disagree with the District's assertion that the URBEMIS model-based approach proposed to calculate project travel and emission impacts is consistent with the Statewide Implementation Plan (SIP) inventory methodology. This SIP emissions inventory and its underlying methodology were used to establish the NOx and PM10 emission reductions targeted by the ISR rules. Thus, it is critically important to ensure that new project impacts determined under the ISR rules are calculated in a manner consistent with the SIP targets to ensure no over- or under-compliance.

Our disagreement centers on the inconsistency between URBEMIS and regional travel demand models (TDMs) in calculating new or net added vehicle miles traveled (VMT) and vehicle trips. The TDM models are used to calculate regional travel impacts (i.e., VMT and trips) within the SIP inventory. The fundamental difference between TDMs and URBEMIS is that TDMs robustly account for the interaction effects[1] between multiple land uses; URBEMIS does not.

1 Interaction effects refer to the fact that when considered together, each individual land use (or project) "competes" with others for vehicle trips. Where these land uses are located within a metropolitan area or county and how well the regional roadway network provides access to each land use affects the number of trips taken and their length (and thus VMT). For example, locating a new shopping center near an existing

If travel activity (VMT and trips) were totaled across all the URBEMIS-based individual ISR project applications, we believe they would overstate the net travel impacts determined when jointly simulating the same new projects using a TDM. This conclusion is based on a side-by-side comparison of impacts of a hypothetical but typical new residential project performed by Sierra/Dowling using URBEMIS and the Fresno County TDM. Further, we believe this conclusion remains valid even after correcting existing bias in URBEMIS default assumptions. This is because URBEMIS treats each new project and its interaction with existing land uses and other new projects separately.

We understand and agree with the District that it is not practical to make developers run TDM simulations under each ISR application, and readily acknowledge that TDMs are not without flaws of their own. However, calculations performed within the SIP that identify further emission reductions needed for the San Joaquin Valley to attain federal ambient air quality standards (a portion of which are targeted by the ISR rules) are based on vehicle travel activity forecasts from TDMs.

The District suggests that this fundamental difference between TDMs and URBEMIS is accounted for by applying a 50% discount factor in the NOx and PM10 fee formulas to require mitigation of only half or one direction of two-way trips between a new project and existing land uses. We understand the concept in principle, but strongly believe that by simply slicing URBEMIS impacts in half, SIP consistency has not been demonstrated. We believe the acid test of SIP consistency consists of an analysis that compares summed URBEMIS vs. TDM simulated travel impacts for a package of specific projects that have been developed in recent years. We are not aware that this type of URBEMIS analysis has ever been done and is likely one of the key reasons why ISR rules have never been successfully adopted and implemented on this scale.

RESPONSE: Please see Response to Comment #19 above. The District agrees that the model used for the ISR program should be carefully chosen as to not over- or under-comply with the SIP reduction targets. However, the District maintains that the methodology for implementation does not need to be identical to the SIP methodology to achieve this. The author states that for the Valley, if URBEMIS is compared side by side to a TDM, URBEMIS over-estimates net travel impacts. However, a regional TDM was never meant to be, nor should it be, used to estimate emissions from an individual project. To take a project-level model and try to compare it 'side-by-side' to a regional model is inappropriate and misleading.

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residential area would likely shorten the length of existing shopping trips taken from the residential area (and thus reduce VMT). It may also increase the number of shopping trips from the residential area due to its proximity compared to the location of existing shopping centers.

Stop the Air Board Tax *We'll All Pay!*
Date: November 16, 2005
Signed by
City of Clovis – Mayor Nathan Magsig
San Joaquin Busniess Council – President Ron Addington
Visalia Chamber of Commerce – President and CEO Mike Cully
Kern County Taxpayers Association – Executive Director Michael Turnipseed
Greater Merced Chamber of Commerce – CEO Will Lee

30. **COMMENT:** A broad-based coalition of local chambers of commerce, local government officials, homebuilders, taxpayer organizations, agricultural groups, ethnic and community groups are formally opposing Rules 9510 and 3180 proposed by the San Joaquin Valley Air Pollution Control District (the District). These Rules will collect hundreds of million of dollars by imposing fees on every new home, small and large business, public facilities and other new construction projects within the Central Valley, with questionable air quality benefit.

Indeed, as Rules 9510 and 3180 are currently proposed, the District is proposing to collect more than $670 million in fees over the next five years- taken right out of the regional economy.

RESPONSE: First, the proposed rule does not apply to all new development nor does it impose fees on all new development. For instance, the following projects are exempt from the rule or the fees:

- Projects below the applicable size thresholds in the rule (e.g., 50 residential homes)
- Projects at stationary source businesses already regulated by the District
- New projects and expansions that do not require a new discretionary approval by the local land-use agency
- Projects that employ enough control features to reduce emissions to less than 2 tons per year

The District's most up to date estimate of the offsite mitigation fees is $103 million over the next 3 years. The authors' estimate of $670 million in five years is erroneous. The authors' estimate is based on incorrect use of the fee formulas and emissions estimates and record setting development rates. The District believes that it is not prudent to base revenue estimates on record development rates that would result in SIP commitments that fall short if not realized. Although the authors' estimates are overstated, it should be recognized that solving the Valley's air pollution problems is very costly as can confirmed by industrial sources that have invested billions of dollars on pollution control in the last three decades. The funds will not be taken out of the regional economy. All offsite mitigation fees will be used to purchase emission reductions here and will

result in the funds being reinvested in the Valley. The cost of administering the program is assessed at only four percent of the offsite emission fees.

Finally, the District has thoroughly documented, described and demonstrated that the proposed rules will have a real and substantial beneficial impact on air quality. For more information on the emission reduction analysis or spending plan, please see Staff Report Appendix B: Emissions Reduction Analysis (which used a standard, accepted emission reduction methodology) and Appendix E: Cost Effectiveness Analysis (which thoroughly demonstrates the availability of off-site reductions and a plan for off-site fee use).

31. **COMMENT:** As you are probably aware, the Air District recently released a revised version of these Rules and accompanying documents. In our opinion, the changes have failed to address some of the fundamental concerns of our coalition. Namely, the Rules continue to unfairly target new homeowners and businesses to disproportionately fund air emissions cleanup; the methodology and science remain flawed and they still significantly overestimate emissions and result in inflated fees; the fees still seek to impose enormous and unjustified new costs on businesses, new homeowners, public entities and ultimately all Valley consumers and our economy; and the rules still fail to provide for full accountability.

We all support the goal of cleaner air, but there are better and more effective ways to reduce air pollution in a manner that is balanced and less costly for residents and our economy.

As representatives of the coalition, we feel compelled to share the following key reasons we are respectfully urging you and other Governing Board members to oppose Rules 9510 and 3180 when they come up for a vote on December 15, 2005.

RESPONSE: Please see Response to Comments #32 through #42 below.

32. **COMMENT:** ISSUE #1 – LACK OF FAIRNESS, EFFECTIVENESS OR EFFICIENCY
Indirect source rules place a disproportionate burden on new housing, new businesses and new public facilities to pay for a regional problem that is the responsibility of ALL residents. Indirect source rules are just that – *indirect, unproven* and *inefficient* ways to go about calculating and mitigating air quality emissions. For this reason, no other air district in the nation has adopted this type of indirect source rule. The District should be pursuing more balanced solutions that equally apply to all residents and rules that more directly go after

the true source of emission – namely tail pipe emissions and the dirtiest pollution sources like diesel.

RESPONSE: The authors claim that new homeowners and businesses are being singled out unfairly for controls by this rule. This rule would be only one of many measures that the District has implemented and proposes to implement to control emissions from nearly every possible source category. The District has produced two comprehensive plans, one for ozone and one for PM10, that analyze current and future emissions, and lay out a strategy for emission reductions by a variety of controls and actions. For example, the ISR program is one of more than 20 rules identified in the 2004 Extreme Ozone Attainment Demonstration Plan.

The authors indicate that the ISR program attempts to 'burden' new development to pay for a regional problem. The ISR program only assesses and places requirements on the fair share of the emissions from new development to solve regional ozone and PM10 problems. Each project that would go through the ISR program would be responsible *only* for their own emissions.

In addition, the District has successfully and aggressively regulated existing sources of air pollution. Existing homeowners have contributed in the form of DMV surcharges to the tune $7 per year per vehicle, compliance with fireplace regulations, low-VOC architectural coatings, and smog check programs. New stationary sources must employ Best Available Control Technology and mitigate their new emissions with offsets.

33. COMMENT: ISSUE #2 – THE COST OF THE PROPOSED RULES
Two years into the rule-making process, the District still has failed to provide the public with a comprehensive estimate of the cost of the proposed Rules. Specifically, the socioeconomic analysis fails to address the cumulative impact on housing costs, on business costs, and on economic growth and job creating. The analysis discusses impact on only select segments of the business community, ignoring the full economic impacts of the rule. Our coalition has reviewed what information is available in the District's socioeconomic analysis and we were able to determine that the District will collect as much as $670 million in fees over the next five years.

RESPONSE: Concerning the adequacy of the District's analysis of economic impacts, please refer to Response to Comment #24 above. Concerning the '$670 million' in purported fees, please refer to Response to Comments #30 and #34.

34. COMMENT: Housing:

The District's analysis shows the fees will average more than $1,700 on every home by 2008. Cumulatively, we estimated that the cost on all new housing projects in the eight county region will exceed $225 million over the next 5 years, assuming the current pace of housing permits. That's why the State Department of Housing and Community Development warned that these Rules will negatively impact housing affordability in our region.

RESPONSE: The author has misstated the facts provided in the District's analysis and in the Socioeconomic Analysis. The fee estimates of $1,700 per home and the various numbers sited for industrial and commercial projects represent maximum worst-case fees that may apply if the developers choose to employ no on-site controls. Even so, this amount was found to not have a significant impact on the housing market in the socioeconomic impact analysis. If the high rates of development continue, the air impacts from housing will also be greater than predicted, and so those funds will be needed to offset some of that increase. The District believes that nearly all projects will be able to reduce their fees with on-site-measures since local land use agencies currently require some of the measures and many developers incorporate them as standard practice. The District has published an extensive list of control measures that would reduce the applicable fees. The authors' estimate assumes that all homes and industrial and projects will be built with no control features and is not realistic. In addition, the authors apply the worst-case fee to a higher, possibly unsustainable, rate of housing construction. The author then used this inflated fee amount and based the $670 million on a rough assumption of the ratio between housing and commercial/industrial development. The District finds this methodology of fee estimation to be inappropriate and inflated.

The District hired an independent consultant to perform a comprehensive socioeconomic analysis that assesses the economic impact of the proposed rule including any significant impact on housing affordability. This report concluded that rule would have a negligible impact on housing affordability.

35. COMMENT: New Business Developments:

The District's own assessment estimates the level of likely fees on selected properties to be significant. By 2008 it will cost $397,483 in new fees to build a local community shopping center and $131,000 in new fees to build a neighborhood shopping center. These developments are typically home to mom and pop businesses, restaurants and small retail shops and these fees will be directly passed along to these small business owners (and ultimately their consumers and employees). The District also reports that as much as 2/3 of the total fees they plan to collect will come from non-residential projects. Since the District's figures show that the total fees on housing may exceed $225 million, it

is conceivable that the cost to businesses and non-residential developments will exceed $400 million.

RESPONSE: The fees are based on emissions generated by each project. If a commercial development generated emissions that resulted in a fee of $397,483, it would be a very large development or one composed of many small retail establishments. If it were comprised of many small businesses, each one would be responsible for a fair share of the impact and the fee.

The author falsely states that, "the District's figures show …fees on housing may exceed $225 million." The District's figures ***do not*** show that housing fees will be that high. See Response to Comment #34 above, which illustrates how the authors distorted facts to generate an inflated number. In fact, the District's analysis shows that the District may receive up to $103 million from *all* types of development subject to the rule between 2006 and 2008. The 2/3 ratio cited by the author was provided by the District as a rough estimate arrived at by subtracting residential development emissions from all development related emissions. The District used the emission reduction analysis (Appendix B) for fee income analysis since the emissions growth data from the state is well accepted for this purpose. See also Response to Comment #30 and #34.

36. COMMENT: Public Facilities:

The Rules also apply to public and government facilities such as new schools, transit projects, government office buildings, fire houses, police stations and more – driving up the cost of public works projects and ultimately further burdening taxpayers with higher costs. The District's analysis is silent on these costs and their impact on local finances and fees.

RESPONSE: The District has drafted the rule to fairly allocate emissions among all indirect sources. Public uses are a substantial part of the growth in emissions that if not addressed here, would need to be addressed through other means. We agree that the cost of achieving air quality mandates could increase the cost of these facilities; however, we would expect most transit projects, fire houses, and police stations to be exempt since they would produce emissions below the two ton per year level. In addition, schools and government offices are well suited in many cases to incorporate features that enhance walking, bicycling and transit use and use low emission vehicles and equipment that could reduce the fees, possibly to zero.

37. COMMENT: ISSUE #3 – FLAWED SCIENCE

Members of our coalition and others have repeatedly demonstrated that the methodology and modeling that the District staff is using to calculate indirect sources of emissions – and resulting fees and mitigations – are fundamentally

flawed. These flaws result in grossly inflated fees and mitigation requirements. For instance, the URBEMIS model being used by the District (a computer program used to estimated emissions associated with land development projects), overstates vehicle emissions by over 70% (see public comments filed Sierra Research, July 22, 2005). No other air district in the nation uses URBEMIS to determine fees for vehicle emissions because, as the District's modeling consultant said, it's a "sketch planning" tool, not an accurate gauge of the specific emissions resulting from an individual project.

RESPONSE: In context, the term sketch-planning tool did not imply that it is not an accurate gauge of specific emissions resulting from an individual project. In fact, URBEMIS is a proven statewide model used by other air districts, including South Coast and Sacramento Metro Air Districts, in assessing emissions from project-level developments. URBEMIS is commonly used for CEQA analysis, and is also used by other air districts to determine off-site mitigation fees. In addition, the Development Agreements entered into by the District and applicants relied on URBEMIS for emissions estimates. See Staff Report pages 19 through 22 for a detailed discussion on why URBEMIS is the best model for the purposes of the rule. See also Response to Comment #19 above.

The CBIA and its consultant, Sierra Research, have provided comments (See September 1, 2005 Comments #123 through #162 and above comments #18 through #29) about the adequacy or implied lack thereof of the URBEMIS model. However, the District has shown that the 'flaws' stated by the author are not valid.

For example, the authors assert that the model overstates vehicle emissions by over 70%. The comments received by the District compared the URBEMIS model, which counts both ends of trips, to a regional impact model (admittedly inappropriate for project-level analysis- See Comment #19 above) that only accounts for one end of trips. The URBEMIS program does not overstate emissions, as asserted by the author, but accounts for emissions differently than a regional model. It should also be understood how the fee formulas work. Please see Figure 3 and 4 in Appendix B- Emission Reduction Analysis, which clearly show that half of the estimated baseline emissions are not assessed fees.

URBEMIS reflects the state of art in quantifying emissions from development projects. In fact, developers and local land use agencies routinely use URBEMIS to quantify project impacts during the CEQA process. The proposed rule allows for the use of other models that can better quantify emissions from various types of projects. The accuracy of URBEMIS will be further refined through the use of project-specific information in lieu of the otherwise applicable defaults. The authors' claim may have merit if the District rule only allowed for the use of URBEMIS defaults and disallowed the use of project-specific information such as proper traffic counts and vehicle mix. This is not case.

The District is part of a statewide working group that will continually work on refining and enhancing the accuracy of the URBEMIS model.

38. COMMENT: ISSUE #4 – DISTRICT'S OWN DOCUMENTS DEMONSTRATE THAT FEES CANNOT BE AVOIDED THROUGH ON-SITE MITIGATION.

District staff has continually and erroneously stated that if sponsors of new development satisfy the District's list of on-site mitigation measures, they won't have to pay any fees. According to the Air District's own documents and comments by their own staff, this is simply not true.

Even the District's newly revised staff report demonstrates that new homebuilders and businesses likely cannot completely mitigate indirect source emissions on-site (see Draft staff report page 15, 11/17/05). Perhaps this is why, at a recent meeting before the Bakersfield Chamber of Commerce, District Deputy Executive Officer Seyed Sadredin admitted most projects will not be able to mitigate their estimated air impact on site and will likely have to pay all or most of the fees.

Neither the text of the Rules nor the staff report provide useful guidance on how doing one or all of the proposed on-site mitigations will score against the proposed fees and it has provided no detail about the air quality benefits of each of the proposed mitigation measures. Accordingly, applicants have no way of determining how much on-site mitigation will reduce emissions or how it will reduce the fee they're obligated to pay.

Second, the District's proposed on-site mitigation checklist relies heavily on the existence of mass transit and other forms of transportation that don't exist to achieve emission reductions. Further, since there is no plan or realistic prospect of these necessary transportation projects being built in the near future, it is impossible for sponsors of development to comply with these types of on-site mitigations to avoid fees.

RESPONSE: The authors' comments are incorrect. The District has *not* stated that simply enacting the measures on the on-site list would result in no fees. The District has stated, and has conducted internal analysis that verifies, that it is possible to incorporate enough measures to result in no fees. The page referenced to from Staff Report *does not* assert or state that homebuilders and businesses cannot completely mitigate emissions on-site. The Staff Report does demonstrate how a certain percentage of on-site reduction achieves a larger percentage of fee reduction. District staff is unsure how the author misinterpreted the Staff Report, as the text states, "… the "bigger bang for the buck" is achieved with as much on-site mitigation as possible…..See Table 1 for ***examples*** (emphasis added) of on-site emission reductions and the associated off-site fee reduction".

Concerning guidance on how the measures "score" against the fees, and the air quality benefit associated with the measures, the authors should read page 11 of the Staff Report, which states,

> *The measures listed in the checklist have a known quantification methodology in URBEMIS 8.7. The methodologies can be found in the URBEMIS User's Guide, available at South Coast AQMD's website http://www.aqmd.gov/cega/urbemis.html.*

URBEMIS is a free, easy to use program that can be downloaded and used by the public, project applicants, public agency staff, and anyone else. See also September 1, 2005 Response to Comments #7 and #9. Applicants can easily see on their own how incorporation of measures reduces emissions through using the model (most simple projects take less than ½ hour), and can see how that reduces the fees by running the numbers through the fee formulas.

Finally, the checklist does not 'rely' on mass transit and other transportation for emission reductions, but provides a venue to credit emission reductions from those items. Project applicants are not required to 'comply' with the list, but fill in which measures apply to their project, and which measures do not.

The fees can be reduced significantly by employing the reasonable number of measures suggested by the District. We agree that it will be difficult to total eliminate the fees initially with the type of development that has historically occurred in the Valley.

On how to 'score' the emission reduction from the measures suggested by the District, all measures in the on-site lists have a quantification methodology in the URBEMIS model. These methodologies may be read in the URBEMIS User's Guide. The measures do not have a straight "credit" associated with implementation, but a calculated reduction based on various parameters, which may include interaction with other selected measures, amount input, and other parameters. The District will provide a great deal of assistance to the applicants to properly quantify the emissions and the applicable credits for measures employed.

ISSUE 5 – DISTRICT HAS FAILED TO ADDRESS SOME BASIC – BUT IMPORTANT – POLICY QUESTIONS RAISED THROUGHOUT THIS PROCESS

The following represent just a few of the many very important policy concerns that the Air District has failed to address or respond to, despites these questions being raised for many months. Governing Board members should take great pause before voting on Rules without getting answers to these very serious questions and concerns.

39. COMMENT: District has not quantified fees for the full 5-year rule period: The socio-economic and cost/effectiveness analyses provide an incomplete

accounting of fees that the District expects to assess over the 5-year rule period. No information has been provided in either appendix on the cost to public facilities including schools, parks, and roads. No information has been provided in any appendix on the overall economic impact to the Central Valley.

RESPONSE: The fee schedule holds fees past 2008 at the 2008 level. The socioeconomic impact analysis and cost-effectiveness analysis only assess 2006-2008 because those are the amounts being proposed in the rule. If the rule is amended to change the fee amounts by a significant amount, it would result in the preparation of new analyses. If fees are held to the 2008 level, socio impacts would be the same as the 2008 level. For cost effectiveness, the District is confident that targets are feasible through 2008, but past 2008 would be too speculative.

The District disagrees that overall impact on the economy in the Central Valley is not adequately addressed. Since the impact on the development industry was not significant and fees will be recirculated into the regional economy, it is logical to conclude that the rule would not have a significant adverse impact on the regional economy. See also Response to Comment #24 above.

See Response to Comment #36 regarding public facilities.

40. COMMENT: Incomplete Spending Plan: Although Appendix E offers a spending program for the fees collected by Rule 9510, it falls short of what is acceptable. First, it covers only three of the five years of the rule period. Second, the revenue projects cover roughly one-sixth of the Rule's potential revenue: $102 million vs. the potential $670 million in total fees that could be collected.

RESPONSE: As stated above, the first three years have enough information to be adequately assessed.. Second, the $670 million stated by the authors is based on incorrect information and misinterpretations of rule requirements (see above Response to Comments #30 and #34). District analysis, using factual data, shows that the District may receive up to $103 million between 2005 and 2008 based on the availability of the fee deferral option and historic development rates. The cost of reductions is more uncertain farther into the future. The District will reassess the cost of reductions prior to 2009 so that changes in regulations and the availability of new technologies can be taken into account.

The District has proposed a detailed plan in the staff report that will be considered by the Board at the December hearing. Additionally, as a part of the District's annual budget process, the plan will be reviewed and amended as necessary. The District will also provide routine reports on the quantity fees collected, projects funded, and emission reductions achieved per Rule 9510 Section 10.4.

41. COMMENT: Unresolved fee estimation issues: As noted above, the URBEMIS model overstates project emissions by over 70%. The District has not committed to fix URBEMIS prior to Rule adoption and implementation. Unless resolved, Governing Board adoption will result in projects paying fees that are exaggerated by as much or more than 70% due to improper default values that do not reflect actual conditions in the Central Valley.

RESPONSE: As stated previously (Response to Comment #19), the "70%" overestimation is simply not valid. Previous comments have pointed out refinements that should occur to some URBEMIS default values, such as the silt loading factor, and the District has committed to providing guidance prior to implementation and to update URBEMIS as soon as possible with the revised factors (see Response to Comments #19-22, #27-29, #37, and Staff Report pages 21-22). However, the statement that the model grossly overstates vehicle emissions is not valid.

42. COMMENT: Unresolved CEQA conflicts: CEQA already requires mitigation of air quality impacts associated with new development, yet the District states that Rule 9510 is not duplicative and is completely independent of the CEQA process. However, the District's response to EPA concerns is that it is counting on local agency CEQA requirements to make on-site mitigation measures enforceable. The District has not explained how its Rule will interact with local agency CEQA actions to achieve this result.

RESPONSE: Currently, for measures that are required by a local agency, that agency includes them in CEQA documentation and is required to enforce those measures. The District recognizes this enforcement mechanism through CEQA for those measures that are required by the local agency. Therefore, although the project applicant is taking credit for emission reductions from measures required by lead agencies, the District will not have to enforce those measures independently. For measures that are not required by the local agency, the District will be responsible for enforcement. There are no new requirements on local agencies, and no additional 'interaction' is required by the rules.

43. COMMENT: In closing, members of our coalition agree that improving the region's air quality is an important goal and one that demands that everyone in the Central Valley play a role. Accordingly, the District has a duty to convince the public of the value of its new policy and to win their trust in carrying it out. Regrettably, the District has failed to demonstrate the value or benefit of the proposed Rules.

Members of our coalition stand ready to work with the District on an alternative to proposed Rules 9510 and 3180 and towards achieving a more equitable, efficient and cost effective plan to reduce emissions.

In the meantime, we urge you to reject Rules 9510 and 3180 when they're brought before a vote of the Governing Board on December 15, 2005.

RESPONSE: Comment Noted.

SUMMARY OF COMMENTS AND RESPONSES ON THE SEPTEMBER DRAFT RULE SEPTEMBER 1, 2005

EPA:
Date: September 20, 2005

1. **COMMENT:** We are providing comments based on our preliminary review of the draft rule identified above. In general, we are very supportive of the District's effort to reduce emissions from new development projects and we recognize that this effort raises unique challenges. Please direct any questions about our comments to me at (415) 947-4115 or to Lily Wong at (415) 947-4114.

RESPONSE: Comment Noted.

2. **COMMENT:** 1. Program Evaluations and the EIP
This rule relies on market-based strategies to reduce emissions and, as a result, is subject to national guidance entitled, "Improving Air Quality with Economic Incentive Programs" (EIP), EPA-452/R-01-001, January 2001. Specifically, the DESIGN program has elements similar to Clean Air Investment Funds as described in chapter 9 of the guidance. As a result, the District's staff report should demonstrate that the program is consistent with the EIP guidance including, for example, provisions regarding environmental benefit, consistency with attainment/progress plans and automatic suspensions. Generally, we do not believe these demonstrations will be difficult to make. However, we believe the District should expand the scope of the annual program evaluation requirement (rule provision 10.4) to address elements identified in the EIP (sections 5.3(b) and (c)), including evaluation of the overall effects of the program, whether the Air Impact Mitigation Fees are appropriate based on the cost of reductions, and whether the program is achieving the projected emission reductions. The rule should also describe the procedures and criteria for the evaluations. Lastly, since the District will be responsible for obtaining emission reductions for off-site mitigation projects, the SIP submittal should include the District's commitment to rectify in a timely manner any shortfall in emission reductions.

RESPONSE: The District disagrees that the rule is a market based strategy subject to EIP guidance. Indirect sources are not seeking to use incentive funding as a substitute for controlling emissions directly. Although it is not an EIP, the District intends to demonstrate that the program will provide environmental benefit and is consistent with all plans and rules. The appropriate

mechanism to ensure program performance is with annual reporting and corrective action to make up any shortfall. This can be accomplished by focusing funding on more cost-effective projects and would not require any special rule provision to accomplish. In the event that the rule did not achieve a milestone and altering the project mix was not successful, contingency measures are in place in the SIP to make up the shortfall while revisions to the rule are made or new rule(s) are adopted to correct the situation.

3. **COMMENT:** 2. Mitigation
The District should ensure that on-site mitigation of emissions and off-site emission reductions are enforceable.

RESPONSE: The on-site measures are voluntarily chosen by the developer and, when included as a mitigation measure in the local agency environmental document, are enforceable under the California Environmental Quality Act (CEQA). These types of measures have a relatively large amount of uncertainty, but are highly desirable due to their ability to permanently change trip generation and miles traveled. Therefore the District proposes to account for emission reductions accomplished onsite under Voluntary and Emerging Measures guidance. Projects funded with off-site fees will be under contract with the District enforceable under contract law.

4. **COMMENT:** 3. Director's Discretion
The rule (provisions 3.2, 3.5, 5.3) allows the use of an "APCO-approved model" to calculate emissions and emission reductions from development projects. To avoid inappropriate director's discretion, the rule should identify, by name and version, all models that may be used under this rule, or require that the model or model revisions be approved by the District and EPA.

RESPONSE: The rule has been revised to reflect that the District and EPA will approve models and model revisions used under the rule. Since all emission reduction calculations are accomplished using emission factors approved by the ARB and EPA and are consistent with the emission inventory factors, this should allow for quick implementation of model improvements that will be developed over time.

5. **COMMENT:** 4. Surplus
The rule should include provisions and mechanisms to ensure that emission reductions from on-site and off-site mitigation projects will be surplus to the requirements of the plan (e.g., reductions required by Rule 8061), and are not otherwise relied upon in the plan (e.g., part of the planning or growth assumptions in the plan). At a minimum, the rule should define "surplus" to include consideration of rule requirements and planning assumptions, and include provisions to prevent the double counting of emission reductions. We note, for example, that the May 19, 2005 PM-10 Plan (p. 4-45) lists a few specific

activities expected to provide emission reductions for this rule. However, the URBEMIS model allows credit for on-site mitigation measures not included on this list such as fewer wood burning stoves, energy efficiency projects and off-road maintenance equipment. While the Plan may include assumptions regarding these emissions, the District should ensure that the rule achieves the emissions reductions that the Plan predicts for the rule and that mitigation measures do not result in double counting of emission reductions assumed elsewhere in the plan.

RESPONSE: The District will demonstrate that all offsite emission reduction projects submitted for credit are surplus in the documentation for each program developed to utilize the off-site funds. The District's Heavy Duty Engine Incentive Program is the prototype for how it will manage funding received from Rule 9510. This program has stringent criteria for determining if reductions remain surplus for the wide variety of projects. The District works closely with ARB in developing guidelines such as those adopted for the Carl Moyer Program. These guidelines pay particular attention to the issue of surplus reductions. New project types will undergo a similar rigorous process.

ARB: No comment received.

California State Department of Transportation:
Date: September 8, 2005

6. **COMMENT:** The purpose of this letter is to comment on the proposed San Joaquin Valley Unified Air Pollution Control District (District) Rule 9510 (Decreasing Emissions' Significant Impact from Growth and New Development) and the associated fees as stated in proposed rule 3180 (Administrative Fees for Air Impact Assessment Applications). When applied to the California Department of Transportation's (Department) construction sites, these rules attempt to regulate vehicular (mobile) emissions regardless of the District's lack of specific authority to regulate these emissions.

Both statutory and case law clearly establishes that "local and regional authorities have the primary responsibility for control of air pollution other than vehicular sources." (See *California Health and Safety Code* sections 39002, 40000, 43000 and 43013). The responsibility for regulating vehicle emissions belongs to the California Air Resources Board. The proposed District rules attempt to regulate mobile emissions from vehicles without statutory authority and therefore, it is our position that the proposed rules do not apply to vehicular emissions on Caltrans projects.

RESPONSE: Rule 9510 does not attempt to regulate emissions from vehicles. The rule would regulate the emissions resulting from the act of construction and

the emissions resulting from the act of operation. The distinction lies in the following:

- The rule does not set emission reduction requirements for individual engines or pieces of equipment
- The rule does not require retrofits, the use or purchase of certain pieces of equipment or prescribe any specific use of emission reduction technology
- The rule does not limit emissions through hours of operation or prescribe certain activities that reduce emissions
- The rule does not require emission reductions to be achieved through the equipment or engines used.

Simply, an amount of reduction is required by the rule, which can be achieved through any on-site or off-site means that are quantifiable and meet the requirements of the rule. The rule does not set a fleet average, regulate engines or vehicles or otherwise delve into the realm of mobile emissions, which the District does not have authority to regulate. The District does, however, have the authority to regulate indirect sources per Health and Safety Code, Section 40716:

> *"(a) district may adopt and implement regulations to … reduce or mitigate emissions from indirect and areawide sources of air pollution."*

The District has the authority to control indirect sources, defined in the Clean Air Act (CAA §110(a)(5)(C)) as, "… a facility, building, structure, installation, real property, road, or highway which attracts, or may attract, mobile sources of pollution"(emphasis added). This authority comes from the CAA §110(a)(5)(A)(i):

> *Any State may include in a State implementation plan … any indirect source review program.*

The Indirect Source Review Program that the District is proposing would review the emissions from that indirect source (the facility, building , installation, real property, *road*, etc.) that occur from the installation of that source (i.e. construction) and the operation of that source (i.e. area and mobile). For transportation projects, essentially road construction, the District would review only the construction emissions associated with that indirect source.

It is the District's position that the proposed rule is within the authority granted to the District by the federal Clean Air Act and the California Health and Safety Code.

California State Department of Housing and Community Development
Date: September 15, 2005

The Department of Housing and Community Development (Department) has reviewed the Draft Rules as revised September 1, 2005 and continues to have significant concerns about their impact on housing development and costs in the San Joaquin Valley. Many of the concerns expressed in the Department's July 25, 2005 letter have not been addressed by subsequent revisions or by the District's responses to our comments, and are reiterated below.

7. **COMMENT:** 1. The on-site mitigation measures for residential development proposed by the Draft Rule 9510 duplicate the type of mitigation measures already required by the environmental review and mitigation process pursuant to CEQA or the local land-use permitting process. For example, requirements for transit measures, tree canopies, bike trails, etc., are already imposed by local governments during the existing local permitting process. This duplication is of particular concern if the projects cannot receive credit for such measures already incorporated in the project, or if the duplication were to result in most projects being charged fees for off-site mitigation programs. It is not evident that imposing the same type of mitigation requirements as those already imposed by State law (or sometimes federal as well) is necessary for the District to execute its powers as required by Health and Safety Code Section 70727 (b)(5).

Recommendation: Clarify that projects will receive mitigation credits for on-site mitigation measures approved or required by the local government's permitting process.

RESPONSE: It is the District's intent that all quantifiable on-site measures that reduce a project's emissions be given credit in the ISR program. The District does not require the applicant to implement any of the measure listed, but requires the applicant to identify which measures will and won't be implemented. The applicant is required to identify measures that are a requirement of another agency so that the District can identify which selected measures will need District enforcement, and which measures will be enforced by another public agency. The measures listed in Appendix C have a known quantification within the URBEMIS model. Measures selected will be credited to the project. The District will amend the rule language and staff report to reflect this.

8. **COMMENT:** 2. Draft Rule 9510 will lengthen and complicate permit-processing times for new homes in a manner inconsistent with the Permit Streamlining Act, which is applicable to all public agencies (*Chapter 4.5 of the Government Code, commencing with Section 65920)*. Draft Rule 9510 does not meet the consistency standard of Health and Safety Code Section 40727 (b)(4)).

- Section 8.1 of Draft Rule 9510 has been revised to require the District to determine the completeness of Air Impact Assessment (AIA) applications in ten days instead of thirty. It is unclear whether this changes will result in a practical benefit, however, as the Draft Rule does not include a mechanism for facilitating concurrent review between the District and local planning agencies. Sections 5.0 and 8.2 suggest the District is cognizant of the need to coordinate with local agencies, but does not specify the timing and nature of the coordination. Without concurrent review, developers who are required to, or elect to, alter a project may be required to resubmit plans to the local planning agency for additional discretionary review. Such outcomes would have additional and redundant cost implications for permit processing. Further, projects which would otherwise be subject to ministerial permit processing only, should not be subjected to discretionary review because of the Draft Rules.

- Draft rule 9510, Section 8.8, proposes the District should have 90 days to take final action on an AIA application. Consequently, absent a concurrent review, process time could now take an additional 90 days. In some cases, Draft Rule 9510 thus has the potential to double existing processing times.

Recommendation: Revise draft Rule to include a mechanism or process for concurrent review by the District and local planning agencies to avoid impacts on local government. The Rule should not directly, or indirectly, prompt local governments to assess yet additional fees for responsibilities which may fall on them in implementing the District's Rule.

RESPONSE: Draft Rule language will be revised to make application submittal for ISR concurrent with local agency processes. Specifically, applications must not be submitted after application for a final *discretionary* permit in the San Joaquin Valley Air Basin, and may be submitted prior to that time. The rule will not place requirements upon the public agency for review or implementation of the ISR process. The public agency review (§ 8.2) has been revised to a voluntary review. The District will be coordinating review with the public agency through:

1. Making the ISR process concurrent with or prior to the public agency process;
2. Forwarding a copy of the AIA application (upon determination of completeness), a copy of the AIA approval package (upon approval), and a letter of Final Compliance to the public agency for voluntary review and commenting;
3. Communicating with the public agency when necessary during the application review process; and
4. Providing a letter of project status to the public agency upon request.

It should be noted that this rule will not apply to ministerial projects, nor will it prompt ministerial projects into becoming discretionary projects. That determination is made by the local land use authority.

9. **COMMENT:** 3. There is insufficient information or clarity in the Draft Rules regarding not only permit processing coordination, but also quantification and cost of mitigation measures. According to Health and Safety Code Section 40727 (b)(3), a rule or regulation adopted by a District board should be "…easily understood by the persons directly affected by it." Neither the Draft Rules, the Appendices, nor the Draft Staff Report describes the methodology the District will use to determine the number or value of mitigation credits to be associated with the various mitigation measures. Other aspects of the Draft Rules warranting clarification include, but are not limited to: ….*(District - see Comments 10 through 13 below)*

Recommendation: Revise Draft Rule 9510 to include a detailed description and analysis of the methodology the District will use to determine the number or value of mitigation credits to be associated with various mitigation measures. Clarify the items noted above in Draft Rules 9510 and 3180.

RESPONSE: The District will clarify the staff report to address how emission reductions from measures will be assessed. All measures within Appendix C have a quantification methodology in the URBEMIS model. These methodologies may be read in the URBEMIS User's Guide, available at South Coast Air Quality Management District's website http://www.aqmd.gov/ceqa/urbemis.html, and will be made available at the District's website. The measures do not have a straight "credit" associated with implementation, but a calculated reduction based on various parameters, which may include interaction with other selected measures, amount input, and other parameters.

10. **COMMENT:** Draft Rule 9510, Section 5.5 – Mitigation and Monitoring Report Program: The Draft Rule should specify if the applicant or the District is responsible for preparing this document.

RESPONSE: The rule language will be revised to reflect the following: The applicant is responsible for preparing a proposed document. The District will provide the format and recommended keys for the document. The District will then work with the applicant to finalize the document prior to approval. It should be noted that this will only apply to measures selected by the applicant that do not have another enforcement mechanism, such as being a requirement by another public agency.

11. **COMMENT:** Draft Rule 9510, Section 8.5 – Air Impact Mitigation Fee Estimate Acceptance: What amount of time does the developer have to respond to the estimate provided by the District?

RESPONSE: The draft Rule will be revised to reflect the following Unless the applicant has proposed a Fee Deferral Schedule (FDS) prior to AIA approval, the applicant must pay the fee within 60 days, or may propose a FDS within 15 days of receiving the fee invoice. If the applicant proposes a FDS within the allowed timeframe, the District then has up to 15 days to finalize the FDS with the applicant.

12. **COMMENT:** Draft Rule 9510, Section 10.2.3 – Administration of the Mitigation Funds: what, if any, limits are there on the duration of the contract between the developer and the District?

RESPONSE: A distinction must be drawn between the ISR applicant, and an applicant for the funds. Section 10.2.3 discusses the process between the District and the applicant for funds. The duration of the contract will vary depending on the project. Some contracts will be completed upon installation, while others may require reporting for 5 years. For example, a road-paving project would have a contract that is completed upon installation, whereas an engine contract typically contains a 5-year reporting requirement. The staff report will be amended to include this information.

13. **COMMENT:** Draft Rule 3180, Section 4.2 – Application Processing Time Log: How long does the District have to respond to a developer's request for a copy of the Log?

RESPONSE: The District uses an automated Labor Information System (LIS) to track project time by all staff working on a project. This allows the District to easily prepare the time log within a short timeframe. The District standard for this type of request is 10 days. The District will amend Draft Rule 3180, Section 4.2 to state the District has up to 10 days to provide the information.

14. **COMMENT:** 4. The direct and indirect costs imposed by the Draft Rule on the residential development process will result increased housing costs. The rationale for these increased costs as required by the Health and Safety Code Section 40728.5 are not adequately identified nor justified by the complete analysis.

The Department commends the District's decision to reinstate the exemption for housing projects directly assisted by federal, State, or local housing funds. Assisted projects, however, only account for a small percentage of the San Joaquin Valley's workforce housing stock. The majority of new lower- and moderate-income residents will occupy market-rate units. Increases in

construction costs resulting from the Draft Rules will ultimately be passed on to these residents in the form of higher rents and home prices.

Yet, as indicated below, the Executive Summary of the socioeconomic assessment the District prepared pursuant to the Health and Safety Code Section 40728.5 concludes that increases in the construction and housing costs are irrelevant because lower-income residents are already overpaying for housing and are thus dependent on public subsidies:

The analysis demonstrates that, even before the imposition of an air quality fee(s), most low-income (and) households in the Central Valley are priced out of newly constructed multifamily unit market, the rents for which need to be at levels that account for the price of land, development cost, developer fees, and an adequate level of profit, among other things. The analysis discusses how public subsidies can assist in enhancing the financial feasibility of a real estate project in which a certain portion of units are set-aside as below-market rental units (San Joaquin Valley Unified Air Pollution Control District. Socioeconomic Analysis Proposed Indirect Source Rule: Draft Rules 9510 and 3180. 24 August 2005.p.1.)

The demand for assisted housing far exceeds available resources of all levels of government. The District should not assume that higher rents and home prices can be solely addressed by government subsidies. Furthermore, higher housing prices are problematic because the affordability gap widens, forcing more San Joaquin Valley residents to overpay for housing and/or live in overcrowded conditions. Additional regulatory barriers that increase the cost of housing supply must be restructured and their benefit should exceed their cost impacts.

The Department also notes that the socioeconomic assessment does not address the impact of the Draft Rules on small business or analyze the availability or cost-effectiveness of alternatives, as required by Health and Safety Code Section 40728.5(b)(1), (b)(3), and (b)(4). For example, Part 6 (p. 26-32) includes generic information about impacts on single-family and multifamily homebuilders, but does not specify impacts on small homebuilders.

Recommendation: Revise the socioeconomic assessment to include: 1) a more thorough analysis of the impact of the Draft Rules on the economy of the San Joaquin Valley, including the number of consumers who will be overpaying for housing; 2) the impact of the Draft Rules on small residential developers; and 3) alternatives to the Draft Rules.

RESPONSE: The Socioeconomic Analysis will be amended to include analysis on the rule's impact on small businesses. In addition, the analysis does not discuss alternatives because there are no identified alternatives to adoption of the ISR rules.

Although the Socioeconomic Analysis does discuss the role of public subsidies, the District's conclusion is not that low-income housing impacts are irrelevant due to public subsidies. The Socioeconomic Analysis discusses public subsidies to show the options and availability of what subsidies exist. The conclusion of the Socioeconomic Analysis is that the impacts on housing costs (both to the developer and the buyer/renter) are less than significant. The District's conclusion is similar to how some pollutant thresholds of significance are set. For example, the District is in non-attainment for ozone and PM10. It could be argued that because the air is bad already, *any* increase is contributing to non-attainment and therefore is significant. However, the District finds it impractical and unwarranted to force every project that emits *any amount* of the applicable pollutants into the 'significant' category. Therefore, the District determines significance for PM10 and ozone precursors against a threshold that aims to truly differentiate between less-than-significant and significant impacts. Similarly, the Socioeconomic Analysis states on page 37:

For the most part, rents that low-income households should pay are substantially below the rents that the typical new multi-family units construction in the region should command, even before the imposition of the air fee.

That is to say, the market is such that low-income households are already priced out of most new dwelling units. Any increase in housing costs, regardless of origin, will exacerbate this disparity. However, the analysis shows that the potential increase in mortgage is, "*a small fraction of the original household income required to finance a new home in the event no air quality fees were in place*," and the potential increase in rents are, "*similarly small*." (p.1)

15. **COMMENT:** 5. Draft Rule 9510 would impose mitigation fees without adequately establishing a nexus. The Draft Staff Report and Summary of Comments and Responses from the June 30, 2005 public workshop do not adequately support the nexus between the expenditure of mitigation fees and the location of indirect sources. For example, while NOx occurs throughout the District, the impact of other pollutants, such as PM10, is more localized.

Recommendation: Clarify the nexus between PM10 and the expenditure of mitigation fees.

RESPONSE: The District has prepared documentation included in the staff report for the rule that provides the information necessary to demonstrate a nexus between project impacts and the off-site fee. See Response to Comment #125 for the findings of the District's legal counsel's analysis of nexus requirements.

16. **COMMENT:** In summary, the Draft Rules do not appear to comply with the "clarity", "consistency," and "nonduplication" requirements set forth in Health and Safety Code Section 40727(b). Than you for the opportunity to submit additional comments. Given the magnitude of the concerns identified in this letter, the Department recommends that the District not adopt Draft Rules 9510 and 3180 as drafted and continue to work with all interested parties on needed revision.

RESPONSE: The District disagrees that Rule 9510 conflicts with H&S 40727(b). The District prepared a consistency analysis that is provided as Appendix G to the Staff Report. The rule is being revised to improve clarity of the requirements and will provide detailed rule implementation guidance prior to implementation and typically uses compliance assistance bulletins when issues arise after implementation. The rule does not duplicate other requirements on indirect and areawide sources. Emissions estimates used in the rule account for existing controls on vehicles and equipment. The rule requires a reduction of a portion of the remaining emissions after control. Because of the Valley's rapid growth, a substantial portion of benefit of the controls is offset; hence the need for additional emission reductions to reach attainment by deadlines mandated for the District's PM10 and ozone plans.

Local Public Agencies:

City of Hanford
Date: September 23, 2005

17. **COMMENT:** I applaud your efforts to continue to evaluate methods to improve the air quality in the valley. However, I would request that the San Joaquin Valley Unified Air Pollution Control District take the time to further study Draft Rule 9510 and Draft Rule 3180.

RESPONSE: This rule has been under development for more than two years. The District has had three rounds of workshops, focus groups, stakeholder meetings and other outreach. We believe that the rule development process has been adequate.

18. **COMMENT:** On behalf of the City of Hanford, I would ask that you slow down the process and identify specific steps and programs that will be implemented to reduce air pollution; include additional input from representative agencies and clearly identify how the funds collected will actually improve air quality in the valley.

RESPONSE: See the Staff Report for more information on how the rule works to reduce emissions through on and off-site measures and how the District will use funds received as a result of Rule 9510 and Rule 3180. In addition,

Appendix E (Cost Effectiveness Analysis for Rule 9510) for details on the exercise that the District has completed to ensure that:

1. The emission reduction projects exist in a quantity to provide the reductions necessary, and
2. Those projects exist at a cost-effectiveness that can achieve the schedule listed in the rule in Section 7.2.1 and 7.2.2.

19. **COMMENT:** The incompatibility of the proposed regulations regarding the CEQA requirements poses additional concerns.

RESPONSE: The District believes that Rule 9510 is fully compatible with CEQA requirements. The rule provides a new opportunity to provide consistent air quality analysis and emission reductions on a Valley-wide basis. See Response to Comments #8.

20. **COMMENT:** Restraint must be used in determining actions that would have a significant impact on our residents, the business community and our local governments. Specifically, there must be a nexus for the fee's charged and the specific identification on how the generated funds would be used to remedy the problem which exists.

RESPONSE: The District has designed the rule to address only a fair share of the impacts caused by new development. We are confident that the rule will mitigate emissions in direct proportion to the impact caused by the project in keeping with nexus standards. The key to meeting the nexus is that impact will be estimated with best available tools and emission reductions obtained to offset the impact will be quantified with best available factors and methods. See also Response to Comment #125.

Council of Fresno County Governments (Fresno COG)
Date: September 9, 2005

At the request of our Transportation Technical Committee (TTC), the Council of Fresno County Government (Fresno COG) is submitting this letter regarding the Air District's DESIGN (Decreasing Emissions' Significant Impact from Growth and New development) program. The most recent draft of the DESIGN program was discussed by Fresno COG staff and TTC members at the September 7, 2005 meeting. Many of our member jurisdictions have significant concerns over the proposed rule and requested that we submit the following comments.

21. **COMMENT:** Inadequate Notice and Review Time
In some cases, Fresno COG and our member agencies received only a one-day notice for the September 1, 2005 workshop. This late notice prevented several agencies from attending on that day. On several calls with the Air District last month, Fresno COG staff indicated the need for improved communication and

coordination. This continues to be a concern, as the current rule development schedule allows only two weeks to review and comment on the draft rule.

RESPONSE: The District has a list serve for the rule that enables all interested parties to receive immediate notice of workshops and document availability. The District accepts comments up to and including the Governing Board hearing, allowing for more than a month of additional review time should it be needed.

22. COMMENT: Transportation Projects Subject to the Rule
The short review time is especially troubling given the recent addition of transportation projects (with construction emissions greater than 2 tons per year) as subject to the DESIGN rule. Fresno COG and our local agencies are unclear how this will impact the project approval process and need additional time and information to assess the impacts.

RESPONSE: The rule does not impact the project approval process since the District has no discretion over those projects. The rule just provides a mechanism to enable the agencies to reduce the impacts of project construction. See also the Staff report.

23 COMMENT: Demonstrate the Air Quality Benefits
Fresno COG requests that the Air District clarify how this rule will improve air quality. Please provide additional analysis of the air quality improvements and examples of how the revenue will be used.

RESPONSE: The Staff Report contains analysis that quantifies the projected air quality benefits of the rule. Additional details regarding the potential projects funded by the rule are included in the revised Appendix E. See also Response to Comment #18 on the use of off-site funds.

24. COMMENT: Improve Response to Comments
As noted by several commenters at the September 1st workshop and by our member agencies at our committee meeting, Fresno COG also requests that the District develop and adequate process to address comments received. The "Response to Comments" distributed at the workshop was organized by category, rather than submitting agency; this made it time-consuming to locate and review specific Reponses. In several cases, our local jurisdictions indicated that comments were not addressed and needed to be given sufficient consideration by Air District staff.

RESPONSE: The District has modified the Response to Comment format to address this concern. The District feels that the current format will allow commenters to find their specific comments and the associated responses.

25. **COMMENT:** Identify Rule Changes
Please provide a document on the Air District website that identifies and tracks changes made from previous drafts of the rule. This has been the practice with other rule modifications and is essential to reviewing and commenting on this document.

RESPONSE: The changes to the draft from this round of comments will be made in strikeout/underline format.

Fresno County, Department of Public Works and Planning
Date: September 15, 2005

26. **COMMENT:** We are concerned with the language of the rules as it relates to transportation projects. Should 2.2 say "two (2.0) tons" **per year** "of NOx and PM10 combined.", based on similar language in 2.3.4 and 4.2

However, looking more closely, these three are *not* identical in that:
- 2.2 says "NOx and PM10 combined"
- 2.3.3 says "NOx and PM10"
- 4.2 says "NOx and PM10 each"

If there is a specific reason for the differences, can you explain?

RESPONSE: Since construction emissions occur during a specific period, the emissions are based on the total during the construction period. For example, if a project emits 3 tons of combined emissions during a six month construction period, that amount is subject to the 20% NOx and 45% PM10 emission reduction requirement. If a project emits the same 3 tons of emissions over two years, the calculation is also based on the entire construction project.

Section 2.2 refers to construction NOx and PM10, which is based off of 2 tons of NOx and PM10 total tons combined. The District will revise the rule language to clarify that construction pollutants are total tons combined, and operational pollutants are tons per year non-combined. Section 2.3.2 will be revised to state "NOx *or* PM10" and be specific to operational emissions.

27. **COMMENT:** Also, please look at 8.8. Under it you have 8.7.3, but should that actually be 8.8.4?

RESPONSE: The section will be renumbered as noted.

Kern County Planning Department
Date: July 22, 2005

The Kern County Planning Department appreciates the opportunity to comment on Draft Rule 9510 and Rule 3180 which are being implemented to assist the District's attainment goals for State and Federal standards for ozone and PM10. The stated purpose of Rule 9510 is to provide a mechanism for development to mitigate construction, direct and indirect emissions from their projects through design features, on-site and off-site measures. Rule 3180 will provide for payment of the District's staff cost to implement the new rule.

As our comments have consistently stated, the DESIGN Rule, while using the language of CEQA (Significant Impact) avoids all relationship to CEQA and simply defers any questions to a later time after Rule Development is complete. The following is a preliminary list of questions, comments and concerns regarding this matter.

28. **COMMENT:** What is the basis for the exemption of projects that have mitigated baseline below two tons per year for each pollutant from the Rule? Is this basis evidence that 10 projects in the same area producing less then two tons per year each are not cumulatively considerable under CEQA?

RESPONSE: The District has made changes to the project submittal timing in the rule to ensure that the air analysis conducted can also be used to support the CEQA process for the local agencies discretionary approval.

The rule is designed to reduce the impact of the project to the extent needed for the District to reach attainment of ozone and PM10 standards. The District calculated the level of reduction needed on a per-project basis that would achieve the emission reduction committed to in the PM10 and ozone attainment plans. The rule sets levels that are in compliance with state law regarding indirect source regulations and are feasible to achieve. Based on the District's analysis, project's with emissions below two tons per year of operational NOx and PM10 were not required to reduce emissions to achieve the emission reduction required by the District's plans for attainment.

29. **COMMENT:** Why are only NOx and PM10 being addressed when CEQA requires all pollutants to be quantified and mitigated to the extent they exceed thresholds?

RESPONSE: The ISR program's primary purpose is to meet attainment plan requirements *not* as a CEQA compliance method; however, we believe that reducing one precursor, NOx, will reduce the cumulative impact on ozone from new development to less than significant levels.

It is not the District's intent to reduce the impacts of all pollutants in the valley through this rule. The rules are the result of the District's PM10 and Ozone Attainment Plans, as they identified the need to reduce directly emitted PM10 and NOx in order to reach the standards on schedule. Sufficient ROG was obtained from other control measures to enable the District to predict attainment without additional ROG control. Therefore, the rule was able to focus on those two pollutants and can make the case that ROG from predicted growth from new development will not impact the attainment strategy.

30. **COMMENT:** The District has an established threshold in the GAMAQI of 10 tons of ROG yet no provision for mitigation in the DESIGN rule. Why?

RESPONSE: See Response to Comment #29 above. The GAMAQI is the District's Guide for Assessing and Mitigating Air Quality Impacts, specifically written to help lead agencies, as identified in CEQA, address CEQA for air quality impacts and may be revised to reflect changes that are appropriate.

31. **COMMENT:** Section 6.2 requires mitigation of only apportion of the project's emissions (1/3 of the project's first-year area source and operational baseline NOx emissions over a period of ten years) and then states that it "represents cumulative emissions…". The use of the term "cumulative" should be deleted and replaced by another term to explain the Districts intention. An interpretation of the phrase "cumulative emissions" in a CEQA document, under current case law interpretation, does not include such a reduction as proposed by the District. This disconnect will lead to confusion and legal challenges of CEQA documents.

RESPONSE: The District believes that the term "cumulative" best describes the emissions being reduced by the rule. The NOx emissions are declining over time, so a project that reduces emissions to the extent described by the fee formula will be mitigating its cumulative impact. See also Response to Comment #28.

32. **COMMENT:** The District is the authority that provides guidance and direction for local government on air assessments for CEQA and has been recognized as such by the Courts. If the District has sufficient basis for establishment of this Rule with reductions in required emissions to be mitigated on " the concept that annual NOx emission from motor vehicles declines 50% over ten years.", then the District should include in this Rule making, clear direction from the Governing Board to amend the GAMAQI, through a Public Hearing process, to formally adopt this approach in Air Quality Assessment methodology for CEQA documents. This process, which would necessarily include the fact basis for the adoption of this standard, would provide clear direction for the connection of this Rule to CEQA and provide support of the Lead Agency in current challenges to Air Assessment methodology in CEQA documents.

RESPONSE: The primary purpose of the rule is to help the District meet its attainment plan commitments. The rule provides for emission reductions in a framework that provides strong assurance that reductions will be real, surplus, quantifiable, and permanent and therefore should strengthen environmental documents that rely on reductions to reduce significant air impacts. The District's GAMAQI is formally adopted by the Governing Board at a public hearing. Any revisions will also go through a public review process with a workshop and Governing Board hearing. See also Response to Comment #28.

33. COMMENT: The staff report states on Page 11 that "The current concept is that Rule 9510 will mitigate the cumulative impacts of anticipated growth since the reductions attributed to this program was identified in two attainment plans as necessary to achieve the applicable standards." Yet the next sentence weakly states that "The District may (emphasis added) revise the GAMAQI to define the exact role that Rule 9510 will have in the CEQA process, prior to adoption of this program." Please clarify why the District is not committed to amending the GAMAQI to clearly provide relief for local government in CEQA litigation in a matter, air impacts, for which the District is the recognized expert.

RESPONSE: The District is committed to providing guidance through the GAMAQI that accurately reflects the impacts of all adopted District rules and regulations on air quality.See also Response to Comment #28 and #31.

September 1, 2005 Workshop – Verbal Comments

Bakersfield

Dr. Adrian Moore – Reason Foundation

34. COMMENT: There is a lack of a causal link between new uses and an increase in emissions from new trips. If it is automobiles that are causing the pollution that the rule is targeting, then the District should be going after automobiles.

RESPONSE: There are more than twenty years of CEQA documents that have consistently found that new development has a significant impact on air quality. New development is constructed to accommodate growth. Prior to development of green field areas there are no trips and no construction emissions at the project site. The argument that some trips are displaced from another existing use are not valid except in the short term. When people move to a new house, someone can be expected to move into the existing home and replace the trips the old homeowner was making. When commercial uses open in a new growth area, they may temporarily divert trips from existing commercial uses, but in a growing area the most important factor is an expanding market area. When the community adds enough residents to support another like commercial use, the

trips will be drawn from the area farthest from the existing use to the new use, and overall the number of trips is increasing.

35. **COMMENT:** The sources listed in the District's staff report are not published or peer-reviewed. Specifically, Dr. Holtzclaw's study is not published.

RESPONSE: The Holtzclaw study provides analysis of VMT differences in areas with different levels of pedestrian and transit accessibility in California. The study has been available for all who wish to review it. In addition, the study has been referenced by other researches numerous times in peer-reviewed journals.

36. **COMMENT:** Additionally, the benefits from design identified in the staff report are likely the result of self-selection and not an actual shift in modal choices based on design. Therefore the reductions from the increase in the on-site measures implemented will not materialize from implementation of this rule.

RESPONSE: The author's comment is based on a false assumption that there are no people in the San Joaquin Valley that would choose different development designs if they were available. The District maintains that trip making behavior would change if onsite design measures were widely implemented. The causal link between new development and vehicle emissions has been well documented and is generally accepted. The issue of self-selection v. modal shift in development with 'smart growth', 'transit-oriented' or 'pedestrian-oriented' design has not been resolved. It is known that there is a real, verifiable correlation between land use design and vehicle use. Studies show that well-designed development that considers pedestrian, bicycling and transit generates less emissions than totally automobile oriented design.

The District recognizes that there is always uncertainty when predicting individual travel behavior. For this reason, the District proposes to submit reductions claimed for onsite measures as a voluntary and emerging measure that allows for this type of uncertainty in order to promote innovation.

37. **COMMENT:** If it is automobiles that are causing the pollution that the rule is targeting, then the District should be going after automobiles.

RESPONSE: State and federal controls on motor vehicles are not sufficient for the District to attain federal air quality standards within mandated timeframes. The District has authority to seek additional reduction from indirect and areawide sources to close the gap. Stationary sources must provide offsets to further reduce emissions beyond what is feasible onsite. Indirect source rules operate under a similar concept. See also Response to Comment #6.

38. **COMMENT:** Reducing trips doesn't create large reductions relative to increasingly clean vehicles, regardless of increasing VMT

RESPONSE: The heart of the problem is that although vehicles are increasingly clean, increases in travel and VMT are offsetting a substantial portion of the benefit, hence the need for an indirect source review rule.

39. COMMENT: The housing impact is not near accurate because the market could be in a bubble right now. The Socioeconomic Impact Analysis should use quintiles instead of an average; you would find a huge impact on low incomes with that methodology.

RESPONSE: First, the impact on housing stated in the Socioeconomic Analysis was based on the number of housing units used by the District, which were based on the state population forecasts. If the growth rate exceeds the projection, the impacts will be greater and so will the need for emission reductions. Also, a greater number of units subject to the rule would have no added impact on individual development projects. Second, the use of an average is appropriate because the impact of the fee filters out over time, so the effect, such as an increase in rent, isn't immediate. See also Response to Comment #49.

Arthur Unger – Kern-Kaweah Chapter of the Sierra Club

40. COMMENT: The studies in the District's materials regarding differences in trip generation from different types of development are published.

RESPONSE: Comment Noted.

41. COMMENT: Concerning the information provided in the Socioeconomic Impact Report – the prices of housing in the Valley are a result of supply and demand, not necessarily resultant from fees that are assessed.

RESPONSE: The Socioeconomic Analysis supports the author's comment. The report states, "it is apparent that larger market forces are the primary culprit behind the increases in housing prices…"

Carla Waleka – Construction Industry Air Quality Coalition

42. COMMENT: The Construction Industry Air Quality Coalition would like to see the construction calculator and know the assumptions and inputs.

RESPONSE: The calculations used in the rule were done using URBEMIS construction module. The construction calculator used by SMAQMD is proposed as a model for development of a San Joaquin Valley version. We are now proposing to continue using URBEMIS with the option for developers to use a construction calculator if approved by the APCO.

Renee Nelson – Clean Water and Air Matter, Bakersfield

43. **COMMENT:** The process laid out by the District does not comply with CEQA. The process will allow for negotiations with applicants behind closed doors with no option for public input, which is required under CEQA. In addition, CEQA states that mitigation can't be differed until later. The District also put forth a comment that CEQA timelines vary with jurisdiction, which is untrue.

RESPONSE: The ISR program does not involve discretionary approval of development projects, and therefore is not subject to CEQA. We expect local agencies to use the air analysis accomplished for the rule and o-site emission reduction measures agreed to by the applicant *and the local agency* to reduce air impacts in their CEQA process. If a citizen has an issue with the approval of a project due to air quality impacts they will have the same options that are currently available to them to challenge the project and the validity of the analysis used to support the decision made by the local council or board. See also Response to Comments #8 and #28.

44. **COMMENT:** This program must be aligned with CEQA and should not allow changes to a project behind closed doors.

RESPONSE: The rule is being revised to change the application timeframe to be concurrent with the local agency CEQA process. District has no authority to require applicants to include on-site emission reduction measures. We have traditionally worked with applicants to help them identify changes to the project that would reduce air impacts as early in the development process as possible and will continue this effort. The rule requirement is for the applicant to fill out the on-site emission reduction checklist; however, it does not prescribe a minimum or maximum number of measures that should be checked. The responses on the checklist are solely up to the applicant. The land-use decision making authority is with the local land use authority, not the District. The AIA information will be made available to the public. See also Response to Comments #8 and #29.

45. **COMMENT:** Does the ISR program apply to agricultural projects?

RESPONSE: The District believes the applicability section and the definition of a development project effectively exclude agricultural projects.

46. **COMMENT:** Will the ISR apply to waste-hauling projects?

RESPONSE: Hauling projects are not specifically stated as a project in the rule. ISR projects are land-use based, triggered by a discretionary permit in combination with new construction or increased use that generates construction and/or area and mobile emissions that exceed the ISR threshold. If a land use requires a discretionary permit, and meets or exceeds the applicability threshold, then the emissions from hauling would be subject to the rule. However, if the project is hauling operations alone then it would not be subject to the rule.

47. COMMENT: Where will mitigation funds be used in relation to the project assessed the fees?

RESPONSE: The funds will be spent within an area based on the type of pollutant. NOx is a regional pollutant, but every attempt will be made to fund projects in the vicinity of the project site. PM10 is a more localized pollutant, and PM10 funds would be spent closer to the project assessed the fees.

Brian Todd, BIA and Business, Industry and Government (BIG)

48. COMMENT: The District needs to tell the public about how much more fees will be in the Bakersfield area due to the need for additional PM10 reductions.

RESPONSE: The additional PM10 reductions cited by the commenter is the 1-ton per day by 2010 needed in the Bakersfield Metropolitan area. This rule does not address that reduction. ISR program fees are tonnage based and do not adjust by location. The 1-ton needed in Bakersfield is being addressed through a PM10 task force. Voluntary mitigation agreements in the area may be used to the extent that they mitigate beyond the requirements of Rule 9510.

49. COMMENT: The dynamic driving prices for housing in small and medium cities stated in the presentation is due to school fees. The ISR fees will exacerbate this problem. In addition, the housing market may be a bubble. Basing the fee on housing bubble numbers is a flawed methodology because the market is unstable, and the fee revenue depends on the number of houses.

RESPONSE: The District fees were not based on the number of housing units going in. The fees were based on the amount required to offset emissions, and is purely emission based. The expected *fee revenue* and *future impacts* are estimated from the forecasted population data from the state and the emissions from growth in residential and non-residential development.

It is important to note that the District will only be collecting fees to reduce as in there is development creating emissions to reduce. If the number of houses decrease (bubble burst), the District would have fewer emissions to reduce; therefore, the same fee brings the appropriate amount to reduce those emissions (less revenue). If the number of houses increases, the District would

have more emissions to reduce; therefore, the same fee brings the appropriate amount to reduce those emissions (more revenue).

Heather Ellison

50. COMMENT: What is the meaning of 'recreational space' and 'unidentified space' in the rule?

RESPONSE: Rule 9510 §13.7 defines recreational space for recreational uses such as soccer fields. Unidentified is a catchall category to indicate that other land use categories not listed are still subject to the rule if they generate emissions and are not otherwise exempt.

Mike Kelly – Western State Petroleum, Vector Environmental

51. COMMENT: Previous comments to the District were not adequately addressed in the previous response to comments. The law states that the District can regulate the increase in emissions. There is a concern that the Rule will trigger review of those discretionary permits that don't result in an increase in vehicle traffic, such as certain Conditional Use Permits (CUPs).

RESPONSE: The District typically consolidates similar comments and provides a single response. The District will consider providing individualized responses on a case-by-case basis.

The Rule applies to the *increase* in emissions resulting from land-uses changes that require a discretionary permit. Therefore, if project requires a discretionary permit, but does not result in an increase in emissions that meet the applicability threshold, then it would not be subject to the Rule. However, if the CUP allows for an increase in indirect or area source emissions or new construction activity that generates emissions, it would be subject to the rule if not specifically exempt.

Fresno

Bob Keenan – BIA, BIG

52. COMMENT: Fee collection and use is governed by the Health and Safety Code, §6600 subsection G. The rule does not meet those requirements.

RESPONSE: The author cites Government Code Section 66000 (The Mitigation Fee Act) as the impetus for promulgating a nexus document. The legislation clearly states that it is applicable to fees (§66000(b)), "in connection with approval of a development project." Section 66000(a) defines a development project as including, "a project involving the issuance of a permit for construction

or reconstruction, but not a permit to operate." In addition, Section 66001(a) states:

> *In any action establishing, increasing, or imposing a fee* ***as a condition of approval*** *of a development project by a local agency on or after January 1, 1989, the local agency shall do all of the following:*
> (Emphasis added)

Section 66005(a) also ties the legislation with 'condition of approval of a development project'.

1. The District will not approve or disapprove a development project, but will approve or disapprove the project's analysis to determine the quantity of emission reductions required to comply with the rule. The authority to approve or disapprove the development itself is the local land-use agency, not the District.
2. The District will not be issuing a permit, nor will the District give a discretionary approval of the project.
3. The District's ISR action is ministerial, and therefore will not include conditions of approval.

The District stands by its previous assessment. The Mitigation Fee Act does not apply to the ISR rules. However, the District has analyzed the applicability of nexus requirements to this rule. See Response to Comment #125 for the findings of the analysis.

53. **COMMENT:** Fees paid at the permit doubles to the buyer and prices people out of the market.

RESPONSE: Fee prices may price some people out of a particular house, but not necessarily out of the entire market. Currently, market forces are increasing the price of housing to a much greater extent than the fee would. In addition, the difference between paying prior to building permit issuance and at certificate of occupancy can't possibly double the cost unless the loan was at an astronomical interest rate. If the fee were financed in a mortgage at 30 years it may double, but it also doubles the amount they are paying for anything.

54. **COMMENT:** The fees from the program will drive up the costs of existing housing.

RESPONSE: Existing housing is not subject to the rule. Although the District realizes that sellers of existing housing may take advantage of a potential increase in new housing prices by artificially inflating the price of existing housing, the District does not have control over existing housing prices.

Increases in existing housing prices 'attributable' to the rule would be resultant of the seller, not of the District.

55. COMMENT: The impact of the fees resulting from implementation of the ISR program would ruin the Valley's economy.

RESPONSE: The commenter's position that ISR fees would ruin the economy is not supported by factual evidence. The Socioeconomic Analysis found the worst-case scenario of fees to be within the margin that can be absorbed by the economy. This is not to say that there is no impact, but that the impact is less than significant. In addition, the residential scenario in 2008 resulted in a fee of about $1,800 per house. This scenario had no emission reduction measures included; it had a density of 3 unit per acre (increased density decreases emissions), no sidewalks, or any other measure that reduces emissions (and thus fees). See also response to comment #56 and #14. Finally, housing prices have steadily increased in over the last ten years. This increase is far more than $1,800 *every year*. The District does not state this to justify the potential fee, but to illustrate what has occurred in housing prices and that the Valley's economy has not crashed as a result. It is illogical to suggest that a potential $800 per residential unit in 2006 to $1,800 in 2008 would ruin the Valley's economy. As stated in Response to Comment #14, the fee amount listed in the Socioeconomic report is likely much more than will actually occur.

56. COMMENT: The cost of on-site mitigation is not included in the socioeconomic impact report. Therefore, the report does not accurately reflect the impact of the rule.

RESPONSE: The Socioeconomic Analysis does not include the price of on-site emission reduction measures for a specific reason. That is, it is reasonable to expect that an applicant would not choose a more expensive option over a cheaper option. The 'worst-case', no on-site-measure fees are therefore the most that an applicant would pay. It is also important to note that on-site measures are entirely voluntary.

Also of note, many of the on-site measures that count towards reduced emissions are *already* requirements by local land use agencies. For example, most agencies require some amount of sidewalks or bicycle improvements with development that is adjacent to a street. URBEMIS calculates an emission reduction from the amount of sidewalks and bicycle infrastructure built in the project. Therefore, crediting certain on-site measures are of no additional cost to an applicant because they had already incorporated the measures into the project as a result of the public agency requirements.

Mark Stout - Fresno Metro Ministries

57. **COMMENT:** The proposed rule only mitigates a portion of the emissions. Why does the rule only reduce a portion of the emissions, and why the particular level- for example the 33% for operational NOx.

RESPONSE: The District calculated the level of reduction needed on a per-project basis that would achieve the emission reduction committed to in the PM10 and ozone attainment plans. The rule sets levels that are in compliance with state law regarding indirect source regulations and are feasible to achieve. The 33% is based on the area under the triangle that accounts for declining mobile emissions over time – see the fee formula.

58. **COMMENT:** A slide of the presentation showed huge NOx emissions increase from 2006 to 2010 from development. The number listed for reduction attributable to the rule seems rather small in comparison.

RESPONSE: The slide incorrectly showed the reductions attributable to construction as cumulative instead of temporary during the construction phase of development.

59. **COMMENT:** The District would benefit from making the URBEMIS runs available to the community groups. The community groups should be able to review what developers are inputting, and verify the modeling.

RESPONSE: The runs will typically be used in the CEQA process and included with negative declarations and EIRs. The files will be available with a public information request. The District will make this information public. See also Response to Comment #8.

Colby Morrow – Southern California Gas Company

60. **COMMENT:** Appendix C should be amended. PUC Energy Efficiency programs can be administered by energy companies and municipalities.

RESPONSE: Appendix C, page C-5 will be amended.

Cathy Crosby, Fresno County Public Works, Transportation and Planning

61. **COMMENT:** The response to comment format from the previous workshop made it difficult to find one's comments and the associated responses. The preferred format would be the EIR format, where the original comment letter is retained.

RESPONSE: The District has revised the response to comment format to address this issue. The format is a hybrid, retaining the original comment but not in the original letterform.

62. COMMENT: Several of the Fresno County July 22nd comments weren't addressed in the response to comments. Specifically:

- Transportation projects should be re-written to include non-vehicle projects, such as pedestrian projects.

RESPONSE: The definition of Transportation projects does not include non-vehicle projects because of the definition of an indirect source. The Clean Air Act (CAA §110(a)(5)(C)) defines and indirect source as, "… a facility, building, structure, installation, real property, road, or highway which attracts, or may attract, mobile sources of pollution". Pedestrian projects do not attract mobile sources of pollution, but pedestrians. It would be inappropriate to include non-indirect sources in with transportation projects to be subject to the requirements of the rule.

63. COMMENT: §7.2.2.2 of their letter describers the dissolution of community service districts.

Previous Comment
7.2.2.2- Community Service Districts (as a means to insure perpetual funding for operational mitigation): The Air District may want to evaluate under what conditions a Community Service District that funds any mitigation activity not directly related to health & safety may, after formation, discontinue assessment or dissolve the Community Service District by vote of property owners making up the District.

RESPONSE: All measures within the on-site checklist have an emission reduction benefit associated with their implementation. The District identified those on-site measures that reduce emissions from development projects, and help reduce the air impact of development projects. The goal of the rule is to reduce emissions from development project to achieve the emission reduction committed to by the PM10 and ozone attainment plans. Although each measure is indirectly associated with an air benefit (reduced emissions and attainment of the PM10 and ozone standards), the District considers the measures to be health-related. Therefore, funding of these measures constitutes a health-related activity.

64. COMMENT: Maintenance concern. Where will the funds for County enforcement of the rule come from?

RESPONSE: The County will not be required to enforce the rule. See Response to Comment #8.

Ray Leon – Latino Issues Forum

65. **COMMENT:** The District should clarify the PM2.5 and toxics issue. Suggests that the District break PM10 down further to strengthen the rule.

RESPONSE: This rule is a result of the PM10 and ozone attainment plan commitments. The rule controls NOx and PM10. Some fraction of PM10 is PM2.5 and will be reduced as a result of the rule. NOx reduces ozone during the warm months and reduces ammonium nitrate, most of which is PM2.5, during the cold months of the year.

The District recognizes the issue of toxic emissions from diesel engines, and the particular hazards of PM2.5. However, toxics are addressed through the District's permitting program, state regulation, and through CEQA commenting. District thresholds of significance for these pollutants are contained in the Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI). In addition, PM2.5 will be addressed in the federal PM2.5 Attainment Plan due in 2005.

Mike Sanchez – City of Fresno

66. **COMMENT:** The city's July 22nd comments need to be addressed; they weren't addressed in the previous response to comments.

Previous Comments (paraphrased)

Nexus and Proportionality

- **A.** What is the Nexus determination for the project
- **B.** ISR rules address emissions from existing development; so, placing requirements on new development to remedy problems from existing development would be inappropriate.

Relationship of SJVAPCD and Rules 9510 and 3180 to CEQA and Planning Law

- **C.** Rule appears to defer or circumvent CEQA analysis because analysis and mitigation would be prepared after CEQA analysis. Also, it appears that the District would be issuing a construction permit, making the District a responsible or trustee agency.
- **D.** There may be differences in interpretation of mitigation measures and the reductions associated with them.
- **E.** Because the District is the appropriate agency to make a detailed determination of air quality impacts and appropriate mitigations, the District should fulfill its CEQA responsibilities by providing analysis and recommendations to the local land use jurisdictions so that the CEQA analysis work can be completed with this information.
- **F.** The District should not determine locations or patterns for development, this is the local jurisdiction's authority.

G. "Analysis and conclusions regarding land use and its vehicular emissions need to be rooted in data… recommend objective criteria"

Applicability of the Rules 9510 and 3180

H. It is not addressed if the rule applies to general, regional, community or specific plan adoptions. At that level, project specific information may not be known, and analysis may not be accurate. Therefore, they should be exempted from the rule**.**

I. Each public agency defines 'discretionary' and there is variability as to what each public agency considers discretionary. Therefore, the ISR rules will be applied inconsistently.

J. Language should be included in the rules to prevent piecemealing.

Timing and Project Tracking

K. Request ISR review to be shortened from 30 to 10 days to , "remain within the statutory CEQA timelines for responding to initial study requests" because URBEMIS runs are quick. The District should send the ISR project information to the public agency for incorporation into CEQA documents.

L. How will timing of construction be controlled for mixed use projects, since commercial often lags behind residential development?

M. How will the District track projects, such as multi-phase tract maps or shell buildings, for review and analysis.

Interagency Cooperation

N. "The ISR Rules propose that cities and counties withhold building permits pending satisfaction of SJVUAPCD requirements." There should be an agreement between the public agencies and the District that includes indemnification of the city.

O. "Local land use jurisdictions should be made a party to any mitigation agreements entered with the developer…(and) it would be ideal if such agreements were recorded as covenants running with the land…for which the … analysis was done."

Use of Mitigation Fees Collected Through ISR Rules

P. It appears that the ISR funds will be used to fund existing programs. New programs that expand mass transit and similar systems should be considered. "… the majority of the funding generated through the ISR rule should address vehicular pollution through measures to reduce traffic volume and relieve traffic congestion in the vicinity of the land use projects paying the ISR Rule-related fee."

RESPONSE:

A. See Response to Comment #125

B. ISR rules address emissions from *growth*, not from existing emissions. See Response to Comment #170. See also, Response to Comments #34 and #39.

C. Rule has been revised to be concurrent with CEQA analysis and Public Agency approval process. See Response to Comments #8 and #44. Also,

the District would not become a Responsible agency as a result of ISR implementation (See Response to Comment #52 and #187)

D. The measures listed in the On-Site Emission Reduction Checklists have a known quantification method associated with them. Applicants will identify the *specific* implementation of each measure, so there will not be interpretation of the amount of reduction. See also Response to Comments #7 and #9.

E. Although the ISR rules were not written to address CEQA, the reductions committed to in the PM10 and ozone attainment plans from this rule and individual project compliance can be used in CEQA documents at the public agency's discretion. See Response C above for timing of ISR implementation. See Response to Comment #8 for information on communications between the District and the land-use authority.

F. The District will not be making land-use decisions, and recognizes that that is the authority of the local land use agency. The land-use design considerations discussed by the District are discussed because they are known to reduce air quality impacts. The District provides these types of measures to encourage applicants to design projects submitted for city/county approval in ways that improve air quality and reduce potential ISR fees. The District has no authority over implementing land-use changes. Please note, the District will not require a minimum selection for the on-site checklist, measures selected are voluntarily identified by the applicant and are likely already part of the project. See also Response to Comment #43 and #44.

G. The measures listed on the on-site checklist have objective criteria, based on extensive research within URBEMIS. Please refer to Appendix D (Recommended Changes to URBEMIS for Rule 9510 and 3180) and the URBEMIS User's Guide (available at URBEMIS User's Guide, available at South Coast Air Quality Management District's website http://www.aqmd.gov/ceqa/urbemis.html). See also Response to Comments #7 and #9.

H. The ISR rules are applied to the last discretionary approval of a development project per Rule 9510 Section 2.1. The adoption of a general plan or specific plan is not usually the last discretionary approval a project will go through. Residential development may be rezoned, and must get a subdivision or tract map. Conditional Use Permits and Site Plan Reviews often apply to commercial and office development. However, the District recognizes that some projects may not require additional discretionary approval after the zoning is approved. Specifically, industrial development may not require additional approval. Therefore, the last discretionary approval will vary depending on the project. The District will provide outreach to developers and the public to ensure awareness of the rule; however, it is the responsibility of the applicant to be aware of the need, or lack thereof, for additional discretionary approval by the local land-use agency, and to apply at

the appropriate time. Additionally, applicants are encouraged to apply *prior* to the application for last discretionary approval with the land-use agency.

I. The District recognizes the variability of the application of 'discretion' in the Valley. As stated in H above, the last discretionary action is the trigger for the rule. This may cause inconsistency early in ISR implementation; however,

J. Language has been included. See Rule 9510 Section 2.3

K. First, the ISR program is not a CEQA compliance program (See Comments above). Analysis of the AIA application involves more than opening and running URBEMIS. The District will be analyzing the documentation for projects, running modeling program, finalizing MRS's, finalizing FDS's, etc. See the Draft Staff Report for additional information. The District will be sending information to the public agency. See Response to Comment #8.

L. The District does not have the authority to control construction timing. See Comments F, G and H above.

M. The District will be tracking projects through a database, and will be tracking project location primarily through APN. Multi-phase projects will be entered as such, with the applicable expected build-out dates. The applicant is responsible for identifying the use and build out of the projects. Should the project change, the applicant is responsible for notifying the District. If the project changes such that there is an increase in air emission and the applicant does not notify the District, they will be in violation of the rule and subject to District enforcement action. The District will share project information with public agencies to coordinate project tracking.

N. The District will not require or request that public agencies withhold building permits for ISR enforcement. However, the District may enter into an agreement with a public agency for information sharing that would facilitate District enforcement of the rules.

O. The District will be sending the public the on-site emission reduction checklist, as well as other information (see Response to Comment #8) during the review process. The District will consider the use of covenants for MRS compliance enforcement.

P. The District will not be using the ISR funds solely for existing emission reduction programs. The District has conducted an analysis of emission reduction projects available, and the cost effectiveness associated with them. This analysis can be found in Appendix E. See Response to Comments #18 for the use of funds, and #47 and #188 on the location of funding projects.

Modesto

Sally Rodeman – CalTrans, District 10

67. COMMENT: District 10 did not receive the notice for the meeting.

RESPONSE: You will be added to the rule mailing list. Other Caltrans staff received notice.

CalTrans District 10 is on the District's mailing list as a street address, to which the District has been mailing notices. District staff looked into the issue, and found that the CalTrans website lists a PO Box for District 10. The District will work to resolve this issue.

68. COMMENT: Is CalTrans a developer as defined by the rule?

RESPONSE: CalTrans would be a developer in those instances where the project meets the applicability of the rule.

69. COMMENT: Can the District put that in writing in the rule?

RESPONSE: The District does not specify or write out *who* a rule applies to, but write *what* a rule applies to. The rule is written so that all entities and individuals conducting activities subject to the rule must comply, so there is no need to list every possible agency or entity subject to the rule.

70. COMMENT: Does the Socioeconomic Impact Report account for impacts on the State of California, considering that the state is broke?

RESPONSE: The socioeconomic analysis provides the overall impact to the economy but does not specifically separate out impact to individual government agencies.

71. COMMENT: Does the District have a list of mitigation measures for construction?

RESPONSE: The Staff Report contains a discussion of measures that reduce emissions from construction activities.

Tom Carlson – Sierra Research

Thanks for addressing Sierra Research's comments from the last draft of the rule. Particularly, for Sierra Research's comments on silt loading, trip links and fleet mix.

72. COMMENT: How will the District be addressing the needed changes to the URBEMIS model?

RESPONSE: Updated default values will be provided as rule guidance. This information may be contained in the next update to the GAMAQI. The next upgrade to URBEMIS, beginning next year will include many of the new defaults and an improved construction module. The upgrade may take as much as a

year to complete, so in the interim, the guidance documents will be provided as needed.

73. **COMMENT:** What is the basis for the targets on PM and NOx reductions from construction?

RESPONSE: The District researched what other air districts had set for reductions, and found that those targets are achieved in practice. The reductions (20% NOx and 45% PM10) are achievable with existing technology with a mix of newer equipment and retrofit devices, and will allow applicants applying moderate effort to pay no fee on construction.

74. **COMMENT:** What is the District's response to the vehicle age distribution by age of project that Sierra Research had provided? Is the information provided by Sierra Research not adequate or substantial enough to change the modeling?

RESPONSE: The District is not currently convinced that the data cited would be valid in all circumstances, but will consider projects that provide evidence supporting a reduction for fleet age. There may be other factors that offset the possible benefit from newer vehicles such as higher rates of vehicle ownership (more vehicles per household).

75. **COMMENT:** URBEMIS is a sketch planning tool. Sierra Research believes the District should use a travel model. Sierra Research believes that a travel model is more accurate than URBEMIS, and found that URBEMIS estimates are 60% higher than the travel model estimates for the same project. In addition, as a sketch tool, URBEMIS is inconsistent with SIP methodology.

RESPONSE: The District believes that URBEMIS has been improved beyond its characterization as a sketch planning tool. Very few of the modules of the program are overly conservative. Most modules rely on statewide averages extracted from the emission inventory which should not be considered conservative estimates. The most important module is the mobile source module that includes the same emission factors used to build the emission inventory. It does a good job of arriving at a composite emission rate needed for a project level analysis. Models can always be made more accurate by individualizing more and more input factors. The District believes that URBEMIS balances data requirements with reasonable output accuracy and ease of use. The travel demand models described by Sierra Research are extremely data intense and would be very costly to run for the approximately 1,000 projects that will be submitted to the District each year. It is uncertain whether the demand models are more accurate for project level analyses than URBEMIS with local information**.**

Jan Ennenga – Manufacturing Council

76. **COMMENT:** There is a concern that the ISR program would apply to CEQA processes and permits for existing facilities that make modifications.

RESPONSE: ISR projects are land-use based, triggered by a discretionary permit in combination with new construction or increased use that generates construction and/or area and mobile emissions that exceed the ISR threshold. If a land use requires a discretionary permit, and meets or exceeds the applicability threshold, then the emissions from hauling would be subject to the rule.

77. **COMMENT:** What exactly does "primary source of emissions" mean for the exemptions section?

RESPONSE: The District had originally include an exemption for "A development project, whose primary source of emissions are from stationary sources…" However, the District is revising exemption to make specific land uses exempt. The District has completed a review of industries permitted by the District. This analysis details the amount of rules that apply to each industry and the amount of pollutants regulated by these rules. The intent is to remove the ambiguity of "primary" emissions and detail which industries will be exempt from the rule. In addition, industries with stationary sources may petition the APCO for ISR exemption.

Bill Zelocci – BIA CC, PSSP, StanCo (Affordable Housing)

78. **COMMENT:** The bill targets housing only. The fees, at least the biggest fees are from housing. The Rule doesn't affect other land uses that produce vehicle trips.

RESPONSE: The rule targets new development that results in area and/or mobile emissions. The rule contains an applicability section and an exemptions section. The rule *does not* target housing exclusively or charge higher fees for residential development. Housing constitutes about 1/3 of the development related emissions and therefore 1/3 of the potential for fees under the rule. Other land uses such as commercial office and retail generate more emissions and potential fees. Housing is used extensively in discussing socio-economic impacts because that is what concerns most people. Fees are emission based, not land-use specific. Fees apply to the broad categories of land uses specified in the rule. Certain land uses are exempted from the rule because their emissions are primarily from stationary sources, and they have been subject to extensive controls and requirements already. The sector targeted by the rule are those land uses without the majority of emissions from controlled stationary sources, which haven't been subject to rules or emission controls.

All fees are tonnage based, and the required reduction formula applies equally to all applicable projects. This means that a particular project only pays the off-site emission reduction fee for the required reductions that are not achieved on-site.

The Socioeconomic Analysis discusses the potential impacts to housing more extensively than the impacts to commercial or industrial, because the impact on housing affordability is of a greater concern to the affected industries and the general public than the impacts on commercial or industrial.

Certain land uses are exempted from the rule because their emissions are primarily from permitted stationary sources (the rule only covers area and mobile emissions), and they are and have been subject to extensive controls and requirements.

79. COMMENT: The rule should also address existing housing.

RESPONSE: The goal of the rule is to achieve an emission reduction from *growth* that was identified in the PM10 and ozone plans. Although VMT is increasing valley wide, the majority of new emissions are attributable to new development. It would be inequitable to assess fees on existing uses with the purpose of mitigating emissions from growth.

80. COMMENT: Part of the presentation used small, unreadable font. Please use a reasonably large font for presentations, so that people may be able to read what is on the screens.

RESPONSE: Comment Noted. The District apologizes for the illegible font-size, and will attempt to make future presentations clear and readable.

Randy Hatch – Planning Director, City of Ceres

81. COMMENT: There is a concern that the ISR program will cause changes to a project after a local agency has granted approval to the project.

RESPONSE: The rule has been changed to make the process concurrent or prior to the approval process by the public agency. The District defers land-use choices to the public agency and the applicant. See Response to Comment #8 for more information.

The District does not place requirements for land-use measures on the project. The on-site emission reduction checklist must be filled out by the applicant, but the District does not have a minimum or maximum requirement for the number or type of measures to be selected. Inclusion of measures is voluntary by the applicant (see Response to Comments #56). The District will not engage in negotiations to include on-site measures (See Response to Comment#44).

Therefore, the District will not be imposing measures that conflict with the local land use agency. It is the applicant's responsibility to make sure that those measures they have voluntarily selected are consistent and approvable by the local land use agency. In the instance that the identified measure is not acceptable by the local land use agency, the applicant is responsible for notifying the District and the on-site emission reduction checklist and emissions modeling will be revised to reflect the project at that time.

In addition, the rule and staff report will be revised to provide more interaction with the public agency and the District. See Response to Comment #8 for more information.

82. **COMMENT:** How do public agencies determine compliance with the rule, especially if the District's approval can occur after the approval by the public agency?

RESPONSE: The District will revise the ISR process to be concurrent with or prior to the approval process at the public agency. See Response to Comment #8 for more information. Specifically, the District will provide letters notifying the public agency of the Determination of Completeness, AIA Approval and Final Compliance, as well as providing a letter of compliance status to the public agency upon request.

83. **COMMENT:** What exactly is meant by 'parks' in the applicability section?

RESPONSE: Active recreation parks – parks that attract motor vehicles. It is not the intent of the rule to assess passive recreation parks. Parks will be assessed based on emissions the same as other land uses,

84. **COMMENT:** The City of Ceres suggests the District alter the application process to make it prior to the final public agency approval, perhaps by tying it to the application to the public agency. In addition, the City suggests the District include a predevelopment process. The City of Ceres has a predevelopment process that aids in the application process.

RESPONSE: The District will amend the rule language and the staff report to make the application to the ISR program concurrent with or prior to the final discretionary approval application to the public agency See Response to Comment #8 for more information. The District does not currently have a plan for formal pre-application consultations. However, the District will be available for consultations any time prior to actual application and encourages applicants to meet with District staff to clarify issues when needed.

Fresno

Kathryn Phillips – Environmental Defense

85. **COMMENT:** Concerning the view that land use does not have an impact on air quality (see comment #34) – that is a minority view. Most have realized that land use does have an impact on air quality.

RESPONSE: Comment Noted.

86. **COMMENT:** Concerning the issue of self-selection (see comment #36), the choice of good design should be available.

RESPONSE: Comment Noted.

87. **COMMENT:** The URBEMIS model is imperfect, but it is appropriate for this rule.

RESPONSE: The District concurs. The District is aware that there is not a 'perfect' model available, nor is there likely to be one in the future. However, the URBEMIS model is best available method for quantifying project emissions and benefits from on-site measures.

88. **COMMENT:** Rule 9510 section 2.1.8 has one threshold for recreation, but the definition includes movies. 'Movie theaters' are more commercial in nature, and should be moved to commercial. In addition, 'parks' should be defined.

RESPONSE: Comment Noted. 'Movie theaters' will be removed from recreation to commercial.

89. **COMMENT:** A 2-ton exclusion level (Rule 9510 section 4.2) is too generous. This level should be reduced.

RESPONSE: See Response to Comment #180.

90. **COMMENT:** Rule 9510 section 2.2 discusses transportation projects that have two tons or more of NOx and PM10 combined. How large of a project would fit this description? How large would a project be to be subject to the rule – a pothole or an interstate exchange?

RESPONSE: Small maintenance projects would not exceed the threshold. Construction of a one-half mile arterial road segment would exceed the threshold. The road project must also be subject to a discretionary approval to be brought into the ISR process.

91. **COMMENT:** Rule 9510 section 3.5 defines 'Baseline Emissions'. This section should be clarified. Where exactly is the baseline?

RESPONSE: The definition will be changed to the following:
Baseline Emissions: the unmitigated estimated NOx and PM10 emissions, output calculated by the APCO-approved model, in the units of tons per year.

In addition, the following will be added to the definition section of the rule to clarify the issue of baseline:

Construction Baseline: the sum of unmitigated NOx or exhaust PM10 for the duration of construction activities for a project or any phase thereof.

Operational Baseline: the entirety of NOx or PM10 emissions, including area source and mobile emissions, calculated by the APCO-approved model, for the first year of buildout for that project, or any phase thereof.

A development would have two construction baselines (one NOx, one PM10) and two operational baselines (one NOx and one PM10), if it does not have phase. For the purposes of this discussion, the four baselines will be referred to as a 'baseline set'. For projects with phases, each phase will have one baseline set. According to the off-site fee formulas, the equations are used for each baseline set.

As and example, one project has three phases. The rule contains four fee formulas: an operational NOx, an operational PM10, a construction NOx, and a construction PM10. Each of the four calculations are performed three times, once for each phase or 'baseline set'.

The operational baseline is calculated at the date of expected buildout, the construction baseline is calculated at the date(s) of expected construction.

92. **COMMENT:** Rule 9510 section 4.1.5 needs clarification of what federal, state and local funds for low income housing are applicable.

RESPONSE: Based on the District's internal analysis of applicability and impacts, the exemption for low-income housing has been removed. It has been determined that the Rule should apply to all new residential development that meets the applicability section of the Rule.

93. **COMMENT:** Rule 9510 section 5.3.2 discusses the application for the AIA. The District should list out what information will be in the application.

RESPONSE: The District will expand that section to include more specific information of what will, at a minimum, be included in the AIA application.

94. **COMMENT:** Environmental Defense recommends including ROG in the rule for emissions reductions.

RESPONSE: See Response to Comment #57 and #65.

95. **COMMENT:** Rule 9510 section 6.1.1.1 and 6.1.1.2 discusses the reductions required from construction emissions. The 45% reduction requirement for PM10 is too low. Applicants can get much higher results with existing technology. The 20% NOx reduction requirement may similarly be too low. In addition, Environmental Defense recommends requiring emission reductions by vehicle and suggests that the District talk to CARB about their in-use construction equipment regulations.

RESPONSE: See Response to Comment #57 and #65.

96. **COMMENT:** Rule 9510 section 10.2 (APCO administration of funds) does not contain the term 'permanent'. The District should aim for permanent reductions.

RESPONSE: Many of the projects funded by the District will meet the strict interpretation of permanent reductions. In some cases, the projects are expected to be permanent but the user of the clean equipment is only obligated to operate it during the contract period. After the contract period ends, it is highly likely that any replacement equipment will be as clean or cleaner than that funded by the District due to lower emission standards and improving technology over time for nearly all source categories.

97. **COMMENT:** The funding of projects with fees received from this rule is implied to be application-based. The rule should state if it is application based.

RESPONSE: Although current District programs are primarily open application based for as long as funding is available, for some source categories it may be more appropriate to have requests for proposals with deadlines and project ranking. Therefore, the rule language should remain the same.

98. **COMMENT:** The economic analysis and other supporting documents don't include health impacts and those costs. This information should be included to keep the purpose and goals of these actions in perspective.

RESPONSE: It is not feasible to assign a dollar amount to the health effects that will be avoided or lessened by the implementation of this rule. However, the District will include health-impacts information from the PM10 and ozone attainment plans in the staff report.

Kristine Foster – Asthma Coalition, Respiratory Therapist, Asthma Educator and CAC member.

99. COMMENT: Land use planning is important and the District needs to include education for the public.

RESPONSE: The District concurs with both of the commenter's points. The District currently believes that Rule 9510 will provide incentives for development that creates fewer impacts and will bring greater awareness of this issue to the public.

Bakersfield

Mike Kelley – Vector Environmental

100. COMMENT: Does the rule apply to the fraction of PM greater than 10 microns?

RESPONSE: No. The rule applies to PM10, the fraction of PM 10 microns or less in diameter.

Chambers of Commerce – Public/Private Organizations

The Greater Merced Chamber of Commerce

Date: September 14, 2005

101. **COMMENT:** The Greater Merced Chamber of Commerce urges the district to reevaluate the impacts of rules 9510 and 3180 will cause to the Central Valley. The District has no organized plan for the fees that will be charged and when asked, the district indicates grant money for clean air vehicles and other measures to reduce the pollution. Before these rules should be brought to the board for approval, a complete plan should be developed.

RESPONSE: The District has a history of funding more than $100 million in emission reduction projects. These existing programs are underway and the system is in place for processing projects funded by Rule 9510. The District has provided additional information on the types of projects available for the program in Appendix E. The District has identified more than $400 million in projects available at a cost-effectiveness that will allow the District to achieve plan commitments. As technology advances, even more opportunities for retrofit and replacement programs are expected.

102. **COMMENT:** These rules will make the housing costs rise to a level that will make housing in Merced more unaffordable and will hamper industrial and commercial development in the greater Merced area. A comprehensive study needs to be completed on the effect the rules will have on economic development and jobs in the valley. The valley leads the nation in unemployment figures and the need for jobs through out the Valley is extremely important. These rules ill affect new job creation.

The costs of these new rules will slow down growth that will be coming to the Valley. Without a clear economic study, these rules should not be approved. Growth will happen and proper planning is needed to make sure the growth is well-planned and well-implemented. These rules will create more problems than they will solve.

The Greater Merced Chamber requests more studies and a better economic plan be developed before the rules go forward to the board for approval. Thank you for your consideration of our concerns.

RESPONSE: According the Merced County Association of Realtors, the median home price in Merced County is $330,000. The proposed fee amounts not considering the potential for reductions due to project design are between $800 and $1800 per unit in the first 3 years of program operation. In percentage terms this ranges from .24% to .54% added cost to the median home. The funds

collected from the developers are used for air pollution projects in the area that will benefit the local economy.

Stanislaus Economic Development and Workforce Alliance (Alliance)
Date: September 13, 2005

I am the CEO of the Stanislaus Economic Development and Workforce Alliance. The Alliance is a public private organization comprised of representatives of Stanislaus County, all cities in the county and dozens of private business investors. It is the designated agency for all economic development and workforce activities in the county.

I attended the video conference of an APCD staff presentation at a public \meeting on September 1 in Modesto. I am very concerned about several aspects of that presentation and therefore the consequences of Rule 9510 and Rule 3180 proposed for implementation by the APCD.

My concerns are as follows:

103. **COMMENT:** Regarding the exemption for projects whose primary source of emissions that come from stationary sources, how is **primary** determined?

RESPONSE: The District has completed a review of industries permitted by the District. This analysis details the amount of rules that apply to each industry and the amount of pollutants regulated by these rules. The intent is to remove the ambiguity of "primary" emissions and detail which industries will be exempt from the rule. In addition, industries with stationary sources may petition the APCO for ISR exemption.

104. **COMMENT:** Regarding the submittal of applications no later than 30 days **after** last discretionary approval, what kinds of delays to projects will be experienced while APCD reviews the mitigation plans and does their calculations and assessments. My experience tells me the current workload precludes timely processing or even a return of phone calls regarding ATC requests and other permitting. Staffing is either insufficient or incompetent or both. What steps are contemplated to alleviate the existing gridlock and avoid additional bottlenecks in the future?

RESPONSE: See Response to Comment #8 for the ISR application changes. It should be noted that the ISR process is not a permit, nor is it a discretionary action (See Response to Comment #187). The District is working on producing a streamlined approval process that has clear information requirements and timelines (as listed in the rule). The Planning Department will be responsible for ISR project review and approval. The Planning Department, as well as all affected departments (Compliance, Emission Reduction Incentive Program – ERIP, and Administration), has produced a staffing analysis for implementation

of the ISR program. The Planning Department identified the steps in review and approval, the time associated with those steps, and in this process identified steps that could be merged or simplified. The staffing requests are listed in the Board Memo, and the District will provide a more detailed staffing request before the Board adoption hearing. However, the staffing analysis is for ISR adoption only, and does not address staffing for existing programs.

105. COMMENT: The APCD has not yet created an emissions calculator.

RESPONSE: URBEMIS will be used for Operations, District is working to determine if a modification to URBEMIS or a separate calculator will be needed for construction. However, methodology for construction is known. Take vehicle type, hours of operation and compare to emissions from the state-wide average. URBEMIS can come up with default fleet numbers, we are working about refining them.

106. COMMENT: Developers and business with the same degree of concern on this issue that the APCD exhibits, albeit with a different perspective, have expressed serious reservations about the integrity of URBEMIS. Are these concerns dismissed out of hand with no attempt to verify the soundness beyond your belief that it must be okay because you are using it.

RESPONSE: The Staff Report contains a detailed discussion of why URBEMIS is appropriate for this rule, and why it was chosen over other models. The District has completed extensive research, including hiring a consultant to review existing models to determine the most appropriate, comparisons of models, and detailed model research and has determined that URBEMIS is the most appropriate model for the rule. See Response to Comments # 157.

107. COMMENT: The socioeconomic impact predictions for Rules 9510 and 3180 were calculated using dated methodology (1995) that does not factor in the impact of the meteoric increases in valuations and costs and burden of stagnant incomes regarding affordability.

RESPONSE: The Socioeconomic impact report uses median price data up to 2005. Most data was no older than 2003. The methodology is standard for the air pollution rule development process and is not dated.

108. COMMENT: The financial windfall that will occur if these rules are implemented could total tens of millions of dollars per year in the valley. What accountability is associated with the “mitigation accounts”? Who determines and what is the definition of quantifiable and enforceable mitigation projects?” Is there an audit of these accounts and by whom? How were the fee levels determined? Are they equitable?

RESPONSE:

1. Accountability – The District has successfully managed over $100 million in grant money over the last decade. The District has an outside auditing company to provide assurance to the Governing Board and the public that funds are appropriately managed. The California Air Resources Board has also audited the District.
   Definition of quantifiable – The project to be funded must have emission factors, process rates, and use data, necessary to calculate baseline emissions and emission reductions after the project is implemented.3.
   Enforceable – The project must have a mechanism that ensures that the project will be implemented and that emission reductions will be achieved during the specified timeframe.
2. Fee level determination – The fee levels are based on the average cost of reductions projected for each year for each pollutant. See also Response to Comment #114.
3. The fees are equitable because they are based on emissions generated by the project and each project's emissions are quantified using the same well-accepted models and factors.

109. COMMENT: APCD's goal over the next ten years to reduce the ozone and PM10 emissions targets new development only. If the housing bubble bursts and the corresponding emissions from new growth cease, will the burden shift to commercial, industrial and/or existing housing in order to meet the goals?

RESPONSE: The emission reduction targets for ISR in the PM10 and ozone plan are based on the *predicted* growth in emissions from new development. ISR reduces, through on-site and/or off-site measures, emissions generated by new growth. If that growth does not occur as predicted, for example in a 'bubble burst' scenario, then the emissions from new development will be less than predicted. If the emissions do not occur, they would not have to be reduced through the ISR program. In this situation, ISR does not have to adjust the emission reduction 'burden', or assess additional emission reductions.

110. COMMENT: There seems to be confusion about the degree of compatibility of these rules with the CEQA process, adding additional burden for businesses in meeting timelines and development schedules.

RESPONSE: See Response to Comment #8 and the Staff Report, Section IV.C.

111. COMMENT: Those of us who are tasked with promoting and marketing the valley for business locations and as a quality place to live and work are very concerned about the air quality issues that we fact. Certainly the air quality is a factor in decisions made by individuals and businesses alike when determining the suitability of the valley for their purposes. The major challenge is to address

those issues in a fair and balanced way with techniques and plans that are based on sound logic and a strong scientific basis.

RESPONSE: The District concurs with the author's statement.

Business, Industry & Government Coalition of the South San Joaquin Valley
Date: August 30, 2005

112. **COMMENT:** Our organization and its members share a deep commitment to improving air quality in the South Valley and applaud all reasonable efforts to attain Federal and State mandates. Draft Rule 9510, as we are coming to understand it, is the program that will be employed by the San Joaquin Valley Unified Air Pollution Control District to involve indirect sources, those land uses that attract or generate motor vehicle trips, in the mitigation of air emissions. The required reviews of the draft rule are delineated, however, the fees associated with the draft rule are not easily understood.

The presentation on Draft Rule 9510 – DESIGN (Decreasing Emissions' Significant Impact from Growth and New Development) gave several members of our organization cause for alarm after the initial public meeting was held. While there were references to fee schedules and proposed costs for building permits, the method describing the establishment of fees was not clearly reviewed. The Building Industry members of our organization are well aware of Public Facility Fees, Govt. Code 66000. Using that base of reference, the description about fee collection and fee usage was not congruent with their experience with Public Facility Fees. Upon further review after the meeting, the fees established through the Health & Safety Codes of California are the references for the Air Board's proposed fees. These fees are "news" to our members and additional information would be very helpful.

RESPONSE: See Response to Comment #6 and the Staff Report Section I(B) for a discussion on District authority for the rule.

113. **COMMENT:** For the next public meeting, scheduled September 1, 2005, our request is to have staff provide information about the process establishing the fee each year and how the fees are used for programs and projects under the authority of the Air Board. We want to know about the programs and the proposed costs for programs that will be instituted pursuant to Health & Safety Code 42311 (g). Our read of the statute indicates these fees are set annually based on estimated costs of air pollution control programs that will be conducted in the following year. In the event all funds are not expended, the fee revenue will carry over to the next year and will, then, reduce the fees for the subsequent year. What is the reporting mechanism and public process for these fees? While there are specific requirements outlined in the statute, none of our membership

was aware of actual dates for the public hearings and none were aware of what projects are in process for this year or their related cost(s).

RESPONSE: The fee amount is based on the anticipated cost of reductions in each year. Staff performed an analysis of historical project funding costs from our existing grant programs that have successfully contracted over $100 million and examined the potential for projects in the future based on the emission inventory and population of project candidates, the technologies available to reduce emissions from the source, whether the reductions will be surplus in the future based on proposed and adopted regulations on the potential project candidates, and the feasibility the project. Based on these factors, the District made percentage funding estimates for each type of project for each year. This information allows the District to calculate a projected average cost-effectiveness for each year. To further verify these numbers, staff prepared project mix spreadsheets based on available projects and funding for each year to demonstrate that the cost-effectiveness averages are achievable. This information has been added to Appendix E of the staff report.

114. COMMENT: In concert with the fees proposed through H&S Code 42311(g) are the fees outlined in Draft Rule 3180. Those fees are cost recovery based – cost recovery for administering Rule 9510. We ask for clarification on how that rate is developed and how applicants will be billed for the actual hours of staff time to evaluate and review proposed projects. We also ask to be informed if the weighted average labor rate will be reviewed in a public meeting or public hearing prior to annual establishment. The Health and Safety Code reference for the cost recovery fees appears to be in section 40604. The draft report of Staff indicates that section 40604 was codified as a result of legislation SB709, Florez, from the past fiscal year. Section 40604 is devoid of explanation about the fee structure other than to indicate there will be a schedule of fees and the fee schedule "shall be designed to yield a sum not exceeding the estimated cost of the administration of this chapter and mitigation of emissions and the filing of applications". How will this fee be published and through what public process? The project fees allow for annual rollover; how will the administrative fees be managed? If estimated costs are higher than annual costs, how will notification occur and what mechanism will be used to refund overpayment? We are hoping that the public meeting on September 1st will provide answers to this fee.

RESPONSE: The District will use the same average weighted labor rate method that it has used for many years in processing stationary source permits. It is based on labor and overhead rates used to develop the District's budget that is adopted in a public hearing each June. The project review fees are based on the hours predicted for a relatively simple project. Projects proposing standard on-site measures and having air quality impact assessments that use standard factors and default changes that have been agreed to in advance are expected to be covered by the fee amount. Complex projects are expected to require

additional staff analysis and review time that would result in costs that exceed the application fee. The District will be using a project management and billing system to track hours for the project. An applicant can request the status of labor charges at any time. The amounts accumulated to date can be obtained from the database and provided to the applicant. When the District staff completes its review and determines the off-site fee amount, they will generate an invoice that itemizes charges for review and the proposed off-site fee amount.

115. COMMENT: We are concerned that implementation of additional fees (Rules 9510 and 3180) associated with new construction will adversely affect the addition of sorely needed housing stock to the South Valley. Our region of the state is expected to take the brunt of the projected population growth, and we are already woefully under stocked. Our coalition believes that inadequate attention has been placed on studying the socio-economic implications of implementing the proposed fees.

Reducing PM10 and NOX emissions from indirect sources is a commitment thrust upon everyone in the Central Valley. Adding additional reviews and controls during the planning phase of construction is workable as long as all steps in the review process are clearly communicated and upheld. Compounding the issue of added reviews are the added fees for air pollution control and emission reduction projects that are not well known to members of our organization. As requested, providing more information about the type of projects, costs for current year and the process for the annual review of these fees would be most beneficial. Added study and discussion about the factors that influence the socio-economic status of the Central Valley are desired before these draft rules are presented to the Board of Directors for their consideration and vote.

Thank you for your attention to our concerns and we ask that this letter be read into the public record during the meeting on September 1, 2005.

RESPONSE: The District recognizes that the rule may add a relatively small cost to development; however, the rule is structured to maximize benefits for designs and features incorporated into the project that will reduce the fees and add value to the development. It is possible to significantly reduce the fee with measures now commonly included in projects. The District is committed to streamlining the review process wherever possible and strives to minimize costs and delays. The analysis will be accomplished with URBEMIS for most projects. URBEMIS is very easy to use and can be operated using information typically required by local agencies during the CEQA review process.

INDUSTRY

The Construction Industry Air Quality Coalition (CIAQC)

Date: September 15, 2005

The Construction Industry Air Quality Coalition (CIAQC) is composed of the Southern California Contractors Association and the Southern California chapters of the Associated General Contractors Association, Building Industries Association, Engineering Contractors Association and Rock Products Association. Its membership includes 3,500 construction/development companies.

116. **COMMENT:** 2.0 Applicability: The potential emissions from constructing 2,000 square feet of commercial space, 9,000 square feet of educational space and 10,000 square feet of government space appear too small when compared to emissions from constructing 50 residential units, 39,000 square feet of general office space and 25,000 square feet of industrial space.

RESPONSE: The difference is due to different trip rates for different land uses. Commercial space generates many trips per 1000 square feet compared to other land uses.

117. **COMMENT:** While the rules do not have an effective date, the District should consider the economic impact on small contractors with a high percentage of Tier 0 engines of setting relatively small development project baselines in 2006. An annually decreasing baseline from, say, 200 residential units, 10,000 square feet of commercial space, etc., in 2006 would allow small contractors more time to upgrade their fleets and compete in the bidding process.

RESPONSE: The current approach in the rule using the baseline for each year construction occurs and emission based thresholds provides more incentive to purchase or rent the cleanest equipment at the earliest date. Once in use, the cleaner equipment is available for all future projects subject to the rule. Although small contractors may have an older fleet, those are the equipment and vehicles that are in need of upgrade.

118. **COMMENT:** 3.0 Definitions: The use of computer modeling to estimate construction emissions from potential land uses would eliminate many small contractors unless they can seek advice from the District on how to employ these models. Also, CARB should offer assistance in identifying a diesel emission control device that has been verified for typical diesel engines as well as instruction on the use of the construction emission calculator. Ideally, the contractor or developer could submit to the District the number and types of machines he proposes to use on a project and the number of hours he proposes to run them, and the District would estimate his emissions.

RESPONSE: The District will provide assistance on the use of models to calculate construction emissions and staff can run the models for the applicants on a time and materials basis.

119. COMMENT: 4.1.5 Housing projects directly assisted by government housing funds: Why is government assisted housing exempt from mitigation?

RESPONSE: Based on comments received, the District has removed this exemption so that sources are treated based solely on their emissions.

120. COMMENT: 5.0 The draft rule implies in 5.3 that the APCO is willing to produce an AIA from information supplied by the developer. Is that correct?

RESPONSE: The District will prepare air quality impact assessments if the applicant provides the information needed as inputs in the model.

121. COMMENT: 6.0 A developer should be given emission reduction credit for mitigating windblown dust (PM10) as a result of constructing buildings and landscaping an area.

RESPONSE: The developer is already required to mitigate windblown emissions to comply with District Regulation VIII – Fugitive Dust Rules, therefore, the reductions would not be considered surplus.

122. COMMENT: 7.0 Off-site Mitigation Calculations and Fee Schedules for Construction Activities: In order to be reasonably contemporaneous with emission increases, off-site mitigation should be designated and purchased by the District no later than six months after the payment of the funds by the developer.

RESPONSE: The District commits to spend any funds received as quickly as possible. The programs envisioned require an applicant to come to the District to request funds for qualifying projects, so there may be times when funds take longer than six months to expend.

California Building Industry Association (CBIA)
Date: September 15, 2005

California homebuilders, represented by the California Building Industry Association (CBIA) and its five affiliated Building Industry Associations (BIAs) located in the San Joaquin Valley, are respectfully submitting comments on the Draft Rules, 9510 and 3180 ("proposed rules") of the San Joaquin Valley Air Pollution Control District ("the District").

123. **COMMENT:** CBIA continues to be troubled by what it sees as several fundamental flaws in the District's plan to assess new "air quality mitigation" obligations on new development in the Central Valley:

1) The District has failed to show a nexus between the impacts of new development on air quality in the region and the massive amount of new fees it proposes charging for this purported impact;
2) The District is using flawed scientific modeling to justify charging massive new fees on housing and economic development;
3) The district singles out new development to bear the burden of its new mitigation scheme which contains highly questionable calculations and a woefully deficient cost-benefit analysis.
4) The District has failed to adequately explain what it intends to do with these new fees (taxes) – somewhere between $300 million and $450 million over the next five years – and how charging them will improve the region's air quality; and
5) The District has failed to acknowledge and account for the impacts of these new fees on the region's economy or on housing affordability.

RESPONSE: See Response to Comments #124 through #142 below.

124. **COMMENT:** For these and other reasons, CBIA remains strongly opposed to the adoption of the proposed rules and urges the District to withdraw them and, working with citizens and other stakeholders in the region, begin the work of developing a more responsible, equitable and scientifically grounded plan for improving air quality in the central valley.

In the pages that follow CBIA will enunciate in detail both its fundamental concerns as well as other defects in the proposed rules.

RESPONSE: Opposition noted. See Response to Comment #17 for additional information on the development of these rules.

125. **COMMENT:** The District has failed to demonstrate the required legal nexus for imposing its proposed fees. This has been an ongoing concern of CBIA's and thus far the responses to it given by the District have only caused to make that concern grow. Indeed, the sheer weight of the mitigation fees being proposed by the District for new housing, alone – somewhere between $300 million and $450 million over the next five years – demands a clear description as to what the impacts are that justify the District's fee plans and how the level of fees to be charged are supported by anticipated costs.

RESPONSE: Although the District is not subject to the Mitigation Fee Act (See Response to Comment #52), the District's legal counsel has prepared an analysis of nexus requirements. The analysis identifies if a nexus is required, and discusses the following:

The applicability of the 5th amendment of the US Constitution.

- The analysis finds that the fees resultant from the rule are subject to the "reasonable relationship" test established by *San Remo Hotel LP v. City and County of San Francisco*[2].
- Therefore, if the fee is collected from a development because of the expected air pollution from that development, and the fee is used to offset the type and amount of pollution caused by that development – the fee will likely pass under the reasonable relationship test.

California Mitigation Fee Act

- The analysis finds that the Mitigation Fee Act may not apply to the ISR rules, for the reasons cited from the District in the text of Comment # 126, and in the Response to Comment #52.

California Proposition 13

- The analysis finds that Proposition 13 does not apply to the ISR rules.

California Proposition 218

- The analysis finds that Proposition 218 does not apply to the ISR rules.

California Subdivision Map Act

- The analysis finds that the SMA does not preempt the District from assessing fees on a subdivision.

126. COMMENT: Remarkably, however, the District denies there is a problem. To summarize the District's position, the Mitigation Fee Act (AB 1600) does not apply to these types of fees because (1) the District has no approval authority over development projects, is not imposing the fee as a condition of approval of a development project, and the fee is purely regulatory in nature, (2) AB 1600 only applies to fees for "public facilities" and mitigation measures such as diesel retrofit programs are not "facilities," and (3) even if AB 1600 doesn't apply, the district has met the nexus standard under the Act as well as any other legal standard.

This analysis contains multiple flaws. Government Code Section 66000(b) defines a fee as a monetary exaction other than a tax or special assessment, whether established for a broad class of projects by legislation of general applicability or imposed on a specific project on an ad hoc basis, that is charged by a local agency to the applicant in connection with approval of a development project for the purpose of defraying all or a portion of the cost of public facilities related to the development project. The proposed rules are applicable to a broad range of projects. Likewise, the proposed project-level analysis of on-site

[2] *San Remo Hotel, L.P. v. City and County of San Francisco*, (2002) 27 Cal.4th 643, 669-670.

mitigation constitutes an ad hoc, project-specific review. Both types of analyses therefore apply to the proposed rules.

RESPONSE: See Response to Comment #52.

127. COMMENT: Indeed, the District is a local agency subject to the Mitigation Fee Act. Government Code Section 66000 (c) defines "Local agency" as “a county, city, whether general law or chartered, city and county, school district, special district, authority, agency, any other municipal public corporation or district, or other political subdivision of the state.” Certainly the District qualifies as a special district, agency, or other political subdivision of the state.

RESPONSE: The District is considered a local agency, but this distinction is not relevant. The Mitigation Fee Act does not apply to the ISR rules. See Response to Comment #52 for more information.

128. COMMENT: The attempt to limit the application of this statute to public facilities is also incorrect. Government Code Section 66000(d) includes within the definition of "Public Facilities" “public improvements, public services and community amenities.” Cleaning up the air is a service provided by government and, as such, provides a benefit to the community.

Comment 64 states that the District does not have the authority to impose conditions of approval and contemplates that any project review will occur after the local agency has completed its approval of the project. The developer will be “allowed” to either include on site mitigation measures or pay a fee. Regardless of the choice of words, it is impossible to characterize this requirement as anything other than a fee or exaction on new development. If this is not enforceable as an exaction, then it is voluntary and the District cannot take credit for it as a control measure for purposes of demonstrating compliance with the SIP goals and the Federal Clean Air Act requirement to demonstrate reasonable further progress.

RESPONSE: The District does agree that the ISR program may require a fee from new development. However, the District disagrees with this interpretation of air emission reductions as a public service under GC 66000(d). In addition, the Mitigation Fee Act does not apply to the ISR rules. See Response to Comment #52 for more information.

129. COMMENT: The District’s attempt to define itself out of the Constitutional requirement that nexus be demonstrated is highly questionable. As noted in Government Code Section 66005(c): “It is the intent of the Legislature in adding this section to codify existing constitutional and decisional law with respect to the imposition of development fees and monetary exactions on developments by local agencies. This section is declaratory of existing law and shall not be

construed or interpreted as creating new law or as modifying or changing existing law."

RESPONSE: See Response to Comment #125 for the findings of the District's analysis of nexus requirements. See also Response to Comment #52.

130. COMMENT: It is important to examine that larger body of existing law. The constitutional standards for legislatively enacted development fees of general applicability, such as the proposed indirect source fee on new development, are less stringent than are the standards for fees imposed on specific developments on an individual and discretionary basis (see *Ehrlich v. City of Culver City* 12 Cal. 4th 854, 50 Cal. Rptr. 2d 242; 1996). Where a development fee is imposed generally on a broad class of property owners, it need only bear a reasonable relationship to the impacts of the development project (Id. at 875-876, 50 Cal. Rptr. 2d at 256,257). In adopting the fee, the city must make the "nexus" findings set forth in Government Code section 66001.

RESPONSE: Although the Mitigation Fee Act does not apply to the ISR rules (see Response to Comment #52), the rule has been designed to meet this test. The District analysis contained in the staff report for the rule provides supporting information to draw this conclusion.

131. COMMENT: The District uses a flawed analysis to produce huge sums to be collected as fees on new housing and new businesses. According to an analysis conducted by Sierra Research (see attached letter) using the numeric emission reduction goals in the District's approved SIP Measures for NOx and PM-10, as well as the assumptions set forth in Section 7.2 of Draft Rule 9510, including the stated ton-per-year mitigations costs, the District will require a total of $38,844,869 to meet the SIP's emission reduction goals for calendar years 2006 through 2010. Assuming the District's "worst case" fee scenario of $856 per unit in 2006, rising to $2841 per unit in 2010, the District could collect as much as $292,719,600. The disparity between the cost of the service and the fee charged is 754%. Even at a lowered standard of review of "reasonableness," a disparity of that magnitude will not survive judicial scrutiny.

RESPONSE: The District has addressed the analysis that Sierra Research provided in Response to Comments #143 to #162. In these responses, the District details which parts of the analysis provided by Sierra Research are flawed and/or inaccurate.

132. COMMENT: Again, the proposed rules are in direct conflict with California law as they are proposing to collect fees well in excess of what might be justified under a nexus test. State law is clear about what burden is on local agencies which propose to impose new fees on development. Government Code Section 66005(a) says "When a local agency imposes any fee or exaction as a condition

of approval of a proposed development … or development project, those fees or exactions shall not exceed the estimated reasonable cost of providing the service or facility for which the fee or exaction is imposed."

RESPONSE: As stated in Response to Comment #52, the Mitigation Fee Act does not apply to the ISR rules. The author points out a significant reason why. Section 66005(a) clearly states "as a condition of approval". The District cannot place conditions of approval on development projects through the ISR program, as it is a ministerial action. In addition, the fees are designed to mitigate only a fraction of project emissions and there is nearly zero potential for over mitigating. The fees are tonnage based (what is required to buy one ton of reduction for a particular pollutant) and are charged on a tonnage base. For example, if a project is required to mitigate 2 tons of NOx, then the price per ton is multiplied by 2 to obtain the off-site emission reduction fee.

133. COMMENT: Discretionary, site specific fees, the kind that the District proposes to impose on individual development projects after a project-specific analysis of all on-site mitigation measures, are subject to the stricter "essential nexus" and "rough proportionality" requirements of *Nollan v. California Coastal Commission,* 483 U.S. 825, 107 S. Ct. 3141 (1987), and *Dolan v. City of Tigard*, 512 U.S. 374,114 S. Ct. (1994); see discussion in *Ehrlich* at 12 Cal. 4th 876, 50 Cal. Rptr. 2d at 256,257; *City of Monterey v. Del Monte Dunes at Monterey Ltd*., 526 U.S. 687, 119 S. Ct. 1624, 1635, 143 L. Ed. 2d 882 (1999).

RESPONSE: Although the District will not be making discretionary actions, the Rule has been designed to meet this test. The District has prepared an analysis of nexus requirements. See Response to Comment #125 for the findings of the analysis.

134. COMMENT: In spite of repeated requests from various local agencies and members of the public, the District has not made available any calculations of the amount of emissions credits that will be awarded for on-site mitigation measures. For reasons explored in greater detail in Sierra Research's comment letter, the URBEMIS model was not designed to, and is incapable of, accurately calculating the amount of emissions reductions from most of the design or location-based indirect source mitigation measures included in the District's proposed mitigation checklist. The unknown cost of the deferred mitigation (achieved after the fact through a grant program) makes an accurate analysis of proportionality even more difficult. For this reason, any project-specific fee calculation will be suspect, and subject to the higher standard of review.

RESPONSE: The onsite emission reduction measures are calculated using the URBEMIS v8.7 mitigation component. The model is available for free at urbemis.com. The author's statement that URBEMIS is, "was not designed to, and is incapable of, accurately calculating the amount of emissions reductions

from most of the design or location-based indirect source mitigation measures included in the District's proposed mitigation checklist," is inaccurate at best, and misleading at worst.

The URBEMIS model is maintained by a state-wide working group that includes representatives from air districts throughout California, state agency representatives (such as CalTrans). Proposed changes to the model are vetted through peer review. The last model update, sponsored by the District, was changes to the Area Source module, specifically overhauling and quantifying the mitigation section.

The model components and methodologies are available to the public in the URBEMIS User's Guide, available at South Coast Air Quality Management District's website http://www.aqmd.gov/ceqa/urbemis.html, and will be made available at the District's website. In addition, the details of the model and the recent update are available in the Staff Report and as Appendix D-Recommended Changes to URBEMIS.For more information on URBEMIS components, see Response to Comment #9.

The author's second main point is that, "the unknown cost of the deferred mitigation (achieved after the fact through a grant program) makes an accurate analysis of proportionality even more difficult." The cost of 'deferred mitigation' is exactly that of the off-site emission reduction fee. The applicant is assessed a fee based on the calculations provided in the rule. The per-ton fee is also provided in the rule. The applicant is assessed an administrative fee, stated in Rule 3180 as 4% of the off-site fee. The applicant is also assessed time and materials for the AIA review in excess of that covered by the application fee, detailed in Rule 3180. This is the full extent of fees. The 'deferred mitigation' fee is expressly stated in the rules.

135. COMMENT: The District has failed to explain its calculations in determining a massive revenue-raising plan or the cost-benefit of the plan. According to the proposed rules, the District plans to raise between $300 million and $450 million in fees between 2006 and 2010 from housing alone. Similar fees will be collected from new schools, hospitals, government facilities, transportation projects, retail, office, and industrial development. The use of these funds, presumably, is to cut NOx emissions by 4.1 tons per day and PM-10 emissions by 5.2 tons per day. Yet, the District's own estimates show that NOx will cost an estimated $4,650 per ton in 2006, rising to $13,250 per ton in 2010 and that PM-10 reductions will cost $2,907 per ton, climbing to $13,850 per ton in 2010. These totals are far less than the fee revenue the District intends to raise during the same period.

RESPONSE: The rule's emission calculations are designed to identify a level of reductions from new development that will meet the SIP targets at the cost per ton predicted each year for each pollutant. The $300-450 million for residential

development severely overstates the fee potential and is based on an erroneous analysis of the rule requirements and incorrect calculations. For a detailed analysis of the cost effectiveness calculations, please review Appendix E – Cost Effectiveness Analysis for Rule 9510 ISR. For a detailed analysis of the emission reductions, please review Appendix B – Emissions Reductions Analysis for Rule 9510 ISR.

136. COMMENT: The District has failed to lay out a coherent plan for using its mitigation plan to actually clean the air and to account for it. How the District intends to spend the massive amounts of money it is proposing to raise remains unclear. This in light of the recent concerns expressed by the District's Governing board that the District has not expended its existing motor-vehicle surcharge fees – representing over $50 million in taxpayer dollars – on mitigation measures in a timely and effective manner. In addition, in advancing these proposed rules – again, raising hundreds of millions of dollars over the next five years – the District has failed to present a clear and specific program to insure timely expenditures for measures that reduce emissions proportionately in the areas contributing fees.

RESPONSE: The District will provide additional information to clarify the proposed plan for expending any fees collected and has amended Appendix E – Cost Effectiveness Analysis for Rule 9510 ISR accordingly. The District has successfully contracted over $100 million in funds for air quality projects.

137. COMMENT: Finally, the District has failed to adequately recognize or account for the impact of the proposed rules on housing affordability and the region's economy. The Socioeconomic Analysis examines narrowly examines housing impacts in terms of homebuilder profits without any similar analysis of housing cost and affordability impacts. This overlooks some important facts. Fees have a direct impact on homebuyers. According to a national study, every $1,000 added to the price of a home, locks more than 23,000 California families out of the housing market. Further, $1,000 to $4,000 added to the purchase price of a home escalates dramatically when it is financed with a typical 30 year mortgage. What this does to housing affordability in the region is completely ignored. In addition, the Analysis overlooks the impact of higher housing costs on the regional economy. First, more money spent on housing means less money spent on other goods and services. Second, higher housing costs discourage new business development as housing costs are viewed by executives as having the biggest impact on labor costs. Finally, fewer buyers mean fewer homes to be built which means fewer construction jobs and the profound ripple effects on the regional economy. Right now, home construction represents more than $7 billion in annual economic output in the Central Valley and is responsible for creating nearly 70,000 new jobs every year.

RESPONSE: First, the August 24, 2005 Socioeconomic Analysis provided at the September 1st workshop contains an analysis of housing costs and affordability impacts in Section 6.3 – Impacts on Affected Industries. Section 6.3 ¶1 states, "In addition to impacts on homebuilders, the section analyzes how changes in price affect prospective homebuyers and renters," and contains *Affordable Housing for Low-and Moderate Income Households* as a subsection. The analysis found:

> *…that while the residential fee that the typical residential development would pay under Draft Rule 9510 and 3180 can increase the amount of household income required to finance the purchase of a new home, the estimated increase represents a small fraction of the original household income required to finance a new home the event no air quality fees were in place. The affect of the fees on rents is similarly small.* Page 1 Executive Summary

Second, 100 percent of all off-site funds collected will be spent on emission reduction projects in the San Joaquin Valley. This will create economic activity and jobs. Many of these projects involve the construction industry; for example, road paving to control PM10. The District recognizes that all off-site fees have an impact on the cost of development; however, the emission reductions obtained from the rule will benefit all residents of the San Joaquin Valley.

Finally, refer to Response to Comment #53 for additional information.

138. COMMENT: In addition to the impacts on housing, those on businesses and public service activities have not been fully analyzed. Half of the vehicle trips addressed by the proposed rules are assumed to come from non-residential uses, but it remains unclear how much non-residential uses are going to pay their mitigation obligations (fees). The Socioeconomic Analysis fails to mention fees for new schools, medical facilities or public facilities such as government offices, roads and libraries. The Socioeconomic Analysis concludes that the impact on commercial and industrial development will be significant, but fails to identify Valley-wide costs based on the full range of non-residential uses, or the ripple effect on public agencies, business start-ups and expansions, job generation and the cost of goods and services.

RESPONSE: The District is unsure where the author is referencing the assumptions on vehicle trips. The cost to any sector is proportional to the emissions caused by indirect, area, and construction emissions generated by the project. The potential cost to any development can be calculated using the URBEMIS model to calculate emissions and the cost of reductions for the year of development and fee formula from the rule. The fee formula and cost of reductions applies to all development subject to the rule equally.

Valley-wide impacts would be speculative. As stated in the Socioeconomic Analysis (p. 42), "It is not clear how the development will adjust to the additional costs." Although the analysis states that, "a typical commercial or industrial development could absorb air quality fees in 2006 or 2010," developers may choose to pass on the cost to the buyer or renter. This aspect is unknown, and any projected valley-wide impacts as a result would be speculative and non-quantifiable.

139. COMMENT: The proposed rules 9510 lack effectiveness estimates for on-site mitigation that lead to uncertainty and inaccurate fees. Appendix C contains a 12-page checklist of mitigation measures that developers must consider for their project. Project applicants are instructed to justify why they did not apply a particular mitigation measure if they decided not to use it. However, the checklist provides no control efficiencies for the measures, making it impossible for project developers to reach an informed decision about the most cost-effective methods. Of greatest concern, a large number of mitigation measures are not included in URBEMIS, and their effectiveness must be negotiated between the project applicant and the District. These off-model mitigation decisions inject great uncertainty and potential inaccuracy into determining the amount of mitigation provided and fees exacted.

RESPONSE: The effectiveness of on-site measures varies depending on the design of the project and the land uses and transportation systems supporting the project. A single percentage number for each on-site measure is not appropriate. Please see Response to Comments #7 and #9 on URBEMIS quantification of measures. It should be noted that URBEMIS is free, available to the public, and user-friendly.

140. COMMENT: The proposed rules will create an expansive new bureaucracy to perform duties that duplicate and conflict with existing local planning processes. Local jurisdictions already have the ability to address and mitigate construction and operational emissions of new development through environmental reviews – pursuant to the California Environmental Quality Act (CEQA). The most recent draft of the proposed rules actually appears to dismiss this likelihood for greater conflict and overlap with CEQA by eliminating previously published schedules for District staff's performance of project reviews, mitigation analyses and fee calculations. Indeed, at a recent District-sponsored workshop regarding the proposed rules, District staff essentially said that their measures were separate from those identical ones mandated by CEQA. Indeed, the failure of the District to clarify its role as a "responsible agency" within the meaning of CEQA will foster conflicts with local governments, result in conflicting mitigation standards and requirements and fuel legal challenges – with direct and negative implications for job-generating business projects, affordable housing, schools, roads, and medical and public facilities urgently needed in the area.

RESPONSE: The rule will be revised to make the District's timeline more closely match CEQA timelines. An applicant may come to the District prior to or concurrent with the local agency discretionary application. This is similar current District consultation in its role as a commenting agency. Once the applicant has settled on a project design and scope and on-site measures that will be used for reducing air impacts, the District or the applicant can prepare an air quality impact assessment to determine project baseline emissions, mitigated emissions, and a off-site fee, if any is required. There will be no conflict with local agency mitigation standards since all on-site measures will be sent to the agency for voluntary review and the District will not accept conflicting measures. In addition, it is the responsibility of the applicant to ensure that measures selected are approvable by the public agency. If a selected measure is not approvable, the District will remove the selection and re-assess the project's air impacts. Although more projects will be subject to analysis under this rule, air quality is a critical concern in the San Joaquin Valley and should be receiving this additional attention.

141. COMMENT: The proposed rules lack essential information on construction emission reduction requirements. The latest draft rule requires new development to reduce construction emissions, but does not provide any details on how emission reduction requirements will be calculated. At the September 1st rule workshop, District staff was unable to confirm that a construction emissions "calculator" would be available during the public comment period, or indeed prior to Board consideration of the rule. The homebuilding industry will be directly affected by this provision of the rule, but we cannot gauge the impact of the requirement without information on the assumptions and methods for calculating project emissions. It's requested that this information be provided with time for public review period or eliminate construction emission requirements from the proposed rules.

RESPONSE: URBEMIS V 8.7 is available to quantify construction emissions. The District is working on enhancements to the default values in the model and will be considering a spreadsheet based calculator if it is more appropriate. This will be completed at least 30 days prior to program implementation.

142. COMMENT: For these reasons, as well as reasons previously placed on the record, we request that the District withdraw these proposals as inequitable and unworkable and unenforceable. Continuing down this path is a waste of public resources, which could be better put to use in developing alternative control measures well-designed and well-calculated to achieve compliance with the emission reduction goals set forth in the SIP.

RESPONSE:

- The District considers the ISR Rules to be equitable
  Fees and assessment are emissions based and same for all land-uses.

- The District considers the ISR rules to be workable.
  The rules set a clear path of what is required and how to achieve that. The URBEMIS model is used statewide by air districts and public agencies for project-specific air impacts.
- The District considers the ISR rules to be enforceable.
  The District is granted the authority to promulgate and enforce the rules through the following:
  The Clean Air Act Sec. 110 (5)(C) and 110 (5)(D)

Sierra Research
Date: September 15, 2005

On behalf of the California Building Industry Association (CBIA), Sierra Research (Sierra) is pleased to submit the following comments on the revised draft Indirect Source Rules (ISR) 9510 and 3180 released by the San Joaquin Valley Unified Air Pollution Control District (the District) in late August.

Our comments in this letter expand upon those presented before the District at the September 1st workshop. As directed by CBIA, our comments focus on, but are not limited to, technical and modeling issues related to the use of the URBEMIS model under the proposed rules based on our independent review of the model and its underlying assumptions. In this review we were assisted by Dowling Associates, Inc. (Dowling), a transportation planning firm with extensive travel demand modeling experience supporting a number of the San Joaquin Valley Transportation Planning Agencies (TPAs).

Our comments are summarized briefly blow. Detailed explanations of each comment follow in attachment A.

143. COMMENT: Summary
Our overarching concerns with the draft ISR rules stem from their use of the URBEMIS model to calculate pollutant emission impacts from development projects and the fact that URBEMIS broadly overstates vehicular emission impacts from residential projects. Our analysis of typical single-family residential projects indicates that URBEMIS overstates vehicle emissions of both NOx and PM_{10} (the two pollutants targeted by these ISR rules) by over 70%. Since the mitigation fees that developers would pay under the proposed rules are directly related to the emission impacts calculated by URBEMIS, this model also substantially inflates the fees developers should be required to pay by roughly the same percentage. Our key concerns are summarized below.

RESPONSE: Sierra Research's conclusions are based on erroneous information. URBEMIS is designed to estimate all emissions related to a development project and counts all trips going to and coming from the development as is appropriate for a project level analysis. This accounts for the

higher emission numbers. By using trip counts using both ends of the trip, URBEMIS can credit developers who design their projects to generate less trips with reductions for both ends of the trips that were reduced. To avoid charging a fee on emissions that may be attributable to another new or existing indirect source, the fee formula is based on 50% of the baseline emissions after mitigation is applied onsite. The regional transportation model used as a comparison with URBEMIS is flawed when used for a project level analysis. The fees are not inflated compared to the impact. Sierra incorrectly calculated the potential fees.

144. **COMMENT:** URBEMIS Defaults Are Biased High – Most but not all of our concerns with the URBEMIS model result from its heavy reliance on detailed default assumptions that are not likely to be well understood by project applicants required to use the model under the proposed rules. As our analysis shows, a number of these default assumptions substantially overestimate residential project emissions in the following areas:

- by about 20% for NOx due to over-represented heavy-duty vehicles in the fleet mix;
- by over 20% for NOx, ROG and PM_{10} because of older age distribution assumptions; and
- by roughly 50% for PM_{10} due to incorrect silt loading factors; and
- by 20-30% for all pollutants from overstated average vehicle trip lengths in the San Joaquin Valley.

RESPONSE: The District will provide revised defaults accounting for land use specific fleet mix information, a Valley specific silt loading factor, and updated trip length data prior to rule implementation. The District will consider an age correction factor; however, more evidence of the validity of this approach is needed.

145. **COMMENT:** URBEMIS Is Inconsistent With SIP Methodology – Region-wide pollutant emissions calculated under State Implementation Plans (SIPs) use a more rigorous set of models to determine motor vehicle travel impacts and resulting emission impacts than represented in URBEMIS. During the ISR rule development, the District has provided no clear evidence that URBEMIS is capable of calculating emissions from development projects in a manner that is consistent with SIP-level emissions and has simply asserted its appropriateness for use under these rules.

To test the District's assertion, Sierra and Dowling performed an equivalent, side-by-side analysis of travel and emissions impacts of a typical hypothetical

"suburban fringe" residential project using both URBEMIS and the Fresno County regional travel demand model (one of several county-level travel demand models used to calculate vehicle travel under the SIP). (As in URBEMIS, emission impacts were calculated using the Air Resources Board's EMFAC2002 vehicle emission factor model.) Our analysis found that URBEMIS estimates over 60% higher vehicle miles traveled (VMT) and over 50% higher emissions for all pollutants than the travel model/SIP-based approach. Moreover, this discrepancy cannot apparently be corrected by using "better" URBEMIS inputs than the default assumptions built into the model. Thus, these findings cast doubt on the validity of broadly applying URBEMIS under the ISR rule as URBEMIS clearly does not produce SIP-consistent emission impacts.

RESPONSE: Prior to implementation, the District will provide updated default values to provide the most accurate emission estimates possible. Regional travel demand models are not practical for project level analysis. The rule requires 50 percent of baseline emissions to be mitigated. The 50 percent more than accounts for emissions due to counting both ends of the trips related to the project. URBEMIS counts two way trips to account for the total impact of the project. When used in analyze a single project, this is appropriate measure of impact. When looking at regional impacts, only half of the trips should be counted since if every project, new and existing were examined at once it would exactly double count the trips. Using URBEMIS will result in consistent analysis from project to project. Emission reductions achieved by the rule from offsite measures will be calculated using emission factors and methods consistent with the SIP. Onsite measures will be credited in accordance with EPA Voluntary and Emerging Emission Measures Policy.

146. COMMENT: Residential Fees Appear Understated in Socioeconomic Report – In addition to the comments summarized above on the URBEMIS model, we also have concerns with the fee estimates for typical residential developments contained in the District's socioeconomic analysis of the ISR rules. Table 16 of the socioeconomic report cites "worst-case" fee estimates ranging from $856 per unit in 2006 to $2,841 per unit in 2010. The supporting text offers no explanation of how these estimates were developed.

Its fundamental flaws notwithstanding, Sierra independently estimated residential fees using URBEMIS, and the fee formulas and cost reduction ratios contained in the August drafts of Rule 9510 and 3180. Our analysis found fees were twice as high ($1,607-$7,971 per unit) over the same period for a single-family residential development, assuming a default housing density of 3 units/acre. When the housing density was doubled (to 6 units/acre), per unit fees were still over 50% higher ($1,295-$5,556 per unit) than those cited (without explanation) In the socioeconomic report. . We also calculated fees assuming a 93% vs. 7% split between single and multi-family units, based on the average number of new single- and multi-family housing units permitted in the San Joaquin Valley in

2002 obtained from the California Department of Finance (http://countingcalifornia.cdlib.org/title/castat.html). Even under these mixed use assumptions, our fee estimates ranged from $1,550-$7,702 per unit, still nearly twice as high as those in the socioeconomic report.

Thus, we question how the estimates in that report were developed. Our analysis suggests that the worst case residential fees are substantially higher than those employed in the socioeconomic analysis. If this is correct, then the impacts quantified in the study are understated and would need to be revised.

RESPONSE: Sierra incorrectly calculated the construction emission reductions. This accounts for the differences between the District's numbers in the socio-economic impact report and Sierra's inflated numbers.

147. COMMENT: Revenue From Residential Fees Will Dramatically Exceed the Cost of Purchasing Mitigation Needed to Meet ISR SIP Commitments – Using information developed by the District for this rulemaking, Sierra prepared estimates of the funds that will be generated from residential fees and spent purchasing mitigation between 2006 and 2010. We found incoming fee revenue exceeded outgoing mitigation expenses by $146 to $728 million depending on the level of the fee assumed (the percent difference ranges from 377% to 1,873%). The magnitude of these differences indicates that the rule is seriously flawed. There are two primary reasons for the discrepancy between fee revenue and mitigation expenses. First, as noted above, URBEMIS default assumptions include biases that lead to significant overestimates of project emissions, which in turn lead to overpayment of mitigation fees. Second, there is a fundamental flaw in the fee formulas developed for the rule that overstates the cost of purchasing mitigation.

The fee formulas are designed to advance to the District a monetary sum necessary to mitigate excess emissions not mitigated onsite for a period of ten years. Assuming no onsite mitigation, the operational NOx formula requires payment for 2.5 times and the operational PM_{10} formula requires payment for 5 times the estimated base year emissions. The important point is that developers would be required to pay mitigation fees that offset several years of project emissions. Mitigation expenses, however, are not denominated in years. Instead they represent a single one-time purchase that continues to provide emission reductions for multiple years. According to the staff report the average project life for NOx mitigation is 7 years and for PM_{10} it is 12 years.

Thus, assuming no onsite mitigation, a project applicant can expect to pay for 17.5 years of mitigation for the base year NOx emissions of the project (i.e., 2.5 × 7) and 60 years of mitigation for the base year PM_{10} emissions of the project (i.e., 5 × 12). This bias is extreme and comes on top of the significant default biases incorporated into URBEMIS. Collectively, they explain the huge absolute

and percentage difference between incoming fees and outgoing mitigation expenses. Since the residential fees in this analysis are used to purchase all of the ISR SIP mitigation commitments, the inclusion of both residential and non-residential (e.g., industrial) development fees would only worsen the already enormous inconsistency between ISR revenue and expenses.

RESPONSE: The fee formula does not include a project life multiplier of 7 or 12 years. Any funds collected will be used on projects with average project lives of 7 for NOx or 12 years for PM10, so the mitigation is effective for that long on average. The fee formula calculates an amount of emissions in tons that must be mitigated at the cost of reductions for each year. For most projects funded, the reductions may be considered permanent since at the end of the project life new engines/devices will be purchased that achieve reductions that are equivalent or better.

148. COMMENT: Conclusions.
The draft ISR rules have serious and fundamental flaws related to their reliance on URBEMIS and its extreme overstatement of residential project emissions. Moreover, our analysis of incoming and outgoing revenue streams indicates that the ISR fee formulas dramatically overstate the amount of revenue needed to buy emission reduction offsets for NOx and PM_{10} at "market" prices estimated by the District.

RESPONSE: The District strongly disagrees with this conclusion. Sierra based its conclusions on erroneous calculations and comparisons.

SIERRA RESEARCH
ATTACHMENT A
DETAILED COMMENTS

Our detailed comments on the ISR rules are presented below. Some of these comments were provided by Sierra to the District in July in response to the preceding versions of the draft rules. For completeness and where relevant as related to the District's response to these earlier comments, they are repeated in this letter. At the end of each of these comments, we have listed the District's response as contained in Appendix A of the August version of the ISR rule packet and provided follow-up comments to these responses.

149. COMMENT: URBEMIS Fleet Mix Overstates Residential Project Emissions – One of the most striking instances of inappropriate default data in URBEMIS is the distribution of vehicle types (e.g., passenger cars, light trucks, heavy trucks, etc.) or "fleet mix" employed in the model. Fleet mix differences can significantly impact calculated vehicle emissions because of the relative stringency imposed on different vehicle types under emission certification standards adopted and implemented by the state Air Resources Board (ARB). Generally speaking,

passenger cars must meet more stringent (i.e., lower) emission standards than larger vehicle types such as heavy-duty trucks.

The default fleet mixes in URBEMIS (which vary slightly by calendar year) are based on statewide average distributions contained in ARB's EMFAC2002 model. Those default distributions assume that roughly 3% of the vehicles are heavy-duty vehicles (trucks and buses). This is reasonable for a statewide or air basin average of a large vehicle fleet, but clearly not representative of the mix of vehicles operating in a new residential project. New residential projects are not likely to contain any heavy-duty vehicles (in the "operating" phase following construction). Thus, the use of the URBEMIS default fleet mixes that contain heavy-duty vehicles is clearly inappropriate for these projects.

Table 1 compares the results of URBEMIS runs with default and "no heavy-duty" adjusted fleet mixes. These URBEMIS runs were performed for hypothetical 100-unit residential development with single family detached housing for calendar year 2005 using default assumptions for the remaining inputs and assume no mitigation.

The upper portion of Table 1 shows the existing default fleet mix and the corrected fleet mix which was adjusted by removing all heavy-duty vehicle categories and renormalizing the remaining percentages. The lower portion compares operating emissions calculated by URBEMIS using each fleet mix. Although the emission impacts for ROG and PM_{10} are minimal, NOx emissions are some 23% lower (2.13 vs. 2.76 tpy) when representative fleet mix is used to model residential project emissions.

Table 1
Emission Impacts of Corrected Vehicle Fleet Mix
(SJV Fleet, Calendar Year 2005)

Vehicle Class	Default Mix (%)	Adjusted Mix (%)
Light Auto	56.1	58.1
Light Truck 1	15.1	15.6
Light Truck 2	15.5	16.1
Med Truck	6.8	7.0
Light-Heavy Truck 1	1.0	-
Light-Heavy Truck 2	0.3	-
Med-Heavy Truck	1.0	-
Heavy-Heavy Truck	0.8	-
Line Haul	0.0	-
Urban Bus	0.1	-
Motorcycle	1.6	1.7
School Bus	0.3	-
Motor Home	1.4	1.5
FLEET TOTALS	100.0	100.0
Heavy-Duty Pct.	3.5	0.0
Operating Emissions (tpy) for 100-Unit Residential Project:		
ROG	2.18	2.16
NOx	**2.76**	**2.13**
PM_{10}	1.99	1.98

This is a clear instance where URBEMIS default inputs are not appropriate and significantly overstate NOx emissions and resulting mitigation fees that would be calculated under the District proposed ISR rules. This finding clearly points out the need for the District to thoroughly review the default assumptions in URBEMIS and carefully consider the technical capabilities of applicants as end users of the model under these rules.

RESPONSE: The District is working to ensure that the fleet mix assumptions in URBEMIS are appropriate for each land use type. The District will provide updated land use specific fleet mix information for residential development and possibly other land uses prior to rule implementation. URBEMIS data files containing the updated fleet mix data will be available for ease of use. We will accept changes to default information such as fleet mix when supported by adequate documentation. While the fleet average may somewhat overstate emissions [from] residential developments there are heavy-duty truck emissions associated with them. These include school buses, refuse collection, package delivery and other service vehicles.

150. COMMENT: Follow-Up – Refuse collection vehicles are contained in the heavy-heavy truck (HHT) category. In 2004, ARB adopted a statewide rule for controlling emissions from solid waste collection vehicles

(http://www.arb.ca.gov/regact/dieselswcv/dieselswcv.htm). Under that effort, a solid waste collection vehicle emissions inventory was prepared which identified the statewide population of both residential and commercial refuse collection vehicles as 11,778 in calendar year 2000. According to EMFAC2002, the statewide population of all HHTs in 2000 was 158,204. Thus, residential and commercial refuse collection vehicles represent only 7% (11,778 ÷ 158,204) of the total HHT population, with residential collection vehicles less than that.

Package delivery and other service vehicles generally span the light-heavy truck (LHT) and medium-heavy truck (MHT) categories, but the vehicle populations and vehicle miles traveled for those vehicles serving residential customers is likely much less than those serving commercial customers. Thus, the EMFAC2002 fleet percentages for the LHT and MHT categories still overstate the fractions of those vehicles serving residential areas.

To address these issues, the analysis presented earlier in Table 1 was revised to include school buses and all LHTs and MHTs at the same proportions of the original EMFAC2002 fleet mix. This addresses the District concern that school buses be included and conservatively overstates the representation of residential package delivery and other service vehicles. Since residential refuse collection vehicles represent a very small fraction of all HHTs (less than 7%), the HHT residential fleet fraction was set to zero. Using this revised residential fleet mix, NOx emissions were calculated to be 2.44 tpy, which are 12% lower (2.44 vs. 2.76 tpy) than those based on URBEMIS defaults.

Thus, we believe NOx emissions for a properly determined residential fleet mix are still 12-20% lower than if URBEMIS defaults are used, depending on what assumptions are made with respect to the package delivery and other service vehicle fractions of LHTs and MHTs.

RESPONSE: EMFAC emission projections are revised periodically to account for changes from adopted motor vehicle emission regulations. The next version of EMFAC is expected to be released in 2006. The District will help fund the next upgrade to URBEMIS to utilize the new EMFAC. The District's methodology for estimating land use specific fleet mixes will be available prior to rule implementation

151. COMMENT: URBEMIS Age Distribution Overstates Residential Project Emissions – Another area where URBEMIS does not accurately reflect particular project conditions relates to the distribution of vehicle ages internally built in to the model. The vehicle age distributions contained in URBEMIS are based on statewide average vehicle registrations for the entire on-road fleet contained in the EMFAC2002 model. These distributions likely reflect a generally older vehicle fleet than exists in a new residential project. Vehicle emissions strongly depend on vehicle age due to ARB's implementation of dramatically tighter

emission standards over the last 30 years. New vehicles today are approximately 10-20 times cleaner than those introduced in the early 1970s. And this trend will continue into the future. Thus, it is necessary to accurately represent the age distribution of a fleet of vehicles when calculating their emissions.

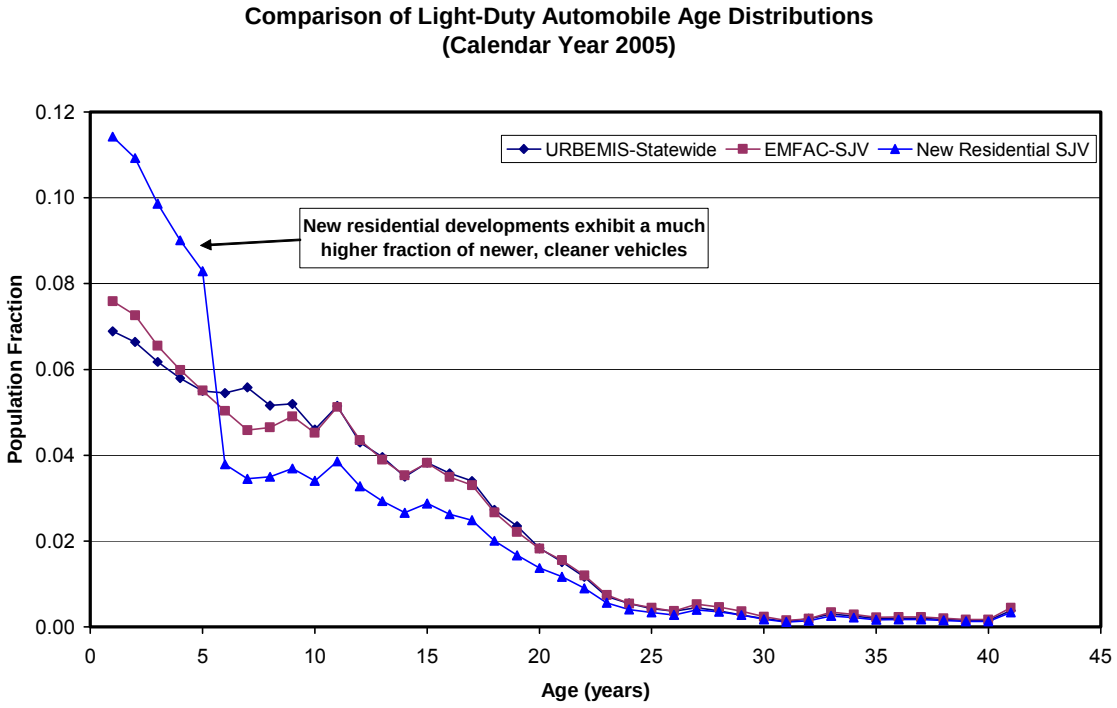
Our subcontractor Dowling has compiled statistics on housing age and vehicle fleet age from two readily available data sources: 1) the 2000 U.S. Census; and 2) the 2001 Caltrans Statewide Household Travel Survey. They compared vehicle age from households in the San Joaquin Valley in two groups:

1. "new" households defined as those that were ≤ 10 years old; and
2. "old" households defined as those older than 10 years.

Dowling found that the "new" housing areas had a 49.5% to 50.5% mix between vehicles ≤ 5 years old and vehicles > 5 years old. In the "old" household areas, the split between ≤ 5 year old vehicles and vehicles > 5 years old was 35.7% to 64.3%, indicating that new households in the San Joaquin Valley reflect a newer vehicle fleet than represented by the URBEMIS model defaults for the entire area.

Figure 1 illustrates the differences in vehicle age distributions between those in the EMFAC2002 model (upon which URBEMIS is based) and those developed for a typical new residential development based on Dowling's findings. As highlighted in Figure 1, new residential developments exhibit a much larger fraction of newer and therefore generally cleaner vehicles.

Figure 1



The emissions impact of using a younger age distribution typically found in new residential developments was determined from a series of spreadsheet calculations by individual model year using age-specific emissions factors extracted from the EMFAC2002 model.

Table 2 presents and compares resulting light-duty automobile exhaust emission factors (in grams per mile) during summer in calendar year 2005. Table 2 also shows the percentage difference in emission factors (and thus calculated project exhaust emissions) using the URBEMIS and New Residential age distributions.

Table 2
Exhaust Emission Impacts of Corrected Vehicle Age Distribution
(SJV Light-Duty Auto Fleet, Calendar Year 2005, Summer)

Quantity/Age Distribution	ROG	NOx	PM_{10}
Emission Factor (grams/mile) - URBEMIS Default	0.177	0.290	0.0082
Emission Factor (grams/mile) - New Residential	0.132	0.222	0.0065
% Difference (New Residential vs. URBEMIS)	**-25.6%**	**-23.3%**	**-20.5%**

As highlighted in Table 2, exhaust emissions of light-duty automobiles were found to be over 20% lower for ROG, NOx and PM_{10} when an age distribution representative of a typical new residential neighborhood is used compared to the

existing fleet-average age distribution contained in URBEMIS. These emission impacts calculated for automobiles are likely to be similar for light-duty trucks as well, which together with automobiles account for about 90% of the vehicles in a residential project fleet.

RESPONSE: The District will consider adding an age correction factor in the fee calculation formula for residential development. The emissions for PM10 in the table appear to be from exhaust and are small compared to the entrained road dust that is not affected by the age of the vehicle.

152. COMMENT: Unlike the previous fleet mix problem which can be addressed by issuing guidance to supply a different fleet mix in one of the URBEMIS input screens, the model cannot be easily revised to properly account for a representative residential vehicle fleet age distribution. The way URBEMIS is currently designed, it internally uses a series of calendar year and season specific emission factor files developed from "upstream" runs of the EMFAC2002 model for a statewide average vehicle fleet. Although it is possible to generate air basin-specific EMFAC2002 files, URBEMIS would need to be re-programmed to utilize these air basin-specific emission factors. More importantly, fleet age distributions for an air basin as a whole are still not likely to reflect those of a typical new residential project. This can clearly be seen from the "EMFAC-SJV" and "New Residential SJV" distribution plotted earlier in Figure 1.

The EMFAC2002 model maintained by ARB is designed to produce several types of outputs under the following three modes: 1) "Burden"; 2) "Emfac"; and 3) "Calimfac". URBEMIS is currently designed to work with "Emfac" mode outputs from EMFAC2002. Although EMFAC2002 can be run with different age distributions, this feature is only available under the "Burden" output mode, not the "Emfac" mode.

Thus, we believe the District will need to completely overhaul the design of URBEMIS and its interaction with ARB's "official" EMFAC2002 emission factor model or consider another analysis method/tool to adequately address this age distribution issue for residential project analyses under the ISR rules.

RESPONSE: The District continues to believe that URBEMIS is the appropriate tool for the job. The District will consider an off model vehicle age correction if well documented. However, the District believes that the fleet average is a reasonable assumption for new development projects. There are a number of factors that impact emissions including age, vehicle class, and fleet turnover. If more specific information is available, the District would consider utilizing project specific numbers.

153. COMMENT: Follow-Up – When asked to clarify this response at the September 1 workshop, District staff indicated that their primary concern with simply using the revised age distributions presented earlier by Sierra/Dowling was that light-duty vehicle class mixes may also be different in new residential areas than represented by URBEMIS defaults. Specifically, the concern was that residential vehicle fleets contain a much higher fraction of sport utility vehicles (SUVs) and pickups than represented in a region-wide fleet.

Our original analysis of the emission impacts of corrected vehicle age distribution was conservatively applied only to passenger cars (which make up less than 60% of the residential fleet), instead of all light-duty vehicles (which comprise roughly 90% of the fleet). We revised our original analysis to include all light-duty vehicles (which include both passenger cars and the light-duty truck categories) because the household survey data upon which the revised age distributions were based included both cars and light-trucks. And to conservatively address the District's concern that a residential fleet would contain a higher fraction of SUVs and pickups than in a region-wide fleet, we doubled the existing fraction of the Light-Duty Truck 2 (LDT2) category (which contains most of the SUVs and large pickups) from roughly 16% to 32%.

Table 3 compares the results of this revised analysis, which applies the newer age distribution to all light-duty vehicles and doubles the LDT2 fleet fraction, to those based on the original URBEMIS defaults. The percentage differences shown in Table 3 are very similar to those presented earlier in Table 2. The reason for this is that although light-duty trucks (specifically LDT2s) have been historically required to meet less stringent in-use emission standards than passenger cars, this gap in stringency has narrowed in recent years and more importantly, their standards have been tightened over time much like passenger car standards. Thus, dramatically increasing the assumed light-duty truck fraction in the residential fleet has much less effect on the relative emission impact compared to URBEMIS defaults and accounting for the younger age distributions of all light-duty vehicles found in newer residential vehicle fleets.

Table 3
Exhaust Emission Impacts of Corrected Vehicle Age Distribution and Doubled LDT2 Fleet Fraction
(SJV Light-Duty Vehicle Fleet, Calendar Year 2005, Summer)

Quantity/Age Distribution	ROG	NOx	PM_{10}
Emission Factor (grams/mile) - URBEMIS Default	0.180	0.345	0.0103
Emission Factor (grams/mile) - New Residential	0.133	0.267	0.0084
% Difference (New Residential vs. URBEMIS)	**-26.1%**	**-22.5%**	**-17.9%**

Therefore, even when accounting for a higher fraction of SUVs and pickups in new residential fleets, we maintain that URBEMIS still overstates NOx and PM_{10} exhaust emissions by approximately 20% due to unrepresentative age distribution assumptions. We believe we have provided the District with ample and readily-available evidence regarding residential fleet age distributions, whose impacts overwhelm those due to what may be higher SUV and pickup fractions in new residential developments. Furthermore, even if fleet data were collected through a survey of new residential developments, the District has not answered the question of how to apply these data since they cannot be accommodated within URBEMIS.

RESPONSE: The District still believes that URBEMIS is the best model for the job and has consistently stated that it would use better data when available. The District will consider applying an age correction factor to the output to address this concern.

154. COMMENT: URBEMIS Silt Loading Factors Inconsistent with ARB Inventory, Overstates Residential Project Emissions – This is another striking example where URBEMIS default assumptions dramatically overstate actual residential project emissions; in this case, by nearly 50% of total operating PM_{10} emissions.

The default silt loading factor supplied to the user by URBEMIS for calculation of entrained (i.e., fugitive dust) PM_{10} emissions is inconsistent with those used by ARB on its emissions inventory and the District's PM_{10} SIP.

In URBEMIS and in ARB's emissions inventory, fugitive dust PM_{10} emissions are calculated for vehicle travel on paved roads using the following equation:

$$EFpaved = k \times (sL/2)^{0.65} \times (W/3)^{1.5}$$

Where:

EFpaved is the emission factor (lb per vehicle mile traveled);
k is the particle size multiplier (0.016 for PM_{10});
sL is the road surface silt loading factor (in grams per square meter);
W is the average weight of vehicle traveling on the road (4,850 lbs is default).

The default road surface silt loading factor in URBEMIS is 0.1 grams per square meter. This value is higher and does not comport with San Joaquin Valley values used by ARB in its statewide inventory for entrained road dust on paved roads, which are different for each roadway type as follows:

- 0.020 g/m^2 for freeways
- 0.035 g/m^2 for major arterials

- 0.035 g/m^2 for collectors
- 0.320 g/m^2 for urban locals
- 1.6 g/m^2 for rural locals.

Using data compiled by the Federal Highway Administration (FHWA) under the Highway Performance Monitoring System (HPMS), the San Joaquin Valley exhibits the following travel percentages by the road types listed above:

- Freeways – 33.25%
- Major Arterials – 38.97%
- Collectors - 27.59%
- Urban Locals – 0.19%
- Rural Locals – 0.01%

The weighted average silt loading factor using these travel fractions and ARB's silt factors by roadway type was calculated to be 0.031 grams per square meter, which is well below the 0.1 default values contained in URBEMIS. Using this ARB and HPMS-based weighted average silt factor for the San Joaquin Valley in the above equation results in a paved road dust emission factor that is 53.6% below that based upon the URBEMIS default silt factor. Use of the ARB-consistent silt factor will also result in a 53.6% reduction in paved road dust PM_{10} emissions computed using URBEMIS defaults.

According to emissions inventory summary data available from ARB on-line at http://www.arb.ca.gov/ei/emsmain/reportform.htm paved road dust PM_{10} emissions make up about 90% of total on-road vehicle PM_{10} emissions in the San Joaquin Valley, excluding unpaved road travel. (We exclude unpaved road dust under the assumption that operating emissions of vehicles in a new residential project exhibit little travel on unpaved roads.) Thus, use of a paved road silt loading factor consistent with ARB's inventory would translate to a 48.2% reduction on total operation PM_{10} emissions of a residential project as described below:

$$\%Reduction = PavedFrac \times (1 - \%SiltReduction) + RemainingFrac$$
$$= 90\% \times (1-53.6\%) + 10\%$$
$$= 48.2\%$$

Where *PavedFrac* is the fraction of project emissions from paved road dust, *%SiltReduction* is the relative reduction in paved road emissions using the ARB-consistent silt factor compared to URBEMIS and *RemainingFrac* is the remaining project emissions of PM_{10} (from exhaust, brake wear and tire wear).

Again, this issue and the alarmingly high overstatement of PM_{10} emissions based on model defaults points out the need to further review and provide detailed guidance for use of URBEMIS in calculating project-specific emissions under the proposed ISR rules.

RESPONSE: The District concurs with Sierra's methodology and will ensure that the correct silt loading factors are utilized in URBEMIS defaults.

155. COMMENT: Follow-Up – We appreciate the District's response to correct the existing silt load factors in URBEMIS. However, when questioned during the September 1 workshop about how and when these silt loading corrections (as well as corrections related to the earlier fleet mix and vehicle age issues) would be addressed, staff indicated that these corrections to URBEMIS defaults would not be completed and released for review prior to the District Board hearing in mid-November for adoption of the ISR rules. Moreover, staff was unclear whether these corrections would be handled by revising the URBEMIS model, or by developing written guidance for users of the model under the ISR rules instructing them how to correct the overstated model defaults when applied to residential development projects.

Given the significance of the impacts of the flawed model defaults on the costs to comply with these proposed rules, we believe these model revisions or guidance documents should be developed and publicly reviewed before ISR rules are adopted if the District intends to pursue the rules despite URBEMIS' deficiencies.

RESPONSE: The District is developing guidance for preparing the air quality impact assessment required by the rule. The guidance will include the default silt-loading factor provided by Sierra Research. The District will provide URBEMIS data files updated with changes that can be used without having to enter the new data. The next upgrade to URBEMIS will contain much of the updated information. The staff report has been updated to describe the impact of these changes on the emissions estimates and economic impacts.

156. COMMENT: URBEMIS Is Inconsistent With SIP Methodology – When a typical residential project was modeled using both URBEMIS and a SIP-based modeling URBEMIS estimates over 60% higher vehicle miles traveled (VMT) and over 50% higher emissions for all pollutants than SIP-based approach.

This is not surprising. The URBEMIS model was originally written as a "sketch-planning" tool, designed to produce intentionally conservative analyses of localized emission impacts from different land uses. For over ten years, the URBEMIS model has been used to assess development project emissions under the California Environmental Quality Act (CEQA) review process. Under CEQA, use of URBEMIS as a conservative (i.e., over-predictive) screening tool is entirely appropriate for comparing project emissions to "significance thresholds"

established under air district guidelines since CEQA requires disclosure of project impacts and significance, but not compliance with regional or state air quality plans or standards. Under this process, URBEMIS-based emission impacts can acceptably err on the side of caution or over-prediction.

RESPONSE: URBEMIS has been continuously updated to provide increased accuracy with each new version. Many of the default values that are based on statewide averages can be changed to use local information when available. The District appreciates the review conducted by Sierra Research to identify additional areas of improvement. The next version of URBEMIS will contain many of these improvements. In the interim, applicants will be instructed to enter local information that is currently available. This information will be provided in a District guidance document. Analyses prepared by the District will also use the local information. URBEMIS remains the best tool for performing project level analyses and provides reasonable estimates of project impacts.

157. COMMENT: Conversely, these ISR rules are being implemented to address specific emission reduction commitments made by the District in Ozone and PM_{10} SIPs for the San Joaquin Valley. Region-wide pollutant emissions calculated under these SIPs use a more rigorous set of models that have been validated with direct measurements to determine motor vehicle travel impacts and resulting emission impacts than represented in URBEMIS. During the ISR rule development, the District has provided no clear evidence that URBEMIS is capable of calculating emissions from development projects in a manner that is consistent with SIP-level emissions. The District has simply asserted the appropriateness of URBEMIS under these proposed ISR rules despite the fact that CEQA guidelines published by other air districts such as the Bay Area and Sacramento clearly characterize URBEMIS as a conservative sketch-planning tool.

RESPONSE: The District believes that URBEMIS has been improved beyond its characterization as a sketch planning tool. Very few of the modules of the program are overly conservative. Most modules rely on statewide averages extracted from the emission inventory which should not be considered conservative estimates. The most important module is the mobile source module that includes the same emission factors used to build the emission inventory. It does a good job of arriving at a composite emission rate needed for a project level analysis. Models can always be made more accurate by individualizing more and more input factors. The District believes that URBEMIS balances data requirements with reasonable output accuracy and ease of use. The travel demand models described by Sierra Research are extremely data intense and would be very costly to run for the approximately 1,000 projects that will be submitted to the District each year. It is uncertain whether the demand models are more accurate for project level analyses than URBEMIS with local information**.**

158. COMMENT: To test the District's assertion, Sierra and Dowling performed an equivalent, side-by-side analysis of travel and emissions impacts of a typical hypothetical "suburban fringe" residential project using both URBEMIS and the Fresno County regional travel demand model3 (one of several county-level travel demand models used to calculate vehicle travel under the SIP. (As in URBEMIS, emission impacts were calculated using the Air Resources Board's EMFAC2002 vehicle emission factor model.)

For our investigation, we considered a 500-unit single family residential project located within a 160-acre parcel in an undeveloped/lightly-developed area in Clovis northeast of downtown Fresno near the intersection of Minnewawa and Shepherd at the edge of the urban area. This was intended to represent a typical suburban project at the fringe of an urbanized area and roughly matches the default single family residential project density assumed in URBEMIS of three units per acre. We looked at travel activity and emissions during Summer 2010.

Dowling ran the Fresno COG travel demand model in 2010 for a baseline (no project) case and a "with project" case under which the 500-unit project was simulated within the affected traffic analysis zone. The detailed travel model outputs were then fed into ARB's current EMFAC2002/BURDEN model to calculate associated emission impacts with the added project. These results were then compared to an URBEMIS simulation of a 500-unit single-family residential project in the San Joaquin Valley. The URBEMIS run assumed pass-by trips were accounted for and assumed an urban land use type. Since we simulated a single land use (single family residential) in both the travel model and URBEMIS runs, there was no need to apply the "double-counting" correction within URBEMIS.

Our analysis found that URBEMIS estimated daily VMT from this project at 35,817, compared to 21,886 using the SIP-based travel model, an increase of nearly 64%. Emission impacts using URBEMIS were also higher for all pollutants and ranged above 50% compared to the SIP-based approach.

3 Regional travel models such as the Fresno County model mathematically simulate vehicle trip movements over a regional roadway network by dividing the region into demographically similar "traffic analysis zones" (TAZs) similar to census tracts. Demographic and socioeconomic data for each TAZ are used to estimate the number and types of person trips taken between each TAZ. These person trips are then translated into vehicle trips (or non-vehicle trips such as walking or bicycle trips) and loaded onto a series of roadway links that spatially approximate the actual regional roadway network.

From our analysis of the underlying elements of the two approaches, we have preliminarily concluded that the discrepancy in VMT is caused by two related factors:

1. overstated defaults trip lengths for typical suburban residential projects in the San Joaquin Valley; and

2. the inherent underreporting of short trips in household survey data upon which average trip length estimates are based.

The trip generation rates in both models were identically-matched because they both rely on the same source, trip generation rates by land use from the Institute of Transportation Engineers (ITE). The ITE Trip Generation rates are a more accurate representation of vehicle traffic at a particular land use than rates based on household travel surveys. The ITE rates are based on actual driveway traffic counts at many land uses across the United States, and do not rely on self-reporting of trips. Therefore, the use of ITE trip generation rates in URBEMIS would accurately represent total trip-making, if the characteristics of the higher numbers of trips were identical to the characteristics survey-based trips used to determine average trip lengths. However, there is evidence that this is not the case, particularly for trip lengths.

RESPONSE: The District will contact the 8 Valley transportation planning agencies to obtain new recommended trip lengths for each county. This information will be included in the guidance provided by the District for use in URBEMIS. The District is not convinced that using the Transportation Demand Model will provide more accurate results.

159. COMMENT: The 2000-2001 Caltrans travel survey included a parallel study of actual vehicle movements using GPS units. The vehicle movements from the GPS surveys were compared with the self-reported trips from the same households. Overall, the GPS surveys resulted in 29 percent more trips than the self-reported travel survey results.

A related study4 identified the characteristics of underreported trips.5 In particular, the study found that short trips were much more likely to be underreported in travel surveys. Although trips of 10 minutes or less made up 48 percent of the total sample, the short trips accounted for 71 percent of the trips that were missing in self-reported results but identified by the GPS survey. Therefore, the short trips were about 50 percent more likely to be missing from the travel survey results.

4 Joanna Zmud and Jean Wolf, "Identifying the Correlates of Trip Misreporting – Results from the California Statewide Household Travel Survey GPS Study," 10th International Conference on Travel Behaviour Research, August, 2003.

5 Joanna Zmud and Jean Wolf, "Identifying the Correlates of Trip Misreporting – Results from the California Statewide Household Travel Survey GPS Study," 10th International Conference on Travel Behaviour Research, August, 2003.

The URBEMIS model therefore overestimates vehicle-miles of travel by basing the total trip generation on the higher ITE Trip Generation rates, but basing the average trip length characteristics on a smaller survey-based subset of trips that excludes many of the shorter trips. Moreover, it may not be easy or simple to correct this discrepancy because unbiased GPS or instrumented vehicle data may not be available for the San Joaquin Valley.

RESPONSE: It seems that Sierra is attempting to discredit URBEMIS by over complicating the emission calculation process. The differences between the project modeling done by URBEMIS and the regional modeling done by transportation demand models are not a valid comparison. With minor corrections URBEMIS will produce results very close to the SIP inventory model and URBEMIS will continue to be improved with each new version.

160. COMMENT: Although our side-by-side analysis of URBEMIS against a SIP-based approach was limited to a single hypothetical case study of a suburban "fringe" residential development, this case was intentionally selected because in addition to being a common example, it also represented conditions (i.e., urban edge) where it was believed that travel impacts from both approaches would be in closest agreement. Thus, the fact that this case study showed URBEMIS overstated SIP-based travel and emissions impacts by over 60% and 50%, respectively, casts doubt on the validity of broadly applying URBEMIS under the ISR rule as URBEMIS clearly does not produce SIP-consistent emission impacts.

Under both public and private sector work performed throughout California for over twenty years, Sierra has found no precedent at any air pollution control district that employs a fundamentally inconsistent methodology in implementing, monitoring and tracking emission reductions of a district rule from that used to calculate its SIP-based commitments. Given the above findings, we believe District bears the "burden-of-proof" that URBEMIS is consistent with SIP-based methods.

RESPONSE: The District disagrees with the assertion that URBEMIS is fundamentally inconsistent with SIP commitment methodologies. Since the emission inventory is built on a regional basis, the differences in individual projects are not addressed. Benefits of on-site measures and surrounding land uses are not credited in the inventory. URBEMIS is the only tool that can quantify emissions and on-site measures at the project level using readily available emission factors and activity data consistent with other inventory models.

The SIP credit expected from the rule comes from two sources – off-site reductions purchased by the District through its grant programs, and onsite

reductions achieved through project design and infrastructure built into the project. The off-site reductions from projects such as diesel engine replacements and retrofits are quantified using engine specific emission factors and use data and enforced by legally binding contracts. These meet the most stringent SIP monitoring and tracking requirements. The onsite measures are voluntary measures selected by the project developer that are more difficult to quantify and monitor. The District will claim reductions from onsite measures in accordance with EPA's Voluntary and Emerging Measures Program. In this program, EPA recognized that many nonattainment areas will need to implement innovative measures that may not be as quantifiable as traditional SIP measures. Sierra has found no precedent for this at other Districts because the San Joaquin Valley is the first to pursue an indirect source program that will be claimed for SIP credit.

161. COMMENT: Residential Fees Appear Understated in the Socioeconomic Report – In addition to the comments summarized above on the URBEMIS model, we also have concerns with the fee estimates for typical residential developments contained in the District's socioeconomic analysis of the ISR rules. Table 16 of the socioeconomic report cites "worst-case" fee estimates ranging from $856 per unit in 2006 to $2,841 per unit in 2010. The supporting text offers no explanation of how these estimates were developed.

Its fundamental flaws notwithstanding, Sierra independently estimated residential fees using URBEMIS, and the fee formulas and cost reduction ratios contained in the August drafts of Rule 9510 and 3180. For construction emissions, project construction equipment emission factors were assumed to equal those of the statewide inventory. URBEMIS runs were generated for a 100-unit residential project in the urban San Joaquin Valley for calendar years 2006 through 2010 using model defaults except where noted below. A 4% administration fee was assumed and included in our comparisons. Attachment B provides the details of our analysis.

Our analysis found fees were twice as high ($1,607-$7,971 per unit) over the same period for a single-family residential development, assuming a default housing density of 3 units/acre. When the housing density was doubled (to 6 units/acre), per unit fees were still over 50% higher ($1,295-$5,556 per unit) than those cited (without explanation) in the socioeconomic report. We also calculated fees assuming a 93% vs. 7% split between single and multi-family units, based on the average number of new single- and multi-family housing units permitted in the San Joaquin Valley in 2002 obtained from the California Department of Finance (http://countingcalifornia.cdlib.org/title/castat.html). Even under these mixed use assumptions, our fee estimates ranged from $1,550-$7,702 per unit, still nearly twice as high as those in the socioeconomic report.

Thus, we question how the estimates in that report were developed. Our analysis suggests that the worst case residential fees are substantially higher than those employed in the socioeconomic analysis. If this is correct, then the impacts quantified in the study are understated and would need to be revised.

RESPONSE: Sierra calculated the construction emission fee incorrectly. The District-estimated costs will be lower for residential development after the analysis is revised to account for the change to the fleet mix and silt loading factor. If the trip length and vehicle age changes can be verified, they too would lower the impact of the fee.

162. COMMENT: Revenue From Residential Fees Will Dramatically Exceed the Cost of Purchasing Mitigation Needed to Meet ISR SIP Commitments – A spreadsheet was created to prepare an estimate of the revenue that would be generated from residential fees for the 2006-2010 period and the cost of purchasing the mitigation needed to supply the ISR SIP emission reduction commitments during the same time period. Key assumptions used to support the development of these estimates include:

Number of Residential Units Subject to the Rule – According to the Construction Industry Research Board, construction permits were issued for 34,000 residential units in the San Joaquin Valley in 2004. This value represents a mixture of single and multi-family homes and was held constant for the years 2006 – 2010. Since the ISR rule provides an exemption for residential projects that have less than 50 units, this value was discounted by 10% to determine the number of units that would be subject to the rule. Using this approach it was determined that a total of 153,000 units would be subject to ISR fees between 2006 and 2010.

Residential ISR Fees – As noted earlier there is considerable difference between the worst case fees employed in the District's socioeconomic analysis and those that result from the use of default assumptions employed in URBEMIS. Given the discrepancy (i.e., the fees based on default URBEMIS values exceed the District's worse case values), four scenarios were used to cover the potential range in fees:

1. One half district worst-case estimate employed in the socioeconomic analysis was used to represent the low end of potential fees;
2. District worse case fees from the socioeconomic analysis represent the only per unit fee estimate available from the District;
3. URBEMIS default values, which are based on a density of 3 homes per acre represent a true worst case fee; and
4. URBEMIS default values adjusted to represent a higher density of 6 homes per acre represents a lower cost fee.

A summary of the fees that would be required to comply with these scenarios is presented in Table 4. It shows that there are considerable differences between the worst-case District values and those produced using default assumptions from URBEMIS. The URBEMIS based values assume that developers do not supply any on-site mitigation and are required to pay the fee-based expense of mitigation. We do not know what level of on-site mitigation was included in the District's estimate.

Table 4
Per Unit Mitigation Fees ($) For Each of the Scenarios Considered

Calendar Year	One Half District Worst Case	District Worst Case	URBEMIS Default 3du/acre	URBEMIS 6du/acre
2006	468	856	1,545	1,245
2007	705	1,409	3,088	2,385
2008	1,001	2,001	4,847	3,584
2009	1,230	2,459	6,637	4,804
2010	1,421	2,841	7,665	5,343

RESPONSE: The District used 3 units per acre for single family dwelling units in the socioeconomic impact analysis and continues to arrive at the same numbers. Sierra uses a figure of 34,000 units per year for its estimates of overall potential fees. The District used 20,000 units per year based on historical data that included years when construction occurred at a much slower rate and population projections used for the District's attainment plans. We believe that it is inappropriate to base future projections on record years that many expect may be a bubble. If the growth rates do continue, that means that the impact of growth will be much greater than projected and the increased revenue from greater participation in the rule by more units would be needed to offset the additional emissions.

Residential Revenue – This value was computed by multiplying the number of units subject to the Rule times the annual fee (i.e., # of units × $/unit = $).

SIP Emission Reduction Targets – The ton/day pollutant specific reduction targets established in the SIP for NOx and PM_{10}. The same values were employed in the rule making and were documented in Appendix B of the ISR rules packet.

District-Estimated Cost of Reductions – The annual pollutant specific $/ton cost of reductions specified in the residential fee schedule for Rule 9510.

Revenue Demanded – This value was computed by multiplying the pollutant specific incremental ton per day reduction commitment established in the SIP by

the District estimated cost pollutant specific reductions by 365.25 (average days per year) by 1.05 (to account for a combination of the administrative fee of Rule 3180 and an assumed 1% application fee). A key assumption in this calculation is that developers did not provide any onsite mitigation, so the District purchased all of the reductions needed to satisfy the SIP commitment.

Attachment C presents a listing of the spreadsheet values developed for each of the above parameters for each the four mitigation fee scenarios listed above. A summary of the cumulative revenue and mitigation values computed for each scenario for the period from 2006 to 2010 is listed in Table 5. It shows that the revenue varies depending on the ISR fees established by the scenario and that the cost of mitigation is constant. Regardless of the scenario considered, incoming revenue exceeds the mitigation expense by a huge margin. As noted in the summary, we believe that this is a result of biases built into URBEMIS default assumptions and the mitigation fees established for operational emissions from residential units.

Table 5
Analysis of Residential Revenue and Mitigation Expense ($ in millions)

Fee Scenario	Revenue	Mitigation Expense	Unexpended Revenue	Relative Difference (%)
One Half District Worst Case	146.3	38.8	107.5	377%
District Worst Case	292.7	38.8	253.9	754%
URBEMIS Defaults	727.7	38.8	688.9	1,873%
URBEMIS High Density	531.2	38.8	492.4	1,368%

SIERRA RESEARCH
ATTACHMENT B
PER UNIT RESIDENTIAL FEE CALCULATIONS

URBEMIS 8.7 ANNUAL AVERAGE EMISSIONS FOR
100-UNIT SF RESIDENTIAL DEVELOPMENT PROJECT (unmitigated)
USING ALL MODEL DEFAULT VALUES

Calendar Year	Construction Emissions (tpy)		Area Source Emissions (tpy)		Operational (Vehicle) Emissions (tpy)		Area+Operational Emissions (tpy)		Total (C+A+O) Emissions (tpy)	
	NOx	PM10	NOx	PM10	NOx	PM10	NOx	PM10	NOx	PM10
2006	30.75	2.59	0.30	0.61	2.58	1.99	2.88	2.60	33.63	5.19
2007	29.38	2.48	0.30	0.61	2.42	1.99	2.72	2.60	32.10	5.08
2008	28.01	2.35	0.30	0.61	2.24	1.99	2.54	2.60	30.55	4.95
2009	26.66	2.28	0.30	0.61	2.05	1.98	2.35	2.59	29.01	4.87
2010	25.36	2.18	0.30	0.61	1.87	1.98	2.17	2.59	27.53	4.77

URBEMIS 8.7 ANNUAL AVERAGE EMISSIONS FOR
100-UNIT SF HIGH-DENSITY (6 units/ac) RESIDENTIAL DEVELOPMENT PROJECT (unmitigated)
USING ALL MODEL DEFAULT VALUES (except single family residential density)

Calendar Year	Construction Emissions (tpy)		Area Source Emissions (tpy)		Operational (Vehicle) Emissions (tpy)		Area+Operational Emissions (tpy)		Total (C+A+O) Emissions (tpy)	
	NOx	PM10	NOx	PM10	NOx	PM10	NOx	PM10	NOx	PM10
2006	26.30	1.79	0.30	0.61	2.29	1.76	2.59	2.37	28.89	4.16
2007	25.14	1.70	0.30	0.61	2.14	1.76	2.44	2.37	27.58	4.07
2008	23.98	1.59	0.30	0.61	1.98	1.76	2.28	2.37	26.26	3.96
2009	22.85	1.53	0.30	0.61	1.82	1.76	2.12	2.37	24.97	3.90
2010	21.75	1.45	0.30	0.61	1.66	1.76	1.96	2.37	23.71	3.82

URBEMIS 8.7 ANNUAL AVERAGE EMISSIONS FOR
100-UNIT SF RESIDENTIAL DEVELOPMENT PROJECT (unmitigated)
USING ALL MODEL DEFAULT VALUES

Calendar Year	Construction Emissions (tpy)		Area Source Emissions (tpy)		Operational (Vehicle) Emissions (tpy)		Area+Operational Emissions (tpy)		Total (C+A+O) Emissions (tpy)	
	NOx	PM10	NOx	PM10	NOx	PM10	NOx	PM10	NOx	PM10
2006	12.62	0.81	0.21	0.61	1.86	1.43	2.07	2.04	14.69	2.85
2007	*12.07*	*0.77*	*0.21*	*0.61*	*1.73*	*1.43*	1.94	2.04	14.02	2.81
2008	*11.53*	*0.72*	*0.21*	*0.61*	*1.61*	*1.43*	1.82	2.04	13.34	2.76
2009	*10.98*	*0.68*	*0.21*	*0.61*	*1.48*	*1.43*	1.69	2.04	12.67	2.72
2010	10.43	0.63	0.21	0.61	1.35	1.43	1.56	2.04	11.99	2.67

SIERRA RESEARCH
ATTACHMENT B
PER UNIT RESIDENTIAL FEE CALCULATIONS

SJV DRAFT RULE 9510 ISR NOx IMPACT FEE CALCULATIONS

Formula:

$$AIMF_{NOx} = \sum_{i=1}^{n} [(EBE_i \times 7.5 / 3) - (EBE_i \times 7.5 \times APM_i)] \times CNR$$

Calendar Year	Cost of NOx Red ($/ton)
2006	$4,650
2007	$7,100
2008	$9,350
2009	$11,600
2010	$13,250
2011	$13,250
2012	$13,250
2013	$13,250
2014	$13,250
2015	$13,250

where
- AIMF = Air Impact Mitigation Fee (in dollars)
- i = each phase
- n = last phase
- EBE = Estimated Baseline Emissions of NOx as documented in the District approved air impact assessment application (in tons/year)
- APM = Actual Percent Mitigation, as documented in the District approved air impact assessment application (as a fraction of one)
- CNR = Cost of NOx Reductions (in dollars per ton)

$$CN\ AIMF_{NOx} = \sum_{i=1}^{n} [AEE_i - (0.8 \times SEE_i)] \times CNR$$

where
- CN AIMF = Construction NOx Air Impact Mitigation Fee (in dollars)
- i = each phase
- n = last phase
- AEE = Actual Estimated Equipment NOx Emissions as documented in District approved air impact assessment application (in total tons)
- SEE = Statewide Average Equipment NOx Emissions as calculated by the District (in total tons)
- CNR = Cost of NOx Reductions (in dollars per ton)

Calculations:

					Area + Operational Sources						Construction Sources				
	Calendar Years				Estimated Baseline	Actual Percent	Air Impact Mitigation	Area+Ops	Actual Equipmt	Assumed	State Avg Equipmt	Constr Air Impact	Constr	Total
Scenario	Start	End	Phases	Units per Phase	Emissions EBE (tpy)	Mitigation APM (%)	Fee AIMF ($)	Fee/Unit ($)	Emis AEE (total tons)	% AEE Over SEE	Emis SEE (total tons)	Fee CN AIMF ($)	Fee/Unit ($)	Fee/Unit ($)
SF Resid	2006	2006	1	100	2.88	0%	$33,480	$335	102.95	0%	102.95	$95,744	$957	$1,292
SF Resid	2007	2007	1	100	2.72	0%	$48,280	$483	141.85	0%	141.85	$201,422	$2,014	$2,497
SF Resid	2008	2008	1	100	2.54	0%	$59,373	$594	166.30	0%	166.30	$310,985	$3,110	$3,704
SF Resid	2009	2009	1	100	2.35	0%	$69,325	$693	184.82	0%	184.82	$436,176	$4,362	$5,055
SF Resid	2010	2010	1	100	2.17	0%	$71,681	$719	182.29	0%	182.29	$483,071	$4,831	$5,550
HD Resid	2006	2006	1	100	2.59	0%	$38,109	$381	79.19	0%	79.19	$73,643	$736	$1,038
HD Resid	2007	2007	1	100	2.44	0%	$43,310	$433	108.88	0%	108.88	$154,612	$1,546	$1,979
HD Resid	2008	2008	1	100	2.28	0%	$53,295	$533	127.80	0%	127.80	$238,989	$2,390	$2,923
HD Resid	2009	2009	1	100	2.12	0%	$62,540	$625	142.90	0%	142.90	$337,253	$3,373	$3,998
HD Resid	2010	2010	1	100	1.96	0%	$64,925	$649	141.21	0%	141.21	$374,211	$3,742	$4,391
MF Resid	2006	2006	1	100	2.07	0%	$24,064	$241	30.37	0%	30.37	$28,243	$282	$523
MF Resid	2007	2007	1	100	1.94	0%	$34,479	$345	41.63	0%	41.63	$59,168	$591	$936
MF Resid	2008	2008	1	100	1.82	0%	$42,426	$424	48.90	0%	48.90	$91,435	$914	$1,339
MF Resid	2009	2009	1	100	1.69	0%	$49,781	$498	54.65	0%	54.65	$128,968	$1,290	$1,787
MF Resid	2010	2010	1	100	1.56	0%	$51,675	$517	53.90	0%	53.90	$142,827	$1,428	$1,945

SIERRA RESEARCH
ATTACHMENT B
PER UNIT RESIDENTIAL FEE CALCULATIONS

SJV DRAFT RULE 9510 ISR PM10 IMPACT FEE CALCULATIONS

Formula:

$$AIMFpm10 = \sum_{i=1}^{n} [(MBE - 0.5\ EBE)i \times 10\ MCE)i] \times CR$$

where
AIMF = Air Impact Mitigation Fee (in dollars)
i = each phase
n = last phase
EBE = Estimated Baseline Emissions of PM10 as documented in the District approved air impact assessment application (in tons/year)
MBE = Mitigated Baseline Emissions, as documented in the District approved air impact assessment application (in tons/year)
MCE = Mitigated Construction Emissions, as documented in the District approved air impact assessment application (as total tons)
CR = Cost of Reductions (in dollars per ton)

Calendar Year	Cost of PM10 Red ($/ton)
2006	$2,907
2007	$5,594
2008	$9,011
2009	$11,308
2010	$13,850
2011	$13,850
2012	$13,850
2013	$13,850
2014	$13,850
2015	$13,850

$$AIMFpm10 = \sum_{i=1}^{n} [(MBE - 0.5\ EBE)i \times 10\ MCE)i] \times CR$$

$$CN\ AIMFpm10 = \sum_{i=1}^{n} [(AEE)i - (0.8 \times SEE)i] \times CPR$$

where
CN AIMF = Construction PM10 Air Impact Mitigation Fee (in dollars)
i = each phase
n = last phase
AEE = Actual Estimated Equipment PM10 Emissions as documented in District approved air impact assessment application (in total tons)
SEE = Statewide Average Equipment PM10 Emissions as calculated by the District (in total tons)
CNR = Cost of PM10 Reductions (in dollars per ton)

Calculations:

					Area + Operational Sources				Construction Sources					
Scenario	Calendar Years Start	Calendar Years End	Phases	Units per Phase	Estimated Baseline Emissions EBE (tpy)	Actual Percent Mitigation APM (%)	Air Impact Fee AIMF ($)	Area+Op Fee/Unit ($)	Actual Equipm't Emis AEE (total tons)	Assumed % AEE Over SEE	State Avg Equipm't Emis SEE (total tons)	Constr. Air Impact Fee CN AIMF ($)	Constr. Fee/Unit ($)	Total Fee/Unit ($)
SF Resid	2006	2006	1	100	2.60	0%	$18,896	$189	4.89	0%	4.89	$6,402	$64	$253
SF Resid	2007	2006	1	100	2.60	0%	$36,361	$364	9.02	0%	9.02	$22,700	$227	$591
SF Resid	2008	2006	1	100	2.60	0%	$58,572	$586	13.76	0%	13.76	$55,814	$558	$1,144
SF Resid	2009	2006	1	100	2.59	0%	$73,219	$732	16.69	0%	16.69	$84,949	$849	$1,582
SF Resid	2010	2006	1	100	2.59	0%	$89,679	$897	19.55	0%	19.55	$121,845	$1,218	$2,115
HD Resid	2006	2006	1	100	2.59	0%	$18,823	$188	3.37	0%	3.37	$1,939	$20	$208
HD Resid	2007	2007	1	100	2.44	0%	$34,123	$341	5.80	0%	5.80	$6,490	$65	$406
HD Resid	2008	2008	1	100	2.28	0%	$51,363	$514	8.17	0%	8.17	$14,718	$147	$661
HD Resid	2009	2009	1	100	2.12	0%	$59,932	$599	9.17	0%	9.17	$20,738	$207	$807
HD Resid	2010	2010	1	100	1.96	0%	$67,865	$629	9.84	0%	9.84	$27,258	$273	$951
MF Resid	2006	2006	1	100	2.04	0%	$14,826	$148	1.20	0%	1.20	$1,571	$16	$164
MF Resid	2007	2006	1	100	2.04	0%	$28,529	$285	2.18	0%	2.18	$5,494	$55	$340
MF Resid	2008	2006	1	100	2.04	0%	$45,956	$460	3.31	0%	3.31	$13,417	$134	$594
MF Resid	2009	2006	1	100	2.04	0%	$57,671	$577	3.89	0%	3.89	$19,809	$198	$775
MF Resid	2010	2006	1	100	2.04	0%	$70,635	$706	4.45	0%	4.45	$27,735	$277	$984

SIERRA RESEARCH
ATTACHMENT B
PER UNIT RESIDENTIAL FEE CALCULATIONS

SJV DRAFT ISR RULE FEE CALCULATIONS FOR TYPICAL RESIDENTIAL PROJECTS

Scenario	Calendar Year	Construction Emis %AEE Over SEE NOx	Construction Emis %AEE Over SEE PM10	Rule 3180 Admin Fee (%)	Per Unit NOx Fees Area+Op	Per Unit NOx Fees Constr.	Per Unit PM10 Fees Area+Op	Per Unit PM10 Fees Constr.	Total Fees Per Unit Area+Op	Total Fees Per Unit Constr.	Total Fees Per Unit Admin	Total	Total Less Admin
100-Unit SF Res	2006	0%	0%	4%	$335	$957	$189	$64	$524	$1,021	$62	$1,607	$1,545
100-Unit SF Res	2007	0%	0%	4%	$483	$2,014	$364	$227	$846	$2,241	$124	$3,211	$3,088
100-Unit SF Res	2008	0%	0%	4%	$594	$3,110	$586	$558	$1,179	$3,668	$194	$5,041	$4,847
100-Unit SF Res	2009	0%	0%	4%	$693	$4,362	$732	$849	$1,425	$5,211	$265	$6,902	$6,637
100-Unit SF Res	2010	0%	0%	4%	$719	$4,831	$897	$1,218	$1,616	$6,049	$307	$7,971	$7,665
100-Unit HD SF Res	2006	0%	0%	4%	$301	$736	$188	$20	$489	$756	$50	$1,295	$1,245
100-Unit HD SF Res	2007	0%	0%	4%	$433	$1,546	$341	$65	$774	$1,611	$105	$2,491	$2,395
100-Unit HD SF Res	2008	0%	0%	4%	$533	$2,390	$514	$167	$1,047	$2,557	$143	$3,727	$3,584
100-Unit HD SF Res	2009	0%	0%	4%	$625	$3,373	$599	$207	$1,225	$3,580	$192	$4,997	$4,805
100-Unit HD SF Res	2010	0%	0%	4%	$649	$3,742	$679	$273	$1,328	$4,015	$214	$5,556	$5,343
100-Unit MF Res	2006	0%	0%	4%	$241	$282	$148	$64	$389	$346	$29	$765	$735
100-Unit MF Res	2007	0%	0%	4%	$345	$591	$285	$227	$630	$818	$58	$1,506	$1,448
100-Unit MF Res	2008	0%	0%	4%	$424	$914	$468	$558	$892	$1,472	$94	$2,457	$2,364
100-Unit MF Res	2009	0%	0%	4%	$498	$1,290	$577	$849	$1,075	$2,139	$129	$3,342	$3,214
100-Unit MF Res	2010	0%	0%	4%	$517	$1,429	$706	$1,218	$1,223	$2,647	$155	$4,025	$3,870
Resid Mix - 93% SF, 7% MF	2006	0%	0%	4%	$328	$911	$186	$64	$515	$975	$60	$1,550	$1,490
Resid Mix - 93% SF, 7% MF	2007	0%	0%	4%	$473	$1,917	$358	$227	$832	$2,144	$119	$3,095	$2,976
Resid Mix - 93% SF, 7% MF	2008	0%	0%	4%	$582	$2,960	$577	$558	$1,159	$3,518	$182	$4,864	$4,677
Resid Mix - 93% SF, 7% MF	2009	0%	0%	4%	$680	$4,152	$722	$849	$1,401	$5,001	$256	$6,659	$6,403
Resid Mix - 93% SF, 7% MF	2010	0%	0%	4%	$705	$4,598	$884	$1,218	$1,589	$5,817	$296	$7,702	$7,406

Calendar Year	Worst-Case Socio Report Resid Fees Res Fees ($/Unit)	One-Half Worst-Case Resid Fees Res Fees ($/Unit)
2006	$856	$428
2007	$1,409	$705
2008	$2,001	$1,001
2009	$2,459	$1,230
2010	$2,841	$1,421

SIERRA RESEARCH
ATTACHMENT B
PER UNIT RESIDENTIAL FEE CALCULATIONS

ANALYSIS OF ISR REVENUE SUPPLIED VS. DEMANDED FROM SIP

Assumptions:
34,000 residential units per year in SJV (Source: Construction Industry Research Board, CY2004 Permits)
10% of residential units exempted from ISR rules under the 50-unit project threshold
SocioHalf source of estimated residential fees (SocioWC = SE report/worst-case; SocioHalf = SE report/one half worst-case; URBDft = URBEMIS Defaults; URBHD = URBEMIS High Density)

	SJV ISR Residential Revenue				**SJV ISR Revenue Needed to Achieve SIP Targets**				
Calendar Year	Est. New Residential Units*	Residential ISR Fee ($/Unit)	**Residential Revenue ($/year)**	Calendar Year	SIP Emission Reduction Targets (tons/day) NOx	PM10	District-Estimated Cost of Reductions ($/ton) NOx	PM10	**Revenue** Demanded ($/year)**
2006	30,600	$428	$13,096,800	2006	0.0	1.2	$4,650	$2,907	$1,337,845
2007	30,600	$705	$21,557,700	2007	2.8	2.4	$7,100	$5,594	$10,198,671
2008	30,600	$1,001	$30,615,300	2008	4.0	3.5	$9,350	$9,011	$8,104,425
2009	30,600	$1,230	$37,622,700	2009	5.0	4.6	$11,900	$11,309	$9,295,883
2010	30,600	$1,421	$43,467,300	2010	5.8	5.7	$13,250	$13,950	$9,908,045
Cumulative Totals 2006 to 2010:			**$146,359,800**						$38,844,869
Relative Difference in Revenue: (Supplied vs. Demanded)						377%			

* Discounted to reflect 10% of residential project units exempted under the 50-unit threshold
** Includes 5% "overhead" fee; 4% admin fee per Rule 3180, plus assumed 1% application fee

RESPONSE: The table provided above fails to include the average project life of the emission reduction projects that will be funded by the revenue collected. This results in severely understating the revenue required to purchase emission reductions. NOx projects have an average life of 7 years. PM10 projects have an average life of 12 years. The $/ton number in the fee formula is based on annualized cost divided by annual reductions. This allows for comparison of projects with different project lives. To arrive at the funding needed to achieve the SIP emission reduction commitment, multiply the annual reductions required times the cost per ton of each pollutant.

The District considers it inappropriate to base housing projections on 34,000 units per year. The SIP growth projections are derived from population projections provided by the Valley transportation planning agencies. If these record growth rates continue until 2010, the SIP emission budgets will need to be increased and additional reductions would be needed to achieve attainment on schedule. Rule 9510 would provide some of these additional reductions if growth exceeds predictions.

SIERRA RESEARCH
ATTACHMENT B
PER UNIT RESIDENTIAL FEE CALCULATIONS

ANALYSIS OF ISR REVENUE SUPPLIED VS. DEMANDED FROM SIP

Assumptions:

34,000 residential units per year in SJV (Source: Construction Industry Research Board, CY2004 Permits)
10% of residential units exempted from ISR rules under the 50-unit project threshold
SocioWC source of estimated residential fees (SocioWC = SE report/worst-case, SocioHalf = SE report/one half worst-case, URECdt = URBEMIS Defaults, UREHD = URBEMIS High Density)

	SJV ISR Residential Revenue				**SJV ISR Revenue Needed to Achieve SIP Targets**				
Calendar Year	Est. New Residential Units*	Residential ISR Fee ($/Unit)	**Residential Revenue ($/year)**	Calendar Year	SIP Emission Reduction Targets (tons/day) NOx	PM10	District-Estimated Cost of Reductions ($/ton) NOx	PM10	**Revenue** Demanded ($/year)**
2006	30,600	$856	**$26,193,600**	2005	0.0	1.2	$4,650	$2,907	**$1,317,813**
2007	30,600	$1,409	**$43,115,400**	2007	2.9	2.4	$7,100	$5,594	**$10,198,671**
2008	30,600	$2,001	**$61,230,600**	2008	4.0	3.5	$9,350	$9,011	**$8,104,425**
2009	30,600	$2,459	**$75,245,400**	2009	5.0	4.6	$11,800	$11,308	**$9,295,883**
2010	30,600	$2,841	**$86,934,600**	2010	5.8	5.7	$13,250	$13,850	**$9,908,945**
Cumulative Totals 2006 to 2010:			**$292,719,600**						**$38,844,869**
Relative Difference in Revenue: (Supplied vs. Demanded)						**754%**			

* Discounted to reflect 10% of residential project units exempted under the 50-unit threshold
** Includes 5% "overhead" fee: 4% admin fee per Rule 3190, plus assumed 1% application fee

SIERRA RESEARCH
ATTACHMENT B
PER UNIT RESIDENTIAL FEE CALCULATIONS

ANALYSIS OF ISR REVENUE SUPPLIED VS. DEMANDED FROM SIP

Assumptions:

34,000 residential units per year in SJV (Source: Construction Industry Research Board, CY2004 Permits)
10% of residential units exempted from ISR rules under the 50-unit project threshold
URBDlt source of estimated residential fees (SocioWC = SE report/worst-case, SocioHalf = SE report/one half worst-case, URBDlt = URBEMIS Defaults, URBHD = URBEMIS High Density)

	SJV ISR Residential Revenue				SJV ISR Revenue Needed to Achieve SIP Targets				
Calendar Year	Est. New Residential Units*	Residential ISR Fee ($/Unit)	**Residential Revenue ($/year)**	Calendar Year	SIP Emission Reduction Targets (tons/day) NOx	PM10	District-Estimated Cost of Reductions ($/ton) NOx	PM10	**Revenue** Demanded ($/year)**
2006	30,600	$1,545	**$47,283,711**	2006	0.0	1.2	$4,650	$2,907	**$1,337,845**
2007	30,600	$3,088	**$94,481,494**	2007	2.8	2.4	$7,100	$5,594	**$10,198,671**
2008	30,600	$4,847	**$148,331,356**	2008	4.0	3.5	$9,350	$9,011	**$8,104,425**
2009	30,600	$6,637	**$203,082,914**	2009	5.0	4.6	$11,600	$11,309	**$9,295,883**
2010	30,600	$7,665	**$234,541,633**	2010	5.8	5.7	$13,250	$13,850	**$9,908,045**
Cumulative Totals 2006 to 2010:			**$727,721,108**						**$38,844,869**
Relative Difference in Revenue: (Supplied vs. Demanded)						**1873%**			

* Discounted to reflect 10% of residential project units exempted under the 50-unit threshold
** Includes 5% "overhead" fee: 4% admin fee per Rule 3180, plus assumed 1% application fee

SIERRA RESEARCH
ATTACHMENT B
PER UNIT RESIDENTIAL FEE CALCULATIONS

ANALYSIS OF ISR REVENUE SUPPLIED VS. DEMANDED FROM SIP

Assumptions:

34,000 residential units per year in SJV (Source: Construction Industry Research Board, CY2004 Permits)

10% of residential units exempted from ISR rules under the 50-unit project threshold

URBHD source of estimated residential fees (SocioWC = SE report/worst-case, SocioHalf = SE report/one half worst-case, URECdt = URBEMIS Defaults, URBHD = URBEMIS High Density)

	SJV ISR Residential Revenue				**SJV ISR Revenue Needed to Achieve SIP Targets**				
Calendar Year	Est. New Residential Units*	Residential ISR Fee ($/Unit)	**Residential Revenue ($/year)**	Calendar Year	SIP Emission Reduction Targets (tons/day) NOx	PM10	District-Estimated Cost of Reductions ($/ton) NOx	PM10	**Revenue** Demanded ($/year)**
2006	30,600	$1,245	**$38,107,242**	2006	0.0	1.2	$4,650	$2,907	**$1,317,813**
2007	30,600	$2,385	**$72,991,721**	2007	2.9	2.4	$7,100	$5,594	**$10,198,671**
2008	30,600	$3,584	**$109,659,478**	2008	4.0	3.5	$9,350	$9,011	**$8,104,425**
2009	30,600	$4,805	**$147,021,892**	2009	5.0	4.6	$11,800	$11,308	**$9,295,883**
2010	30,600	$5,343	**$163,483,390**	2010	5.8	5.7	$13,250	$13,850	**$9,908,945**
Cumulative Totals 2006 to 2010:			**$531,263,724**						**$38,844,869**
Relative Difference in Revenue: (Supplied vs. Demanded)						**1368%**			

* Discounted to reflect 10% of residential project units exempted under the 50-unit threshold

** Includes 5% "overhead" fee: 4% admin fee per Rule 3180, plus assumed 1% application fee

RESPONSE: The tables provided above are based on erroneous information and so should be disregarded.

PETROtech Environmental Solutions
Date: September 19, 2005

Good morning. It was good to see you at the Chamber of Commerce Meeting on Friday.

163. **COMMENT:** My comment regarding SJVUAPCD Rule 9510 is as follows: I would like to see Exemption Section 4.1.4 changed to read as follows:

"Oil EXPLORATION, Production and Processing"

The way the exemption reads now, only Production and Processing would be covered.

RESPONSE: The Rule will be amended to read "Oil Exploration, Production and Processing.**"**

164. **COMMENT:** I also have a comment regarding Air Quality Guidelines for General Plans. Seyed, until about 5-7 years ago, residential development was ongoing, but it was a fraction of what it is today. I will bet that very few folds from Bakersfield paid attention to them when they were drafted. If PETROtech hadn't started doing Air Quality Impact Assessments, I would have never thought about Rule 9510. But the concern that folds have is based on their fears that sometimes Guidelines, or suggested control measures become part of the requirements.

RESPONSE: Comment Noted.

The California League of Food Processors (CLFP)

Date: September 15, 2005

165. COMMENT: CLFP's primary concern is that it is not entirely clear how some of the provisions of Rule 9510 will apply to a range of manufacturing applications, and the potential compliance costs. Based on a review of the draft CLFP suggests that the District amend the proposed rule as follows:

1. Expand the list of exemptions to include food processing facilities. These facilities should be exempted for the following reasons:
    - A large portion of NOx emissions at most food processing plants can be attributed to stationary sources such as boilers or dryers, and most of this equipment is, or soon will be, subject to new emissions reduction regulations.
    - Forklifts, one of the most common vehicles used at processing facilities, will soon be subject to new emissions control regulations.
    - Unlike many manufacturing and commercial operations, most food processors operate on a seasonal basis, and some only operate for a few months per year. This significantly limits the total amount of employee and product delivery vehicle traffic on the site.
    - A number of the emissions mitigation options suggested by the District are not viable for many food processing facilities. Most processing plants are located in rural areas near where the crops are grown. Charging workers for parking or providing free bus passes to encourage the use of mass transit won't be effective if there is no mass transit available. Cannery workers cannot telecommute or teleconference to conduct their duties, and few may want to ride a bicycle home after working a shift in a factory. Options for creating mixed use facilities may be quite limited. In the case of food processors and many other manufacturers, locating new facilities based on reducing worker travel will imply hauling the raw product further, generating longer trips and additional diesel emissions. The economic viability of investing in some energy savings devices may be limited by the seasonal nature of the business. So, there may be a narrow range of cost effective mitigation measures available to food processors.

RESPONSE: The District will expand the definition to include food manufacturing.

166. COMMENT: 2. The District should clarify how baseline emissions will be calculated for manufacturing and industrial facilities.

RESPONSE: Manufacturing and industrial facilities whose primary function is regulated by the District will be exempt. For those industries subject to the rule such as warehouse distribution centers, only indirect and area source emissions

are used for the baseline calculation. A proposed new facility going through the CEQA process would prepare an air quality impact assessment. The assessment would include an URBEMIS run to quantify area source and mobile source emissions. The facility would concurrently apply to the District for an Authority to Construct for any stationary source equipment/devices subject to permitting. District staff would then estimate stationary emissions.

167. **COMMENT:** 3. The District should consider the impact of cumulative regulatory costs on industry. Many firms located in the San Joaquin Valley are currently expending substantial funds to comply with an array of new air and water quality environmental regulations. Rule 9510 will place an additional cost burden on industry which will have a direct effect on competitiveness in the global marketplace.

RESPONSE: The District recognizes the cumulative impact of air regulations on industry and the major investments made in stationary source emission controls in compliance with District rules and regulations and has provided exemptions for sources whose primary function is permitted by the District.

Manufacturers Council of the Central Valley
Date: September 15, 2005

On behalf of the Manufacturers Council of the Central Valley, I want to thank you for the opportunity to provide comments on the draft rule 9510 (Decreasing Emissions' Significant Impact from Growth and New Development – DESIGN) and Draft Rule 3180 of the San Joaquin Valley Unified Air Pollution Control District's Rule 4309. The Council represents a number of food processing and related companies in the San Joaquin Valley including several who will be impacted by this rule – some quite significantly and others, quite unexpectedly, unless there are major modifications prior to its adoption by the Governing Board later this year.

These comments are intended to augment those submitted earlier by Rob Neenan of the California League of Food Processors and which we fully support, but will not, in the interest of time, duplicate.

168. **COMMENT:** As I have communicated to you in a telephone conversation and at the public workshop, the MCCV is particularly concerned with the lack of clarity provided in section 4.1.4 concerning development projects whose primary source of emissions are from stationary sources which are subject to rule 2201 or Rule 2010. At the minimum we would like to see the list of industries expanded to include food processing related companies (including snack foods, candy, milk and cheese), corrugated box manufacturers, can manufacturers, and wineries.

However, even this is insufficient to adequately address the concerns unless a categorical exemption is provided for these industries because the first question

that will be asked is what is the definition of primary? And the subsequent question is how will this be determined? For new developments, this will be somewhat straightforward:

A) If stationary source emissions are projected to be greater than 50 percent of the construction emissions (as calculated by the yet undeveloped emissions calculator) plus the indirect emissions (as calculated by URBEMIS) then project is EXEMPT
B) If less than 50 percent then project is NOT EXEMPT

However, if the development project is an expansion of an existing facility in a jurisdiction which requires discretionary approval, due to its particular ordinance, how will the district review the project and calculate the emissions? What will be the baseline? Will only that portion of the project that is being expanded be subject to the rule? Or will that revert to the policy of the jurisdiction? There are a number of questions that arise and this just touches the surface.

RESPONSE: The rule has been revised to clarify the sources that will be exempt from the rule.

Western States Petroleum Association (WSPA)
Date: September 16, 2005

The Western States Petroleum Association (WSPA[1]) would like to take advantage of the brief opportunity made available by District staff for industry to provide comment on the June 30, 2005 draft of the proposed Rule 9510 (Decreasing Emissions' Significant Impact from Growth and New Development – DESIGN). Our comments on critical development issues related to the rule are attached. We look forward to discussing these issues with the District during future workshop sessions and if necessary providing additional comments should it prove necessary. Preparation of such comments is a crucial aspect of the Rule development process and as such, should be afforded sufficient time for a thorough review of the draft District document and preparation of meaningful comments.

169. COMMENT: I. Indirect Source Review and the SIP
In our July 22, 2005 comments, the Western States Petroleum Association (WSPA) requested that the District designate requirements derived from the proposed regulation as "not federally enforceable". WSPA cited the Federal Clean Air Act at Section 110(a)(5)(A)(i) and the California Health and Safety Code at Section 39602, which we believe support our request.

The Clean Air Act (CAA) at section 110(a)(5)(A)(i) states the following:

1 WSPA is a non-profit trade association representing a full spectrum of companies which explore for, produce, refine, transport, and market petroleum and petroleum products in the Western United States.

"Any state may include in a state implementation plan, but the administrator may not require as a condition of approval of such a plan under this section, any indirect source review program. The administrator may review and enforce as part of an applicable implementation plan an indirect source review program which a state chooses to adopt and submit as part of its plan."

The California Health and Safety Code at Section 39602 states the following:

"…the state implementation plan shall only include those provisions necessary to meet the requirements of the Clean Air Act."

We believe that these sections of the Federal Clean Air Act (CAA) and the California Health and Safety Code when considered together clearly preempt inclusion of indirect source review programs in the California state implementation plan.

The District's response to our comment is contained in Appendix-A of September 1, 2005 draft of the proposed regulation. The District contends that indirect source review programs are required by the CAA, since emission reductions are required to attain ambient air quality standards.

WSPA disagrees. The indirect source review program proposed by the District would be enforceable as a "state only" requirement. Emission reductions from the program would still occur and would reduce ambient concentrations to the same extent. The designation of indirect source review requirements as "federally enforceable" or "non-federally enforceable" has no effect on the attainment of air quality standards.

In California, inclusion of indirect source review programs in state implementation plan is prohibited by H&SC Section 39602 and the CAA section 110(a)(5)(A)(i). Consequently, WSPA requests the proposed regulation include a statement that Rule 9510 is a "state only" regulation.

We believe this to be a critical issue since federal requirements contained in applicable implementation plans must be included in Title V operating permits for major sources. Therefore, under the proposed regulation, mitigation contracts entered into by major stationary sources would require approval (or veto) by the U.S. EPA.

RESPONSE: The District disagrees with the interpretation of CAA sections cited in the comment. The intent of the section was to prohibit EPA from requiring indirect source programs as a Federal Implementation Plan (FIP) measure. Since the District requires the reductions for Rule 9510 to meet commitments in the PM10 Plan, the rule must be enforceable. The enforcement approach we

are proposing is not traditional since this program breaks new ground. The emission reduction projects are enforceable by the District through contract legal actions, but not EPA. If the reductions from the rule and its measures are not achieved, EPA enforcement should require the District to take corrective action to make up for the reductions in accordance with CAA milestone requirements. Since EPA is precluded from requiring the program, they would need to use alternative strategies in the event that a FIP were promulgated.

170. COMMENT: II Rule Applicability

A. Applicability Trigger Date.

In our July 22, 2005 comments WSPA proposed that applications for development projects filed prior to the rule adoption date be reviewed under existing regulations. We continue to believe these development projects should be reviewed under existing regulations. Under existing regulations, projects with significant environmental effects must include all feasible mitigation. The District is provided with notice and an opportunity for commenting on all such projects that are conducted within the San Joaquin Valley. Consequently, the District either has had or will have an opportunity to comment on these projects and to propose mitigation for indirect source and area source emissions. WSPA sees no reason why these projects should have to undergo a second round of regulatory review.

B. Indirect Source Review

As pointed out in our prior comments, Health and Safety Code Section 40717.5 sets forth guidelines and procedures that must be followed by any air district that proposes to adopt or amend a rule or regulation pursuant to Section 40716 or Section 40717.

The requirements contained in Section 40717.5(a) through 40717.5(c) are designed to ensure that emissions from indirect sources are properly allocated to projects that cause an increase in vehicular activity and to ensure that indirect source review requirements are not duplicative of other requirements imposed by the District or other agencies.

The draft version of District Rule does not comply with H&SC Section 40717.5(a)(1) which limits the applicability of indirect source review to those activities that contribute to, "…air pollution by generating vehicle trips that would otherwise not occur".

The District response to WSPA comments (Appendix-A, comment #24, #29) and to similar comments submitted by other was that:

"by their nature new development projects ultimately result in new trips which would not otherwise occur".

The District does not provide any information in support of this generalization and has not made any attempt to determine which types of activities result in an increase in indirect source emissions. In response to other comments the District acknowledges that the proposed rule is intended to control growth induced emissions from indirect sources and new construction (Appendix-A, comment #2, #8, #16). Not all development projects result in growth.

In our July 22, 2005 comments WSPA requested that Rule 9510 be revised to limit rule applicability to indirect source and area source emissions increases. We continue to believe that indirect source review programs established under authority at H&SC Section 40717 and Section 40715.5 are limited to regulation of growth induced indirect source and area source emissions.

WSPA believes that indirect source emissions and area source emissions that are already occurring, or area included in an application for a development project filed before the rule adoption date, should be considered existing emissions and only emissions increase above existing emissions should be subject to Rule 9510 applicability.

RESPONSE: The rule does not target *all* new development, but that development that results in the generation of at least 2 tons per year of NOx or PM10. Certain development, such as an expansion of a manufacturing facility, would be exempt if it does not result in and *increase* of at least 2 tons per year of NOx or PM10 through area and mobile emissions. Therefore, the rule accounts for the *increase* in pollution generation from development projects, and does not place requirements on those developments that do not result in the increase stated above. It is the District's position that projects that result in an increase in pollution emissions are a part of growth. It would be impractical to determine on a case-by-case basis if a project subject to the rule that emits emissions above the applicability threshold is or is not a project resulting from growth in the region.

In regards to projects that have filed for City/County permits *prior* to implementation of the rule, the rule language will be revised to limit the applicability to projects that have applied for a discretionary permit prior to implementation date but have not yet received approval.

171. COMMENT: C Proposed Revision to Applicability
In light of the guidelines specified in the California H&SC at Section 40717.5, and District response to comments, WSPA requests that the following subsection of the Rule Applicability Section 2.0, be revised as follows:

Subsection 2.1

2.1 This rule shall only apply to those elements of a project that require discretionary approval and only if those elements are determined to be part of a development project that meets the following conditions

a. The application for the development project is filed on or after the effective date of this rule.
b. The development project results in an increase in emissions of a pollutant for which the area is designated as nonattainment for either the California, primary ambient air quality standards (CAAQS) or the national, primary ambient air quality standards (NAAQS), for ozone or PM10.
c. The development project results in an increase in indirect source or area source emissions above previously approved existing emissions.

RESPONSE: Comment noted.

172. COMMENT: Subsection 2.1.3

Section 2.1.3 specifies an applicability threshold level of 25,000 square feet for the industrial space category. In our prior comments WSPA requested that the industrial space category be separated into "light Industrial" space and "heavy industrial" space since the vehicle trip ends (VTE) generated by these land use categories differ significantly. For example, according to the institute of Transportation Engineers, "Trip Generation Manual (7th Edition)" the light industrial land use category generates 6.97 VTE per 1,000 square feet. The "heavy industrial" land use category generates 1.5 VTE per 1,000 square feet. The District response to our prior comment was that:

"Most heavy industrial projects would be exempt from this rule, so distinguishing between the different types of industrial would not be productive." (sic)

The District fails to explain why heavy industrial sources would be exempt from the rule's requirements. Furthermore, the District is now proposing to apply the rule to uncategorized discretionary projects involving more than 9,000 square feet. WSPA is again requesting that the "industrial use" category be separated into "light industrial" and "heavy industrial" categories and that the applicability thresholds for these land use categories be established at 25,000ft^2 and 100,000ft^2 respectively.

RESPONSE: Comment noted. The applicability section of the draft rule will be revised to include 25,000 square feet of light industrial, and 100,000 square feet of heavy industrial.

173. COMMENT: Subsection 2.1.9

Delete subsection 2.1.9. The District has not documented why any discretionary project, not otherwise included in a section 2.1 land use category and that is

greater than 9,000 square feet (~1.4 acre) is automatically presumed to have significant indirect source or area source emissions.

RESPONSE: The District prepared emission estimates for all projects listed in the section to determine if they would exceed 2 tons per year of either PM10 or NOx. These projects would be required to prepare an air quality assessment based on their actual design, on-site measures, and characteristics, so in some cases the assessment would determine that no off-site fee is required.

174. COMMENT: Subsection 2.3.2

Delete Subsection 2.3.2. With the exception of the applicability threshold established for "50 residential units", Subsection 2.3.2 supersedes and essentially eliminates the other land use category size thresholds. It can be easily argued that any land use involving nonresidential development, (e.g. commercial, industrial, medial, etc) could accommodate development projects that emit more than 2.0 tons per year of NOx or PM10 (~11ld/day or 0.5 lb/hr).

The District is also proposing that the amount of required mitigation be based on the ability of the property to accommodate future development, whether or not such future development is planned or included as part of the development project responsible for triggering review under this rule.

WSPA believes that developers should not have to provide mitigation for unplanned projects solely because the property has the potential for future development. Future discretionary projects might or might not result in an increase in emissions of air contaminants. Consequently, we request that Subsection 2.3.2 be deleted.

RESPONSE: The rule requires the applicant to come to the District at the last discretionary approval for the project. For industrial and commercial projects this may be a conditional use permit or site plan review. If the use is not known, the general trip rate for the expected use is used to calculate the proposed fee amount. Then, the applicant can use a fee deferral schedule to allow time to identify the actual use. If there were no increase in actual emissions based on the use, the applicant could revise the air assessment and the off-site fee would be not need to be paid.

175. COMMENT: III Definitions

WSPA requests that the following revisions be made to the definitions. We believe the proposed changes will ensure that the definitions are consistent with the stated purpose and applicability of the proposed rule, and will help clarify rule requirements.

Subsection 3.7

In our July 22, 2005 comments WSPA requested that the definition of a development project be revised to exclude projects that require discretionary approval but are required solely to comply with a rule regulation or order of a public agency.

For example, District prohibitory rules frequently require that source operators install control equipment on emission units such as tanks, steam generators, turbines, etc. Installation of the control equipment requires the issuance of an Authority to Construct (ATC) permit which typically involves discretionary approval of an "emission control plan" and control equipment. Depending on the control measure, a source operator could be required to retrofit literally hundreds of individual emission units. The District response to our concerns is summarized below:

> *"The current definition of a development project adequately addresses projects that have ancillary discretionary approvals relating to the project. The applicability of the rule includes not only discretionary approvals but, minimum sizes of projects that must comply with the rule."*

WSPA is confused by the meaning of the first sentence. WSPA requests that the District provide additional explanation of how the current definition of a development project addresses "ancillary discretionary approvals relating to the project".

WSPA assumes that the language contained in the second sentence of the District response means that the District believes that equipment retrofit projects (e.g. steam generators, vapor control systems, etc) are too small to trigger rule applicability. In some cases this may be true. In other cases the size of the control system or facility equipment could easily exceed size threshold specified for industrial sources.

The existing New Source Review Rule (Rule 2201) and many of the prohibitory rules adopted by the District recognize the difference between projects initiated for development and projects undertaken to comply with regulatory requirements. Consequently, WSPA is again requesting that the definition of a development project be revised as follows;

3.7 Development Project: any project, or portion thereof , that is subject to a discretionary approval by a public agency, and will ultimately result in the construction or reconstruction of a building, facility or structure. The Discretionary approval of a project undertaken solely to comply with a rule regulation or order of a public agency shall not be considered a development project.

WSPA also requests that the District staff report clarify the meaning of the word "facility". The use of the word units current context is consistent with the logical meaning of the word and implies that the word "facility" means *"something that is installed or erected to serve a particular purpose".*

RESPONSE: The definition of a development project, in combination with the baseline definition ("area source and operational emissions") effectively eliminates the type of projects the author is commenting about. Permitted equipment emissions are *not* included in the calculations. It is the District's position that all applicable projects that have a baseline above two tons per year of NOx or PM10 from the combination of area and mobile sources should be subject to the emission reduction requirements of the rule, excepting for stated exemptions, regardless of the reason for the project.

176. COMMENT: IV Exemptions

WSPA requests that the exemption section of the rule be revised to include the following changes:

Section 4.1.4

The District has proposed an exemption for a, "development project, whose primary source of emissions are from stationary sources subject to Rule 2201 (New and Modified Stationary Source Review Rule) or Rule 2010 (permits required…". WSPA supports the proposed exemption. However, WSPA requests that the District clarify several items related to the exemption.

First, in response to questions raised by stakeholders during the September 1, 2005 workshop, District staff stated that they though the phrase "primary source of emissions: meant 51% or more of the emissions. Second, in our reading of the proposed exemption we interpret the phrase "stationary sources" to mean air pollutant emitting activities, other than indirect sources and area sources; and not "stationary source" as defined by District Rule 2201.

Assuming our interpretation is correct, then the proposed exemption would be available to development projects where operational emissions from activities other than indirect sources or area sources, comprise 51% or more of the total operating emissions from the development project.

WSPA requests that the District address these issues in their staff report and either confirm our understanding of how the exemption will be applied or provide additional guidance on how subsection 4.1.1 is to be interpreted.

RESPONSE: The District has clarified the exemption section to provide more specifics on the applicable sources that qualify.

177. COMMENT: V Application Requirements

WSPA continues to believe that applications for development projects be submitted to public agencies prior to the effective date of the proposed rule should continue to be processed under the regulations in effect at the time of application submittal. Consequently, we have requested revisions to the applicability section of the rule to be revised accordingly.

Subsection 5.5.5

Delete Subsection 5.5.5. This subsection requires that mitigation, monitoring and reporting programs (MMRP) include provisions for failure to comply, such as stop work authority, permit revocation, civil enforcement, and or administrative appeal. WSPA believes that this subsection should be deleted. The District already has authority to enforce compliance with rules and regulations adopted by the District.

RESPONSE: The District will revise the section to refer to Response to Comment 180, which states the District's authority to enforce provisions of the rule.

178. COMMENT: VI Mitigation

WSPA continues to believe that H&SC Section 477.16 and 47717.5 limit indirect source review programs to control growth induced emissions from indirect sources and area sources. Mitigation should only be required to the extent that a development project causes an increase in indirect emissions or an increase in area source emissions that would not otherwise occur. As we discussed in our prior (July 22, 2005) comments on Rule 9510, WSPA supports the District proposal to allow developers to use a combination of onsite mitigations and offsite mitigation. Developers should also be able to use offsite mitigation resulting from voluntary control of operational emissions from existing development projects upon showing that the emission reductions are surplus and enforceable.

In our July 22, 2005 comments WSPA requested that the District provide a mechanism to enable developers to receive credit for surplus mitigation. We also requested that developers be allowed to provide offsite mitigation by controlling emissions from existing sources through enforceable offsite mitigation programs. Our prior comments are summarized below.

1. For construction emissions, if a developer employs an offsite mitigation strategy, the emission reductions continue to exist after construction is completed. These reductions should be credited to the developer and the developer should be allowed to use the reductions for mitigating construction emissions from future development projects.
2. For operational emissions, developers should receive credit for offsite emission reductions created through voluntary mitigation activities applied ot

previously approved projects. For example, a developer could revegetate or reclaim disturbed surfaces in order to reduce fugitive dust. The developer could then commit these reductions to construction or operational emissions from proposed development projects.

The District response to our comments was:

"The District will consider offsite mitigation proposed by a developer on a case by case basis.".

Based on the District's response, WSPA requests that he District revise Subsection 6.3 as follows:

Subsection 6.3

The requirements listed in Section 6.1 and Section 6.2 above can be met through any combination of onsite or offsite mitigation. Developers may also satisfy the requirements of Section 6.1 and 6.2 by providing mitigation made available by reducing emissions from offsite activities. "the District will consider offsite mitigation proposed by a developer on a case by case basis."

RESPONSE: The District has partially addressed the authors concerns in the September 1, 2005 draft Rule 9510 version in section 7.4.

7.4 The developer shall receive credit for any off-site mitigation measures that have been completed and/or paid for, prior to the adoption of this rule, if the following conditions have been met:

7.4.1 The prior off-site mitigation measures were part of an air quality mitigation agreement with the APCO; or

7.4.2 The developer demonstrates to the satisfaction of the APCO that the off-site emission reduction measures result in real and surplus reduction in emissions**.**

The District will be implementing an off-site emission reduction program that uses fees from the rule to achieve the tonnage reduction required. The District believes that this is the most efficient and effective way to acquire, achieve and track off-site emission reductions. Off-site emission reduction projects that have been coordinated and approved through the District by means of an Air Quality Mitigation Agreement have been thoroughly analyzed and will be administered by the District. Therefore, emission reductions from Air Quality Mitigation Agreements are appropriate to use in the ISR program. However, although a project applicant may be able to find and fund off-site emission reduction projects, it is undesirable to have an applicant administer off-site emission reduction projects to be reviewed by the District on a case-by-case basis. For the purposes of consistency, efficiency, and enforceability, it is most appropriate for off-site emission reduction projects to be administered under the same program.

Applicants and the general public may propose projects for funding through the District's off-site emission reduction program, and the program will have annual review and reporting available to the public.

PUBLIC:

Ann M. Gallon
Date: September 6, 2005

I attended the Sept. 1 Workshop in Bakersfield. This was my first involvement with the Air Pollution Control District. I planned to address you as a private citizen, but all the developers with lengthy statements were a bit intimidating – especially their off screen head nodding and grimacing. They obviously were distressed to have any "controls" of their development projects come under discussion and regulation.

179. **COMMENT:** What I would have said is that I applaud your plans to contain pollution in our Valley, and I would urge you to stick to your guns – or even tighten up on some rules. As an aside, my stepson once sued the EPA on behalf of the Canadian people for not enforcing their own regulations and causing acid rain which drifted over Canada. The Canadian government prevailed in calling the EPA into action.

RESPONSE: Comment Noted.

180. **COMMENT:** Applicability to developers of 50-plus residential homes gives them wiggle room to design multiple projects so they could fall under that 50-unit threshold. Another concern of mine is that developers of fewer than 50 units may be less sophisticated in the industry and may create more pollution than you will prevent in the larger developments. I urge you to consider dropping the applicability to 25 units.

RESPONSE: The 50-unit applicability for residential units was specifically chosen for the following reasons:

1. Based on the District's data on the number and units of development occurring in the valley, a threshold of 50 units would capture the majority of the pollution generation from new developments while keeping the number of projects for District assessment at a practical level.
2. Modeling shows with no on-site measures, 50 units may generate approximately 2 tons per year of NOx in 2006
3. This threshold, with the associated 'penetration' of the rule, achieves the emission reductions committed to in the PM10 and ozone plans.

The District will be vigilant to prevent 'piecemealing' of projects to evade compliance with the rule. Rule 9510 §2.3.1 and §2.3.2 specifically address the issue of contiguous or adjacent properties. In addition, District Rule 1110 (Circumvention) states:

A person shall not build, erect, install, or use any source operation, the use of which, without resulting in a reduction in the total release of air

contaminants to the atmosphere, reduces, dilutes or **conceals an emission which would otherwise constitute a violation** of Division 26 of the Health and Safety Code of the State of California or **of these Rules and Regulations**. This rule shall not apply to cases in which the only violation involved is of Section 41700 of the Health and Safety Code of the State of California or of Rule 4102 (Nuisance of these Rules and Regulations. **Violation of this rule is a misdemeanor pursuant to the provisions of Section 42400 of the Health and Safety Code of the State of California**.
(Sections are bolded for emphasis)

181. COMMENT: To give you an example of development traffic, in July we endured seven days of 8am-4pm diesel truck traffic past our home. Trucks were hauling fill dirt to one large residential lot around the corner from us. The whole week we had to remember to close our front windows against the diesel fumes, noise, and dust clouds rising from dirt shoulders.

Mind you, this was a HOT July and we were trying to use just our evaporative cooler (needs open windows to vent) to save money. When the truck traffic continued into the next week I finally called our Supervisor's office to complain and ask if the trucks could travel on the arterial roads instead of on our residential street. I wrote down the following IN and OUT times one morning for 30 minutes:

IN	OUT
	9:35
9:39	9:41
9:44	9:48
9:51	10:01
9:58	10:09
10:05	

By Wednesday, when Supervisor Watson's field rep, Trice Harvey, arrived at our house to look into our complaint, wouldn't you know it – the truck traffic was over. And he said he couldn't tell trucks which roads to take to a construction site. We were going to be pretty much stuck with traffic when there is building going on in our area.

RESPONSE: The author's comments on truck traffic is noted. In addition, the District's Regulation VIII (Fugitive PM10 Prohibitions) contain prohibitions concerning the emissions of dust from construction sites, bulk materials hauling and carryout/trackout. Although these are requirements, certain developments on occasion do not comply with the rule. The District is responsible for enforcing compliance with the rules and employs field inspectors for these issues; however, it is not always possible to catch violations as they occur at the widely disbursed construction sites within the Valley. The District maintains a complaint

hotline for the public to call when they see a violation of the District's rules, including violations of Regulation VIII and Rule 4102 (Nuisance).

County of Residence	**Toll Free Number**
San Joaquin, Stanislaus, Merced	**(800) 281-7003**
Madera, Fresno, Kings	**(800) 870-1037**
Tulare, Valley portion of Kern	**(800) 926-5550**

182. **COMMENT:** So… please stand firm with the building industry – and with Cal Trans who seemed to think they were exempt from air pollution regs – and let's ask everyone to take their share of the responsibility for cleaning up OUR AIR.

RESPONSE: Comment Noted.

183. **COMMENT:** PS That argument of one man about mitigation fees of $2000 pricing thousands of people out of homes in California was statistical but not logical. If they can *only* qualify for a $300,000 home and the $2,000 fee is going to put them "out of the market," then they can just drop their expectations and builder options and by a home for $295,000. Also, it is bad financial planning to try to buy the most expensive house you can qualify for.

RESPONSE: Comment Noted.

ENVIRONMENTAL

Clean Water & Air Matter (CWAM)
Date: September 15, 2005

Thank you for the opportunity to comment on the above mentioned draft rules as proposed for the District. In addition to my verbal comments made during the September 1, 2005 workshop, I wanted to touch on the following topics.

184. COMMENT: No net gain does not equal a loss. When we begin to mitigate more pollution than we create while adding new pollutants, we will finally begin to achieve reductions in total pollutant levels. Until this happens, we are still adding to the pollutant total without ever actually subtracting anything.

RESPONSE: The author's comment does not hold when applied to mobile emissions. Emissions from mobile sources are reducing over time due to regulations on new vehicles. For example, no net increase in the number of vehicles would result in lower future emissions from vehicle turnover to cleaner fleets. The District takes this and other factors into account in the PM10 and Ozone attainment plans. The plans identify growth and reductions in source categories. The plans quantify the reduction from current District rules and proposed rules as well as state and federal regulations, and then model future emissions to determine if the District may reach attainment for applicable pollutants. For development projects, the 'subtracting' occurs through on-site and off-site emission reductions *and* mobile emission reductions over time. The PM10 and Ozone plans have determined that the ISR rule, in addition to existing and future rules and conditions, will help the Valley clean the air and reach attainment.

185. COMMENT: The Californian Environmental Quality Act (CEQA) is very clear when it comes to mitigation measures and how they must be available for public review before the decision makers (who also must have them for review) vote on the project. In reference to Section 5.0 Application Requirements it is imperative that the mitigation measures not be deferred until after project approval.

In Sundstrom v. County of Mendocino (1st Dist. 1988) 202 Cal. App. 3d 296 [248 Cal Rptr. 352] the court ruled that the deferral of an environmental assessment (in this case a hydrological study) until after the project approval violated CEQA's policy that impacts must be identified before project momentum reduces or eliminates the agency's flexibility to subsequently change it course of action. In addition, because the permit authorized the applicant himself, subject to planning staff approval, to conduct the required analysis, the county had violated CEQA's requirement that an agency's decisionmaking body must ultimately review and vouch for all environmental analysis mandated by CEQA. (202 Cal.App.3d at 306-308]

RESPONSE: Rule 9510 §5.0 has been revised to make application and review of ISR projects concurrent with or prior to the CEQA process a project would undertake with the local land use agency. It should be noted that the ISR program does not involve discretionary approval and therefore not itself a CEQA process. Additionally, compliance with District Rules is a *requirement,* not mitigation.

186. COMMENT: Furthermore, local agencies are instructed to integrate the CEQA review process into the other planning and environmental review procedures they are legally or otherwise obligated to conduct. To the maximum extent feasible, CEQA procedures and other procedures should run concurrently, rather than consecutively. (Pubic Resources Code Section 21003 subd. (a).) Regarding Comment #50- CEQA is a state law and does not vary by jurisdiction. This comment should be changed.

RESPONSE: Concerning timing of application to the ISR program, see the response to comment above. Although CEQA itself does not vary by jurisdiction, the implementation of the time requirements does. CEQA provides the master timeline in the framework of minimum and maximum times for various activities. Each jurisdiction has the authority to implement CEQA with procedures that reduce a particular activity's time to far below the maximum time allowed under CEQA. Therefore, each jurisdiction may have a different timeline for project review and approval based on individual procedures that comply with CEQA. The District will not change response to comment #49 from the June 30, 2005 workshop.

187. COMMENT: While there are exceptions, contextually, the agency is creating a broad, sweeping plan to cover many projects, including but not limited to, commercial, industrial and residential. Consideration of public involvement in the process would facilitate information regarding mitigation at the beginning of the process, rather than after the project has been approved.

This issue, when addressed early in the application process can carry over to all levels of approval, rather than have the public or decision makers continually have to request effective, enforceable mitigation as part of the project not only with the lead agency, but the responsible agency as well.

RESPONSE: While the District concurs that public involvement is important, and will amend the rule and staff report to include mechanisms for public involvement, the ISR program is *not* a CEQA process. ISR is a ministerial action not subject to CEQA, per PRC §21080 *Division Application to Discretionary*

Projects; Nonapplication; Negative Declarations; Environmental Impact Report Preparation (b)(1):

(b) This division does not apply to any of the following activities:
(1) Ministerial projects proposed to be carried out or approved by public agencies.

188. COMMENT: There should be some method for the dispersal of funds to account for project area pollutants and either the on-site or near-by mitigation funded by said project. Money going into the big pot in Fresno and ending up who knows where, by some group that has asked, will not address source point pollution.

RESPONSE: The District will track the location, by City and County, of the projects funded through the off-site emission reduction fund. The District will also complete annual reporting of how much, where and what tons of reductions occurred, which will be made available to the public. The District is unsure of the author's intent with the comment on point source pollution. This rule does not attempt to address emissions from source points. However, if an off-site emission reduction project is a point source, that information will be available in the District's annual reporting, and upon request.

189. COMMENT: Regarding the pollution prevention proposals, it would a be beneficial to have some long-term pollution reduction by means of phyto-remediation. Trees are known, quantifiable and effective pollution reduction technique. The use of trees should be encouraged to help cleanse the valley air. This mitigation could be achieved with tree farms using mitigation banking credits for a controlled system of distribution.

RESPONSE: The District is aware of the air quality benefits of trees. Specifically, trees reduce ambient temperature (reducing formation of ozone), cool housing and AC units (reduce energy consumption), cool cars and paving in parking lots (reduced evaporation of volatiles[6]). It is also known that some of these benefits are quantifiable. The District would entertain a tree program as an off-site project if it meets the requirements set forth in the rule, including cost effectiveness.

190. COMMENT: Enforcement of air quality mitigation measures is the responsibility of the District. I mention again in these comments a critical issue: Currently the district is notified of a project's start when there is a complaint filed by a member of the public. While this is not always the case, this type of complaint based enforcement system is inefficient as best and at worst, a heavy burden on the public to be responsible to see that the approved mitigation measures are actually followed or the best possible attempt to prevent more air pollution

6 McPherson, E. Gregory. Sacramento's parking lot shading ordinance: environmental and economic costs of compliance. Landscape and Urban Planning 57 (2001) 105-123

RESPONSE: The District is notified of the start of a project through several means. The CEQA process allows an opportunity for the District to review and comment on development projects within the Valley. The District also receives Dust Control Plans (DCP) and Notifications from project developers as a *requirement* of Regulation VIII (Fugitive PM10 Prohibitions). It should be noted that District rules are *requirements* and not mitigation, and the District has the authority to take enforcement action for non-compliant projects. The District is notified of Regulation VIII non-compliance through mandatory self-reporting (DCPs, etc.)

191. COMMENT: Additionally, it would be beneficial to both the public and all decision makers reviewing environmental air quality assessment to have the inputs for the baseline for the modeling runs at the beginning of the reports and if the report is quoted in the document, in the text of the document as well.

RESPONSE: The preparation of environmental CEQA documents is the responsibility of the lead agency. The District will make project specific information available to the lead agency and the public (See Response to Comments #8 and #59), but the District cannot prescribe a format that lead agencies must follow.

Kern-Kaweah Chapter of the Sierra Club
Date: September 15, 2005

Here are the comments of the Kern-Kaweah Chapter of the Sierra Club. Our chapter has 1,600 members and there are a few thousand other Sierra Club members in the San Joaquin Valley.

My copy of the September 1 draft is post marked August 26. Does the Air District Staff believe in summer vacation and Labor Day Weekend?

Instead of including our July 15, 2005 letter by reference, we put chunks of it in this letter and put the rest at the end of this letter.

GENERAL REMARKS ON THE RULE

192. **COMMENT:** At the September 1 workshop I learned that air quality regulations forbid the development industry from sheltering those of us with low or even moderate incomes. At previous workshops I learned that air quality regulations prevent farmers from feeding us and prevent various industries from affording to employ us. Perhaps the best plan is for residents to continue to suffer asthma and for those who die prematurely of heart or lung disease to be eulogized as "heroes of the economy".

RESPONSE: Comment Noted.

193. **COMMENT:** Our previous comments applauded 6.1 "The developer shall mitigate 100% of the construction emissions associated with its development project." Construction emissions do not last as long as operational emissions, but exposure to pollution is the same whether the pollution is from construction or from operation; thus, mitigation for construction emissions should be briefer and equally vigorous as construction from operation.

RESPONSE: The draft rule does not require 100% mitigation from construction. Rule 9510 Section 6.1.1 states that exhaust emissions must be reduced from the statewide average by 20% for NOx and by 45% for PM10.

194. **COMMENT:** We object to having developers choose consultants to prepare an Air Impact Assessment; we think consultants will not be chosen by developers unless they make findings as favorable to the developer as possible. The air impact assessment must be produced by the District or by a consultant of the District's choosing. Developers shall pay for the air impact assessment.

RESPONSE: The District will require all inputs and assumptions for the Air Impact Assessment, per the requirements of the rule. This information is contained in the application. The District will review the inputs, assumptions and modeling for accuracy, and will require additional information and/or revision for items that are inaccurate, inconsistent or unjustified. The modeling must be replicable and reasonable, and the emission reduction measures selected must be incorporated into the project and enforced through either other public agency requirements or by a District Monitoring and Reporting Schedule.

195. **COMMENT:** I did not find anything about mitigation by replacing inefficient equipment. Our July 18, 2005 letter said: "If existing equipment is replaced because it is worn out, no mitigation credits must be given unless the new equipment is better than other equipment that could be used. The mitigation credit must be limited to the difference in cost between the cheapest equipment that could have been obtained and the lower emitting equipment that was obtained."

RESPONSE: It is unclear if this comment pertains to on-site emission reduction or off-site emission reductions. For on-site emission reductions from construction, no justification is necessary to achieve credit for cleaner engines. For off-site emission reductions, the reductions will be achieved through the ISR off-site funding program, which will follow criteria and established emission reduction calculations. For programs that replace existing engines with new engines, the old engine must be operational and have a remaining useful life that is the basis of the emission reductions. How those emission reductions are calculated depends on the type of project and the specific components of the project. See the Staff Report and Appendix E – Cost Effectiveness Analysis for additional information on off-site emission reduction projects.

GENERAL REMARKS ON THE NOx REDUCTION OF THE RULE

196. COMMENT: Rule 9510 sets the goal of reducing emissions from projects that produce more than two tons per year of NOx by half. There is no justification for mitigating only 50% of emissions. Reducing NOx by half, rather than complete reduction, would be acceptable if all trips to or from the regulated development projects were to other projects that also reduced their NOx emissions by half. For the most part, rule 9510 regulates new development projects on the edge of town; most of the trips associated with those projects will be to or from long established business, recreational or work sites that have never paid any air quality mitigation fee and have no on site mitigation. If the trip to those sites had been made from an older development nearer the established sites, air emissions would be less. That is why the goal should be complete mitigation for all polluting emissions from all sources including Area Sources.

RESPONSE: The goal of the rule is to achieve an emission reduction from growth that was identified in the PM10 and ozone plans. The District calculated the level of reduction needed on a per-project basis that would achieve the emission reduction committed to in the PM10 and ozone attainment plans. The rule sets levels that are in compliance with state law regarding indirect source regulations and are feasible to achieve. Charging a fee for trips that are the responsibility of another new source or an existing indirect source would not equitably distribute responsibility for existing and new vehicle trips as required by H&S 40717.5. The 33% accounts for declining mobile emissions over a ten year period – see the fee formula.

197. COMMENT: How much NOx will future vehicles make? When will increased gasoline prices cause us to use fewer light trucks and more efficient sedans? The staff report, bottom of page 3, says cars are predicted to decrease pollution between 1994 and 2003. Has this occurred?

RESPONSE: NOx emissions were reduced substantially between 1994 and 2003; however, certain heavy-duty diesel vehicles showed an increase during that period due to use of computer controls that enabled the vehicles to meet emission tests but emit at higher levels during actual operation. This problem has now been corrected. The amount of future NOx is identified in Attachment 2 of Appendix B – Emissions Reduction Analysis for Rule 9510 (ISR). Studies of the effects of gasoline prices indicate that very large price increases would be needed to significantly change travel behavior.

198. COMMENT: Here are examples where rule 9510 may cause someone to pay more than their share to mitigate air quality. Someone might move to a newly built home in order to take a job near that home; they would create emissions only when they drove to established business, recreational sites not I their new neighborhood or visited persons living a distance from their new home. A retired person who moved to a newly built home in order to be near the people they most often visit would generate fewer emissions than most of those who move to a newly built home. These exceptional cases do not seem to justify making this rule weaker or more complex.

RESPONSE: The District recognizes that there are a variety of factors that affect emissions from new projects. It is infeasible to model or account for all this variation at the development stage. In addition, there is no guarantee that those cases of less-emissions, same-house would occur over the ten years assessed by the rule, let alone the life of the project. The District considers the URBEMIS model to be the most accurate model available that meets the needs of the ISR rules. More information on URBEMIS may be found in the Staff Report and in Appendix D – Recommended Changes to URBEMIS.

APPENDIX A: RESPONSE TO COMMENTS

Industry and Public:

199. COMMENT: Comment 1 Each individual development must be held responsible for all the travel it generates. When persons move to the edge of town from a site closer to the center of town, their old home is occupied; the emissions of their old home do not change. The emissions of their new home must all be mitigated. Consider a mitigation fee for those who move into an existing home that is further from the center of the City than their previous home.

RESPONSE: The District agrees that each individual development should be responsible for the trips it generates, but also must consider that the reductions required must be fair and feasible. The District may consider a future rule revision or other program to address existing indirect sources.

200. **COMMENT:** Comment 7 If the emissions of a structure continue beyond ten years, so should the mitigations. Can the air district prove that cleaner cars will allow us to attain PM 10 and ozone standards in ten years and prevent increased emissions thereafter? What if attainment in does not permanently occur?

RESPONSE: The mobile source regulations currently in place and scheduled to go into effect in the next few years provide for a cleaner car and truck fleet well into the future even when accounting for projected growth in trips and vehicle miles traveled. Continued diligence will be required to ensure maintenance of the standards. This is accomplished through a maintenance plan that will provide the reductions needed to keep emissions from increasing due to growth.

201. **COMMENT:** Comments 11 and 18 Response 11 correctly anticipates new standards. Response 18 implies that PM 2.5 is not likely to be one of those new standards because attaining PM 10 standards will control PM 2.5. So far it looks like a lot of PM 10 is geologic particulates that are not as harmful as the smaller particles included in PM 10. The smaller particles, PM 2.5, are products of combustion or are a combination of ammonia and NOx. If so, decreasing PM 10 will not decrease PM 2.5.

RESPONSE: The rule is designed to reduce both fugitive dust PM10 and combustion PM10. Most engine replacement and retrofit projects provide NOx and PM10 benefits. Most of the combustion PM10 is comprised of the fine fraction less than 2.5 micrometers in diameter. The PM10 standard cannot be achieved without fugitive PM10 reductions and so must be part of this rule.

202. **COMMENT:** Comment 25 Some recreational space reduces motor vehicle use, such as a park that many persons can easily access on foot or by bicycle. Some recreational space increases motor vehicle use, such as a motocross facility or any facility that attracts visitors from a distance.

RESPONSE: Recreational uses that attract vehicle trips and exceed the operational threshold of 2 tons/year of NOx or PM10 will be subject to the rule. Uses that attract pedestrians or bicyclists would not trigger the rule.

203. **COMMENT:** Comments 67 and 70 The Socioeconomic impact of these rules must include the decrease in the cost of illness and death that this rule will cause. The cost of illness includes pain, suffering, premature loss of income, absence from school, absence from work and loss of companionship. To estimate the incidence of these events, please consult physicians who have reported such figures to CARB; for example, there are 106,695 workdays lost in Kern County due to PM10.

RESPONSE: See Response to Comment #98.

204. **COMMENT:** Comment 87 I do not bicycle on very hot days and most folks stay indoors those days. When I do bicycle on days of elevated ozone levels, I expose myself to ozone rather than use my car to raise ozone levels for everyone else. There are, or would be if bike paths are constructed, many persons as virtuous as I.

RESPONSE: Comment Noted.

205. **COMMENT:** Comment 96 Mitigating air pollution as close as reasonably possible to the source of the pollution may be more acceptable to the public than distant mitigation; however, insistence on mitigating in the immediate area can be used as a way to make mitigation more difficult.

RESPONSE: See Response to Comment #188.

206. **COMMENT:** Comment 98 Limiting mitigations to those that match the source of the mitigations can be used as a way to make mitigation more difficult. A ton of NOx generated by Valley traffic is the same as a ton of NOx mitigated by reducing Valley generation of electricity from fossil fuel.

RESPONSE: See Response to Comments #188.

207. **COMMENT:** Comment 102 As inflation and the completion of the most cost effective measures occur, how will mitigation fees be increased?

RESPONSE: Off-site fees are dictated by the amount it would take to offset a ton of the applicable pollutant. The District has included the fee schedules for 2006 through 2008. If an adjustment is required, for example, if during implementation the District finds that there aren't enough off-site projects achieve the set cost-effectiveness, the District can amend the cost-effectiveness schedule in the rule through a rule amendment. Rule amendment procedures are standard, and must be adopted by the Board.

EPA

208. **COMMENT:** Comment 7 p. A 25 Is EPA completely satisfied with this response to their thoughtful comment?

RESPONSE: See Response to Comment #5 for additional comments to the issue of surplus mitigation.

209. **COMMENT:** Comment 18 p. A 28 A high density residential project far from jobs, shopping, schools and other services does not decrease emissions except for trips between residents. A high density project that enables residents to

access jobs, shopping, schools and other services on foot, bus or bicycle decreases emissions and should get credit for on site mitigation.

RESPONSE: See Response to Comments #7 and #9 for discussion on URBEMIS on-site measure quantifications.

210. COMMENT: Comment 36 p. A 30 We are pleased that low-income housing is not exempt from the rule. Low-income housing often has elderly residents whose diseased lungs and hearts are especially susceptible to air pollution. Government can help pay the small cost of clean air for poor people if the voters wish.

RESPONSE: Comment noted.

Remarks On The Wording Of The Rule

211. COMMENT: 1.1
Does the reference to "particulate matter" include PM 2.5 and the smaller particles such as PM 0.1 that can be inhaled from ambient air into the blood stream? Comments 11 and 18 apply: Response 11 correctly anticipates new standards. Response 18 implies that PM 2.5 is not likely to be one of those new standards because attaining PM 10 standards will control PM 2.5. So far it looks like a lot of PM 10 is geologic particulates that are not as harmful as the smaller particles included in PM 10. The smaller particles, PM 2.5, are products of combustion or are a combination of ammonia and NOx. If so, decreasing PM 10 will not decrease PM 2.5.

RESPONSE: See Response to Comments #57 and #65 for the Districts response to which pollutants, and how much reduction was chosen.

212. COMMENT:2.1.8
Comment 25 applies: Some recreational space reduces motor vehicle use, such as a park that many persons can easily access on foot or by bicycle. Some recreational space increases motor vehicle use, such as a motocross facility or any facility that attracts visitors from a distance.

RESPONSE: The Air Quality Impact Assessment uses URBEMIS to calculate mobile source emissions from each project. URBEMIS uses trip generation rates for each type of use and allows for different trip rates to be used for different types of recreational facilities. This will allow for an accurate differentiation between the uses mentioned in the comment.

213. COMMENT: 2.3.1 & 2.3.2
We wish to thank whoever brought to your attention that the draft of 9510 dated June 30, 2005 did not address cumulative impact of adjacent development.

These paragraphs at least call our attention to this failing. As I understand 2.3.1 & 2.3.2, if I had one piece of land big enough to build 147 units, I could build 49 residential units that rule 9510 would not apply to. Then, in lieu of inheritance I could give each of my two children land so that they each build 49 residential units. We would thus build 147 residential units without having to comply with rule 9510. No one would ever know if I benefited financially from my children's property.

RESPONSE: See Response to Comment #214.

214. COMMENT: The only way I can write rule 9510 to avoid this problem and avoid high administrative cost is to say that even one house will be subject to this rule but that small tracts can pay a mitigation fee, rather than have their emissions determined and mitigated.

Our comments of July 18, 2005 on 2.2 and 4.2 of rule 9510 are included here:

The rule should apply to even the smallest projects so that developers do not piece meal. Building many little developments can have a major cumulative effect; CEQA has cumulative impact concerns. Among the 6 30 05 comments that supported not omitting projects that make only two tons of NOx and only two tons of PM 10 per year was one by a City of Clovis employee who forecast developments of 49 houses. Dr. Nipp has commented on over a dozen housing developments that somehow had just under ten tons per year of NOx and just under ten tons per year of ROG. Several years ago several natural gas 48 or 49 MW cogeneration power plants were built in Kern County; 50 MW plants had to be reviewed by the California Energy Commission.

These exemptions could also increase administrative costs and give some developers an advantage over others. What happens if soon after a new 20,000 square feet store is occupied, it fails or for some other reason becomes general office space? The store has paid a fee that it would not have paid if it had been built as general office space.

Please disregard our next paragraph of July 18, 2005; it is in error. It read: The rule could say that if a project is small, and no developer has enough land at the site to develop any other source of emissions small projects could be exempted.

RESPONSE: The District added rule language that prohibits piecemealing of projects to evade the applicability threshold. In addition, the District will implement procedures for identifying non-compliant projects and will have staff assigned to ensure compliance with the rule.

215. COMMENT: 3.22 & 3.23
In view of the decrease in emissions that will result from replacing some of our private auto travel with public transit, we might need to mitigate emissions form public transit construction less stringently than emissions from other construction. Since building new roads leads to more car and truck use, and therefore more pollution, road building emissions must be strictly mitigated.

RESPONSE: The District has determined that transit projects involving construction in excess of 2 tons total of NOx and PM10 combined should remain subject to the rule.

216. COMMENT: 4.1.4
Agriculture should be among these exemptions provided it is regulated under other rules as provided in the SB 700 series of bills.

RESPONSE: See Response to Comment #45.

217. COMMENT: 4.3
Transportation Projects should not be exempt from the requirements of the rule. If more roads, as opposed to mass transit, are made available, more people will use the roads rather than mass transit. This is called induced traffic. If bicycle paths and mass transit become available, some of us will choose to use them.

RESPONSE: The District specifically exempted transportation projects from the 'operational emission reduction requirements of the rule. Transportation projects are subject to the construction emission reduction requirements of the rule. Although not part of this rule, the District may consider including operational and area requirements in a future rule or rule amendment.

218. COMMENT: 5.0
CEQA provides that information such as provided by an AIA be available to the public and to decision makers before any discretionary action is approved. Please change the first sentence of 5.0 so that if complies with the CEQA.

RESPONSE: The District intends to submit air quality impact assessments to local agencies so that they may use them in their CEQA documents prepared for the land use approval. Although the rule provides analysis and emission reductions that will be useful in the CEQA process, the main focus of the rule is attainment of PM10 and ozone standards. (See Response to Comments #8 and #59). Also keep in mind, the ISR program is not discretionary approval and therefore *not* a CEQA process (See Response to Comment #187).

219. COMMENT: 5.1
Any consultant involved by any developer must be identified.

RESPONSE: The District will amend the rule language to include the above.

220. COMMENT: 5.4.1.1
Does this say that any mitigation required by laws existing before a development occurs can not be counted as an indirect source mitigation under rule 9510? We hope the answer to this question is "yes". The Air District intends to obtain agreed upon mitigations, as 5.5.6 shows.

RESPONSE: Any on-site measure that is quantifiable through the APCO approved model shall be counted towards on-site emission reduction. Only measures that do not have an enforcement mechanism through city/county or other requirements will be required to complete a monitoring and reporting schedule with the District.

221. COMMENT: 6.1.1
Are a 20% reduction in NOx emissions and a 45% reduction in PM10 emissions all developers are reasonably capable of, or is it just enough to attain a CAA standard deadline? Why does the Federal Clean Air Act allow areas like Bakersfield, that fail to attain daily 8 hour ozone standards on more days than any other place in the USA, to employ RACM, not BACM?

Does the Air District intend to wait for 2007 to complete a plan to attain federal 8-hour ozone standards? If so, how do you justify this to children who can not play outdoors when there is too much ozone in the air?

RESPONSE: The emission reduction requirements were based on the availability of new technology that can achieve the results allowing for a reasonable period of time for equipment owners to phase in the cleaner equipment considering the high cost of large construction equipment and its long useful life.

The District is working as rapidly as it can on 8-hour ozone planning. We are currently working with a Northern California 8-hour State Implementation Plan Working Group to coordinate the modeling and other efforts to get the plans out on time. The atmospheric modeling now beginning is needed to identify the reductions required. The District continually works to identify control measures that can be adopted to achieve reductions as early as possible. The District's goal is to complete the 8-hr plan in the spring of 2007.

Appendix C: On-Site Mitigation Checklist

222. **COMMENT:** Except for push mowers, this is identical to our July 18, 2005 letter. Local office holders must be tested on various parts of appendix C and recalled if they fail.

RESPONSE: Comment Noted.

223. **COMMENT:** 1 Bicycle Infrastructure:
Class II bike lanes on arterial/collector streets are more dangerous than class I.

RESPONSE: Comment noted. The corresponding URBEMIS mitigation component states "Percent of Arterials/Collectors with Bike Lanes: Or Where Suitable, Direct Parallel Routes Exist." 'Bike Lane' is the Class II category. 'Bike Path' is the more desirable Class I category. In addition, the District believes appropriate "complete street" planning adequately addresses the issue of safety.

224. **COMMENT:** 7 Pedestrian Oriented Infrastructure:
Place store entrances just off the sidewalk. Folks dislike walking across busy, un-shaded parking lots.

RESPONSE: The District will add the above to the items listed under "Pedestrian Oriented Infrastructure"

225. **COMMENT:** 16 Parking
Some employers offer employees about $40/month in lieu of free parking; employees who accept are left to choose among transit, bicycle, car pool, walking etc.

RESPONSE: This type of measure is appropriate for projects where the building tenant is known at the time the project review is accomplished. It could be included as an employer Transportation Demand Management Program. The emission reductions will depend on individual measures that the employer will implement and the pedestrian, bicycle, and transit service at the project site.

226. **COMMENT:** 25 Energy Efficiency
Provide space for outdoor passive solar clothes dryers, once known as wash lines and space for portable indoor drying racks.
Shaded, reflective or white roofs are not as good as the items you mention, but they are better than dark, unshaded roofs. Roof overhangs that shade windows in summer decrease heating costs.
Water heater should be located in most sinks so that a central hot water heater does not need to be turned on just to get hot water in one sink.
Provide fluorescent lighting, including compact bulbs.

If air conditioners, rather than swamp coolers, are insisted upon, they should be placed on the ground, north of the building, in the shade.

RESPONSE: The items listed above relate to the individual components that may increase energy efficiency. The On-Site Emission Reduction List contains the following measure:

> *Increase the building energy efficiency rating above what is required by Title 24 requirements. This can be accomplished by any combination of the following (this list should not be considered comprehensive):*

The list mentioned is an 'idea list' to inform the applicant of the variety of components that are available. The District will amend the list as additional energy-saving components are identified.

227. COMMENT: 47 Landscaping
At least let folks know push mowers are available at stores and they lower body weight.

RESPONSE: The District has a Public Information Department that has an excellent track record in getting the word out on the many options available for individuals to reduce their air impacts.

Appendix F: Socioeconomic Analysis

228. COMMENT: We agree that the affect of rule 9510 on home prices and rents will be small if the assumptions of the study by "Applied Development Economics" are made. We think that in general and in the Valley's housing market, supply and demand have a much greater effect on price than costs do; therefore we think the rule will have negligible effect on prices.

Our remarks on comments 67 and 70 above apply.

RESPONSE: Comment Noted.

229. COMMENT: If rule 9510 results in increased use of public transit, it will decreases the amount of money spent on gasoline. Sixty per cent of America's crude oil is imported. If residents divert money from partly imported gasoline to local products and to paying the wages of those employed by public transit, it will increase the gross domestic product of the Valley except for a decrease in money going to local oil drilling and refining. Would the net of this have a significant effect on Valley incomes? What if we decrease crude imports without decreasing local crude oil production?

RESPONSE: The District believes that although the implementation of Rule 9510 will have some economic impacts, it also will have a potentially significant beneficial economic effect on the San Joaquin Valley's economy through funding

off-site emission reduction projects. For example, a PM10 project may be paving unpaved roadways. This could result in an increase in jobs. However, the District does not speculate on the rule's potential secondary impact on the petroleum industry due to increase or decrease in fuel use.

230. COMMENT: If society desires a certain rate of home ownership among those with lower income, or otherwise wishes to increase the standard of living for those with lower income society can subsidize their mortgage payments, pay more for their work or tax them less and tax others more.

RESPONSE: Comment Noted.

Environmental Defense
Association of Irritated Residents
Steven and Michele Kirsch Foundation
Union of Concerned Scientists
Latino Issues Forum
Relational Culture Institute
Center for Energy Efficiency and Renewable Technologies
Fresno Metro Ministry
Natural Resources Defense Council
Merced/Mariposa County Asthma Coalition
Earthjustice
Date: September 14, 2005

We represent national, regional and local environmental, public health, and community organizations that are actively engaged in finding solutions to the San Joaquin Valley's air pollution. We have been closely following the district's development of DESIGN (Rule 9510) and the accompanying air impact assessment application fee (Rule 3180). We believe that together these rules have great potential for reducing and mitigating air pollution that accompanies growth in the Valley.

As noted in the comment letter many of us signed regarding the June 30 version of the draft rules, we believe the two rules have great potential for improving the quality of life for everyone in the Valley, and not just through the direct benefit of cleaner air. The two rules can increase opportunities and incentives for affordable housing located near jobs; reduce the climb in daily vehicle miles traveled; reduce traffic congestion and encourage viable transportation choices; protect agricultural lands from encroachment; and be the first words in a regional conversation about how to best accommodate growth without increasing pollution.

We believe that the September 1 version of the draft rule is an improvement over the June 30 draft. We are pleased that the latest draft has more detail. We also appreciate the district's effort to prevent gaming of the rule by ensuring that projects on contiguous

or adjacent property under common ownership of a single entity will be treated as one project. However, we believe that overall, the current version still falls short of ensuring that the DESIGN program meets its full potential to reduce air pollution.

We urge the district to consider the following comments and make appropriate changes to the September 1 draft rule before submitting it to the board for approval.

231. COMMENT: Section 2.0 Applicability. The thresholds for the size of developments covered by the rule are too high. The thresholds appear to be set to cover developments that would be expected to produce two or more tons per year of pollution. Neither the staff report nor the draft rule provides any strong logic for ignoring developments that produce less than 2 tons but at least 1 ton per year. Leaving tons on the table unnecessarily reduces the rule's effectiveness and eliminates cost-effective opportunities to protect public health. The thresholds should be set to cover developments that produce 1 ton or more per year.

RESPONSE: See Response to Comments #57 and #180 for the District's determination of the applicability level.

232. COMMENT: Section 3.5 Definition of Baseline Emissions. The wording for this definition needs to be clearer. The current wording leaves it unclear whether the first year of the project or any phase of the project is included in the baseline emissions. Additionally, as we discuss below, the emissions covered should include reactive organic gases.

RESPONSE: See Response to Comment #91.

233. COMMENT: Section 3.14.7 Definition of Recreational. The definition is too inclusive. It should be refined to ensure that facilities within this category generate similar levels of pollution. A community park, for instance, does not generate the same amount of pollution as a movie theater. Movie theaters and fitness clubs are probably more appropriately included in commercial categories.

RESPONSE: See Response to Comment #88.

234. COMMENT: Section 4.1.5 Housing Projects Exemption. This definition needs to be clearer. It appears that the district is interested in exempting housing that would qualify as affordable housing and that is receiving public funding to ensure its status as affordable housing. However, the definition as it now stands could be interpreted as offering a much broader exemption, and including any housing that receives federal- or state-backed loans. The definition should be more clearly and narrowly stated to reflect the district's intent.

RESPONSE: The District has eliminated this exemption in the proposed rule.

235. COMMENT: Section 5.3 Air Impact Assessment (AIA), Section 5.4 On-site Mitigation Checklist, Section 5.5 Mitigation Monitoring and Reporting Program (MMRP), and Section 5.6 Air Impact Mitigation Fee Deferral Schedule (FDS). The rule should overtly guarantee public access to documents and information required by these sections. While state law would allow public access, to ensure that access is available in a timely fashion, and not subject to delays resulting from the need to file public records act requests, the rule should specifically note that the district will make available to the public the application and information described in sections 5.3, 5.4, 5.5 and 5.6 within two weeks of the district's receipt and review of these documents.

RESPONSE: The ISR program will not be a discretionary program, and thus is not subject to the public review requirements of CEQA (See Response to Comment #187). The District will be including mechanisms for public agency and public review of certain ISR documents. See Response to Comment #8 for Public Agency access. See Response to Comment #59 for public access. See Response to Comments #178 and #188 for public access to the Off-Site Program.

236. COMMENT: Section 6.1 Construction Equipment Emissions. Construction equipment emissions reduction goals should be set as a minimum standard for individual vehicles, not as a fleet average. We applaud the district's inclusion in this draft of a section specifically requiring reductions in construction vehicle tailpipe pollution. Uncontrolled construction equipment represents some of the dirtiest and most health-threatening mobile emissions. However, the fleet average approach suggested in the draft rule fails to protect those working and living closest to, and therefore at most risk from, the emissions from individual pieces of the dirtiest uncontrolled equipment. We recommend requiring a minimum level of control for all construction equipment that limits emissions to those achieved by Tier 1 controlled construction equipment, in combination with a fleet average as described in the rule.

RESPONSE: The District does not have the authority to set emission standards for mobile sources. Please see Response to Comment # 6 for additional information.

237. COMMENT: Section 6.2 Operational and Area Source Emissions. The rule should fully mitigate the most health-threatening indirect source pollutants. We are pleased that the district has clarified that PM 2.5 will be included in the emissions controlled. However, we continue to believe that, like the June 30th version, the September 1 draft rule does not provide the level of health protection warranted. The rule addresses only oxides of nitrogen (NOx) and coarse and fine particulate matter (PM 10 and PM 2.5). It should also require mitigation of reactive organic gases (ROG), a precursor that leads to the

formation of ground-level ozone. Mobile sources account for almost 40% of ROG emissions in the San Joaquin Valley.

Additionally, the draft rule continues to call for reducing just a third of the NOx emissions and half of the operational PM 10 emissions over a ten-year period. This approach leaves the majority of pollutants produced by a new development unmitigated. The district staff has arrived at these discounts short of 100 percent mitigation to avoid double counting. It has thus assumed that every vehicle traveling to or from a new development is starting or ending the trip at another new development also covered by the rule. This is an unreasonable expectation.

At the very least, if the district believes it must discount mitigation levels to avoid double counting, it should arrive at the proposed discount in a logical, defensible fashion. The district should engage the URBEMIS update advisory group, composed of professional air regulators familiar with the model and the literature on land use and transportation, to define a reasonable and defensible default number for discounting trips to avoid double counting.

RESPONSE: See Response to Comments #57 and #65 for the District's response on the amount, pollutant type, and calculations for emission reductions. By ensuring that the program does not mitigate more than half the trips generated by the project, the District is ensuring compliance with the H&S Code that requires indirect source programs to differentiate between new and existing trips. URBEMIS accounts for all trips related to a development but does not differentiate between new and existing trips. When analyzing a project in an area that is planned but not built out, some of the trips will be going to new development that will also be subject to the rule in the future and other trips will be going to existing development not subject to the rule. Both types of trips should not be charged to the project being analyzed so that impacts are fairly allocated among all uses

238. COMMENT: Additionally, the mitigation requirement should extend beyond ten years. One need not look very far in California to see that most buildings continue to attract pollution-emitting traffic for much longer than ten years. The DESIGN rule should more faithfully reflect the real life of—and real life of emissions from—the development project. We suggest a minimum of 30 years, which assumes a development will last at least as long as a standard mortgage.

The rule should also recognize that developments have variations in emissions over their lives. This change reflects the changing demographics in housing developments over time, and the changing uses of buildings, including commercial and industrial buildings. The rule should include that variation in emissions modeling and the district should require a review of actual emissions from projects at least once every five years to ensure that the match between emissions and required mitigation is strong.

RESPONSE: See Response to Comment #198 for the District's response on variations.

239. COMMENT: Section 10.2 Administration of Mitigation Funds. Mitigation measures should be permanent. The district, in Section 10.2, the draft rule indicates that it will use mitigation fees to fund quantifiable, enforceable and surplus NOx and PM10 emissions from off-site mitigation projects. All mitigation, whether on-site or off-site, should be permanent as well.

Some mitigation measures, such as the incremental improvement from retrofitting a diesel truck engine, are not permanent. The incremental improvements last only as long as that retrofitted or replaced engine is in operation and go away once a newer, cleaner engine replaces that older engine. Yet the pollution those measures intend to mitigate do not change. Therefore, short-term mitigation measures should be sequenced with other mitigation measures, to ensure that mitigation lasts as long as the mitigated pollution does.

RESPONSE: The District disagrees with this commenter's characterization of permanent reductions. The key is that all equipment and vehicles wear out and must be replaced over time. If the old equipment is replaced at the end of its useful life with new equipment that is as clean or cleaner than the old equipment then the emissions continue at the same or lower rate and the reductions should be considered permanent. If the equipment were replaced with dirtier equipment at the end of its useful life, the reduction would not be permanent. The District uses project life estimates from the Carl Moyer program that are very conservative. For example, ag IC engines are allowed a project life of 7 years, but our experience in the grant program has shown that many engines are operated for 20 to 30 years.

240. COMMENT: The District Should Develop Long-Term Measures with Mitigation Funds, and Invite the Public to Participate.

The September 1 draft, like the earlier drafts, is vague and uncertain about how monies will be spent and leaves critical decision-making about spending the funds up to the air district. The district should use the Carl Moyer program as a model. Broad areas for expenditure are outlined in the statute establishing the Moyer program, and then the lead regulatory agency, after public workshops and hearings, adopts guidelines about the specifics of how the Moyer funds will be spent.

Mitigation funds collected from developers for off-site mitigation should help create and fund long-term air pollution mitigation measures. Improving transportation choices by investing in vanpool systems and providing incentives for affordable housing located near existing job sites are examples of just two

long-term measures. The district needs to engage the public, local government and other agencies to identify the best uses of mitigation funds to get these long-term emissions reductions. The rule should establish development of a public process and guidelines for determining the best uses of the mitigation funds.

RESPONSE: Long-term measures as described in the comment may be funded if they can meet the reductions are quantifiable and enforceable. There will be opportunities to add programs once the rule is adopted.

241. COMMENT: Include Discussion of Health Costs of Air Pollution**.**
In the staff draft report, in the draft rules, and in the socioeconomic analysis, there is no indication that air pollution costs money. There is no indication that the main purpose for this and every other rule adopted by the air district is to make the air healthier to breath. The air district staff, and by extension the air district board, does itself and the cause of clean air a disservice by continually ignoring this critical issue. Dirty air is costly. It impairs health and costs residents in time lost at work, in lost productivity, in lost days at school, in direct health care costs. It also costs crop damage and materials damage. More than a decade ago, researchers established that not meeting federal ambient air quality standards in the Los Angeles air basin costs that region at least $9 billion a year.

We continue to be disappointed by the district staff's refusal to note in its rule reports and socioeconomic analyses that air pollution has costs, especially health costs. We urge the district to use this rulemaking opportunity to bring to the public's attention the very real health costs associated with air pollution. Ample information is available from the California Air Resources Board and other state and national environmental agencies to help district staff provide sound information about the costs of air pollution.

RESPONSE: See Response to Comment #98.

242. COMMENT: Finally, we applaud the district for its decision to develop rules 9510 and 3180, and we appreciate the district staff's hard work on this rule. We hope to see another draft that incorporates the changes we have recommended. We also look forward to further discussions with the district about the rule as it moves forward.

RESPONSE: Comment Noted.

Yokuts Group, Sierra Club
Date: September 1, 2005

243. COMMENT: While I think several of the commentators today made the point, I, as a long-time low-income person, would like to tell your socioeconomic that, yes, a $100 increase in rent or mortgage, DOES make a difference. Obviously

he has never been in the position of not having enough money to pay all of his bills.

I'm not qualified to comment on the rest of the presentation, but that I do know about.

RESPONSE: The author's comment on the impacts of pricing on low income persons is well taken. It is important to point out that the rule exempts housing of less than 50 units; and it applies to only *new* housing developments. In addition, the impacts discussed in the Socioeconomic Analysis are the unlikely 'worst-case' scenario where all developments contain no sidewalks, all residential is built at 3-units per acre, there are no transit services, bike racks or any other measure that reduces emissions. The District believes that the exemptions and applicability stated above as well as the more likely, less-fee scenario reduce the impacts on housing affordability beyond that stated in the Socioeconomic Analysis.

244. COMMENT: And I would agree with Kathryn that the cost of *not* doing anything about pollution has to be spelled out. All too often only the costs of rectifying our past neglect are all we look at. That, actually is only relevant when comparing the benefits of several alternatives for cleaning our air.

RESPONSE: The District believes that rule by rule analysis of the health benefits of individual rules is not appropriate; however, the cumulative benefit of the District's attainment strategy on health is extremely important. The District will be revising the Staff Report to include discussion on health impacts as addressed in the PM10 and Ozone plans.

Late Comments

City of Manteca
October 7, 2005

245. COMMENT: The Manteca City Council recently adopted the attached Resolution opposing the adoption of Draft Rules 9510 and 3180. We are aware that we live in a non-attainment area. We are also in favor of lowering the amount of PM-10 and NOx emissions. However, before the assessment of additional fees occurs, a program needs to be presented that will show how the funds collected will be used to lower the emissions.

We will be happy to reconsider our actions when a positive plan has been presented.

RESPONSE: The District has provided a clear and positive plan for use of fees in Appendix E – Cost Effectiveness Analysis for Rule 9510. Detailed program guidance for new programs will be developed once the rule is adopted.

Resolution No R2005-446
A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MANTECA OPPOSITION THE SAN JOAQUIN AIR POLLUTION CONTROL DISTRICT DRAFT RULES 9510 AND 3180

246. COMMENT: WHEREAS, the San Joaquin Valley Air Pollution Control District has proposed two potentially costly draft rules (9510 and 3180) that will impose new taxes and fees on every new office building, home, retail store, restaurant and other private development in the counties of Fresno, Madera, Merced, Kern, Kings, San Joaquin, Stanislaus and Tulare; and

RESPONSE: The Draft Rules 9510 and 3180 do not apply to all new development, nor does it place fees on all development. Please refer to Response to Comment #170. See also Response to Comments #46, #51, and #78, and #175.

247. COMMENT: WHEREAS, every Central Valley Resident will pay for these new air district taxes and fees, as business pass along their new costs through increased prices on goods and services; and

RESPONSE: Please refer to Response to Comments #89, #138, and #180.

248. COMMENT: WHEREAS, adding tens of millions in new taxes and fees every year will hamper the Valley's economic development and job-growth in a region that has among the highest unemployment rates in California; and

RESPONSE: Please refer to Response to Comment #137. See also Response to Comment #55 and #102.

249. COMMENT: WHEREAS, the air district taxes and fees will exacerbate the housing affordability problem in the Central Valley by adding more than $50 million in new costs each year to the construction of homes and apartments, driving up the cost of mortgages and rents and pricing thousands of families out of homes they can no longer afford; and

RESPONSE: Please refer to Response to Comment #137.

250. COMMENT: WHEREAS, the air district taxes and fees would fund the expansion of a bureaucracy that lacks accountability or any specific plan to improve air quality. The air district has failed to present a plan of what improvements to the region's air quality it will make with its new taxes and fees; and

RESPONSE: Please refer to Response to Comments #101, #104, #108, #113, #114, #115 and #137, and #188. Also refer to Rule 9510 Section 10.

251. COMMENT: WHEREAS, the air district has failed to provide scientific evidence to support the new taxes and fees it is proposing; and

RESPONSE: Please refer to Response to Comments #135. In addition, considerable study and analysis went into the District's PM10 and ozone attainment plans, which identified reductions from Indirect Sources as a requirement for attainment of the PM10 and ozone standards.

252. COMMENT: WHEREAS, the air district taxes and fees will interfere and conflict with local government land use authority by creating a new and competing review process, that will erode local control over land-use decision making; and

RESPONSE: Please refer to Response to Comments #8, #81, #133, and #140. . In addition, please refer to the Staff Report Section (B) *District Authority and Limitations*, and Section (D) *State Environmental Review – CEQA*

253. COMMENT: WHEREAS, the air district land-use power is redundant and conflicts with existing environmental rules and safeguards, such as the California Environmental Quality Act and existing air quality and environmental reviews.

RESPONSE: The District does not have land-use power, nor does it desire to usurp the local land-use authorities discretion on land use power. Please refer to Response to Comments #8, #81, #133 and #140. In addition, please refer to the Staff Report Section (B) *District Authority and Limitations*, and Section (D) *State Environmental Review – CEQA*

254. COMMENT: ***NOW, THEREFORE, BE IT RESOLVED*** that the City Council of the City of Manteca opposes the San Joaquin Valley Air Pollution Control District Draft Rules 9510 and 3180

RESPONSE: Opposition noted. The District notes that the substance of the letter is unsupported - see Response to Comments #245 to #253.

STOP the AIR BOARD TAX – We'll All Pay! (Coalition)

A.L. Gilbert Company.
African American Chamber of Commerce of San Joaquin County
Building Industry Association of Central California
Building Industry Association of the Delta
Building Industry Association of Kern County
Building Industry Association of San Joaquin Valley
Building Industry Association of Tulare and Kings Counties
Business, Industry & Government (BIG) Coalition of the South San Joaquin Valley
Cal Bennett's
California Black Chamber of Commerce
California Building Industry Association
California Business Properties Association
California Manufacturers & Technology Association
California Mexican American Chamber of Commerce
California Restaurant Association
California Retailers Association
California Senior Advocates League
California Taxpayers' Association
Central California Hispanic Chamber of Commerce
Constructing Industry Air Quality Coalition
Consulting Engineers and Land Surveyors of California
Consumers First, Inc
City of Avenal
City of Clovis
City of Escalon
City of Lodi
Coalinga Area Chamber of Commerce
Greater Bakersfield Chamber of Commerce

Greater Merced Chamber of Commerce
Howard Jarvis Taxpayers Association
J.F. Shea Co., Inc
KRC Safety
Kern County Farm Bureau
Kern County Hispanic Chamber of Commerce
Kern County Taxpayers Association
International Council of Shopping Centers
Lemke Construction
Lodi Association of REALTORS, Inc
Lodi Chamber of Commerce
Madera Hispanic Chamber of Commerce
Matthews Homes
National Association of Industrial and Office Properties – California Chapters
National Coalition of Hispanic Organizations
National Tax Limitation Committee
Orange Belt Board Realtors
Raymus Homes
Rainscape
Reason Foundation
San Joaquin Valley Black Chamber of Commerce
San Joaquin Chamber of Commerce
Scolari Tile & Co., Inc
Self-Help Enterprises
Sharp Insurance & Bonding
Small business Action Committee
The Hispanic Chamber of Commerce of Stanislaus County
Tulare and Kings Counties Builders Exchange
The Tulare/Kings Hispanic Chamber of Commerce
Tulare Chamber of Commerce
Tulare County Association of REALTORS
Tulare County Farm Bureau
Valley Taxpayer's Coalition
Valley Outdoor Advertising
Visalia Chamber of Commerce

255. COMMENT: On behalf of small business, labor, taxpayer, local government, community and other diverse organizations, we strongly oppose draft Rules 9510 and 3180. These measures will impose new taxes and fees on Central Valley residents, hurting our economic development and job-growth but offering no accountability and no guarantees of cleaner air.

RESPONSE: New Taxes: The Draft Rules 9510 and 3180 do not apply to all new development, nor does it place fees on all development. Please refer to

Response to Comment #170. See also Response to Comments #46, #51, and #78, and #175.

Hurt Economy: Thee is no factual evidence that implementation of the rules will hurt the economy. Please See the Staff Report and Appendix F – Socio Economic Impact Analysis for more information. Please refer to Response to Comment #137. See also Response to Comment #55 and #102.

Accountability: The authors' statement is untrue. Accountability is built into the rule. Refer to Rule 9510 Section 10. See also Response to Comments #101, #104, #108, #113, #114, #115 and #137, and #188.

256. COMMENT: The proposed rules will impose a slew of new taxes and fees that will apply to every newly constructed property – offices, homes, retail stores, restaurants and small or large businesses. Combined, these taxes and fees are expected to cost hundreds of millions of dollars over the next five years. This fee will price tens of thousands of families out of housing they can afford and worsen the housing crisis in the Central Valley.

RESPONSE: New Taxes: The Draft Rules 9510 and 3180 do not apply to all new development, nor does it place fees on all development. Please refer to Response to Comment #170. See also Response to Comments #46, #51, and #78, and #175.

Costs of Rule: The District analyzed the calculations that the BIA provided via Sierra Research, and concluded that the analysis was flawed and inaccurate. Please see Response to Comments #161 and #162.

Housing Impact: The Socioeconomic Impact Analysis did not find a significant impact to housing builders or housing buyers/renters. See the Staff Report and Appendix F for more information. In addition, please see Response to Comments #137, #41, and #53.

257. COMMENT: By imposing similar costs on new businesses, these measures will hamper the Valley's economic development and job-growth which will be particularly disastrous in a region that has among the highest unemployment rates in California.

Ultimately, these additional costs will be passed along to consumers, meaning we all pay.

RESPONSE: The District disagrees that the rule will hamper economic development in the Valley. Please see Response to Comment #55.

258. **COMMENT:** Most troubling is the fact that there are no accountability mechanisms built into the draft Rules and no guarantees that the funds will actually improve the air quality. The Air Board has failed to present a detailed list of the specific air-quality-improvement activities it intends to pursue and has failed to provide credible scientific support for the proposed rules.

RESPONSE: Accountability: The authors' statement is incorrect. Accountability is built into the rule. Refer to Rule 9510 Section 10. See also Response to Comments #101, #104, #108, #113, #114, #115 and #137, and #188.

Credible Scientific Support: Again, the authors' statement is not valid. The District has been developing the rule over several years, involving extensive research and documentation. Please refer to Response to Comments #135, the Staff Report, and associated Appendixes. In addition, considerable study and analysis went into the District's PM10 and ozone attainment plans, which identified reductions from Indirect Sources as a requirement for attainment of the PM10 and ozone standards.

259. **COMMENT:** Lastly, the new bureaucracy will interfere with local government land use decision-making by creating a new and unworkable process that erodes local control over land-use planning. This will stall much-needed new housing, businesses and other economic growth in our communities. For example, the draft Rules are redundant and even conflict with existing environmental rules and safeguards, such as the California Environmental quality Act and Existing air quality and environmental reviews

RESPONSE: First, 100% of off-site fees will be used for off-site emission reduction programs only. None of the off-site fees will be used for District administration or other uses. Second, the rules are not redundant, conflicting, unworkable, or otherwise interfere with the environmental review process, existing laws, or the land-use agencies' discretionary land use authority.

The District does not have land-use power, nor does it desire to usurp the local land-use authorities discretion on land use power. Please refer to Response to Comments #8, #81, #133 and #140. In addition, please refer to the Staff Report Section (B) *District Authority and Limitations*, and Section (D) *State Environmental Review – CEQA*

260. **COMMENT:** Draft Rules 9510 and 3180 are misguided solutions that will hurt every Central Valley Resident, potential new homeowners and renters and the

economic climate in the Central Valley. For these reasons we the undersigned oppose draft Rules 9510 and 3180 and urge your opposition as well.

RESPONSE: Opposition Noted. The District notes that the substance of the letter is unsupported – See Response to Comments #255 to #259 above.

Merced County Economic Development Corporation (MCEDCO)
Dated September 13, 2005
Received September 19, 2005

261. **COMMENT:** On behalf of the Merced County Economic Development Corporation (MCEDCO) we urge members of the San Joaquin Valley Air Pollution Control District (Air Board) to oppose draft Rules 9510 and 3180. The draft Rules will impose hundreds of millions in new fees on residential, commercial and business developments, discourage investments and job growth throughout the Central Valley and hinder affordable housing without any guarantee that they will directly improve the situation

RESPONSE: The factual evidence supports the District's position that the Draft Rules will have a less-than-significant effect on the housing market in the Valley, and a minimal effect on other land use projects. In addition, there is no supporting evidence that the rules would 'discourage investments and job growth'. Finally, there is solid scientific evidence that the rules will benefit the air quality of the valley. The District has been developing the rule over several years, involving extensive research and documentation. Please refer to Response to Comments #135, the Staff Report, and associated Appendixes. Accountability is built into the rule as draft Rule 9510 Section 10. In addition, considerable study and analysis went into the District's PM10 and ozone attainment plans, which identified reductions from Indirect Sources as a requirement for attainment of the PM10 and ozone standards. See also Response to Comment #55.

262. **COMMENT:** MCEDCO is a private/public nonprofit 501c4 organization that offers economic development expertise to the incorporated cities and unincorporated communities within Merced County. MCEDCO's primary mission is to promote and facilitate net, new employment growth, encourage increased corporate investment and assist in the diversification of the Merced County economy. MCEDCO focuses on retention and expansion of existing businesses, small business start-up, and recruitment of new enterprises

MCEDCO's efforts serve the entire community by encouraging new jobs opportunities for residents, increased sales and improved productivity for local business and new tax and fee revenues to support programs and services

offered by the cities and county. Without new business investment, employment growth is not realized and subsequently residential growth falters.

California is already recognized as a costly business location. Businesses frequently cite high fees and development expenses as a disincentive to new investment. The rising cost of property in tandem with additional fees and high operating costs jeopardizes potential wealth generation opportunities.

Environmental issues, in particular clean air for the Valley, are important matters to prospective business investors. However, MCEDCO is concerned that the draft Rules may not directly improve the situation and may deter residential and other construction that is often considered a primary trigger to economic development.

RESPONSE: The District recognizes the author's concerns. However, the District has provided detailed calculations of the emission reductions predicted by the rule as well as potential off-site emission reduction projects available, Appendix B and E respectively. In addition, considerable study and analysis went into the District's PM10 and ozone attainment plans, which identified reductions from Indirect Sources as a requirement for attainment of the PM10 and ozone standards. See also Response to Comment #55.

263. COMMENT: The draft Rules may also thwart affordable housing, a top priority in the Merced area given our ranking as the least affordable community in the nation. Balancing environmental concerns with affordable housing and new employment is a daunting challenge, not likely to be furthered by the draft Rules. Efforts to improve air quality are supported by the MCEDCO provided that said activities reflect a balanced approach with a clear plan for improvements.

RESPONSE: The District feels that it has met the criteria stated by the author. The draft ISR rules are part of a larger plan, the PM10 and ozone attainment plans, that identified emissions inventories for various activities and land uses, looked at the predicted growth, identified controls, modeled future air quality and determined a mix of actions that would reduce air pollutant emissions to bring the valley into attainment for PM10 and ozone. Part of this plan (also mandated by state law – SB 709) is to reduce emissions from indirect and area sources. As stated in Response to Comment # 17, the ISR development process has taken several years, multiple workshops, as well as working with the state-wide URBEMIS working group, careful analysis of existing regulations and programs. For more information, please see the Staff Report and associated Appendixes.

SUMMARY OF COMMENTS AND RESPONSES FROM THE PUBLIC WORKSHOP HELD ON JUNE 30, 2005

EPA: No comment received.

ARB: No comment received.

Industry and Public:

General Comments

1. **COMMENT:** The rule does not address the increase in trip length or vehicle trips resulting within the region from existing development.

RESPONSE: The purpose of the rule is to mitigate the emissions that result directly from new development. While the growth in the footprint of the region can result in increased travel, it is not practical to assign that growth to an individual development.

2. **COMMENT:** With new housing growing the housing inventory by at most 3% a year, we are therefore ignoring 97% of the homes and cars that create pollution. Our legislators have a responsibility to address the issue head on and not hide behind the pretense that burdening 3% of the households can mitigate the pollution of the other 97%.

RESPONSE: The District agrees that Rule 9510 does not address the emissions associated with existing residential, commercial, and industrial development. Given the requirements of the Health and Safety Code Section 40717.5, the District is precluded from regulating emissions resulting from existing trips associated with existing development. The purpose of the rule is to mitigate growth which is occurring at a rate of about 3% per year. In 10 years, the cumulative growth will constitute 30 percent of emissions. In other words, without growth at the projected rate, emissions would be 30 percent lower in 10 years.

3. **COMMENT:** Stakeholders are gravely concerned about the District's ability to take on these complex new tasks accordant workload.

RESPONSE: The District has a long history of analyzing the impact from new developments and suggesting appropriate mitigation. Additionally, the District has extensive experience operating incentive program to purchase off-site emissions reductions. In conjunction with the rule adoption the District will provide an assessment of workload and an appropriate staffing recommendation.

4. **COMMENT:** There needs to be protections built into the program for speedy processing of air quality assessments.

RESPONSE: The draft rule contains timelines for the District process applications. The District received a number of comments concerning how those timelines relate to the land-use approval process. The District will make every effort to ensure that the timelines in the rule do not unduly delay the land-use approval process. The rule allows developers to submit applications prior to beginning the CEQA process. For projects where the project description is not expected to change, all analysis and preliminary emissions estimates can be accomplished prior to the CEQA document being released for public review.

5. **COMMENT:** Why are only NOx and PM10 being addressed when CEQA requires all pollutants to be quantified and mitigated to the extent that they exceed thresholds?

RESPONSE: Rule 9510 is being developed to meet commitments that the District has made in the PM10 and Ozone attainment demonstration plans. The District has not committed to reductions of other pollutants in this rule. While the mitigation contained in the rule will help applicants comply with CEQA that is not the primary purpose of the rule. The revision to the GAMAQI document will outline how this rule will work under CEQA.

6. **COMMENT:** Not all of the classes of development projects identified in Section 2.2 are defined in Section 3.11.

RESPONSE: The District will make the appropriate changes ensure that there are no internal discrepancies in the rule.

7. **COMMENT:** Most buildings in the SJVAB last longer than ten years. The ten-year period should be expanded to at least thirty years, since that is the term of the standard mortgage.

RESPONSE: The District selected ten years based upon a number of factors. First, since the rule has been committed to attain the federal ozone and PM10 standards in 2010 the ten-year time frame is sufficient to get past the attainment deadlines and ensure that they last into the maintenance period. Also, utilizing a thirty-year time period would have a significant financial impact on the region.

8. **COMMENT:** What would happen if a change of use occurs and the previous use required fees that were already paid, and the actual use did not?

RESPONSE: The District is not proposing to re-assess a project at change of use. The program will only deal with new construction.

9. **COMMENT:** Better clarification of the definition of "baseline emissions" is needed.

RESPONSE: The District will ensure that the definition is clear.

10. **COMMENT:** Consultants should either be chosen by the District or the District itself should performed the Air Impact Assessment, so that consultants will be less likely to manipulate numbers.

RESPONSE: The District can ensure that air impact assessments are properly performed. This can be achieved with the District performing the analysis or with private consultants performing an analysis that is reviewed by the District.

11. **COMMENT:** Projected NOx emissions reductions exceed the 2010 SIP commitment. The reductions should stay in line with SIP commitments.

RESPONSE: The District has utilized the plan commitment as a guideline for rule development but the final emissions reductions will be governed by developing an effective rule. Final reductions from the rule will be within range of the SIP commitment. It is also important to achieve as many reductions as feasibly possible, since there are numerous new standards that the District will need to meet.

12. **COMMENT:** The inclusion of the proposed rule in the SIP is prohibited by the Health and Safety Code since this is voluntary compliance with the Clean Air Act and not required.

RESPONSE: The emissions reductions associated with the rule are required to achieve attainment of the federal ozone and PM10 standards and are therefore federally required and are commitments in two federally enforceable plans.

13. **COMMENT:** All requirements pertaining to indirect source review or derived there from should be designated as "not federally enforceable."

RESPONSE: See previous response.

14. **COMMENT:** The inclusion of the proposed rule in the SIP is prohibited by the Health and Safety Code since the authority for this rule is to attain a state, not federal, ambient air quality standard.

RESPONSE: The District is not aware of any such prohibitions since the emissions reductions associated with the rule are needed to attain the applicable National Ambient Air Quality Standards.

15. **COMMENT:** The definition of a development project should include the following additional language: The issuance of a permit for construction or reconstruction, where such permit is required solely to comply with a rule, regulation or order of a local agency shall not be considered to be a development project. The issuance of an operating permit shall not be considered a development project.

RESPONSE: The current definition of a development project adequately addresses projects that have ancillary discretionary approvals relating to the project. The applicability of the rule includes not only discretionary approvals, but also minimum sizes of projects that must comply with the rule.

16. **COMMENT:** It appears that the mitigation measure resulting from this rule are to be used to comply with mandates of attainment plans for ameliorating existing air pollution problems in the Valley. That is, the rule is not primarily intended to prevent new pollution from occurring, they are intended to address pollution that has occurred/is occurring from existing development. Case law in this area would indicate that new development should not be expected to remedy impacts created by previously approved and existing development.

RESPONSE: The purpose of the rule is to reduce the emissions impact from projected development in the San Joaquin Valley not existing development. The emissions inventory in the relevant PM10 and ozone plans contain estimates of emissions totals that include the growth in emissions. The emissions reductions commitment for this rule does not exceed the emissions projected for growth, and therefore only addresses the impact of new development.

17. **COMMENT:** It is unclear how the District will track the various developments and the various iterations of each approval.

RESPONSE: The District will work with local government agencies to ensure that appropriate tracking mechanisms are in place.

18. **COMMENT:** PM2.5 should be included as well.

RESPONSE: The definition for PM10 includes particulates less than 10 microns in size. By definition this would include PM2.5 emissions.

19. **COMMENT:** The rule should require that all NOx and PM emissions be mitigated.

RESPONSE: There are specific previsions of the Health and Safety Code that make it difficult to mitigate 100 percent of projects emissions without violating state law. Additionally, the District has committed to specific emissions reduction levels in the applicable ozone and PM10 plans. The District can achieve these reductions without requiring 100 percent mitigation from projects.

20. **COMMENT:** Discounting the trips at 50% is not defensible. The District should engage the URBEMIS group, composed of professional air regulators to define a reasonable and defensible default number for discounting trips.

RESPONSE: The purpose of discounting the trips by 50% is to ensure that the district does not charge fees on both ends of a trip. If the District did not discount the trips by 50% there is a very real possibility of charging both residential and commercial projects for the same trips, which could result in double counting.

21. **COMMENT:** The rule should recognize the variation in emissions over the life of the development. Therefore, the rule should include a review of actual emissions every five years to ensure that the match between the emissions and the required mitigation is strong.

RESPONSE: The URBEMIS model contains average assumptions for types of development projects. While there is some variation from project to project, and over the life of a project, the assumptions in the model are adequate when applied over a large number of projects.

Applicability

22. **COMMENT:** What was the basis for establishing the project build-out thresholds?

RESPONSE: The project build-out thresholds are based upon the emissions associated with those types of projects. The thresholds reflect 2 tons per year. By setting project build-out thresholds, the District can address the maximum amount of the emissions associated with new development while minimizing the administrative burden on small projects.

23. **COMMENT:** The rule should be set to cover developments that upon build-out create 1 ton or more per year of any pollutant. The size associated with each development project listed in section 2.2 would then be cut in half.

RESPONSE: See previous response.

24. **COMMENT:** The applicability section should include the following language: The increase in emissions from the development project result from an increase in vehicular activity that would not otherwise occur, or the increase in emissions from the development project results from new area sources, not previously authorized.

RESPONSE: By their nature new development projects ultimately result in new trips that would not otherwise occur.

25. **COMMENT:** Other land use categories should be added, such as recreational space and military bases, since these activities generate a significant number of vehicular trip ends.

RESPONSE: The District will add these categories.

26. **COMMENT:** The industrial space threshold should be replaced with light industrial space at 25,000 square feet and heavy industrial space at 100,000 square feet, since trip generation from these types of land use differ significantly.

RESPONSE: Most heavy industrial projects would be exempt from this rule, so distinguishing between the different types of industrial would not be productive.

29. **COMMENT:** The proposed rule does not comply with H&SC Section 40717.5(a)(1) which limits the applicability to activities that contribute to "…air pollution by generating vehicle trips that would not otherwise occur."

RESPONSE: By their nature new developments ultimately result in new trips that would not have otherwise occurred.

30. **COMMENT:** Under the proposed rule, the installation of equipment, wherein such installation requires a public agency "exercise judgment" in approving the permit, would make the project discretionary and subject to Rule 9510 even though the project might not result in vehicular activity.

RESPONSE: These projects would not be subject to the rule since the size of the equipment would be lower than the applicability thresholds of the rule.

31. **COMMENT:** 55,000 square feet of general office space is excessive.

RESPONSE: Comment noted.

32. **COMMENT:** The rule should not retroactively apply to permit applications filed prior to the effective date of the rule. This appears to defer or circumvent CEQA

analysis. The seriousness of the pollution problem in the SJVAB makes all information on air pollution and its mitigation extremely pertinent and necessary to consideration of development projects prior to project approval.

RESPONSE: The rule is not intended to replace the CEQA review for projects. The mitigation developed for a project through the CEQA process can be credited to the requirements of the rule.

33. **COMMENT:** The applicable square footage thresholds in section 2.2 are discriminatory in that "government space" thresholds are considerably less than non-government identified spaces.

RESPONSE: The applicable square footage thresholds are based upon emissions estimates for different land-use types. These estimates are influenced by a number of factors including trip generation rates that are specific to each land-use type. Government spaces tend to have higher trip rates, so a lower threshold for those spaces are warranted.

34. **COMMENT:** Will the rule as it relates to urban residential development be applicable to development proposed in the unincorporated areas of the county?

RESPONSE: The rule will apply to new development projects in the entire San Joaquin Valley Air Basin.

35. **COMMENT:** The definition of "discretionary" projects would be applied inconsistently throughout the SJVAB since different jurisdictions handle them differently. By defaulting to the jurisdictions' interpretation of the term, the District is allowing for the rule to be applied inconsistently.

RESPONSE: The District does not have the authority to change the local government process. Therefore the District is defaulting to the jurisdictions' interpretation, so as not to interfere with the local jurisdictions' land use authority.

36. **COMMENT:** A simplified and flexible approach should apply to all projects smaller than the exemption thresholds. Smaller projects should be exempt from the detailed analysis, but should still be required to implement all feasible onsite mitigation strategies and make a contribution to offsite mitigation.

RESPONSE: Projects that go through CEQA and have a significant impact are required to implement all feasible mitigation.

Exemptions

37. **COMMENT:** There should be a new exemption section added, section 4.3, which should include the following: Any project subject to federal Section 7 or Section 10 consultations with the United States Fish and Wildlife Services (USFWS) or a 2081 consultation with California Department of Fish and Game (CDFG), since these projects will require life of project mitigation.

RESPONSE: It is not understood how a project that is required to mitigate the life of the project for Fish and Wildlife, would mitigate their air impact. Therefore, this exemption will not be added.

38. **COMMENT:** Section 4.1.4 should read as follows: A development project where the emissions primarily result from direct sources or from emissions units as defined by Rule 2201 (New and Modified Stationary Source Review Rule); or projects subject to Rule 2010 (Permits Required). Examples of exempt sources can be expanded to include: Oil Production and Natural Gas Production, Refineries and Natural Gas Processing Plants, Waste Disposal and Waste Management Facilities, Mineral Extraction and Processing Plants.

RESPONSE: Comment noted, with the exception of waste facilities and mineral facilities. These types of facilities may include a significant traffic component, therefore they should be subject to the rule. The stationary source emissions associated with all facilities will not be included.

39. **COMMENT:** Section 4.1.4 needs to be modified to include gas plants, bulk loading terminals, and gas liquid processing plants.

RESPONSE: See previous response.

40. **COMMENT:** The 50 unit exemption is bound to result in “gaming” or several tract maps coming in at 49 units.

RESPONSE: The District will modify the rule to minimize the potential for circumventing the requirements of the rule.

41. **COMMENT:** The exemption for the applicability should be extended to the reconstruction of owner occupied low-income housing.

RESPONSE: Reconstruction of a single unit would be below the thresholds for rule applicability.

42. **COMMENT:** What is the rationale for exempting transit and transportation projects?

RESPONSE: The exemptions for transit and transportation projects were intended to be from the operational emissions portion of the rule. Since these

projects do not generate or attract trips it would not be appropriate to include these projects operational emission. There are significant emissions from the construction of these projects. The rule will be modified so that the construction requirements apply to transportation projects. Transit projects will continue to be exempt, since they are ultimately considered mitigation.

43. **COMMENT:** This rule is akin to the local conformity rule, Rule 9110 and overlaps with US EPA's General Conformity requirements of 40 CFR 51. In fact, the conformity rules are more stringent that this proposed rule. Sources subject to general conformity should be exempt from the rule.

RESPONSE: In some cases the general conformity rule is more stringent than the DESIGN rule. In those cases federal sources will be given credit for the efforts to meets conformity requirements. In other cases, federal sources are not required to mitigate their emissions if they are already included in the SIP. In those cases the DESIGN rule would be more stringent than the general conformity provisions.

44. **COMMENT:** The definition of projects subject to the rule does not address whether general, regional, community, or specific plan adoption would be considered "discretionary" projects subject to the rule. These plans and subsequent information for URBEMIS inputs are too general to furnish precise estimates of pollution as a result of those plans. Therefore, the consideration and adoption of specific plans should be exempt from the rule, unless the adopting land jurisdiction does, in fact, intend to issue development/construction permits pursuant to a specific plan without subsequent environmental analysis.

RESPONSE: As long as the general, regional, community, or specific plan are not the last discretionary approval of a project or portion of that project, the rule would not be applied to these approvals, but rather to the later more specific discretionary action for the project. If these plans were the last discretionary approval, perhaps the plan or CEQA document could contain a condition of approval or mitigation measure requiring the developer to provide an analysis to the District once the project design is finalized and prior to final ministerial site plan review or subdivision map or issuance of the building permit.

CEQA

45. **COMMENT:** The proposed rule does nothing to protect against CEQA lawsuits with respect to air quality mitigation.

RESPONSE: Due to limitations in state law, the District is unable to develop a rule that provides the same level of mitigation that some communities are seeking through the CEQA process. The District has established a program

through which project proponents can work with the District to fully mitigate their projects through CEQA.

46. **COMMENT:** There is a disconnect between the levels of significance in the Guidelines for Assessing and Mitigating Air Quality Impacts (GAMAQI) and the proposed rule.

RESPONSE: The purpose of the rule is to assist the District in attaining clean air standards. The rule is not intended to satisfy the requirements of CEQA. However, the GAMAQI will be revised to describe how compliance with this rule would affect CEQA.

47. **COMMENT:** What is the basis for the exemption of projects that have a mitigated baseline below two tons per year? Is this basis evidence that 10 projects in the same area producing less than two tons per year each are not cumulatively considerable under CEQA?

RESPONSE: The threshold was in part determined by selecting a level where reductions achieved would meet the commitments outlined in the PM10 and ozone plans. The revisions to the GAMAQI will outline the issue of cumulative impacts, in relation to this rule.

48. **COMMENT:** The District should include in this rulemaking, clear direction from the Governing Board to amend the GAMAQI, through a public hearing process, to formally adopt the concept of NOx mitigation over ten years in Air Quality Assessment methodology for CEQA documents. This would provide clear direction for the connection of this rule to CEQA and provide support for the Lead Agency in the current challenges to Air Assessment methodology in CEQA documents.

RESPONSE: The District will continue to improve its CEQA process to insure that appropriate analysis and mitigation are included for projects. Pending Governing Board adoption of this rule, the GAMAQI will be revised through a public process.

49. **COMMENT:** Please clarify why the District is not committed to amending the GAMAQI to define the exact role that this rule will have in the CEQA process, which would clearly provide relief for local government in CEQA litigation in a matter, air impacts, for which the District is the recognized expert.

RESPONSE: As was mentioned previously, the purpose of the rule is to achieve the emissions reductions necessary to attain the federal PM10 and ozone standards. The primary purpose of the rule is not CEQA compliance. However, the GAMAQI will be revised, and will provide clarification on how this rule works under CEQA.

50. **COMMENT:** The appropriate time for District analysis of projects under the rule would be during the early consultation process, before the overall environmental analysis of a project is completed and before the mitigation measures are approved for the project.

RESPONSE: Since the timelines for land use approval and CEQA vary greatly from jurisdiction to jurisdiction, the District cannot prescribe a timeline that will fit all jurisdictions. To that end, it is up to the developer to determine when would be the best time to approach the District. It is the District's preference that it is as early in the process as practicable so that the analysis and impact assessement could be completed prior to circulation of the CEQA document.

Regulatory Process

51. **COMMENT:** The best time to analyze and mitigate environmental impacts is at the comprehensive higher plan level. However, this rule discourages master planning in favor of piecemeal, small projects due to the liabilities stated for changes in design.

RESPONSE: The applicability of the rule at the last discretionary approval stage does not provide a disincentive to planning at a higher plan level. In fact, the opposite is true. Building in mitigation at the comprehensive plan level will assist in complying with the requirements of the rule.

52. **COMMENT:** The proposed rule creates a major burden for project applicants by imposing new requirements for preparation of detailed air quality studies.

RESPONSE: Many projects are already doing comprehensive analysis during the CEQA process. It is intended that the analyses and work for this rule provide a foundation for and/or complement the analyses required under CEQA. The District will work to provide tools and training to streamline the analysis process.

53. **COMMENT:** The mitigation agreement is wholly duplicative of the mitigation procedures set forth in CEQA, and will create chaos and confusion.

RESPONSE: Given that mitigation is consistent with the CEQA process it should not create chaos or confusion. The mitigation should in most cases be included as a mitigation measure in the CEQA document. Measures provided by the developer after the CEQA process is complete will require an agreement to ensure compliance.

54. **COMMENT:** The requirement for a new assessment based on changes to the construction schedule approaches absurdity with a master-planned community. How can one accurately predetermine market forces over a 20-year period?

RESPONSE: The fact that the rule is applied at the last discretionary approval of a project will mitigate the need to reanalyze projects. If a project is phased over an extremely long period of time it is appropriate to re-analyze the project if the schedule is significantly altered.

55. **COMMENT:** There is a conflict when the review of the Air Impact Assessment Application is to be done and when the review and assessment of the EIR must be accomplished.

RESPONSE: The District will not prescribe when the application is required. Therefore, it is likely that the same analysis could be used for both purposes.

56. **COMMENT:** The developer, who might be expected to pay for the mitigation fees in order to get land entitlements, may not be the same entity that purchases the project to eventually build the development. So if the latter decides to terminate the project and not build, there would be an administrative headache in terms of refunds.

RESPONSE: The District has offered the option for a fee deferral agreement that could defer the fees for projects that have an uncertain future.

57. **COMMENT:** The 30 day review process, plus the time necessary to process an application will significantly add to the development review time for a project's approval.

RESPONSE: The District has altered the timeframes in the rule to ensure that the rule will not result in unnecessary delays in the development process.

58. **COMMENT:** How would the rule apply to Master Plan Communities/Developments? Would each project in that plan need to be evaluated or just the plan? The difference in administration of the two options would be enormous.

RESPONSE: The rule requires the review at the last discretionary approval for a project.

59. **COMMENT:** The approval of the Air Impact Assessment should be done prior to CEQA hearings, and the details of the calculations should be made available to the public prior to those hearings.

RESPONSE: It is the District's intent to have the Air Impact Assessment available prior to the adoption of the project.

60. **COMMENT:** We request that the 30 day review period for determining an application complete be shortened to 10 days, since that is more in line with the 10 day review period for Initial Study consultation comments, and since URBEMIS analyses can be done within a matter of minutes, with the exception of EIRs since those can have a 30 day response time.

RESPONSE: Comment noted.

61. **COMMENT:** We request that the District forward a copy of the URBEMIS findings to the local jurisdictions for incorporation in their CEQA documentation prepared for projects.

RESPONSE: The District is willing to share information with local jurisdictions and in fact regularly comments on CEQA documents.

62. **COMMENT:** The rule proposes that cities and counties withhold building permits pending satisfaction of the District requirements.

RESPONSE: The rule does not include this provision.

63. **COMMENT:** The District should ensure timely public access to information used to calculate emissions. This would include publishing the information.

RESPONSE: The District will make all appropriate information available to the public.

Mitigation Fee Act

64. **COMMENT:** The draft rule fails to comply with the nexus test required by AB1600.

RESPONSE: The District has determined that this rule is not subject to AB 1600 (the Mitigation Fee Act) for two reasons. First, the District has no approval authority over development projects and, therefore, is not imposing a fee as a "condition of approval of a development project." Any fee will be assessed as a separate regulatory fee after the project has been approved by the local land use agency. Second, the Mitigation Fee Act applies only to fees assessed for the purpose of defraying the cost of "public facilities." The District does not believe that air pollution mitigation projects such as diesel engine retrofits are public facilities. However, notwithstanding the above, the District has met the "nexus" test under the Mitigation Fee Act or any other legal standard. New developments subject to the rule attract pollution caused by construction activities and vehicle traffic. The rule seeks to mitigate such pollution by allowing the developer to (1) include on-site mitigation measures in the design of the development that mitigate the types of air pollution caused; and/or (2) pay a fee

that will be used to fund emissions reduction projects, such as engine retrofits, that will mitigate the types of air pollution caused. Thus, the purpose of the fee and its uses are clear. In addition, there is clearly a reasonable relationship between new development and a fee imposed to mitigate the air pollution it causes. Finally, the fees will be reasonable in amount in that they will be directly tied to the cost of reducing the emissions caused by the development. The fee is established on a site-specific basis through URBEMIS modeling designed to determine the amounts and types of excess emissions caused by the development and then calculating the cost of reducing those emissions. URBEMIS is currently the best tool in existence for quantifying such emissions and has been used in similar contexts in the past. Thus, the fee meets all nexus requirements outlined in AB 1600.

65. **COMMENT:** The draft rule does not distinguish between the two-prong analytical paths in AB1600.

RESPONSE: See previous response.

66. **COMMENT:** The District has not circulated any documentation reflecting a nexus study.

RESPONSE: See previous response.

Socioeconomic Impact Analysis

67. **COMMENT:** The District has not released a socioeconomic impact analysis as required by the Health and Safety Code.

RESPONSE: The District will be distributing the socioeconomic impact analysis in conjunction with this draft of the rule.

68. **COMMENT:** The socioeconomic Impact analysis should demonstrate the impacts on the following: housing costs, rents, low-income families.

RESPONSE: Comment noted.

69. **COMMENT:** The socioeconomic Impact analysis should demonstrate the impacts of the processing, fee and mitigation proposals on new businesses.

RESPONSE: Comment noted.

70. **COMMENT:** The socioeconomic analysis should make a note of the overall costs to the public of air pollution.

RESPONSE: The District will include a general discussion of the impacts of air pollution on public health in the socioeconomic analysis.

URBEMIS

71. **COMMENT:** URBEMIS is a useful tool for calculating emissions only at the "sketch planning" level. It is not capable of evaluating specific design elements and operational measures, and accordingly, there is no way to do an accurate project-specific analysis of mitigation.

RESPONSE: The District does not agree. In fact, URBEMIS has been utilized to analyze the impact from projects through the CEQA process for years. The model has recently been updated based upon an extensive review of travel behavior studies to ensure that it provides proper credit for design features that are built into a project.

72. **COMMENT:** Please clarify how URBEMIS will be used in the process. Is the operating assumption that all discretionary development, regardless of its consistency with the general plan, is "new" for the purposes of modeling (i.e. additional development, and not replacing land uses/emissions already assumed within the model), or will the assessment be based on its placeholder land use?

RESPONSE: The analysis will be conducted at the last discretionary approval for a project regardless of whether the project is consistent with the existing general plan. If the general plan is the last discretionary approval for that particular land-use the district will analyze the land-use based upon the highest emitting use that could be built under that land-use category. The modeling would be based on approved land uses or those proposed in the case of a large plan area that contains the project being analyzed. This will enable credit to be taken for innovative community design and layout.

73. **COMMENT:** The URBEMIS fleet mix overstates residential emissions by roughly 50%. It is based on the statewide mix of vehicle types, which is comprises 3% of heavy-duty trucks.

RESPONSE: The District is working to ensure that the fleet mix assumptions in URBEMIS are appropriate for each land-use type. While the fleet average may somewhat overestimate emissions residential developments there are heavy duty truck emissions associated with them. These include school buses, refuse collection, package delivery, and other service vehicles.

74. **COMMENT:** The URBEMIS age distribution overstates residential project emissions. The defaults are based on the statewide mix of vehicle types, which are generally older than a new residential fleet. Vehicles, in new housing units that were 10 years or younger, had a 50/50% split on vehicles 5 years or

younger, and older than five years. Housing units older than 10 years had a 36/64% split. This problem cannot be easily revised within the current framework of URBEMIS.

RESPONSE: The District believes that the fleet average is a reasonable assumption for new development projects. There are a number of factors that impact emissions including age, vehicle class, and fleet turnover. If more specific information is available, the District would consider utilizing project specific numbers.

75. **COMMENT:** URBEMIS silt loading factors for entrained PM10 emissions overstate residential project emissions by nearly 50%.

RESPONSE: The District will ensure that the correct silt loading factors are utilized.

76. **COMMENT:** URBEMIS trip lengths are inconsistent with TPA model data and recent statewide travel surveys.

RESPONSE: The District will continue to update trip lengths with local data as the model is updated. Project proponents can utilize project specific information in lieu of the URBEMIS defaults.

77. **COMMENT:** URBEMIS default vehicle speed and estimated vehicle speeds vary by as much as 50-100% of survey data.

RESPONSE: The defaults for vehicle speeds may be modified if project specific information is available.

78. **COMMENT:** URBEMIS is not based on the most recent version of EMFAC in the Ozone SIP.

RESPONSE: As the URBEMIS model is updated it will be updated with the most recent version of EMFAC that is available. The District will ensure that emissions are credited to the Ozone SIP in the proper SIP currency.

79. **COMMENT:** Many commercial and industrial buildings are permitted and built, not knowing who the tenant will be in advance. How will URBEMIS estimate emissions for these types of development?

RESPONSE: In this case the analysis will assume the highest emitting use that would be allowed under the land-use designation.

Construction

80. **COMMENT:** Construction activities are not considered to be indirect sources.

RESPONSE: The purpose of the rule is to mitigate the emissions associated with new developments, not just indirect source emissions.

81. **COMMENT:** The rule overlaps and conflicts with existing District and ARB regulations that control emissions from construction activities and equipment, specifically Regulation VIII and the Dust Control Plan requirement.

RESPONSE: The District is proposing modifications to the rule that do not target dust emissions, but rather target mitigating emissions associated with the construction fleet.

82. **COMMENT:** There is no precedent in District or state regulations that require 100% mitigation of a particular source. 100% mitigation is not reasonable or feasible, as required by CEQA.

RESPONSE: Comment noted.

83. **COMMENT:** Regulation VIII should address more stringent controls on fugitive PM10 from construction activities and not an indirect source rule.

RESPONSE: Comment Noted.

84. **COMMENT:** The Regulation VIII list serve and mailing list should be notified of the rule.

RESPONSE: Comment noted.

On-site Mitigation

85. **COMMENT:** Reductions from many of the individual measures on the Mitigation Checklist are “off-model.”

RESPONSE: The rule includes the provisions that the APCO can approve alternative modeling methodologies. This would include approving appropriate “off-model” adjustments for mitigation that cannot be analyzed in URBEMIS. Many of the mitigation measures that are currently not included in URBEMIS have been removed from the checklist.

86. **COMMENT:** The Mitigation Checklist needs to be reviewed and modified with input from the development community.

RESPONSE: The District is happy to discuss the checklist with stakeholders.

87. **COMMENT:** Reduction measures such as requiring motorists to abandon vehicles in lieu of intermittent bus scheduling or biking on a 100 degree not appear capable of substantially reducing the amount of smog forming pollutants in our air.

RESPONSE: Any reduction in vehicle use would reduce emissions. URBEMIS accounts for differences in transit service and the quality of the road system to accommodate bicycling. The District is not requiring any on-site mitigation measures, but allowing them to be used. It is the discretion of the developer and the local jurisdiction to require those types of measures.

88. **COMMENT:** Most local jurisdictions are concerned about the mitigation measures being land use and urban design strategies, since these matters are not the District's province. By intending to consider and apply mitigation measures after all other analysis is done, it would appear that the rules would be positioning the District as the ultimate authority on land use and urban design.

RESPONSE: The mitigation measures in the checklist are voluntary. A developer can choose many measures, some measures, or no measures from the checklist. It is up to the local jurisdiction to approve of those measures, in regards to their land use authority. The District expects any design and infrastructure measures must comply with all local development standards and would be included in city/county approved plans and maps. The District has no authority to require that particular measures be included in the project.

89. **COMMENT:** If mixed uses or conjunctive residential and non-residential uses are considered to be a mitigation measure, how will the timing of construction be controlled, since commercial uses tend to postpone construction until the demographics can be analyzed?

RESPONSE: The project will be credited based upon the uses that are planned to be constructed. If the planned uses were changed that would be considered in a subsequent analysis.

90. **COMMENT:** Local land use jurisdictions should be made a party to any mitigation agreements entered with the developer.

RESPONSE: Comment noted.

Off-site Mitigation

91. **COMMENT:** The District has calculated that fees will escalate rapidly and allows for APCO adjustment based on actual costs. This fails the nexus test.

RESPONSE: The District has eliminated the option for APCO discretion to change the fee amount.

92. COMMENT: The District fails to state how the fees will be used.

RESPONSE: The fees will be utilized to purchase emissions reductions through the District's incentive programs.

93. COMMENT: The sequencing of payments does not fit the reality of permitting, financing, and constructing homes.

RESPONSE: The district has provided the option of paying the fees based upon the schedule in the rule, or through a fee deferral agreement with the District. The fee deferral agreement allows the flexibility to collect the fees based upon the project's unique financing situation.

94. COMMENT: The Mitigation Fee Act states that local agencies shall not require the payment of fees until the date of final inspection or the date of certificate of occupancy.

RESPONSE: See response to #64 above.

95. COMMENT: The fee formula needs to be simplified so that there is predictability and a lack of opportunity for controversy.

RESPONSE: The District will develop templates and/or calculators that will allow applicants to easily assess their projects and have predictable outcomes.

96. COMMENT: The impact revenue should be used, first and foremost, within the immediate area of the project that the fees are collected from.

RESPONSE: Fees collected from a project will be spent to mitigate the impacts associated with the particular development project.

97. COMMENT: The district should indicate whether increased district enforcement of existing regulations would be an eligible expenditure of mitigation fees. Air quality improvement would be expected given the responses from the District that its enforcement staff is very limited when apparent violations have been reported.

RESPONSE: The District is not proposing to utilize fees to increase enforcement staff other than staff to enforce the provisions of this rule.

98. **COMMENT:** The fees collected should be used on "traceable" mitigation measures (mitigation must be traced to the activity which the agency approves) as specified in CEQA. Since the proposed rule mainly targets vehicle traffic, traffic synchronization appears to be a logical solution.

RESPONSE: The District proposes to utilize funds for cost-effective emissions reduction projects. The District will track the emissions reductions achieved through the expenditure of fees generated by the rule. If an application for grant funds for traffic synchronization were submitted, the District would assess whether or not it could be funded based on cost-effectiveness and other criteria such as whether the reductions can be verified over time.

99. **COMMENT:** The APCD should develop a Regional Intelligent Transportation Authority (RITA) responsible for regional traffic synchronization, regional transit and intermodal planning, assisting cities with TCM implementation, and integrated collaboration with Caltrans. RITA should be funded by the rule and Section 40605(b) surcharge fees.

RESPONSE: The District will continue to assess opportunities, such as this suggestion, to utilize fees to achieve cost-effective emissions reductions.

100. **COMMENT:** The emissions reduction calculations for off-site mitigation need to calculate the benefit from a new piece of equipment to a less-emitting new piece of equipment.

RESPONSE: There are a variety of incentive programs that the fees can be utilized for. In some cases it is appropriate to compare a base new piece of equipment to less-emitting new piece of equipment. In other cases, where there is useful life left in a piece of equipment, and the equipment is taken out of service, it is appropriate to provide credit for emissions that are eliminated by retiring the old equipment.

101. **COMMENT:** Developers should receive credit for offsite emission reductions created through voluntary implementation of additional mitigation measures applied to previously approved projects. For example, a developer could revegetate or reclaim disturbed surfaces in order to reduce fugitive dust. The developer could then commit these reductions to construction or operational emissions from proposed development projects.

RESPONSE: The District will consider off-site mitigation proposed by a developer on a case-by-case basis. Any mitigation must be surplus and quantifiable.

102. **COMMENT:** We opposed the unilateral authorization to adjust the cost of controls. The APCO should be allowed to adjust the cost of reductions after

providing notice and an opportunity for public comment. We strongly believe that any increase in the mitigation fees should be subject to a cost effectiveness analysis and the approval of any fee increase should be subject to approval by the Governing Board.

RESPONSE: The District has eliminated the APCO discretion to modify fees.

103. **COMMENT:** It is a concern that the District intends to use these revenues primarily to fund existing programs and activities such as scrapping old vehicles and replacing lawnmowers, rather than to partner more closely with cities and counties to make alternative transportation more accessible and useful. The best use of the money would be to expand/create mass transit systems and alternative transportation routes in the Valley, and to fund measures that reduce traffic volume and relieve traffic congestion.

RESPONSE: The District will consider programs that achieve cost-effective emissions reductions.

104. **COMMENT:** The District should ensure that the off-site mitigation measures are permanent, as opposed to the short-term benefit of replacing engines. Examples include vanpool systems, incentives for locating affordable housing close to existing job sites.

RESPONSE: While the benefits from the District's incentive programs are credited for a short period of time, the actual reductions from the projects will continue. Additionally, the District has committed a specific tonnage requirement in the short-term to attain the ozone and PM10 attainment deadline of 2010. If the reductions were stretched over an extended period of time the District would not meet its plan goals, or attain the standards. It should also be noted that vanpool systems are currently eligible projects under the REMOVE II incentive program, and would be eligible for funds collected under this rule.

105. **COMMENT:** The District needs to engage the public, local government, and other agencies to identify the best uses of the funds, and establish a public process and guidelines for determining those best uses.

RESPONSE: Any new incentive program is subject to Governing Board approval, and thus it will be subject to public review.

106. **COMMENT:** Long-term reductions strategies may appear costly at first, but they can have the largest cumulative emissions avoidance benefits, making them cost effective in the long run. Not only will initial reductions occur, but they will have a self-perpetuating ripple effect of infill and/or redevelopment.

RESPONSE: Cost-effectiveness calculations used by the Moyer Program and the District account for the project life, so long lived projects with low annual reductions may have good cost-effectiveness compared to short lived projects with higher annual reductions. The proposed rule is primarily focused on existing incentive program projects, since they are already established and can demonstrate cost-effective reductions. Upon adoption of the rule, the District will take a closer look at other types of emission reduction projects, and develop incentive program and procedures for viable and cost-effective project types.

107. COMMENT: Similar to an investment portfolio, the District needs to identify a variety of short-, mid- and long-term off-site mitigation strategies.

RESPONSE: See previous response.

Rule 3180

108. COMMENT: If the air impact Assessment Application is done at the same time as the SJVAPCD review of the air impact in a CEQA document, the rule could be a source of funding for the SJVAPCD review of EIR documents.

RESPONSE: It may be possible that some projects that would have been reviewed under CEQA, would now be subject to this rule which requires a more comprehensive look at it. To that end, the District needs to recover any time and materials spent related to this rule.

109. COMMENT: The administrative fee should be reduced initially, and there should be a sunset clause on it once the basic fund is built up to the point that the interest revenue from the funds is sufficient to cover the cost of the program.

RESPONSE: The District will amend the portions of the rule, which is subject to a public review and adoption, if the need arises.

COMMENTS FROM FOCUSED WORKSHOPS HELD ON MARCH 11, 15, 24, 31, 2004

EPA:

1. **COMMENT:** The District should ensure that a "District approved model" is identified by name in the rule and that their use is appropriate based on consultation with EPA and other federal agencies.

   RESPONSE: The rule specifies the District approved model and allows additional models to be approved by the District.

2. **COMMENT:** Section 5.3.2.3 allows the use of the Institute of Transportation Engineers Trip Generation Manual. It is unclear whether this is the same manual that was developed by the Department of Transportation (DOT). We consider the trip generation rates in the DOT manual to be appropriate.

   RESPONSE: The Institute of Transportation Engineers Trip Generation Manual is used by the California Department of Transportation (DOT).

3. **COMMENT:** More specificity is needed for sections: 5.1, 5.3.1.1, 5.3.2.2-4, 5.3.3.6, 5.4.2-3, 5.5, and 5.7.2.2-3, 5.7.3.2

   RESPONSE: Comment noted.

4. **COMMENT:** Section 3.27 defines a "vested project," however; the rule does not specify the process by which a project will be designated as "vested." The rule should indicate what minimum components are required to become a "vested project."

   RESPONSE: "Vested projects" is a relatively standard development procedure in which the developer requests the applicable agency to vest his/her project. If a project is vested, it cannot be liable for future changes in regulations for that agency. In exchange for that status, the applicable agency may require other items or actions of the developer. The procedure for vesting status varies by jurisdiction. The current version of the rule should eliminate the need to specify that process, since vested projects will be treated the same as non vested projects.

5. **COMMENT:** Section 3.25 excludes developments where streets are a portion of the project from the definition of "transportation projects." Rule 9510 should not allow sources to receive credit for road paving associated with new developments, which it appears to allow by this definition and the exemption contained in Section 4.3. The rule should also define those developments where streets are a portion of the project.

RESPONSE: The definition of transportation projects has been modified to exclude projects where the traffic surfaces are a portion of the project. It would be virtually impossible to define developments where the traffic surfaces are a portion of the project, since most developments are designed to accommodate transportation. The emissions from constructing internal roads in a project are included in the construction emissions for the land use and are not considered a transportation project.

6. **COMMENT:** Section 5.5 would be clearer if it stated that the developer shall provide the project information "Upon final local agency discretionary approval."

RESPONSE: Comment noted.

7. **COMMENT:** The District needs to ensure that the level of mitigation that is required under Section 5.1 exceeds the level of mitigation already required under other rules and programs in place, specifically Regulation VIII.

RESPONSE: URBEMIS contains district-specific emission factors, and therefore only the portion of non-regulated emissions will be counted in the estimated project baseline total. The emissions totals contained in Appendix B already have Regulation VIII control subtracted from them.

8. **COMMENT:** In order to ensure consistency between the implementation of this rule and the transportation conformity activities of the MPOs, the District may want to work with these agencies on implementation procedures or additional rule language.

RESPONSE: The District will coordinate with the MPOs.

9. **COMMENT:** Rule 9510 should distinguish the various types of agencies and the various types of permits that would be subject to the rule.

RESPONSE: Many jurisdictions handle permits and projects differently. However, writing a prescriptive rule that identified every kind of project at varying stages of planning would be extremely difficult. To that end, the wording of the current rule meets our needs. If an individual agency had a question regarding their coverage by the rule, the District could make a determination.

10. **COMMENT:** Monitoring programs in Section 5.3.3.6 should be further described for clarity.

RESPONSE: Comment noted.

ARB: No comments.

INDUSTRY/PUBLIC:

Trips

1. **COMMENT:** The proposed program should only regulate new trips and not redirected trips.

RESPONSE: The proposed program has been designed to regulate new sources of emissions.

2. **COMMENT:** Double-counting trips will lead to overestimating and overcharging.

RESPONSE: The proposed program will not be double-counting trips and appropriate modifications have been made to prevent that.

3. **COMMENT:** Trip lengths in URBEMIS are not accurate.

RESPONSE: The trip lengths in URBEMIS are based on data submitted by the local transportation planning agencies. If project specific trip lengths are available, they should be used instead of URBEMIS defaults.

4. **COMMENT:** URBEMIS double-counts reductions from existing rules.

RESPONSE: URBEMIS contains district-specific emission factors, and therefore only the portion of non-regulated emissions will be counted in the estimated project baseline total.

5. **COMMENT:** There are emissions impact from mitigation measures, such as lighting, and increased energy use.

RESPONSE: Any emissions impact from this rule will be considered under CEQA. Emissions from power generation is small in comparison to emissions reduced from vehicles and combustion equipment used at the project site due to emission controls at the power plant and higher efficiency of electrical equipment such as electric lawnmowers.

6. **COMMENT:** There should be a de minimis level of new trips.

   RESPONSE: The rule sets an applicability threshold based upon the emissions from a project.

URBEMIS/Analysis

7. **COMMENT:** URBEMIS is not reliable for establishing a fee schedule.

   RESPONSE: The district maintains that URBEMIS is the right tool for this program. URBEMIS contains district and state specific emissions factors, and is the most widely-used air emissions model in the State of California, and many courts have made decisions based on its output. URBEMIS has also been updated to reflect the state-of-the-science on air mitigation measures.

8. **COMMENT:** Future changes to URBEMIS should be a public process.

   RESPONSE: URBEMIS is owned by all the air districts in the state of California, as well as ARB. The district does not have direct control over whether or not changes to URBEMIS should be public.

9. **COMMENT:** The option of another model should be given.

   RESPONSE: Comment noted.

10. **COMMENT:** Consultants should not be conducting an analysis of the development. There is opportunity for "tweaking" the numbers. It would be more efficient and consistent if the District were to do it.

    RESPONSE: There are adequate safeguards in place to ensure that the District can verify the work of applicant or the applicant's consultant. Each URBEMIS run creates a document that specifies any changes that were made to default values. The District can then verify any changes with the applicant or the applicant's consultant.

11. **COMMENT:** The District should use a checklist approach instead of an analysis approach, so that the process is streamlined and there is no fee.

    RESPONSE: Emissions reductions associated with each mitigation measure is dependant upon project specific variables, and therefore cannot be streamlined to a checklist approach.

12. **COMMENT:** There needs to be clear time limits on analyses conducted by the District.

RESPONSE: Comment noted.

13. **COMMENT:** The Expedited Review option sends a mixed message, almost a pay-to-pollute message.

RESPONSE: Comment noted.

14. **COMMENT:** Construction emissions should be addressed, since some projects can take up to 10 years to fully construct.

RESPONSE: Comment noted.

15. **COMMENT:** There should be an appeals section for all analyses.

RESPONSE: Comment noted.

On-Site Mitigation

16. **COMMENT:** The proposed rule would allow the District to indirectly regulate land use at the local level through its required on-site mitigation measures.

RESPONSE: The current draft of rule 9510 gives the developer the option of how to comply with the rule. If certain on-site mitigation measures, such as mixed use development, are not allowed in a jurisdiction, then the developer cannot use that measure. On-site mitigation measures are designed to give the developer the option to reduce the emissions on-site. The developer can choose from a broad range of on-site mitigation measures. Any on-site measures that reduce emissions will reduce the amount emissions that need to be mitigated through fees. This rule does not impinge upon local agency land use authority.

17. **COMMENT:** Some mitigation measures, such as traffic signals or sidewalks, are not put in place for 5-20 years.

RESPONSE: Traffic flow improvements, such as traffic signals, will not be used as a mitigation measure under this program. Sidewalks, if used as a mitigation measure, should be constructed prior to operation of the project.

18. **COMMENT:** Credit should be given for high-density residential projects.

RESPONSE: Comment noted.

19. **COMMENT:** Some of the on-site mitigation measures lack enforceability or may not work.

RESPONSE: The mitigation measures in URBEMIS have been revised to help alleviate that problem. Also, the current version of the rule requires developer and the district will enter into a mitigation agreement that will include provisions for enforcement, in the event that the local jurisdiction does not have enforcement mechanisms in place.

20. **COMMENT:** The fees from this program will overlap with traffic mitigation fees.

RESPONSE: Fees collected for traffic mitigation are primarily aimed alleviating congestion and/or fixing roads. While those items may have an incidental, temporary air benefit, this program intends to directly mitigate emissions from projects. If an activity is conducted or developed, or a mitigation measure is included for traffic mitigation, and it benefits air quality, the assessment/URBEMIS will quantify the air quality benefits.

21. **COMMENT:** There should be a list of mitigation measures so that developers can fast track the process.

RESPONSE: Comment noted. Please see Appendix C.

22. **COMMENT:** The effectiveness of the mitigation measures is unlikely given the climate of the SJVAB.

RESPONSE: The mitigation measures included in the new mitigation component of are based on the most recent research available.

23. **COMMENT:** The district should provide the control efficiencies of the proposed mitigation measures.

RESPONSE: The control efficiencies are contained in Appendix D of this staff report.

24. **COMMENT:** The list of mitigation measures should be open-ended, to allow for new and innovative measures.

RESPONSE: While the District would like to encourage new and innovative mitigation measures, each measure needs to have substantial evidence demonstrating the emissions are in fact reduce because of that measure. The District will consider giving credit to additional mitigation measures as they are proposed.

25. **COMMENT:** The 30-day review time period is excessive given the timelines required by CEQA. It should be 10 days.

RESPONSE: The District will streamline the process where possible**.**

26. **COMMENT:** Title 24 is already being implemented.

RESPONSE: The mitigation measure seeks to take credit for emissions reductions achieved by going above and beyond Title 24.

General

27. **COMMENT:** The program should regulate existing as well as new homebuyers.

RESPONSE: The District is precluded by the Health and Safety Code from charging fees to mitigate existing trips.

28. **COMMENT:** The District should consider an annual fee approach for residential sources.

RESPONSE: Due to provisions of the Health and Safety Code, this approach would be an excessive administrative and enforcement burden.

29. **COMMENT:** Indirect regulations are not the way to go.

RESPONSE: The concept of mitigating the indirect emissions from new development has a long history of being implemented through the California Environmental Quality Act. Likewise, the purpose of this program is to mitigate the impacts of new development.

30. **COMMENT:** Area sources do not generate new vehicle trips.

RESPONSE: The applicability has been changed to reflect new emissions.

31. **COMMENT:** Why is the District focusing on the cleanest developments in the air basin?

RESPONSE: New development is not necessarily the cleanest developments. Depending upon location of the new development, it could be responsible for more vehicle miles traveled and/or trips.

32. **COMMENT:** The District should form a technical advisory committee.

RESPONSE: Comment Noted.

Applicability

33. **COMMENT:** This program should include schools, regional parks, and churches.

RESPONSE: This program will include any new development that is estimated to emit equal to or more than the threshold where indirect sources are the primary source of emissions from the project.

34. **COMMENT:** The current wording of Section 2.0 would include projects that come to the District for an Authority to Construct. Is it the District's intent to include those projects?

RESPONSE: It was not the original intent. The exemptions have been expanded to exempt projects where stationary sources of emissions from a development are the primary source of emissions.

35. **COMMENT:** The current wording of Section 2.0 would exclude State projects, because they do not have to apply for or obtain development permits.

RESPONSE: The new wording should include state projects.

Exemptions

36. **COMMENT:** Low-income housing should not be exempt because 1) residents tend to drive older, more polluting vehicles, 2) there are higher concentrations of people, and 3) those residents can benefit from alternate forms of transportation.

RESPONSE: Comment noted. There is no exemption for low-income housing in the current version of the rule.

37. **COMMENT:** If there is not an exemption for low-income housing with a broader scope, many contractors will go out of business.

RESPONSE: Comment noted.

38. **COMMENT:** Structures that are required to obtain a Permit to Operate (PTO) should be exempt from the rule.

RESPONSE: See response to comment #34.

39. **COMMENT:** Infill projects, schools, public parks, and other public facilities should be exempt.

RESPONSE: See response to comment #33.

40. **COMMENT:** General plans, specific plans, and community plans should be exempt from the rule.

RESPONSE: The rule applies to the last discretionary approval for a project.

Nexus

41. **COMMENT:** The Nexus should identify the benefits of the program.

RESPONSE: As with all District rule, an analysis of the emissions reduction associated with the rule has been developed.

Misc.

42. **COMMENT:** The rule should not distinguish between ministerial and discretionary projects.

RESPONSE: Many jurisdictions handle discretionary and ministerial differently. However, writing a prescriptive rule that identified every kind of project at varying stages of planning would extremely difficult.

43. **COMMENT:** Local agencies may use the Mitigation Agreement as a tool to hinder mitigation for projects.

RESPONSE: Local agencies may disapprove of measures in a Mitigation Agreement due to health, safety, and welfare reasons. For example, if a bus bulb was desired, but the bulb interferes with a pedestrian element, it might be a legitimate cause for disapproval.

44. **COMMENT:** How will the Bakersfield Metropolitan Project be addressed?

RESPONSE: That project will be handled separately through a “task force.”

45. **COMMENT:** How will overlap with CEQA be handled?

RESPONSE: This rule may meet many of the air-related CEQA issues for development in this air basin. The Guidelines for Assessing and Mitigating the Air Quality Impacts (GAMAQI) document will be revised and adopted prior to implementation of the program, and will explicitly define how the district interprets this program in relation to CEQA.

46. **COMMENT:** The socioeconomic analysis should look at the per unit cost differential between a home built in a large residential development and a home built on a smaller development.

RESPONSE: Comment noted.

47. **COMMENT:** The socioeconomic analysis should consider the costs of health if the program was not implemented.

RESPONSE: The socioeconomic analysis is an analysis that is mandated by the Health and Safety Code. That portion of the cost does not require a health benefit analysis. That type of analysis is better handled at the plan stage when demonstrating attainment of a health based standard.

48. **COMMENT:** There should be a clause in the rule that protects developers from later changes of the rule, similar to the Safe Harbor clause in habitat regulations.

RESPONSE: Any potential changes to District rules go through a public process. Any discussion of exemptions to rules or changes to rules should be handled through that process.

49. **COMMENT:** There should not be an administrative fee as well.

RESPONSE: An administrative fee is imperative to recover the districts costs associated with administering this program.

50. **COMMENT:** There should be a broader spectrum of stakeholders involved.

RESPONSE: Notices are distributed via newspapers in all eight counties and published on the district's website. Whether or not portions of the public choose to become involved is up to them.

51. **COMMENT:** The draft rule is silent on enforcement mechanisms. How will this be enforced?

RESPONSE: Any on-site mitigation measures included in the design of the project will be identified in a mitigation checklist. Those measures that do not have an enforcement mechanism through the local agency will be subject to a mitigation agreement between the district and the developer. That agreement will identify those measures and their enforcement.

52. **COMMENT:** The proposed certified mitigation program to be administered by local agencies is impractical.

RESPONSE: Comment noted.

Off-Site Mitigation

53. **COMMENT:** Section 5.8 should allow local jurisdictions to use the fees collected because they may know of local opportunities.

RESPONSE: The District will consider local projects when allocating any fees collected through this program.

54. **COMMENT:** Section 5.8 needs to be more specific.

RESPONSE: Comment noted.

55. **COMMENT:** There should be an appeals section for the expenditure of fees.

RESPONSE: See response to comment #15.

56. **COMMENT:** A process for fee reimbursement should be provided if emissions reductions are not achieved.

RESPONSE: Comment noted.

57. **COMMENT:** There needs to be a mechanism in place to expand off-site projects.

RESPONSE: Comment noted.

58. **COMMENT:** Fee expenditures should be located in the jurisdiction of origination.

RESPONSE: Fee expenditures will be located in a manner that will mitigate the emissions impact from the project.

59. **COMMENT:** All fleets should have the opportunity to obtain grants.

RESPONSE: The district is currently drafting a fleet grant program. Any fleet that submits a cost-effect project consistent with the District's guidelines will be eligible to receive funds.

60. **COMMENT:** There should be an appeals section for all project types, not just the Complete Analysis.

RESPONSE: See response to comment #15.

61. **COMMENT:** The grant programs should focus on diesel and smoking vehicles.

RESPONSE: The grant programs will focus on getting the most cost effective emissions reduction.

62. **COMMENT:** There should not be a limitation on spending the fees on research.

RESPONSE: The district needs to obtain immediate and quantifiable emissions reduction. Research does not meet the district objectives for this program.

63. **COMMENT:** The fees should go towards traffic congestion mitigation.

RESPONSE: The purpose of the program is to mitigate the impacts of development on air quality. While traffic congestion may be a part of the air quality problem, there are already traffic congestion fees in some jurisdictions. Also, traffic congestion mitigation is a temporary fix to the air quality problem. Studies have shown that increasing traffic flow increases capacity, and more capacity attracts more traffic.

COMMENTS FROM SCOPING MEETINGS HELD ON OCTOBER 7 - 9, 2003

EPA: None received.

ARB: None received.

INDUSTRY:

1. COMMENT: Public input and oversight should be built into the process.

RESPONSE: The District intends to provide periodic reports to the District Governing Board that will be available to the public that will enable public oversight. The development of the indirect source rules will be conducted in an open public process that allows for public input at every stage.

2. COMMENT: The fee structure implemented should be a Mello-Roos based fee requiring an annual payment by the owner of record.

RESPONSE: The DESIGN program is designed to reduce the impact that new development has on the growth in emissions. The program gives credit to projects based upon design features that are incorporated into a project to reduce emissions. Any fees charged are utilized to make up the gap between mitigation measures incorporated in the project and a 50% reduction in emissions. This type of program would not be appropriate for a Mello-Roos based program.

3. COMMENT: This program should be handled similarly to that of the school district fees.

RESPONSE: The calculation and collection of school fees is relatively simple compared to calculating air quality impacts of the project. The proposed program gives the opportunity for a project applicant to incorporate design measures that could potentially reduce emissions over the life of that project. This means that each project may need its own determination of emissions after on-site mitigation have been accounted for to calculate the appropriate fee amount.

4. COMMENT: How will the indirect source fee's impact on air pollution be measured and monitored?

RESPONSE: Projects funded with indirect source fees will have annual reporting requirements that will demonstrate that the emissions claimed are being achieved. The District will physically inspect all projects to ensure that the project is accomplished as claimed by the applicant for the funds and will credit those reductions in the appropriate attainment plans and progress reports.

5. **COMMENT:** What provisions will be made for repealing the fee if it is enacted but is not effective at reducing air pollution from automobiles?

RESPONSE: The emission reductions achieved from any fee collected will be subject to reporting and monitoring requirements. All projects that are based on retrofit or replacement of old technology with new technology must use equipment/devices that are emission certified or verified by the California Air Resource Board (ARB) and so are proven effective. The District will consider a periodic review of the entire program to ensure that the anticipated emissions reductions have in fact occurred. District staff would then present the results of the review and a recommendation to the governing board.

6. **COMMENT:** An indirect source fee will act as a disincentive for homebuyers to help clean the air by purchasing a new home.

RESPONSE: The decision to purchase a new home is influenced by a number of factors. If a subdivision incorporates on-site mitigation measures that reduce trips and area source emissions, which would lessen the fee amount and add value to the development, there may be more of an incentive to purchase a new home.

7. **COMMENT:** If fees are to be charged based on automobile usage, all development, not just new development, should be charged.

RESPONSE: The purpose of the program is to reduce the emissions associated with new development. The District prefers a preventative approach. One of the key features of the DESIGN program is to incorporate mitigation measures on-site, which will reduce emissions over the life of the development. This is possible during the design of new projects. It would not be feasible to "retrofit" existing homes and development; accordingly, they would probably pay 100% of the fee amount.

8. **COMMENT:** Infill developments with special measures incorporated into their design should receive a credit from this program.

RESPONSE: The reductions achieved by the DESIGN program are a combination of on-site design elements and off-site emissions reductions that are achieved by buying emissions reductions with fees to make up any shortfall

in on-site mitigation. In-fill projects that incorporate design features that reduce the emissions associated with the project will be given credit for those reductions and will reduce their potential fee amount.

9. **COMMENT:** Fees should be roughly proportional to the number of trips generated by that land use, as directed by the U.S. Supreme Court in the case of Nollan v. California Coastal Commission (1987) and Dolan v. City of Tigard (1994).

RESPONSE: The District expects any fee collected under this rule to meet this condition. The fee formula is based upon the emissions associated with the project.

10. **COMMENT:** The District needs to demonstrate how assessing a fee on land development will mitigate air pollution from automobiles.

RESPONSE: The purpose of the program is to mitigate the emissions associated with new development through on-site mitigations and potential fees. The District will outline the Nexus between any potential fees charged and the projects that they are mitigating.

11. **COMMENT:** Fees should be collected no earlier than at the final inspection or certificate of occupancy and paid at close of escrow, when the calculated emissions would actually begin.

RESPONSE: The fees need to be collected early enough to achieve emissions reductions prior to occupancy. Collecting the fee at occupancy would not provide adequate time to achieve the necessary emissions reductions prior to occupancy. Additionally, not all local agencies within the SJVAB have a Certificate of Occupancy permit for all uses, which would make enforcement of proposed requirements difficult. The proposed Rule 3180 may include the option for a Fee Deferral Agreement, which will operate under the capabilities of the local agency involved.

12. **COMMENT:** Fees should be collected at close of escrow, so <u>all</u> homebuyers are charged. This will lower the fee and generate funding at a much quicker rate.

RESPONSE: Please see Response #7.

13. **COMMENT:** Funds generated should be restricted for use in the jurisdiction where they were generated and should be restricted to uses that relate directly to whichever land use is paying the fee.

RESPONSE: The District will utilize any fees collected to mitigation the impact of the emissions associated with the projects that paid the fees.

14. **COMMENT:** Funds should be collected by the local agency at the building permit stage, and that local agency should utilize the funds for emission reduction activities. The local agency would then provide periodic reports to the District.

RESPONSE: The District has over 10 years of experience managing projects that reduce emissions. Providing training and oversight to all jurisdictions within the SJVAB, to ensure proper use of the funds and track emissions reductions would be time-consuming. Also, the District wants to ensure that existing local agency funds are not replaced with indirect source funds to pay for a project that would have occurred anyways. In order to utilize the funds generated in the most efficient and consistent manner, the District has proposed to manage the funds collected.

15. **COMMENT:** Consideration should be given to projects with low-cost housing or in economically depressed areas.

RESPONSE: The District will consider potential exemptions during the rule development process. On-site measures that enable people to use alternatives to the automobile for their personal transportation needs are very important in low-income areas.

16. **COMMENT:** Several jurisdictions already have fees for the purpose of reducing traffic congestion and automobile emissions that it creates. There should not be another fee that accomplishes the same purpose.

RESPONSE: The District will calculate the benefit of mitigation that is included in the project. If existing fees result in real, quantifiable, surplus emissions reductions the District will credit those reductions to the project.

17. **COMMENT:** There may be some overlap with conformity analyses. This needs to be addressed.

RESPONSE: Emission reductions from the indirect source program are reflected in the motor vehicle conformity budgets in the PM10 Plan. When budgets are set for the next ozone plan, they will also reflect emission reduction estimates. Conformity analysis done for individual transportation projects could take into account changes in trip generation rates and VMT resulting from mitigation incorporated by new development when determining if the transportation project will result in a decrease or increase in emissions. However, the transportation models may not provide the level of detail that would enable the user to provide input for individual development projects.

18. **COMMENT:** How will final build out versus phasing be addressed?

RESPONSE: That issue will be discussed at length during the Administrative Procedures focused workshop.

19. **COMMENT:** The applicant should assume the responsibility of interacting with the District.

RESPONSE: The District has incorporated this suggestion into the rule language.

20. **COMMENT:** Fees collected through this program should not fund projects that would have otherwise occurred.

RESPONSE: The District agrees that these projects not be funded. The District will take suggestions on how to prevent that.

21. **COMMENT:** The computed fee should be increased by 25% or more to fund projects that would improve our air, instead of just offsetting emissions.

RESPONSE: The DESIGN Program is being developed to ensure that any fees will meet the nexus standard. Thus, the fee cannot be set "above" the anticipated emissions.

22. **COMMENT:** Double counting should be addressed.

RESPONSE: The District is limiting the mitigation associated with the project to 50% of the projects base year emissions. This eliminates any potential double counting.

23. **COMMENT:** Funds should not be spent on public education processes or research type activities, but on projects where emissions reductions are quantifiable.

RESPONSE: It is mandatory that all projects funded will result in real and quantifiable emissions reductions. The specific policies on how the funds will be spent will be included in the draft staff report at the final workshop.

24. **COMMENT:** A grant-like program could potentially result in large amounts of fees collected with no projects being implemented. An expenditure program managed by the District and/or the Councils of Governments (COGs) should be developed.

RESPONSE: The District is currently formulating how the funds will be spent.

25. **COMMENT:** The District should clearly explain the relationship between the reductions from this program to the CEQA threshold discussions in the District's Guide to Assessing and Mitigating Air Quality Impacts (GAMAQI). The GAMAQI should be used as an implementation tool for this rulemaking project and it should be updated to provide consistent direction on the preparation of environmental documents.

RESPONSE: The District will calculate emissions for each project based on mitigation measures included in the project. If a project has agreed to mitigation measures as part of CEQA, then those measures will be reflected in the emission calculation. It is anticipated that the GAMAQI will be revised after the rules are adopted to show the relationship between the rules and CEQA.

26. **COMMENT:** Construction emissions should be included in the emissions total, and hence, subject to a fee.

RESPONSE: The District intends to include mitigation for construction emissions in the formula.

27. **COMMENT:** It is likely that mitigation fees will be used to fund the most cost-effective projects first. Thus, as time goes on, costs associated with pollution reduction projects will probably rise. The schedule of fees should be subject to upwards revisions based on this contingency.

RESPONSE: The types of projects available for funding are not static. The District has analyzed the types of projects that it anticipates will be available in the near future and has adjusted the cost-effective factor appropriately for future years.

APPENDIX B

Emissions Reduction Analysis for Proposed Rule 9510 (Indirect Source Review) and Rule 3180 (Administrative Fees for Indirect Source Review)

December 15, 2005

EMISSION REDUCTION ANALYSIS FOR RULE 9510 (Indirect Source Review)

I. INTRODUCTION

Both the 2003 PM10 Plan and the Extreme Ozone Attainment Demonstration Plan, contain emissions reduction commitments for proposed Rule 9510 of 4.1 tons per day of NOx and 5.2 tons per day of PM10 to be achieved by 2010. Those estimates were based on assumptions at the time and are commitments that are necessary to assist the district in meeting the federal and state PM10 and ozone standards. This appendix contains emissions and emissions reduction estimates that update those original estimates.

II. BASELINE EMISSIONS

A. Sources of Emissions from New Development

It is generally accepted in both air quality and transportation planning, as well as in case law that new emissions occur from new development. The construction of new structures is undertaken in order to accommodate the growth in population of a particular area. With the projected growth and development in the San Joaquin Valley Air Basin (SJVAB), there will also be a corresponding growth in emissions from energy usage, landscape maintenance equipment, wood combustion, motor vehicles, and entrained dust from paved and unpaved roads.

Energy Usage

Emissions associated with energy usage from new development primarily occur from two different sources, electricity generation and fuel combustion. NOx and PM10 emissions result from using space heating, water heating, cooking, and from other miscellaneous electrical appliances/equipment. ARB estimates fuel combustion emissions from natural gas, distillate oil or LPG, using EPA emission factors, and gas sales.[1] Emissions attributed to use of electricity generated at power plants are not easily quantified due to the variety of sources that supply electricity, which are located in and out of the basin and the state. Therefore, electrical generation emissions associated with new development will not be quantified or addressed for this program.

1 Air Resources Board, Emissions Inventory Procedural Manual, Vol. III, Methods for Assessing Area Source Emissions, October 1997 with revisions through November 1998, section 7.2-7.3.

Landscape maintenance equipment

Landscape maintenance equipment generates NOx and PM10 emissions from fuel combustion (gasoline, diesel, or LPG or CNG) and from evaporation of unused fuel. Equipment in this category can include leaf blowers, lawn mowers, trimmers, edgers, chainsaws, chippers, etc. ARB uses the OFF-ROAD model to estimate PM10 and NOx emissions using population, activity duration, and emission factors.[2] URBEMIS uses OFF-ROAD results and quantifies emissions by the number of homes and business units.[3] Based on District analysis, the growth in NOx and PM10 emissions from residential landscape maintenance equipment is relatively small, 15 tons per year, despite a projected increase of nearly 1.8 million pieces of residential landscape equipment in the SJVAB. The primary reason for the small emissions increase is that the new equipment is significantly cleaner than the older equipment.

Wood Combustion

Residential wood combustion emissions of PM10 and NOx come from burning wood or similar materials inside fireplaces, wood stoves and inserts. ARB estimates emissions totals using the following factors: tons of wood used per house, BTU rating per cord, number of houses, fraction of active wood combustion devices, average number of days burned per house, and other representative factors.[4] The recent amendment to Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters) will reduce a significant portion of emissions from those devices. Rule 4901 contains limits on wood combustion devices in new development, however, it still allows new devices in a development of a certain size or larger. Therefore, reductions from this category can still occur if the development can still install those devices and chooses not to.

Motor Vehicle Emissions

Motor vehicle emissions is the largest category of emissions attributed to new development. The inventory includes estimates of exhaust and evaporative VOCs, NOx, and PM10 associated with exhaust, tire wear and brake wear. On-road motor vehicles account for approximately 43% of the entire NOx inventory for 2002.[5] ARB estimates emissions from on-road vehicles using the EMFAC2002 model, which uses emission factors, vehicle numbers and vehicle activity. Emission rates are derived primarily from direct testing by the state or EPA. Vehicle population and vehicle age data are obtained from the Department of Motor Vehicles (DMV). Travel activity, which includes vehicle miles traveled (VMT), distribution of VMT by speed, the number of trips taken per vehicle each day, are provided by the California Department of Transportation

2 Staff report for Public Meeting to Consider Approval of the California Small Off-road engine emissions inventory, http://www.arb.ca.gov/msei/off-road/pubs/sore_final.doc

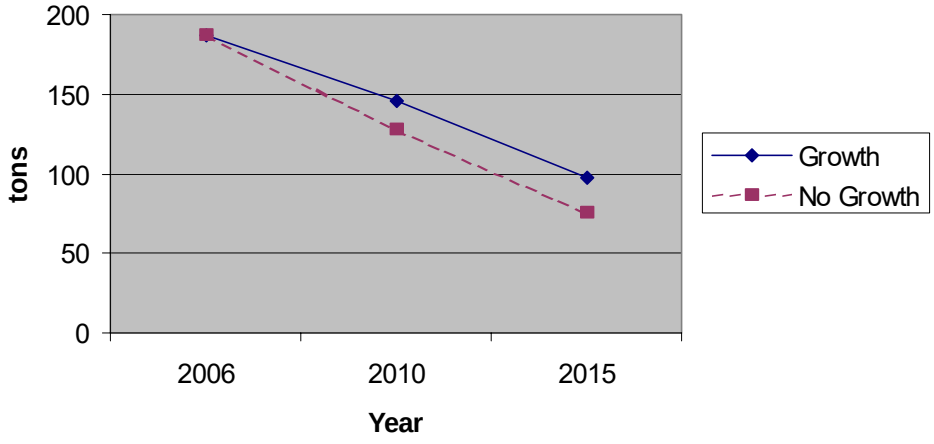
3 URBEMIS2002 Users' Guide, Version 7.4, May 2003, Appendix B.

4 Air Resources Board, Emissions Inventory Procedural Manual, Vol. III, Methods for Assessing Area Source Emissions, October 1997 with revisions through November 1998, section 7.1.

5 2003 PM10 Plan, Chapter 3, NOx Emissions Inventory

(Caltrans), local Metropolitan Planning Organizations (MPOs), local Councils of Governments (COGs), and fleet monitoring.[6] URBEMIS quantifies vehicle emissions attributed to a particular development based on the emission factors and vehicle activity found in EMFAC2002, in combination with project specific data. While the motor vehicle emissions inventory in both the PM10 and ozone plans show that vehicle emissions are declining, emissions would have declined even more if growth were not to occur, thus hampering the ability of the region to reach attainment of the PM10 and ozone standards. The following chart shows the emissions from all motor vehicles for the current population if it would have remained constant (No-Growth), and the emissions from vehicles for the projected population as reported in the 2003 PM10 Plan emissions inventory (Growth). Based on an analysis performed by ARB using EMFAC2002, which can be found in Attachment 1, the difference is an estimated 17.3 tons per day of NOx attributed to projected increase in growth in the SJVAB between 2006 and 2010.

Figure 1
Difference in NOx Emissions for All Vehicle Types



Re-entrained Road Dust

PM10 emissions from road dust occur by vehicles driving on unpaved roads, or by vehicles entraining or re-entraining dust on paved roads. ARB estimates PM10 emissions by using the following factors for different road types: silt loading on roads, vehicle weight, and VMT traveled. The majority of new development occurs on or creates new paved roads, however, some development in rural areas still use unpaved roads. Unpaved road emissions are estimated by using an emission factor and total VMT traveled.[7]

6 Overview of the On-Road Emissions Inventory, http://www.arb.ca.gov/msei/on-road/briefs/emfac6.pdf

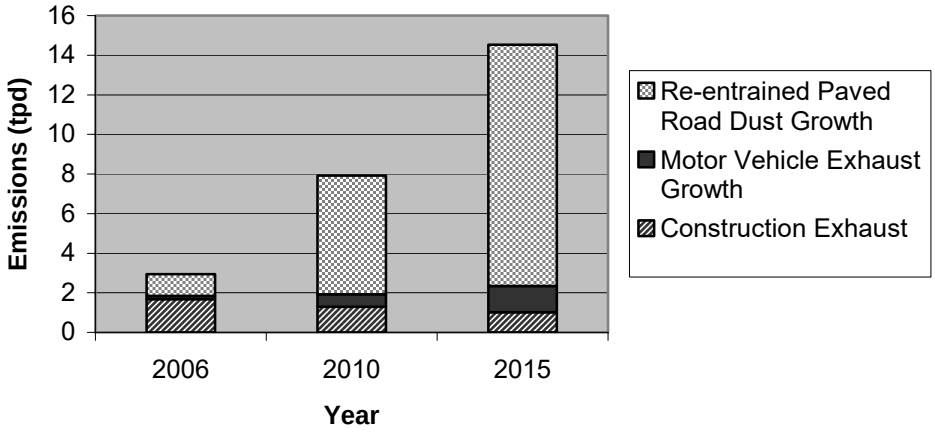
7 Air Resources Board, Emissions Inventory Procedural Manual, Vol. III, Methods for Assessing Area Source Emissions, October 1997 with revisions through November 1998, section 7.9-7.10.

Construction

This category of emissions differ slightly from the others, since all emissions from construction are due to new development, regardless of growth in the category. Emissions associated with construction activities occur for the purpose of building residential, commercial, industrial, institutional, or governmental structures. Emissions result predominantly from equipment associated with site preparation work, which may include scraping, grading, loading, digging, compacting, and other operations. ARB estimates construction emissions by utilizing a computer model called OFF-ROAD. The construction emissions in the OFF-ROAD model are estimated using the population, activity, and fuel usage of the varied types of construction equipment.

The following figure demonstrates PM10 emissions and emissions growth from construction equipment, re-entrained paved road dust, and vehicle exhaust associated with new development.

Figure 2
PM10 Emissions from Development



B. Projected Emissions from New Development

The following table illustrates the projected growth in emissions, as can be discerned from the emissions inventory:

Total Emissions Attributed to Land Use Growth in the SJVAB in 2010

NOx

Emissions Category	Emissions from Growth In 2010 (tpd)	Emissions from Growth during 2006-2010 (tpd)
On-road Vehicles[A]	2.2	17.3
Construction Equipment[C]	21.3	21.3
Total NOx	**23.5**	**137.8**

PM10

Construction Equipment[C]	1.4	1.4
On-road Vehicles[A]	0.2	0.6
Paved Road Dust[B]	1.1	5.2
Total PM10	**2.7**	**13.4**

A. Emissions Growth between 2006 and 2010 was estimated based on an ARB EMFAC 2002 version 2.2 run, dated June 10, 2005 (Attachment 1). This will be revised to obtain a total for 2006.

B. 2003 PM10 Plan emissions inventory

C. ARB Emission Inventory for 2010

It should be noted that some sources of emissions from new development are not included in the above table for several reasons. While there may be difficulties in assessing what portions of the emissions inventory are resulting from new growth, there are new emissions from growth occurring. Therefore, the above table represents a conservative estimate of what will occur, and does not overestimate. Therefore, any reductions applied to the emissions outlined in the above table will represent a conservative estimate of actual reductions resulting from this program.

III. EMISSIONS REDUCTION OPTIONS FOR NEW DEVELOPMENT

A. On-site Project-Specific Emissions Reductions

On-site mitigation measures and their corresponding emission reduction methodologies were developed by Nelson/Nygaard and put into URBEMIS. The following discussion lists measures/conditions, if implemented that would result in emissions reductions from a development project. The maximum percent reduction is in general terms. The actual reduction relies on project specific information and factors, and how the mitigation measure is used in combination with other measures.

Increase Energy Efficiency Beyond Title 24

This measure would reduce emissions by decreasing the amount of natural gas that is needed and in turn combusted for a particular development. Examples of how this could be achieved include: using insulation in the attic and walls, insulating ductwork, using whole house fans, double-paned and/or high performance glazed windows, maximizing the use of natural lighting, installing EnergyStar appliances, orienting the

building north or south to utilize passive heating and cooling, designing the building to maximize natural ventilation, or any number of other items that would decrease the use of natural gas, and therefore decrease emissions. The emissions reductions associated with this mitigation measure in URBEMIS would require a quantification of the % reduction beyond what is already required by Title 24 as determined by a computer model developed for Title 24 purposes.

Electrical landscape maintenance equipment

This measure would reduce emissions by eliminating some or all of the combustion of gasoline or diesel in standard landscape equipment by replacing it with equipment that relies on batteries, an electrical outlet, or manually-powered equipment. Emissions reductions are quantified by using the % of the development that would use non-combustion powered equipment.

Hearth

This measure would reduce emissions by eliminating construction of a wood combustion device that would have otherwise been allowed under Rule 4901.

Net Residential Density

Emissions reductions from this measure would occur when an individual from a particular residential use forgoes the use of the automobile and uses an alternate form of transportation. A considerable volume of research has investigated the links between density and travel behavior and has determined that there is a significant and quantifiable relationship between residential density and automobile use. Three key studies of travel behavior and density itself have identified elasticities, which has been used to develop a formula to determine the reduction in vehicle trips and vehicle miles traveled, and the corresponding emissions reductions. The maximum reduction in trips/VMT and resulting emissions that may occur from this measure is calculated to be 55%.

Mix of Uses

Emissions reductions from this measure would occur when an individual forgoes the use of the automobile and uses other forms of transportation. Research has shown that there is an impact of diversity or mix of uses on travel behavior, which can occur at the macro-scale, such as jobs-housing balance. Numerous studies of travel behavior and mix of uses have identified elasticities, which has been used to develop a formula to determine the reduction in vehicle trips and vehicle miles traveled, and the corresponding emissions reductions. The maximum reduction in trips/VMT and resulting emissions that may occur from this measure is calculated to be 9%.

Local Serving Retail

Emissions reductions from this measure occur when an individual forgoes the use of the automobile, since the proximity of the retail encourages other forms of transportation. The maximum reduction in trips/VMT and resulting emissions that may occur from this measure is calculated to be 2%.

Transit Service

Emissions reductions from this measure would occur when an individual forgoes the use of the automobile and uses transit. Transit choices could include buses, light rail, dedicated shuttles, and trolleys. Since emissions from transit services already exist, the elimination of trip(s) from the automobile would result in emissions reductions. URBEMIS determines emissions reductions from transit use based on a Transit Service Index, which is based on the latest California-specific research on transit use. The maximum reduction in trips/VMT and resulting emissions that may occur from this measure is calculated to be 15%.

Bicycle and Pedestrian Facilities

Emissions reductions from this measure would when an individual forgoes the use of the automobile and uses a bicycle or walks. Since the use of a bicycle or the action of walking does not emit emissions, the elimination of trip(s) from the automobile would result in emissions reductions. URBEMIS determines emissions reductions from bicycle use and pedestrian activities based on quantitative values of network density, sidewalk completeness and bike lane completeness. The maximum reduction in trips/VMT and resulting emissions that may occur from this measure is calculated to be 9%.

Affordable Housing/Senior Housing/ Assisted Living

This measure would reduce emissions by designating residential units as deed-restricted below-market-rate (BMR) housing. Research has shown that lower-income households and senior citizens own fewer vehicles and drive less. By designating residential units as deed-restricted BMR, only lower-income individuals that use the automobile less would occupy those units, which would result in lower emissions due to less automobile use. The maximum reduction in trips/VMT and resulting emissions and resulting emissions that may occur from this measure is calculated to be 4%.

Transportation Demand Management Programs

TDM Programs can include free transit passes, parking restrictions and telecommuting. Emissions reductions from this measure would occur when a landlord provides an incentive, such as transit passes, to individual(s), who then forgoes the use of the automobile and uses transit. These programs provide an incentive for the individual(s) to use the transit, and studies have show that these programs both increase transit ridership and reduce vehicle trips. The maximum reduction in trips/VMT and resulting emissions and resulting emissions that can be achieved under this measure is 25%.

Fleet Modifications

Reductions from this measure occur when a fleet owner makes vehicle specific modifications or agrees to purchase and/or use only vehicles with controls, such as a particulate filters or catalysts. There are numerous options available. The maximum reduction in emissions that can be achieved under this measure varies by control option.

It is important to note that many of the mitigation listed above requires a change in travel behavior of an individual in order for the emissions reductions to occur. It is not guaranteed that the mitigation measures will be successful at changing travel behavior to the exact amount as calculated, however, it represents the best estimate/projection of what will occur based on the most recent research conducted on existing travel behavior to date.

B. Off-site Emissions Reductions

In the event that the emissions impact of a particular project is not fully mitigated on site a proportional fee will be assessed and collected for the NOx and PM10 emissions not mitigated. The fees collected would be placed into a mitigation fund for each pollutant and county, and expended on projects that reduce emissions of that pollutant in that county, utilizing a grant-like program. The district has over eleven years experience with grant programs designed to reduce primarily NOx, and some VOC. Each grant program has had strict guidelines on emissions reductions, qualifying equipment, and the related administration of the program. Based on that experience, the District has decided that a grant program would provide the most cost-effective emissions reductions for the money that will be collected.

The District has employed the California Air Resources Board (ARB) and the California Department of Transportation document "*Methods to Find the Cost Effectiveness of Funding Air Quality Projects"* for finding the cost effectiveness and emission reduction benefits for a wide variety of emission reduction projects. This document can also be accessed through an associated on-line database. The methods described are generally accepted and include: a list of information needed to calculate cost effectiveness, emission factors, project life, defaults that may be used when project-specific data is not available (assumptions) and formulas to calculate vehicle emission reductions for three major pollutants, NOx, PM10, and VOC's. Many of those methods were used to develop the grant programs that could be funded under this program.

The most successful District grant program has been the Heavy-Duty Engine Incentive Program. This program replaces older model high polluting engines with newer and cleaner burning engines. Eligible project types funded under the heavy-duty program include, but are not limited to: on-road and off road vehicles and equipment, agricultural pump engines, marine vessels, forklifts, truck stop electrification technology, and school bus projects.

The Voluntary Accelerated Vehicle Retirement (Scrap) Program is designed to accelerate the voluntary retirement of older, higher polluting passenger vehicles. Monetary incentives are provided to individuals who agree to scrap their high polluting passenger vehicles. Ideally, this incentive money will help them purchase newer vehicles with cleaner burning engines.

The Light and Medium Duty Vehicle Incentive Program is designed to encourage the purchase and use of cleaner engine technology for passenger vehicles. To be eligible under the program, the light and medium duty vehicles must be powered by natural gas, electricity, fuel cells, or gasoline-electric hybrid technology.

The Carl Moyer Program provides incentive funds for significant near-term reductions in NOx. Eligible project types under the Carl Moyer Program include: new alternative fuel vehicle projects, on and off-road vehicle engine replacement projects, agricultural pump engine replacements, locomotive engine replacements, marine vessels, forklifts, and airport ground support equipment engine replacements. Projects are funded based on cost effectiveness, utilizing criteria developed by the state in coordination with the air districts and the statewide Incentive Program Implementation Team (IPI).

In addition to the sources listed above, the District receives grant funds from other state and federal funding sources including: the State's Lower Emission School Bus Program, Peaker Plant Offset funds, and the State's NOx and PM Program funds.

IV. EMISSIONS REDUCTION OPTIONS FOR CONSTRUCTION

Construction PM10 emissions can be mitigated in numerous ways. The following discussion lists measures/conditions, if implemented that would result in emissions reductions from construction activities. The percent reduction identified was based on the URBEMIS2002 Users' Guide.

A. On-site Reduction Options

There are several on-site construction emissions reductions available. The following lists the current mitigation measures that reduce PM10 and NOx. There is a statewide effort to update the construction portion of URBEMIS, so there may be more mitigation measures identified that are not included in this appendix.

Equipment Exhaust Control

There are several options available for controlling NOx and PM10 emissions from equipment used for construction. Options can include, purchasing newer equipment, altering fuel usage, modifying an engine, using exhaust after-treatments, or renting equipment that help meet the rule requirements. New equipment can provide a high percentage of emissions reductions, depending on the horsepower and the year of the equipment. Reductions that can occur from using newer equipment reductions range from 8-62% for PM10, and 20-38% for NOx. Different fuels are available for use that would reduce emissions from construction equipment. Ultra-low sulfur diesel can achieve a 5-9% reduction in PM10. Alternative diesel fuels can achieve 5-16% reduction in NOx and a 40-63% reduction in PM10. Diesel oxidation catalysts can reduce PM10 by 25-50%. Diesel particulate filters can reduce PM10 by 85%. Selective Catalytic Reduction can reduce NOx by 80% and PM10 by 25%.

Worker Commute Trip Reductions

This measure would entail using a shuttle to take construction workers to a retail establishment for lunch. This would eliminate numerous trips, which would reduce vehicle exhaust, and entrained and/or re-entrained road dust. The maximum PM10 reduction from this measure is 1.3%.

B. Off-site Reduction Options

Since any fees collected will reduce construction emissions off-site, the same emissions reduction options listed in section III above apply.

V. PROJECT-SPECIFIC EMISSIONS REDUCTIONS

Each development project, subject to Rule 9510, will have an assessment of the project performed. The assessment will include an APCO-approved model run that identifies the project or project phase baseline emissions and the emissions reduction resulting from on-site mitigation measures. The remaining emissions will be quantified and will fund emissions reduction project(s), using the fee formulas identified below.

Area and Operational NOx Fee Formula

The NOx fee formula must identify the total tonnage of mitigation required, subtract the tonnage mitigated on-site, and multiply the remaining tonnage by the cost of reductions in order to determine the cost to reduce emissions off-site.

Figure 3

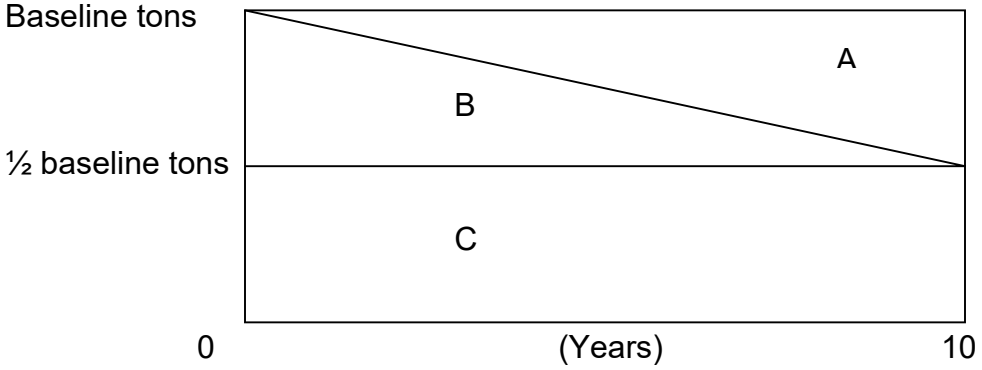


Figure 3 represents a development project's NOx emissions over a period of ten years. Section A represents the emissions reductions projected to be achieved from ARB's tailpipe control, which is 25% of the total project's 10 years emissions. The remaining 75% is the project's estimated NOx emissions for ten years. The mitigation required by Rule 9510 is represented by the triangle B, which equal to a third of the non-A section. Thus, the total tonnage of mitigation required can be identified as follows:

$$\frac{\text{Estimated Baseline Emissions (tons) x 10 years x 75\%}}{3}$$

which is equal to:

$$\text{EBE (tons) x 2.5}$$

The next step is to subtract the percent reduction achieved from on-site mitigation measures. This is determined by using the estimated baseline emissions over ten years and applying the percent mitigation, as follows:

$$\text{Estimated Baseline Emissions (tons) x 10 years x 75\% x Actual \% Mitigation} = \text{EBE x 7.5 x APM}$$

Thus,

$$\text{(EBE x 2.5) - (EBE x 7.5 x APM)}$$

determines the total emissions remaining to mitigate off-site. That number then needs to multiplied by dollars per ton, in order to determine total dollars required to mitigation emissions off-site. The resulting NOx Air Impact Mitigation Fee is as follows:

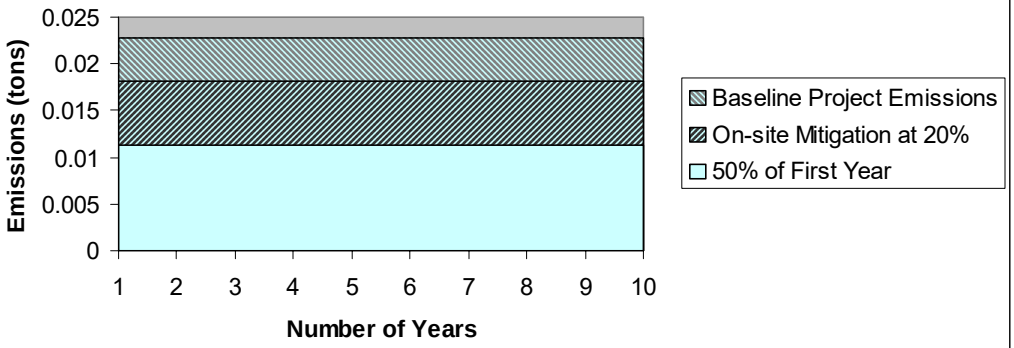
$$\text{[EBE x 2.5] - [EBE x 7.5 x APM] x [Cost of NOx Reductions/ton]}$$

It is important to note that the percent reduction achieved onsite, results in a greater reduction of the NOx fee. While on-site mitigation is not required, the "bigger bang for the buck" is achieved with as much on-site mitigation as possible.

Area and Operational PM10 Fee Formula

The Air Impact Mitigation Fee for PM10 is more straightforward since a project's PM10 emissions remain relatively constant over the life of the project. For ease of understanding, Figure 4 below demonstrates the relationship between baseline emissions, mitigated emissions and half of the baseline emissions.

Figure 4
PM10 Project Emissions and Reductions Compared to 50% of the First Year Emissions



The required PM10 mitigation is half of the baseline emissions for ten years. In order to determine the emissions that are subject to a fee, half of the baseline emissions need to be subtracted from the Mitigated Emissions and multiplied by cost of reductions in dollars per ton. Thus the resulting PM10 Air Impact Mitigation Fee is calculated as follows:

(Mitigated PM10 emissions – ½ Baseline PM10 emissions) (Cost of PM10 Reductions)

Construction Formulas

The Air Impact Mitigation Fees for construction are based on the project's estimated construction equipment emissions, and compared to the statewide fleet average emissions. The required information is as follows: 1)a list of construction equipment used, 2)the model year, and 3)the hours estimated to be used is compiled, which can be determined from the National Construction Estimator or using project-specific information if known. Then the model specific emission factors are used to determine the actual estimated emissions (designated as AEE). The same hours are multiplied by a statewide average fleet emission factor for a particular year, to determine the statewide average estimated emissions (designated as SEE). Since the requirement is to reduce construction NOx emissions by 20% beyond the statewide average, this is determined as follows:

NOx Construction = (AEE) – [(1.00 x SEE) – (SEE x 0.20)]
(AEE) – [1.00SEE – 0.20SEE]
(AEE – 0.8SEE)

PM10 is almost identical, except that the requirement is to reduce construction PM10 emissions by 45% beyond the statewide average.

PM10 Construction = (AEE) – [(1.00 x SEE) – (SEE x 0.45)]
(AEE) – [1.00SEE – 0.45SEE]
(AEE – 0.55SEE)

VI. EMISSIONS REDUCTIONS FROM RULE 9510

Both the 2003 PM10 Plan and the Extreme Ozone Attainment Demonstration Plan, contain emissions reduction commitments for proposed Rule 9510 of 4.1 tons per day of NOx and 5.2 tons per day of PM10 to be achieved by 2010. Those estimates were based on assumptions at the time and are commitments that are necessary to assist the district in meeting the federal and state PM10 and NOx standards. The methodology contained in this section and related attachments demonstrate the draft emission reductions for the program.

As part of determining the emissions reductions, sources that are exempt from the rule need to be subtracted out. The District has numerous years of experience in commenting on projects subject to CEQA. Based on that experience and the thresholds contained in Rule 9510, it is estimated that 15% of all development project emissions will be exempt from the provisions that rule. Attachment 2 and Attachment 3 identify the growth in emissions for each pollutant for each year, and subtract the emissions that will be exempt from the program. Once the emissions subject to the program are identified, the required mitigation is applied, which is 33.3% of baseline NOx emissions over ten years, 50% of baseline operational PM10 emissions over ten years, 20% of construction NOx emissions and 45% of construction PM10 emissions. The reductions achieved on-site were calculated by multiplying the estimated percent of sources opting to use on-site measures, the percent reduction achieved on-site, by the baseline emissions. Off-site reductions were estimated differently. Since grant programs typically rely on project life to determine cost effectiveness and emissions reductions, the reduction was divided by the average project life for that pollutant's cost-effectiveness, which is 7 years for NOx and 12 years for PM10, and spread out over that number of years. Attachment 2 and 3 contain the detailed emission reductions calculations. The results of those calculations reveal that the program, as currently defined, will result in reductions of 5.4 tons per day of NOx in 2010 and 5.8 tons per day of PM10 in 2010.

Attachment 1 - Emissions and Growth in Emissions from Motor Vehicles

Passenger Cars						
Total - Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	46,763,000	1,186,080	27.53	25.64	1.69	282.88
CY 2007	48,037,000	1,215,840	25.06	23.34	1.73	260.25
CY2008	49,324,000	1,246,060	22.80	21.26	1.77	239.16
CY2009	50,625,000	1,276,970	20.74	19.32	1.81	219.49
CY2010	51,952,000	1,308,670	18.80	17.52	1.85	200.89
CY2011	53,253,000	1,340,690	17.11	15.87	1.90	184.01
CY2012	54,544,000	1,373,190	15.61	14.39	1.94	168.64
CY2013	55,835,000	1,406,290	14.28	13.07	1.99	154.78
CY2014	57,127,000	1,440,000	13.12	11.89	2.04	142.42
CY2015	58,427,000	1,474,400	12.12	10.85	2.08	131.38
Total - No Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	46,763,000	1,186,080	27.53	25.64	1.69	282.88
CY 2007	46,817,000	1,184,970	23.52	21.39	1.68	242.70
CY2008	46,857,000	1,183,740	20.86	18.97	1.68	217.58
CY2009	46,878,000	1,182,430	18.52	16.81	1.67	194.91
CY2010	46,885,000	1,181,030	16.38	14.86	1.67	174.13
CY2011	46,849,000	1,179,460	14.55	13.13	1.67	155.73
CY2012	46,784,000	1,177,840	12.96	11.61	1.67	139.41
CY2013	46,702,000	1,176,250	11.58	10.29	1.66	125.00
CY2014	46,601,000	1,174,680	10.39	9.13	1.66	112.39
CY2015	46,487,000	1,173,100	9.37	8.14	1.66	101.32
Total - Difference						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2007	1,220,000	30,870	1.54	1.95	0.05	17.55
CY2008	2,467,000	62,320	1.94	2.29	0.09	21.58
CY2009	3,747,000	94,540	2.22	2.51	0.14	24.58
CY2010	5,067,000	127,640	2.42	2.66	0.18	26.76
CY2011	6,404,000	161,230	2.56	2.74	0.23	28.28
CY2012	7,760,000	195,350	2.65	2.78	0.27	29.23
CY2013	9,133,000	230,040	2.70	2.78	0.33	29.78
CY2014	10,526,000	265,320	2.73	2.76	0.38	30.03
CY2015	11,940,000	301,300	2.75	2.71	0.42	30.06

Light-Duty Truck (GVWR < 3,751 lbs)						
Total - Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	19,277,000	504,871	16.65	16.97	0.75	191.39
CY 2007	19,879,000	518,651	15.59	15.63	0.77	177.66

CY2008	20,503,000	532,766	14.54	14.39	0.78	164.45
CY2009	21,148,000	547,300	13.50	13.21	0.80	151.41
CY2010	21,810,000	562,308	12.50	12.10	0.82	138.99
CY2011	22,456,000	577,812	11.70	11.10	0.84	128.18
CY2012	23,103,000	593,638	10.97	10.22	0.86	118.33
CY2013	23,754,000	609,742	10.27	9.41	0.88	109.08
CY2014	24,410,000	626,177	9.61	8.68	0.90	100.56
CY2015	25,072,000	642,987	9.02	8.01	0.93	92.73
Total - No Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	19,277,000	504,871	16.65	16.97	0.75	191.39
CY 2007	19,374,000	505,480	14.54	14.03	0.75	163.40
CY2008	19,478,000	506,121	13.21	12.57	0.74	147.26
CY2009	19,582,000	506,782	11.96	11.22	0.74	132.09
CY2010	19,683,000	507,465	10.80	10.01	0.74	118.19
CY2011	19,756,000	508,326	9.87	8.96	0.74	106.40
CY2012	19,816,000	509,186	9.04	8.04	0.74	95.88
CY2013	19,869,000	510,001	8.26	7.22	0.74	86.35
CY2014	19,912,000	510,803	7.55	6.49	0.74	77.79
CY2015	19,949,000	511,590	6.93	5.86	0.74	70.11
Total - Difference						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2007	505,000	13,171	1.05	1.60	0.02	14.26
CY2008	1,025,000	26,645	1.33	1.82	0.04	17.19
CY2009	1,566,000	40,518	1.54	1.99	0.06	19.32
CY2010	2,127,000	54,843	1.70	2.09	0.08	20.80
CY2011	2,700,000	69,486	1.83	2.14	0.10	21.78
CY2012	3,287,000	84,452	1.93	2.18	0.12	22.45
CY2013	3,885,000	99,741	2.01	2.19	0.14	22.73
CY2014	4,498,000	115,374	2.06	2.19	0.16	22.77
CY2015	5,123,000	131,397	2.09	2.15	0.19	22.62

Light-Duty Truck (GVWR 3,751 to 5,750 lbs)						
Total - Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	14,206,000	363,542	11.60	15.81	0.74	133.05
CY 2007	14,550,000	373,494	11.03	14.80	0.76	125.36
CY2008	14,919,000	383,713	10.48	13.85	0.78	117.89
CY2009	15,308,000	394,213	9.95	12.93	0.80	110.66
CY2010	15,718,000	405,048	9.44	12.05	0.83	103.67
CY2011	16,150,000	416,094	8.90	11.17	0.85	96.52
CY2012	16,591,000	427,382	8.39	10.34	0.87	89.90
CY2013	17,045,000	438,884	7.89	9.56	0.90	83.57
CY2014	17,507,000	450,596	7.40	8.83	0.92	77.55
CY2015	17,972,000	462,557	6.97	8.16	0.95	72.09

Total - No Growth						
	VMT	Pop	ROG	NOx	PM10	CO
CY 2006	14,206,000	363,542	11.60	15.81	0.74	133.05
CY 2007	14,180,000	364,010	10.37	13.49	0.74	116.90
CY2008	14,173,000	364,523	9.61	12.29	0.74	107.14
CY2009	14,175,000	365,028	8.90	11.17	0.74	98.08
CY2010	14,185,000	365,543	8.25	10.14	0.74	89.63
CY2011	14,208,000	366,056	7.59	9.16	0.75	81.45
CY2012	14,230,000	366,582	6.99	8.27	0.75	74.06
CY2013	14,257,000	367,092	6.42	7.46	0.75	67.24
CY2014	14,281,000	367,573	5.87	6.72	0.75	60.96
CY2015	14,300,000	368,032	5.41	6.06	0.75	55.36
Total - Difference						
	VMT	Pop	ROG	NOx	PM10	CO
CY 2007	370,000	9,484	0.66	1.31	0.02	8.46
CY2008	746,000	19,190	0.87	1.56	0.04	10.75
CY2009	1,133,000	29,185	1.05	1.76	0.06	12.58
CY2010	1,533,000	39,505	1.19	1.91	0.09	14.04
CY2011	1,942,000	50,038	1.31	2.01	0.10	15.07
CY2012	2,361,000	60,800	1.40	2.07	0.12	15.84
CY2013	2,788,000	71,792	1.47	2.10	0.15	16.33
CY2014	3,226,000	83,023	1.53	2.11	0.17	16.59
CY2015	3,672,000	94,525	1.56	2.10	0.20	16.73

Medium-Duty Truck (GVWR 5,751 to 8,500 lbs)						
Total - Growth						
	VMT	Pop	ROG	NOx	PM10	CO
CY 2006	5,521,000	141,790	5.01	7.94	0.29	57.52
CY 2007	5,679,000	146,113	4.79	7.46	0.30	54.45
CY2008	5,844,000	150,494	4.57	7.00	0.31	51.57
CY2009	6,017,000	155,025	4.36	6.56	0.32	48.81
CY2010	6,196,000	159,717	4.16	6.15	0.33	46.11
CY2011	6,369,000	164,373	3.96	5.74	0.33	43.46
CY2012	6,547,000	169,143	3.77	5.35	0.34	40.99
CY2013	6,728,000	174,015	3.60	4.99	0.36	38.71
CY2014	6,914,000	178,995	3.44	4.65	0.37	36.65
CY2015	7,105,000	184,102	3.29	4.34	0.38	34.70
Total - No Growth						
	VMT	Pop	ROG	NOx	PM10	CO
CY 2006	5,521,000	141,790	5.01	7.94	0.29	57.52
CY 2007	5,535,000	142,403	4.47	6.84	0.29	50.71
CY2008	5,552,000	142,967	4.16	6.25	0.29	46.84
CY2009	5,571,000	143,548	3.87	5.71	0.29	43.19
CY2010	5,591,000	144,140	3.60	5.20	0.29	39.82
CY2011	5,603,000	144,606	3.35	4.73	0.29	36.65
CY2012	5,615,000	145,080	3.12	4.30	0.30	33.75

CY2013	5,628,000	145,550	2.91	3.91	0.30	31.12
CY2014	5,640,000	146,015	2.72	3.55	0.30	28.80
CY2015	5,653,000	146,480	2.54	3.24	0.30	26.65
Total - Difference						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2007	144,000	3,710	0.32	0.62	0.01	3.74
CY2008	292,000	7,527	0.41	0.75	0.02	4.73
CY2009	446,000	11,477	0.49	0.85	0.03	5.62
CY2010	605,000	15,577	0.56	0.95	0.04	6.29
CY2011	766,000	19,767	0.61	1.01	0.04	6.81
CY2012	932,000	24,063	0.65	1.05	0.04	7.24
CY2013	1,100,000	28,465	0.69	1.08	0.06	7.59
CY2014	1,274,000	32,980	0.72	1.10	0.07	7.85
CY2015	1,452,000	37,622	0.75	1.10	0.08	8.05

Light Heavy-Duty Truck (GVWR 8,501 to 10,000 lbs)						
Total - Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	2,281,000	34,879	2.13	5.00	0.12	12.85
CY 2007	2,304,000	35,651	1.96	4.95	0.12	11.55
CY2008	2,321,000	36,449	1.84	4.89	0.13	10.52
CY2009	2,334,000	37,270	1.74	4.84	0.13	9.70
CY2010	2,344,000	38,123	1.68	4.71	0.13	9.01
CY2011	2,351,000	38,998	1.65	4.58	0.13	8.49
CY2012	2,356,000	39,887	1.63	4.46	0.13	8.06
CY2013	2,362,000	40,784	1.63	4.34	0.13	7.67
CY2014	2,371,000	41,696	1.63	4.23	0.13	7.34
CY2015	2,384,000	42,634	1.64	4.13	0.13	7.04
Total - No Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	2,281,000	34,879	2.13	5.00	0.12	12.85
CY 2007	2,246,000	34,746	1.91	4.82	0.12	11.24
CY2008	2,205,000	34,626	1.74	4.64	0.12	9.99
CY2009	2,161,000	34,511	1.61	4.48	0.12	8.97
CY2010	2,115,000	34,405	1.51	4.24	0.12	8.13
CY2011	2,068,000	34,309	1.45	4.02	0.11	7.46
CY2012	2,021,000	34,213	1.40	3.82	0.11	6.91
CY2013	1,976,000	34,113	1.36	3.63	0.11	6.42
CY2014	1,934,000	34,014	1.33	3.45	0.11	5.98
CY2015	1,897,000	33,921	1.31	3.28	0.10	5.60

Total - Difference						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2007	58,000	905	0.05	0.13	0.00	0.31
CY2008	116,000	1,823	0.10	0.25	0.01	0.53
CY2009	173,000	2,759	0.13	0.36	0.01	0.73

CY2010	229,000	3,718	0.17	0.47	0.01	0.88
CY2011	283,000	4,689	0.20	0.56	0.02	1.03
CY2012	335,000	5,674	0.23	0.64	0.02	1.15
CY2013	386,000	6,671	0.27	0.71	0.02	1.25
CY2014	437,000	7,682	0.30	0.78	0.02	1.36
CY2015	487,000	8,713	0.33	0.85	0.03	1.44

Light Heavy-Duty Truck (GVWR 10,001 to 14,000 lbs)						
Total - Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	624,000	10,645	0.76	2.78	0.06	4.45
CY 2007	626,000	10,885	0.75	2.67	0.05	4.18
CY2008	630,000	11,133	0.74	2.57	0.05	3.93
CY2009	637,000	11,387	0.72	2.47	0.05	3.67
CY2010	645,000	11,651	0.70	2.33	0.05	3.42
CY2011	653,000	11,922	0.68	2.19	0.05	3.18
CY2012	664,000	12,200	0.66	2.06	0.05	2.98
CY2013	674,000	12,484	0.64	1.93	0.05	2.79
CY2014	686,000	12,773	0.62	1.81	0.05	2.63
CY2015	699,000	13,071	0.60	1.70	0.05	2.46
Total - No Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	624,000	10,645	0.76	2.78	0.06	4.45
CY 2007	611,000	10,609	0.73	2.60	0.05	4.07
CY2008	599,000	10,576	0.70	2.43	0.05	3.73
CY2009	590,000	10,544	0.67	2.29	0.05	3.40
CY2010	582,000	10,514	0.63	2.10	0.05	3.09
CY2011	575,000	10,489	0.60	1.92	0.04	2.80
CY2012	569,000	10,465	0.56	1.76	0.04	2.56
CY2013	564,000	10,442	0.53	1.61	0.04	2.34
CY2014	560,000	10,420	0.50	1.48	0.04	2.15
CY2015	556,000	10,400	0.47	1.35	0.04	1.96
Total - Difference						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2007	15,000	276	0.02	0.07	0.00	0.11
CY2008	31,000	557	0.04	0.14	0.00	0.20
CY2009	47,000	843	0.05	0.18	0.00	0.27
CY2010	63,000	1,137	0.07	0.23	0.00	0.33
CY2011	78,000	1,433	0.08	0.27	0.01	0.38
CY2012	95,000	1,735	0.10	0.30	0.01	0.42
CY2013	110,000	2,042	0.11	0.32	0.01	0.45
CY2014	126,000	2,353	0.12	0.33	0.01	0.48
CY2015	143,000	2,671	0.13	0.35	0.01	0.50

Medium Heavy-Duty Truck (GVWR 14,001 to 33,000 lbs)						
Total - Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	1,844,000	32,324	4.23	20.26	0.61	31.38
CY 2007	1,897,000	33,004	3.94	19.34	0.58	29.10
CY2008	1,951,000	33,694	3.69	18.42	0.57	27.07
CY2009	2,005,000	34,411	3.45	17.53	0.56	25.24
CY2010	2,058,000	35,155	3.22	16.29	0.54	23.47
CY2011	2,113,000	35,925	3.00	15.10	0.52	21.80
CY2012	2,168,000	36,711	2.79	13.96	0.50	20.22
CY2013	2,223,000	37,512	2.60	12.87	0.49	18.77
CY2014	2,279,000	38,329	2.40	11.85	0.48	17.36
CY2015	2,334,000	39,167	2.23	10.88	0.46	16.05
Total - No Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	1,844,000	32,324	4.23	20.26	0.61	31.38
CY 2007	1,849,000	32,166	3.83	18.83	0.56	28.33
CY2008	1,853,000	32,009	3.49	17.48	0.54	25.68
CY2009	1,856,000	31,864	3.19	16.21	0.52	23.34
CY2010	1,857,000	31,726	2.90	14.68	0.49	21.15
CY2011	1,859,000	31,605	2.64	13.27	0.46	19.15
CY2012	1,860,000	31,488	2.39	11.96	0.43	17.32
CY2013	1,859,000	31,376	2.17	10.76	0.41	15.68
CY2014	1,859,000	31,267	1.96	9.65	0.39	14.15
CY2015	1,857,000	31,163	1.77	8.65	0.37	12.76
Total - Difference						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2007	48,000	838	0.11	0.51	0.02	0.77
CY2008	98,000	1,685	0.20	0.94	0.03	1.39
CY2009	149,000	2,547	0.26	1.32	0.04	1.90
CY2010	201,000	3,429	0.32	1.61	0.05	2.32
CY2011	254,000	4,320	0.36	1.83	0.06	2.65
CY2012	308,000	5,223	0.40	2.00	0.07	2.90
CY2013	364,000	6,136	0.43	2.11	0.08	3.09
CY2014	420,000	7,062	0.44	2.20	0.09	3.21
CY2015	477,000	8,004	0.46	2.23	0.09	3.29

Heavy Heavy-Duty Truck (GVWR 33,001 to 60,000 lbs)						
Total - Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	4,845,000	31,643	6.00	82.30	1.85	44.21
CY 2007	4,978,000	32,260	5.70	78.05	1.72	41.00
CY2008	5,123,000	32,896	5.44	73.87	1.65	38.44
CY2009	5,281,000	33,555	5.18	69.88	1.60	36.18
CY2010	5,449,000	34,235	4.90	64.43	1.52	33.93
CY2011	5,628,000	34,939	4.64	59.06	1.44	31.99

CY2012	5,817,000	35,648	4.39	53.91	1.37	30.10
CY2013	6,019,000	36,370	4.13	49.01	1.31	28.31
CY2014	6,235,000	37,118	3.91	44.50	1.26	26.84
CY2015	6,451,000	37,891	3.68	40.44	1.22	25.19
Total - No Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	4,845,000	31,643	6.00	82.30	1.85	44.21
CY 2007	4,852,000	31,440	5.49	75.87	1.67	39.47
CY2008	4,866,000	31,251	5.10	69.98	1.57	36.07
CY2009	4,890,000	31,071	4.73	64.51	1.48	33.09
CY2010	4,918,000	30,896	4.37	57.97	1.37	30.23
CY2011	4,951,000	30,738	4.03	51.80	1.27	27.78
CY2012	4,989,000	30,577	3.71	46.09	1.18	25.48
CY2013	5,034,000	30,420	3.41	40.86	1.10	23.37
CY2014	5,086,000	30,279	3.15	36.19	1.03	21.61
CY2015	5,133,000	30,148	2.90	32.08	0.97	19.78
Total - Difference						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2007	126,000	820	0.21	2.18	0.05	1.53
CY2008	257,000	1,645	0.34	3.89	0.08	2.37
CY2009	391,000	2,484	0.45	5.37	0.12	3.09
CY2010	531,000	3,339	0.53	6.46	0.15	3.70
CY2011	677,000	4,201	0.61	7.26	0.17	4.21
CY2012	828,000	5,071	0.68	7.82	0.19	4.62
CY2013	985,000	5,950	0.72	8.15	0.21	4.94
CY2014	1,149,000	6,839	0.76	8.31	0.23	5.23
CY2015	1,318,000	7,743	0.78	8.36	0.25	5.41

School Bus						
Total - Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	186,000	3,982	0.32	2.54	0.10	3.59
CY 2007	190,000	4,082	0.31	2.57	0.10	3.39
CY2008	195,000	4,185	0.31	2.60	0.10	3.35
CY2009	200,000	4,290	0.31	2.63	0.10	3.26
CY2010	205,000	4,398	0.31	2.65	0.10	3.22
CY2011	210,000	4,512	0.31	2.67	0.10	3.19
CY2012	216,000	4,627	0.32	2.66	0.10	3.15
CY2013	221,000	4,743	0.31	2.64	0.10	3.03
CY2014	227,000	4,861	0.31	2.62	0.10	2.93
CY2015	232,000	4,981	0.31	2.60	0.10	2.81
Total - No Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	186,000	3,982	0.32	2.54	0.10	3.59
CY 2007	185,000	3,978	0.30	2.50	0.10	3.30
CY2008	185,000	3,975	0.29	2.47	0.10	3.17

CY2009	185,000	3,972	0.29	2.43	0.09	3.01
CY2010	185,000	3,969	0.28	2.39	0.09	2.90
CY2011	185,000	3,969	0.28	2.34	0.09	2.80
CY2012	185,000	3,968	0.27	2.27	0.09	2.69
CY2013	185,000	3,967	0.26	2.20	0.09	2.53
CY2014	185,000	3,966	0.25	2.13	0.08	2.39
CY2015	185,000	3,963	0.24	2.06	0.08	2.23
Total - Difference						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2007	5,000	104	0.01	0.07	0.00	0.09
CY2008	10,000	210	0.02	0.13	0.00	0.18
CY2009	15,000	318	0.02	0.20	0.01	0.25
CY2010	20,000	429	0.03	0.26	0.01	0.32
CY2011	25,000	543	0.03	0.33	0.01	0.39
CY2012	31,000	659	0.05	0.39	0.01	0.46
CY2013	36,000	776	0.05	0.44	0.01	0.50
CY2014	42,000	895	0.06	0.49	0.02	0.54
CY2015	47,000	1,018	0.07	0.54	0.02	0.58

Urban Bus						
Total - Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	330,000	2,407	1.30	4.70	0.08	11.25
CY 2007	338,000	2,468	1.29	4.69	0.08	11.08
CY2008	347,000	2,531	1.28	4.68	0.08	10.88
CY2009	356,000	2,595	1.28	4.67	0.08	10.78
CY2010	365,000	2,661	1.27	4.66	0.08	10.55
CY2011	374,000	2,730	1.27	4.64	0.08	10.29
CY2012	384,000	2,800	1.26	4.56	0.08	9.87
CY2013	393,000	2,870	1.26	4.54	0.08	9.41
CY2014	403,000	2,942	1.26	4.44	0.08	9.05
CY2015	413,000	3,014	1.25	4.40	0.08	8.47
Total - No Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	330,000	2,407	1.30	4.70	0.08	11.25
CY 2007	330,000	2,406	1.25	4.56	0.07	10.78
CY2008	329,000	2,404	1.21	4.44	0.07	10.32
CY2009	329,000	2,403	1.17	4.31	0.07	9.97
CY2010	329,000	2,402	1.14	4.19	0.07	9.51
CY2011	329,000	2,402	1.11	4.07	0.07	9.04
CY2012	329,000	2,401	1.07	3.90	0.07	8.45
CY2013	329,000	2,401	1.04	3.79	0.06	7.86
CY2014	329,000	2,400	1.02	3.61	0.06	7.37
CY2015	329,000	2,398	0.98	3.49	0.06	6.72

Total - Difference						
	VMT	Pop	ROG	NOx	PM10	CO
CY 2007	8,000	62	0.04	0.13	0.01	0.30
CY2008	18,000	127	0.07	0.24	0.01	0.56
CY2009	27,000	192	0.11	0.36	0.01	0.81
CY2010	36,000	259	0.13	0.47	0.01	1.04
CY2011	45,000	328	0.16	0.57	0.01	1.25
CY2012	55,000	399	0.19	0.66	0.01	1.42
CY2013	64,000	469	0.22	0.75	0.02	1.55
CY2014	74,000	542	0.24	0.83	0.02	1.68
CY2015	84,000	616	0.27	0.91	0.02	1.75

Motorhome

Total - Growth						
	VMT	Pop	ROG	NOx	PM10	CO
CY 2006	531,000	34,851	0.84	2.04	0.03	21.00
CY 2007	552,000	36,150	0.80	2.01	0.03	19.78
CY2008	574,000	37,508	0.75	1.97	0.03	18.26
CY2009	598,000	38,927	0.70	1.93	0.03	16.91
CY2010	624,000	40,417	0.66	1.86	0.03	15.57
CY2011	651,000	42,003	0.60	1.79	0.03	14.09
CY2012	679,000	43,650	0.56	1.72	0.03	12.73
CY2013	709,000	45,360	0.50	1.63	0.04	11.26
CY2014	741,000	47,134	0.45	1.54	0.04	9.86
CY2015	772,000	48,973	0.40	1.46	0.04	8.67
Total - No Growth						
	VMT	Pop	ROG	NOx	PM10	CO
CY 2006	531,000	34,851	0.84	2.04	0.03	21.00
CY 2007	538,000	35,232	0.78	1.95	0.03	19.27
CY2008	546,000	35,632	0.71	1.87	0.03	17.33
CY2009	554,000	36,045	0.65	1.78	0.03	15.65
CY2010	563,000	36,475	0.59	1.68	0.03	14.04
CY2011	573,000	36,951	0.53	1.57	0.03	12.39
CY2012	583,000	37,440	0.48	1.47	0.03	10.92
CY2013	593,000	37,940	0.42	1.36	0.03	9.41
CY2014	604,000	38,449	0.37	1.25	0.03	8.04
CY2015	615,000	38,965	0.32	1.15	0.03	6.89

Total - Difference						
	VMT	Pop	ROG	NOx	PM10	CO
CY 2007	14,000	918	0.02	0.06	0.00	0.51
CY2008	28,000	1,876	0.04	0.10	0.00	0.93
CY2009	44,000	2,882	0.05	0.15	0.00	1.26
CY2010	61,000	3,942	0.07	0.18	0.00	1.53
CY2011	78,000	5,052	0.07	0.22	0.00	1.70
CY2012	96,000	6,210	0.08	0.25	0.00	1.81
CY2013	116,000	7,420	0.08	0.27	0.01	1.85

CY2014	137,000	8,685	0.08	0.29	0.01	1.82
CY2015	157,000	10,008	0.08	0.31	0.01	1.78

Motorcycle						
Total - Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	342,000	38,680	2.17	0.55	0.02	20.14
CY 2007	352,000	39,251	2.14	0.57	0.03	20.42
CY2008	361,000	39,854	2.06	0.57	0.02	19.23
CY2009	369,000	40,483	1.99	0.56	0.02	18.12
CY2010	376,000	41,132	1.93	0.56	0.02	17.19
CY2011	383,000	41,807	1.88	0.56	0.02	16.31
CY2012	389,000	42,499	1.85	0.56	0.02	15.62
CY2013	395,000	43,204	1.83	0.56	0.02	15.05
CY2014	401,000	43,920	1.81	0.57	0.02	14.58
CY2015	408,000	44,655	1.80	0.57	0.02	14.21
Total - No Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	342,000	38,680	2.17	0.55	0.02	20.14
CY 2007	343,000	38,255	2.08	0.55	0.02	19.89
CY2008	343,000	37,861	1.95	0.54	0.02	18.27
CY2009	342,000	37,486	1.84	0.52	0.02	16.79
CY2010	339,000	37,121	1.74	0.51	0.02	15.52
CY2011	337,000	36,780	1.66	0.49	0.02	14.37
CY2012	333,000	36,453	1.59	0.48	0.02	13.42
CY2013	330,000	36,136	1.53	0.47	0.02	12.61
CY2014	327,000	35,827	1.48	0.46	0.02	11.91
CY2015	324,000	35,529	1.43	0.45	0.02	11.32
Total - Difference						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2007	9,000	996	0.06	0.02	0.01	0.53
CY2008	18,000	1,993	0.11	0.03	0.00	0.96
CY2009	27,000	2,997	0.15	0.04	0.00	1.33
CY2010	37,000	4,011	0.19	0.05	0.00	1.67
CY2011	46,000	5,027	0.22	0.07	0.00	1.94
CY2012	56,000	6,046	0.26	0.08	0.00	2.20
CY2013	65,000	7,068	0.30	0.09	0.00	2.44
CY2014	74,000	8,093	0.33	0.11	0.00	2.67
CY2015	84,000	9,126	0.37	0.12	0.00	2.89

San Joaquin Valley - Total						
Total - Growth						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	96,748,000	2,385,690	78.53	186.52	6.33	813.73
CY 2007	99,384,000	2,447,850	73.37	176.07	6.25	758.21
CY2008	102,094,000	2,511,290	68.48	166.08	6.27	704.76
CY2009	104,878,000	2,576,430	63.91	156.53	6.30	654.24
CY2010	107,741,000	2,643,520	59.57	145.29	6.30	606.01
CY2011	110,590,000	2,711,800	55.70	134.46	6.30	561.51
CY2012	113,456,000	2,781,370	52.19	124.18	6.32	520.59
CY2013	116,360,000	2,852,260	48.93	114.56	6.34	482.43
CY2014	119,300,000	2,924,540	45.95	105.61	6.38	447.77
CY2015	122,271,000	2,998,430	43.32	97.54	6.43	415.80
Total - No Growth						
	VMT	**Pop***	**ROG**	**NOx**	**PM10**	**CO**
CY 2006	96,748,000	2,385,690	78.53	186.52	6.33	813.73
CY 2007	96,860,000	2,385,690	69.25	167.42	6.09	710.08
CY2008	96,988,000	2,385,690	63.03	153.93	5.95	643.40
CY2009	97,114,000	2,385,690	57.40	141.45	5.83	582.49
CY2010	97,233,000	2,385,690	52.20	127.97	5.68	526.32
CY2011	97,291,000	2,385,690	47.65	115.47	5.54	476.01
CY2012	97,315,000	2,385,690	43.59	103.99	5.42	430.85
CY2013	97,326,000	2,385,690	39.89	93.55	5.30	389.92
CY2014	97,319,000	2,385,690	36.58	84.13	5.20	353.53
CY2015	97,284,000	2,385,690	33.68	75.81	5.12	320.71
Total - Difference						
	VMT	**Pop**	**ROG**	**NOx**	**PM10**	**CO**
CY 2007	2,524,000	62,160	4.12	8.65	0.16	48.13
CY2008	5,106,000	125,600	5.45	12.15	0.32	61.36
CY2009	7,764,000	190,740	6.51	15.08	0.47	71.75
CY2010	10,508,000	257,830	7.37	17.32	0.62	79.69
CY2011	13,299,000	326,110	8.05	18.99	0.76	85.50
CY2012	16,141,000	395,680	8.60	20.19	0.90	89.74
CY2013	19,034,000	466,570	9.04	21.01	1.04	92.51
CY2014	21,981,000	538,850	9.37	21.48	1.18	94.24
CY2015	24,987,000	612,740	9.64	21.73	1.31	95.09

* Note: The EMFAC model slightly redistributed vehicle populations within vehicle classes; however, the total vehicle population are all CY2006 numbers. See below:

CY2007 with CY2006 Veh Pop: 2,385,695 Compared to: 2,385,690
% Difference: 0.00021%

Attachment 2
NOx Emissions and Emissions Reductions

Emission Inventory Category	NOx Emissions (tons per day) 2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Growth in Motor Vehicle Emissions[A]	0.0	8.3	11.6	14.3	16.4	17.9	19.0	19.8	20.2
Total Annual Growth in Motor Vehicles Emissions[A]	0.0	8.3	3.2	2.7	2.1	1.5	1.1	0.7	0.5
Rule Penetration (tpd)[B]	0.0	7.1	2.7	2.3	1.8	1.3	1.0	0.6	0.4
On-Site Reductions									
Estimated Sources to perform on-site reductions[C]	40%	45%	50%	55%	60%	65%	70%	70%	70%
Average Mitigation achieved on-site (%)[C]	7%	9%	11%	13%	14%	15%	15%	15%	15%
Reductions from 2006 Development	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Reductions from 2007 Development		0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2
Reductions from 2008 Development			0.2	0.1	0.1	0.1	0.1	0.1	0.1
Reductions from 2009 Development				0.2	0.2	0.1	0.1	0.1	0.1
Reductions from 2010 Development					0.1	0.1	0.1	0.1	0.1
Reductions from 2011 Development						0.1	0.1	0.1	0.1
Reductions from 2012 Development							0.1	0.1	0.1
Reductions from 2013 Development								0.1	0.1
Reductions from 2014 Development									0.0
Total On-site Reductions[D]	**0.0**	**0.3**	**0.4**	**0.6**	**0.7**	**0.8**	**0.8**	**0.8**	**0.8**
Off-site Reductions									
Remaining Subject Emissions[E]	0.0	6.8	2.6	2.2	1.6	1.2	0.9	0.5	0.4
Reductions from 2006 Development	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Reductions from 2007 Development		2.4	2.4	2.4	2.4	2.4	2.4	2.4	
Reductions from 2008 Development			0.9	0.9	0.9	0.9	0.9	0.9	0.9
Reductions from 2009 Development				0.8	0.8	0.8	0.8	0.8	0.8
Reductions from 2010 Development					0.6	0.6	0.6	0.6	0.6
Reductions from 2011 Development						0.4	0.4	0.4	0.4
Reductions from 2012 Development							0.3	0.3	0.3
Reductions from 2013 Development								0.2	0.2
Reductions from 2014 Development									0.1
Total Off-site Reductions[F]	**0.0**	**2.4**	**3.4**	**4.1**	**4.7**	**5.1**	**5.4**	**5.6**	**3.3**
Total Reductions	**0.0**	**2.7**	**3.8**	**4.7**	**5.4**	**5.9**	**6.3**	**6.5**	**4.2**

A. ARB performed an EMFAC2002 model run that estimated the growth between 2006 and 2015 (Attachment 1). Since this analysis needs growth per year, the current year's missions are subtracted by the previous year's emissions to obtain the annual growth.

Medium-Heavy and Heavy-Heavy Duty emissions have been reduced by 12% to account for through-valley traffic

B. Rule penetration is estimated to be 85% based on District experience with CEQA projects.

C. Staff estimate

D. Determined by multiplying rule penetration of operational emissions, estimated sources to perform on-site reductions, average mitigation achieved on-site, and adding the reductions for each year

E. Determined by subtracting a particular years on-site reduction from the Rule Penetration of Operational Emissions for that year.

F. Determined by multiplying Remaining Subject Emissions with 250%, and dividing by 7 to account for the average project life of the estimated emission reduction projects.

G. The rule requires mitigation of 250% of the first years emissions. That total was then divided by 7 to account for the average project life of the estimated emission reduction projects.

On-Site reductions are reduced over time to account for the reduction in mobile emissions

Attachment 3
PM10 Emissions and Emissions Reductions

EMISSIONS INVENTORY CATEGORY	ANNUAL GROWTH IN PM10 EMISSIONS (tons per day)[A] 2006	2007	2008	2009	2010	2011	2012	2013	2014
Operational PM10 Emissions									
Re-entrained Paved Road Dust[B]:									
Freeway	0.4	0.4	0.4	0.3	0.3	*0.3*	*0.3*	*0.3*	*0.3*
Collector Streets	0.1	0.1	0.1	0.1	0.1	*0.1*	*0.1*	*0.1*	*0.1*
Major Streets	0.4	0.4	0.4	0.4	0.4	*0.5*	*0.5*	*0.5*	*0.5*
Local Streets	0.2	0.2	0.1	0.2	0.2	*0.2*	*0.2*	*0.2*	*0.2*
Rural Streets	0.4	0.4	0.4	0.4	0.4	*0.5*	*0.5*	*0.5*	*0.5*
On-road vehicles[C]	0.0	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
Total Annual Growth in Operational PM10 Emissions	**1.1**	**1.2**	**1.1**	**1.3**	**1.3**	**1.5**	**1.5**	**1.5**	**1.5**
Cumulative Growth in Operational PM10 Emissions[D]	1.1	2.3	3.4	4.7	6.0	7.5	9.1	10.6	12.2
Rule Penetration of Operational Emissions (tpd)[E]	0.9	1.0	1.0	1.1	1.1	1.3	1.3	1.3	1.3
On-site Reductions									
Estimated Sources to perform on-site reductions[F]	40%	45%	50%	55%	60%	65%	70%	70%	70%
Average Mitigation achieved on-site (%)[F]	7%	9%	11%	13%	14%	15%	15%	15%	15%
Reductions from 2006 Development	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Reductions from 2007 Development		0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Reductions from 2008 Development			0.05	0.05	0.05	0.05	0.05	0.05	0.05
Reductions from 2009 Development				0.08	0.08	0.08	0.08	0.08	0.08
Reductions from 2010 Development					0.09	0.09	0.09	0.09	0.09
Reductions from 2011 Development						0.13	0.13	0.13	0.13
Reductions from 2012 Development							0.14	0.14	0.14
Reductions from 2013 Development								0.14	0.14
Reductions from 2014 Development									0.14
Total On-site Reductions (tpd)[G]	**0.0**	**0.1**	**0.1**	**0.2**	**0.3**	**0.4**	**0.6**	**0.7**	**0.8**
Off-site Reductions									
Remaining Subject Emissions[H]	0.9	1.0	0.9	1.0	1.0	1.2	1.2	1.2	1.2
Reductions from 2006 Development	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Reductions from 2007 Development		0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Reductions from 2008 Development			0.4	0.4	0.4	0.4	0.4	0.4	0.4
Reductions from 2009 Development				0.4	0.4	0.4	0.4	0.4	0.4
Reductions from 2010 Development					0.4	0.4	0.4	0.4	0.4
Reductions from 2011 Development						0.5	0.5	0.5	0.5
Reductions from 2012 Development							0.5	0.5	0.5
Reductions from 2013 Development								0.5	0.5
Reductions from 2014 Development									0.5
Total Off-site Reductions[I]	**0.4**	**0.8**	**1.2**	**1.6**	**2.0**	**2.5**	**3.0**	**3.5**	**4.0**
Total Operational PM10 Reductions[J]	**0.4**	**0.9**	**1.3**	**1.8**	**2.3**	**2.9**	**3.5**	**4.2**	**4.8**

A-P

See footnotes on following pages.

EMISSIONS INVENTORY CATEGORY	ANNUAL EMISSIONS (tons per day)[K] 2006	2007	2008	2009	2010	2011	2012	2013	2014
Construction Equipment Emissions									
Total Construction Equipment NOx Emissions[L]	26.9	25.5	24.1	22.7	21.3	20.1	18.9	17.6	16.4
Construction Equipment PM10 Equivalent[M]	17.9	17.0	16.1	15.1	14.2	13.4	12.6	11.7	10.9
Rule Penetration of Construction Equipment Emissions (tpd)[E]	15.2	14.4	13.7	12.9	12.1	11.4	10.7	10.0	9.3
On-site Reductions									
Estimated Sources to perform fleet reductions (%)[F]	10%	20%	30%	40%	50%	50%	50%	50%	50%
Average Fleet Reductions (%)[N]	20%	20%	20%	20%	20%	20%	20%	20%	20%
Construction Fleet Reductions[G]	**0.3**	**0.6**	**0.8**	**1.0**	**1.2**	**1.1**	**1.1**	**1.0**	**0.9**
Off-site Reductions									
Remaining Emissions (tpd)[4]	14.9	13.9	12.8	11.8	10.9	10.3	9.6	9.0	8.4
Reductions from 2006 Development	0.4	0.4	0.4	0.4	0.4	0.4	0.4		
Reductions from 2007 Development		0.4	0.4	0.4	0.4	0.4	0.4	0.4	
Reductions from 2008 Development			0.4	0.4	0.4	0.4	0.4	0.4	0.4
Reductions from 2009 Development				0.3	0.3	0.3	0.3	0.3	0.3
Reductions from 2010 Development					0.3	0.3	0.3	0.3	0.3
Reductions from 2011 Development						0.3	0.3	0.3	0.3
Reductions from 2012 Development							0.3	0.3	0.3
Reductions from 2013 Development								0.3	0.3
Reductions from 2014 Development									0.2
Total Off-site Reductions[O]	**0.4**	**0.8**	**1.2**	**1.5**	**1.8**	**2.1**	**2.4**	**2.2**	**2.1**
Construction Equipment Reductions[J]	**0.7**	**1.4**	**2.0**	**2.5**	**3.0**	**3.2**	**3.4**	**3.2**	**3.0**

A. Annual Growth in emisions were determined by subtracting one years emissions from the previous year's emissions. Emissions' growth in 2011-2014 were determined by taking the difference between 2015 and 2010 and dividing that by 5 years.

B. The growth in these emissions were taken directly from the emissions inventory, and were reported by road type. Control for Regulation VIII is accounted for.

C. These totals were obtained from ARB. Current year's emissions are subtracted by the previous year's emissions to obtain the annual growth.

D. Cumulative growth was determined by creating a running total of emissions from each year

E. Rule penetration is estimated to be 85% based on District experience with CEQA projects.

F. District staff estimate

G. Determined by multiplying rule penetration of operational emissions, estimated sources to perform on-site reductions, average mitigation achieved on-site, and adding the reductions for each year.

H. Determined by subtracting a particular years on-site reduction from the Rule Penetration of Operational Emissions for that year.

I. Equals 5 x Remaining Subject Emissions That total was then divided by 12 to account for the average project life of the estimated emission reduction projects.

J. Determined by adding On-site Reductions and Off-site Reductions

K. Total emissions were used for each year, since all construction activity each year is for new development

L. These emissions were taken from ARB and interpolated based on 2005, 2010, and 2015.

M. Modeling in the 2003 PM10 indicated that 1.5 tons of NOx are equivalent to 1.0 tons of PM10.

N. This is a rule requirement

O. Determined by multiplying Remaining Subject Emissions with 20%, and dividing by 7 to account for the average project life of the estimated emission reduction projects.

P. Determined by multiplying Remaining Subject Emissions with 45%, and dividing by 12 to account for the average project life of the estimated emission reduction projects.

ANNUAL PM10 EMISSIONS (tons per day)[K]

EMISSIONS INVENTORY CATEGORY	2006	2007	2008	2009	2010	2011	2012	2013	2014
Construction PM10 Exhaust Emissions									
PM10 Exhaust from Construction Equipment[L]	1.7	1.6	1.5	1.4	1.4	1.3	1.2	1.2	1.1
Rule Penetration of Construction PM10 & PM10 Equiv. Emissions (tpd)[E]	1.4	1.4	1.3	1.2	1.2	1.1	1.0	1.0	0.9
On-site Reductions									
Estimated Sources to perform on-site reductions (%)[F]	10%	20%	30%	40%	50%	50%	50%	50%	50%
Average Mitigation achieved on-site (%)[N]	45%	45%	45%	45%	45%	45%	45%	45%	45%
Onsite Reductions (tpd)[G]	**0.1**	**0.1**	**0.2**	**0.2**	**0.3**	**0.2**	**0.2**	**0.2**	**0.2**
Off-site Reductions									
Remaining Emissions (tpd)[H]	1.4	1.2	1.1	1.0	0.9	0.8	0.8	0.8	0.7
Reductions from 2006 Development	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Reductions from 2007 Development		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Reductions from 2008 Development			0.04	0.04	0.04	0.04	0.04	0.04	0.04
Reductions from 2009 Development				0.04	0.04	0.04	0.04	0.04	0.04
Reductions from 2010 Development					0.03	0.03	0.03	0.03	0.03
Reductions from 2011 Development						0.03	0.03	0.03	0.03
Reductions from 2012 Development							0.03	0.03	0.03
Reductions from 2013 Development								0.03	0.03
Reductions from 2014 Development									0.03
Reductions from 2015 Development									
Total Off-site Reductions[P]	**0.1**	**0.1**	**0.1**	**0.2**	**0.2**	**0.2**	**0.3**	**0.3**	**0.3**
Total Construction PM10 Reductions (tpd)[J]	**0.1**	**0.2**	**0.3**	**0.4**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**
TOTAL ESTIMATED PM10 REDUCTIONS (tpd)	**1.2**	**2.4**	**3.6**	**4.7**	**5.8**	**6.6**	**7.5**	**7.9**	**8.3**

A. Annual Growth in emisions were determined by subtracting one years emissions from the previous year's emissions. Emissions' growth in 2011-2014 were determined by taking the difference between 2015 and 2010 and dividing that by 5 years.

B. The growth in these emissions were taken directly from the emissions inventory, and were reported by road type. Control for Regulation VIII is accounted for.

C. These totals were obtained from ARB. Current year's emissions are subtracted by the previous year's emissions to obtain the annual growth.

D. Cumulative growth was determined by creating a running total of emissions from each year

E. Rule penetration is estimated to be 85% based on District experience with CEQA projects.

F. District staff estimate

G. Determined by multiplying rule penetration of operational emissions, estimated sources to perform on-site reductions, average mitigation achieved on-site, and adding the reductions for each year.

H. Determined by subtracting a particular years on-site reduction from the Rule Penetration of Operational Emissions for that year.

I. Equals 5 x Remaining Subject Emissions That total was then divided by 12 to account for the average project life of the estimated emission reduction projects.

J. Determined by adding On-site Reductions and Off-site Reductions

K. Total emissions were used for each year, since all construction activity each year is for new development

L. These emissions were taken from ARB and interpolated based on 2005, 2010, and 2015.

M. Modeling in the 2003 PM10 indicated that 1.5 tons of NOx are equivalent to 1.0 tons of PM10.

N. This is a rule requirement

O. Determined by multiplying Remaining Subject Emissions with 20%, and dividing by 7 to account for the average project life of the estimated emission reduction projects.

P. Determined by multiplying Remaining Subject Emissions with 45%, and dividing by 12 to account for the average project life of the estimated emission reduction projects.

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APPENDIX C

On-Site Emission Reduction Checklist for Proposed Rule 9510 (Indirect Source Review) and Rule 3180 (Administrative Fees for Air Impact Assessment Applications) and On-Site Enhancing Measures List

November 17, 2005

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MIXED USE OR NON-RESIDENTIAL ON-SITE EMISSION REDUCTION LIST

No.	Measure – Objective
	LOCATION
Bicycle Infrastructure	
M-1	Project is located within 1/2 mile of existing or planned Class I or II bike lanes on arterial/collector streets, or where a suitable parallel route exists. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Bicycle and Pedestrian Node)*
Mass Transit Infrastructure	
M-2	Project is located within 1/4-1/2 mile of a transit stop. *(URBEMIS Location: Operation Emissions: Mitigation Measures: Transit Service Node)*
	* Office floor area ratio is 0.75 greater within 1/4 mile of existing transit stop.
Mixed Use/Density	
M-3	Include high density residential, mixed, or retail/commercial uses on site or locate near (within a 1/2 mile of project center). *(URBEMIS Location: Operational Emissions: Mitigation Measures: Mix of Uses Node and/or Operational Emissions: Mitigation Measures: Local Serving Retail)*
	* Day care facilities
	* Restaurant or cafeteria
	* Bank or ATM
	* Dry cleaners
	* Post office / services
	* Entertainment (movie / video)
	* Recreation facility / fitness center
	* Public Park
	* Residential development / On-site employee living spaces
M-4	Average Residential density is 7 Dwelling Units (DU) per acre or greater. *(URBEMIS Location: Land Use Selection - Acreage)*
	▪ Project contains ancillary residential units - "Granny Flats"
M-5	Designate a portion of residential units as deed-restricted below-market-rate (BMR) housing. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Affordable Housing Node)*
	▪ Include Affordable Housing/Senior Housing/ Assisted Living
	BICYCLE/PEDESTRIAN
Bicycle Storage	
M-6	Provide Class I and Class II bicycle parking facilities on-site. Bicycle parking facilities should be near destination points and easy to find. At least one bicycle parking space for every 20 vehicle parking spaces. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
	* One bicycle parking space for every 10 car parking spaces is considered appropriate.
	* Provide secure bicycle storage at public parking facilities.

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
M-7	Provide shower and locker facilities to encourage employees to bike and/or walk to work, typically one shower and three lockers for every 25 employees. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
M-8	Provide Class I bicycle parking at apartment complexes or condos without garages. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*

Pedestrian- Bicycle Oriented Infrastructure

M-9	Install Class I or II bike lanes on arterial/collector streets, or where a suitable route exists. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Bicycle and Pedestrian Node)*
M-10	Install complete, separate, safe, and convenient pedestrian sidewalks/paths that connect multiple uses. This can be implemented through the following project designs: *(URBEMIS Location: Operational Emissions: Mitigation Measures: Bicycle and Pedestrian Node)*
	* Provide direct pedestrian connections
	* Provide paths and building access which are physically separated from street parking lot traffic and that eliminates physical \barriers such as walls, berms, landscaping and slopes that impede the use of pedestrians, bicycle facilities, or public transportation vehicles
	* Place store entrances close to adjacent sidewalks.
	* Provide pedestrian signalization and signage to improve pedestrian safety
	* Provide continuous sidewalks separated from the roadway by landscaping and on-street parking.
	* Provide clearly delineated crosswalks at intersections.
	* Provide on and off-site pedestrian facility improvements such as overpasses and wider sidewalks
	* Provide on and off-site pedestrian facility improvements such as trails linking them to designated pedestrian commuting routes and/or on-site overpasses and wider sidewalks.
	* Provide street lighting
	* Provide shaded pathways (e.g. provide street trees or building overhangs)
	* Link cul-de-sacs and dead-end streets to encourage pedestrian and bicycle travel
	* Provide traffic calming modifications to project roads, such as narrower streets, speed platforms, bulb-outs and intersection modifications designed to reduce vehicle speeds, to encourage pedestrian and bicycle travel.
	* Provide a parking lot design that-includes clearly marked and shaded pedestrian pathways between transit facilities and building entrances
	* Provide pedestrian access between bus service and major transportation points and destination points within the project.
	* Minimize building setback to adjacent existing or planned pedestrian infrastructure
	* Setback distance is minimized between development and transit, bicycle, or pedestrian corridor
	* Setback distance is minimized between development and neighboring properties

TRANSPORTATION DESIGN

Signage

M-11	Provide a display case or kiosk displaying transportation information in a prominent area accessible to employees, residents, or visitors. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
	* Display Bike Route Maps
	* Display Bus Schedules
	* Display other transportation information such as carpooling, carsharing, etc.

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
Streets	
M-12	Project design uses models by the Local Government Commission (LGC) in the "Smart Growth Guidebook," such as: street block patterns that form an interconnected grid, short block faces, numerous alleys and narrow streets. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Bicycle and Pedestrian Node)*
PARKING	
Strategies: Pricing and Preferential Parking	
M-13	Develop and implement parking pricing strategies, such as charging parking lot fees to low occupancy (single occupant vehicles) vehicles. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
M-14	Provide preferential parking spaces near the entrance of buildings for those who carpool/vanpool/rideshare and provide signage. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
Parking Amount	
M-15	Provide parking reduction. The following are guidelines: *(URBEMIS Location: Operational Emissions: Mitigation Measures: Parking Supply)*
	* Office 25%
	* Medical office 8%
	* Commercial 5%
	* Industrial 10%
	* Additional 10-20% if located along transit station
BUILDING/SITE DESIGN	
Energy Efficiency	
M-16	Increase the building energy efficiency rating above what is required by Title 24 requirements. This can be accomplished by any combination of measures. The following is an idea list of measures that may be implemented to achieve this measure (this list should not be considered comprehensive): *(URBEMIS Location: Area Emissions: Mitigation Measures Node)*
	General
	* Participate in and implement available PUC energy-efficient rebate programs including air conditioning, gas heating, refrigeration, and lighting programs.
	* Install efficient heating and other appliances, such as water heaters, cooking equipment, refrigerators, furnaces and boiler units beyond Title 24 requirements (see Title 24, Part 6, Energy Efficiency Standards for Residential and Nonresidential Buildings: http://www.energy.ca.gov/title24/standard)
	* Capture waste heat and re-employ it in nonresidential buildings.
	* Trees should be carefully selected and located to protect the building(s) from energy consuming environmental conditions and to shade paved areas
	* Improve the thermal integrity/efficiency of buildings, and reduce the thermal load with automated and timed temperature controls or occupant sensors.
	Roof
	* Install "Green Roof" System
	* Install EPA/DOE Energy Star labeled roof materials
	* Install roof photovoltaic energy systems as a standard feature (on new homes)

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
M-16	*Solar Design*
Cont	* Design buildings with proper orientation, fenestration, and other design components that maximize the potential of passive cooling and heating, include shading master plan
	Components
	* Use devices that minimize the combustion of fossil fuels.
	* Install low nitrogen oxide (NOx) hot water heaters.
	* Install high efficiency Energy Star heating or ground source heat pumps
	* Install energy efficient interior lighting.
	* Install built-in energy efficient appliances.
	* Install door sweeps and weather stripping if more efficient doors and windows are not available.
	* Install energy-efficient and automated controls for air conditioning
	* Install of energy-efficient lighting (includes controls) and process systems such as water heaters, furnaces and boiler units.
	* Install electrical outlets on the exterior walls of both the front and back of residences or all commercial buildings to promote the use of electric landscape maintenance equipment.
	* Install electric vehicle recharging station with both conductive and inductive charging capabilities in residential garages / parking lots.
	* Install a gas outlet for use with outdoor cooking appliances, and in any proposed fireplaces, including outdoor recreational fireplaces or pits.
	* Use low energy street lights (i.e. sodium).
	* Use low energy traffic signals (i.e. light emitting diode).
	* Install Medium Efficiency Filters
	* Install High Efficiency Filters
	* Install HEPA (High Efficiency Particle Arrestance) Filters
	* Install "whole-house" or "fresh-air" ventilation system

Building Maintenance/Indoor Air Quality

M-17	Reduce VOC emissions from Architectural Coatings⊗ *(URBEMIS Location: Area Emissions: Architectural Coatings - Nonresidential)*
	* Use Low-VOC Coatings
	* Use surfaces that do not require coatings, such as stone or brick
	* Use No-VOC Coatings

Fuel Combustion

M-18	Provide Electrical outlets at front and rear of residences for the use of electrically powered landscape equipment (See Measure 47 below) *(URBEMIS Location: Area Emissions: Mitigation Measures Node)*
M-19	Provide electrical outlets at non-residential units for the use of electrically powered landscape equipment. In combination with Measure M-31 below. *(URBEMIS Location: Area Emissions: Mitigation Measures Node)*
M-20	Reduce Wood Fireplaces and/or Woodstove above that required by District Rule 4901. *(URBEMIS Location: Area Emissions: Hearth Fuel Combustion Node)*

OPERATIONAL MEASURES

Telecommunication

M-23	Implement an employee telecommuting policy *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
	* Install videoconferencing system
	* Include teleconferencing capabilities, such as web cams or satellite linkage, which will allow employees to attend meetings remotely without requiring them to travel out of the area.

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
M-23	* Offer low cost financing to employees for the purchase of telecommuting equipment, or lend company-owned equipment.
Cont	* Provide satellite work offices when appropriate. Applicable to office/industrial and educational institutions.

Alternative Transit

M-24	Provide guaranteed ride home⊗ *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
M-25	Provide carpool matching assistance⊗ *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
M-26	Provide Car-Sharing Services⊗ *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
M-27	Employ or appoint an Employee Transportation Coordinator to work with the TMA and the District⊗ *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
	* Implement a rideshare program
	* Provide incentives to employees to carpool/vanpool, take public transportation, telecommute, walk, bike, etc.
	* Participate in an employee "flash-pass" program, which provides free travel on transit buses.
	* Provide transit pass subsidy (100%) and/or commute alternative allowance
	* Participate in alternative transportation programs such as CalTrans rideshare where deemed appropriate by local transportation planning agencies and/or APCD
	* Provide transit-use incentives, as approved by applicable transportation planning agencies such as subsidized transit passes and accommodation of unusual work schedules to encourage transit use
	* Provide funds for on line computer rideshare matching.
	* Provide an employer subsidized shuttle service to connect to existing transit sites.
	* Provide an employer subsidized free or reduced transit fares for midday central business district trips.
	* Provide financial incentives to carpoolers for vehicle tune-up or maintenance
	* Implement a lunchtime shuttle to reduce single occupant vehicle trips.
	* Provide Flextime for non-SOV (single occupancy vehicle) commuters
	* Maintain a fleet of bicycles for employee and business use
M-28	Provide transit pass subsidy (100%) and/or commute alternative allowance⊗ *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
M-29	Provide a display case or kiosk displaying transportation information in a prominent area accessible to employees or residents. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
	* Provide ridesharing information in a homeowner's association package.

Work Schedules

M-30	Implement alternative work schedules such as compressed workweek schedules where weekly work hours are compressed into fewer than five days.⊗ Examples of these options are: 9/80, 4/40, 3/36 *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*

Landscaping

M-31	Project provides and/or requires use of electric maintenance equipment; including, but not limited to electric lawn mowers, electric leaf blowers. In combination with measure M-19. *(URBEMIS Location: Area Emission: Mitigation Measures Node)*
	* Prohibit gas powered landscape maintenance equipment within developments.

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
M-31 *Cont*	* Contract only with commercial landscapers who operate with equipment that complies with the most recent California Air Resources Board certification standards, or standards adopted no more than three years prior to date of use.
	* Provide battery powered or electric landscape maintenance equipment for new residences, commercial and industrial land uses.

Fleet / Engines

M-32	Implement clean air business practices such as using low-emission delivery vehicles, contract with alternative-fuel waste hauling companies, contracting with carrier, delivery, security, or other services utilizing electric, low-emission, alternative fuel, convert fleet to cleaner vehicles or utilizing heavy-duty vehicles that are CARB certified to optional low-emission standards for NOx.⊗ *(URBEMIS Location: Operational Emissions: Mitigation Measures: On-Road Trucks)*
	Medium Trucks - 5,751 to 8,500 lbs
	* ESW Particulate Reactor
	* PuriNOx Emulsified Diesel fuel
	* CCRT Particulate Filter
	* CRT Particulate Filter
	* Cleaire Longview (ultra low diesel)
	Light Heavy - 8,501 to 10,000 lbs
	* DCM DOC Muffler w/series 6000 or 6100 catalyst
	* ESW Particulate Reactor
	* PuriNOx Emulsified Diesel fuel
	* CCRT Particulate Filter
	* CRT Particulate Filter
	* Cleaire Longview (ultra low diesel)
	Light Heavy - 10,001 to 14,000 lbs
	* DCM DOC Muffler w/series 6000 or 6100 catalyst
	* ESW Particulate Reactor
	* PuriNOx Emulsified Diesel fuel
	* CCRT Particulate Filter
	* CRT Particulate Filter
	* Cleaire Longview (ultra low diesel)
	Medium Heavy - 14,001 to 33,000 lbs
	* AZ Purifier & AZ Purimuffler (Cummins & Navistart: 1991-03)
	* DCM DOC Muffler w/series 6000 or 6100 catalyst
	* ESW Particulate Reactor
	* PuriNOx Emulsified Diesel fuel
	* DPM DPF muffler with/Series 6300 catalyst formulation
	* CCRT Particulate Filter
	* CRT Particulate Filter
	* Lubrizol Engine Control Systems Purifilter
	* Cleaire Longview (ultra low diesel)

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
M-32 Cont	*Heavy Heavy - 33,001 to 60,000 lbs*
	* DCM DOC Muffler w/series 6000 or 6100 catalyst
	* Cleaire Flash and Match oxidation catalyst
	* ESW Particulate Reactor
	* PuriNOx Emulsified Diesel Fuel
	* DPM DPF muffler w/series 6300 catalyst formulation
	* CCRT Particulate Filter
	* CRT Particulate Filter
	* Lubrizol Engine Control Systems Purifilter
	* Cleaire Flash Match system (Cummins M11 engines only)
	* Cleaire Longview (ultra low diesel)
	Line Haul Vehicles >60,000 lbs
	* DCM DOC Muffler w/series 6000 or 6100 catalyst
	* Cleaire Flash and Match oxidation catalyst
	* ESW Particulate Reactor
	* PuriNOx Emulsified Diesel Fuel
	* DPM DPF muffler w/series 6300 catalyst formulation
	* CCRT Particulate Filter
	* CRT Particulate Filter
	* Lubrizol Engine Control Systems Purifilter
	* Cleaire Flash Match system (Cummins M11 engines only)
	* Cleaire Longview (ultra low diesel)
	Urban Bus
	* ESW Particulate Reactor
	* PuriNOx Emulsified Diesel Fuel
	* CCRT Particulate Filter
	* CRT Particulate Filter
	* Cleaire Longview (ultra low diesel)
	School Bus
	* ESW Particulate Reactor
	* PuriNOx Emulsified Diesel Fuel
	* CCRT Particulate Filter
	* CRT Particulate Filter
	* Cleaire Longview (ultra low diesel)
	General
	* Utilize electric fleet vehicles
	* Utilize Ultra Low-Emission fleet vehicles
	* Utilize methanol fleet vehicles
	* Utilize liquid propane gas fleet vehicles

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
M-32	* Utilize compressed natural gas fleet vehicles
Cont	* Replace diesel fleet with alternative fuel engine technology and infrastructure
	* Retrofit existing equipment to reduce emissions using methods such as particulate filters, oxidation catalysts, or other approved technologies.
	* Fleet vehicles that use clean-burning fuels as may be practicable
	* Adopt a Vehicle Idling Policy requiring all vehicles under company control to adhere to a 5 minute idling policy.
	* Conversion to cleaner engines
	* Use of cleaner (reduced sulfur) fuel
	* Regular maintenance – keep equipment well tuned
	* Add-on control devices, e.g., particulate traps, catalytic oxidizers
	* Repower/Retrofit heavy-duty diesel fleet with cleaner diesel engine technology and/or diesel particulate filter after-treatment technology
	* Replace diesel fleet with alternative fuel engine technology and infrastructure
	* Replace auxiliary power units with cleaner engine technology, alternative fuels, or require electric connection while at loading dock
	* Replace diesel fleet vehicles with cleaner fueled low emission vehicles (i.e. school buses, buses, on- and off- road heavy duty vehicles, lighter duty trucks and passenger vehicles)

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

RESIDENTIAL ON-SITE EMISSION REDUCTION LIST

No.	Measure - Objective
	LOCATION
	Bicycle Infrastructure
R-1	Project is located within 1/2 mile of existing or planned Class I or II bike lanes on arterial/collector streets, or where a suitable parallel route exists. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Bicycle and Pedestrian Node)*
	Mass Transit Infrastructure
R-2	Project is located within 1/4-1/2 mile of a transit stop. *(URBEMIS Location: Operation Emissions: Mitigation Measures: Transit Service Node)*
	Mixed Use/Density
R-3	Include high density residential, mixed, or retail/commercial uses on site or locate near (within a 1/2 mile of project center) these uses to minimize the need for trips. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Mix of Uses Node and/or Operational Emissions: Mitigation Measures: Local Serving Retail)*
	* Day care facilities
	* Restaurant or cafeteria
	* Bank or ATM
	* Dry cleaners
	* Post office/services
	* Entertainment (movie/video)
	* Recreation facility/fitness center
	* Public Park
	* Residential development/On-site employee living spaces
R-4	Average Residential density is 7 Dwelling Units (DU) per acre or greater. *(URBEMIS Location: Land Use Selection- Acreage)*
	* Project contains ancillary residential units - "Granny Flats"
R-5	Designate a portion of residential units as deed-restricted below-market-rate (BMR) housing. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Affordable Housing Node)*
	* Include Affordable Housing/Senior Housing/ Assisted Living
	BICYCLE/PEDESTRIAN
	Bicycle Storage
R-6	Provide Class I bicycle parking at apartment complexes or condos without garages *(URBEMIS Location: Operational Emissions: Mitigation Measure: Transportation Demand Management Node)*
	Pedestrian- Bicycle Oriented Infrastructure
R-7	Install Class I or II bike lanes on arterial/collector streets, or where a suitable route exists. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Bicycle and Pedestrian Node)*
R-8	Install complete, separate, safe, and convenient pedestrian sidewalks/paths that connect multiple uses. This can be implemented through the following project designs: *(URBEMIS Location: Operational Emissions: Mitigation Measures: Bicycle and Pedestrian Node)*
	* Provide direct pedestrian connections

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
R-18	* Provide paths and building access which are physically separated from street parking lot traffic and that eliminates physical \barriers such as walls, berms, landscaping and slopes that impede the use of pedestrians, bicycle facilities, or public transportation vehicles.
Cont	* Place store entrances close to adjacent sidewalks.
	* Provide pedestrian signalization and signage to improve pedestrian safety
	* Provide continuous sidewalks separated from the roadway by landscaping and on-street parking.
	* Provide clearly delineated crosswalks at intersections.
	* Provide on and off-site pedestrian facility improvements such as overpasses and wider sidewalks
	* Provide on and off-site pedestrian facility improvements such as trails linking them to designated pedestrian commuting routes and/or on-site overpasses and wider sidewalks.
	* Provide street lighting
	* Provide shaded pathways (e.g. provide street trees or building overhangs)
	* Link cul-de-sacs and dead-end streets to encourage pedestrian and bicycle travel
	* Provide traffic calming modifications to project roads, such as narrower streets, speed platforms, bulb-outs and intersection modifications designed to reduce vehicle speeds, to encourage pedestrian and bicycle travel.
	* Provide pedestrian access between bus service and major transportation points and destination points within the project.

Transportation Design

Signage

R-9	Provide a display case or kiosk displaying transportation information in a prominent area accessible to residents, or visitors. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
	* Display Bike Route Maps
	* Display Bus Schedules
	* Display other transportation information such as carpooling, carsharing, etc.

Streets

R-10	Project design uses models by the Local Government Commission (LGC) in the “Smart Growth Guidebook,” such as: street block patterns that form an interconnected grid, short block faces, numerous alleys and narrow streets. *(URBEMIS Location: Operational Emissions: Mitigation Measures: Bicycle and Pedestrian Node)*

Building/Site Design

Energy Efficiency

R-12	Increase the building energy efficiency rating above what is required by Title 24 requirements. This can be accomplished by any combination of measures. The following is an idea list of measures that may be implemented to achieve this measure (this list should not be considered comprehensive): *(URBEMIS Location: Area Emissions: Mitigation Measures Node)* *General*
	* Participate in and implement available PUC energy-efficient rebate programs including air conditioning, gas heating, refrigeration, and lighting programs.

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
R-12	* Install efficient heating and other appliances, such as water heaters, cooking equipment, refrigerators, furnaces and boiler units beyond Title 24 requirements (see Title 24, Part 6, Energy Efficiency Standards for Residential and Nonresidential Building
Cont	* Trees should be carefully selected and located to protect the building(s) from energy consuming environmental conditions and to shade paved areas
	* Improve the thermal integrity/efficiency of buildings, and reduce the thermal load with automated and timed temperature controls or occupant sensors.
	Roof
	* Install "Green Roof" Technology
	* Install EPA/DOE Energy Star labeled roof materials
	* Install roof photovoltaic energy systems as a standard feature (on new homes)
	Solar Design
	* Design buildings with proper orientation, fenestration, and other design components that maximize the potential of passive cooling and heating, include shading master plan
	Components
	* Use devices that minimize the combustion of fossil fuels.
	* Install low nitrogen oxide (NOx) hot water heaters.
	* Install high efficiency Energy Star heating or ground source heat pumps
	* Install energy efficient interior lighting.
	* Install built-in energy efficient appliances.
	* Install door sweeps and weather stripping if more efficient doors and windows are not available.
	* Install energy-efficient and automated controls for air conditioning
	* Install of energy-efficient lighting (includes controls) and process systems such as water heaters, furnaces and boiler units.
	* Install electrical outlets on the exterior walls of both the front and back of residences to promote the use of electric landscape maintenance equipment.
	* Install electric vehicle recharging station with both conductive and inductive charging capabilities in residential garages / parking lots.
	* Install a gas outlet for use with outdoor cooking appliances, and in any proposed fireplaces, including outdoor recreational fireplaces or pits.
	* Use low energy street lights (i.e. sodium).
	* Use low energy traffic signals (i.e. light emitting diode).
	* Install Medium Efficiency Filters
	* Install High Efficiency Filters
	* Install HEPA (High Efficiency Particle Arrestance) Filters
	* Install "whole-house" or "fresh-air" ventilation system

Fuel Combustion

R-13	Provide Electrical outlets at front and rear of residences for the use of electrically powered landscape equipment (See Measure R-18 below). *(URBEMIS Location: Area Emissions: Mitigation Measures Node)*
R-14	Reduce Wood Fireplaces and/or Woodstove above that required by District Rule 4901. *(URBEMIS Location: Area Emissions: Hearth Fuel Combustion Node)*

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

No.	Measure - Objective
	OPERATIONAL MEASURES
Alternative Transit	
R-15	Provide Car-Sharing Services⊗ *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
R-16	Transit pass subsidy (100%) and/or commute alternative allowance⊗ *(URBEMIS Location: Operational Emissions: Mitigation Measures: Transportation Demand Management Node)*
R-17	Provide a display case or kiosk displaying transportation information in a prominent area accessible to residents. *(URBEMIS Location: Operational Emissions: Mitigation Measure: Transportation Demand Management Node)* * Provide ridesharing information in a homeowner's association package. * Provide an opportunity to receive either a complimentary bicycle or electric bicycle retrofit kit to each residential buyer * Provide electric shuttle or minibus service to transit stops * Provide free transfers between all shuttles and transit. * Operation of a shuttle bus to shopping, health care, public services sites and other nearby trip attractors to reduce automobile use.
Landscaping	
R-18	Project provides and/or requires use of electric maintenance equipment; including, but not limited to electric lawn mowers, electric leaf blowers, etc (In combination with measure R-13 above).⊗ *(URBEMIS Location: Area Emissions: Mitigation Measures Node)* * Prohibit gas powered landscape maintenance equipment within developments. * Contract only with commercial landscapers who operate with equipment that complies with the most recent California Air Resources Board certification standards, or standards adopted no more than three years prior to date of use. * Provide battery powered or electric landscape maintenance equipment for new residences.

⊗ These operational, program-oriented measures must be implemented for at least 10years from build-out to qualify as an emission reduction measure

ON-SITE ENHANCING MEASURES

No.	Measure - Objective
	LOCATION
	Mass Transit Infrastructure
A	* Project is located within one mile of a park and ride lot operated by a transportation agency.
	TRANSPORTATION DESIGN
	Transit Support
B	Include transit support features in the project where deemed appropriate by the local agency with jurisdiction over the project as demand and service routes warrant subject to review and approval by local transportation planning agencies, including (but not limited to):
	* On-site/off-site turnouts
	* Route signs and displays
	* Bus turnouts/bulbs
	* Street lighting
	* Passenger benches
	* Shelters at transit access points
C	Develop park-and-ride lots
	Streets
D	Make street design/speeds consistent with requirements for neighborhood electric vehicles
	PARKING
	Parking Amount
E	Use of any excess parking over zone code requirements as on-site parking-n-ride lots.
	Parking Construction
F	Provide a parking lot design that includes clearly marked and shaded pedestrian pathways between transit facilities and building entrances
G	Loading and unloading facilities for transit and carpool/vanpool users. (Provide Signage)
H	Provide grass paving or reflective surface paving for unshaded parking lot areas, driveways, or fire lanes that reduce standard paving by 10% or more.
	* Portland concrete is the preferred paving material
	* Other reflective surfaces to be determined in consultation with SJVAPCD.
	* "Chip Seal" methodology
	* Green Pavement http://www.invisiblestructures.com/GP2/grasspave.htm
I	Structural soil should be used under paved areas to improve tree growth.
J	Provide electric vehicle charging facilities with preferential parking

ON-SITE ENHANCING MEASURES

No.	Measure - Objective
	BUILDING/SITE DESIGN
Telecommuting Infrastructure	
K	Provide necessary infrastructure for telecommuting
	* Provide fiber optic wiring and connections
	* Provide T1 wiring and connections
	* Install a teleconferencing facility
	* Install a on-site telecommunications center
	* Build new homes with internal wiring/cabling that allows telecommuting, teleconferencing, and telelearning
Landscaping	
L	Plant trees sufficient to shade 1/2 the paved area within 15 years after development is constructed.
M	Landscape with low-emission native drought-resistant species (plants, trees and bushes) to reduce the demand for gas powered landscape maintenance equipment. Contact the District for a list of low-emission trees and shrubs.
	OPERATIONAL MEASURES
Telecommunication	
N	Provide free-access telework terminals in multi-family projects
O	Provide a community videoconferencing system coordinated with TMA.
P	Design and implement "Shop by Telephone" or "Shop-by-Computer" services. Applicable to shopping centers and retail facilities.
Goods Movement	
Q	Establish delivery services. Applicable to retail facilities (frequent use), shopping centers, and restaurants.
R	If the development is a grocery store or large retail facility, provide home delivery service for customers.
S	Schedule goods movement for off-peak traffic hours.

APPENDIX D

Recommended Changes to URBEMIS for Proposed Rule 9510 (Indirect Source Review) and Rule 3180 (Administrative Fees for Air Impact Assessment Applications)

Area and On-road: Jones & Stokes Memo
Operational: Nelson/Nygaard Memo

November 17, 2005

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Jones & Stokes

Revised Memorandum

Date: October 20, 2004

To: Jennifer Barba, San Joaquin Valley Unified Air Pollution Control District

From: Tim Rimpo

Subject: **Recommendations for URBEMIS2002 On-Road and Area Source Mitigation Measures**

Introduction

This memorandum describes Jones & Stokes' proposed approach for updating URBEMIS2002's on-road and area source emission calculations and mitigation measures. The information included in the memo combines and modifies information in two previous memos based on comments received from the District and the URBEMIS Working Group during several conference calls held during the summer of 2004.

ON-ROAD MITIGATION MEASURES

The current version of URBEMIS2002 (version 7.5.0) includes operational mitigation measures that focus on travel behavior. They include measures designed to encourage individuals to walk, bike, or use transit in lieu of driving. A separate memo prepared by Nelson\Nygaard Consulting Associates (September 9, 2004) describes proposed changes to URBEMIS2002's operational mitigation measures.

In its current format, URBEMIS does not allow the user to enter mitigation measures to reduce on-road emissions associated with medium- and heavy-duty vehicles. This memorandum describes Jones & Stokes' proposed approach for incorporating operational on-road mitigation measures into URBEMIS2002.

The proposed addition of on-road mitigation to URBEMIS would focus on those measures that can be used to reduce emissions from diesel powered medium and heavy-duty engines (over 14,000 lbs). Although these on-road mitigation measures could be used to reduce emissions for any land use designation, they are most useful for land uses with a high percentage of on-road truck use, such as warehouses, manufacturing firms, and industrial uses. Other land uses that have a large number of on-road truck trips, such as large retail stores, may also reduce emissions using this new mitigation option.

Jones & Stokes' original proposal was to group on-road mitigation measures into the following four categories:

- Repower existing engines,
- Retrofit existing engines,
- Purchase new engines, and/or
- Use alternative fuels.

However, after discussing this topic with the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) during the May 13th, 2004 conference call, it became clear that this approach had too many uncertainties and could not be accurately estimated by URBEMIS.

Instead, for project applicants wishing to provide on-road mitigation for medium- or heavy-duty trucks, the applicant would be required to work with the SJVUAPCD to estimate the pounds per day and tons per year emission reductions associated with the project. URBEMIS would be modified so that the user has the option of entering the pounds per day and tons per year emission reductions as calculated by the SJVUAPCD.

This approach would work much the same way in other air districts. The project applicant would need to work with the air district to determine the emission reduction associated with a project. That emission reduction would then be entered directly into URBEMIS.

AREA SOURCE MITIGATION MEASURES

URBEMIS2002 currently can be used to estimate emissions from five categories:

- Natural gas fuel combustion,
- Woodstove fuel combustion,
- Fireplace wood combustion,
- Landscape fuel combustion, and
- Consumer products.

We propose adding one additional area source category, architectural coatings, to the area source emissions module. Each of these six area source emission categories is discussed separately below.

Natural Gas Combustion

Emission Factors

URBEMIS2002 can be used to estimate natural gas fuel combustion emissions from cooking and water and space heating using an approach first described in Tables A9-12, A9-12-A, and A9-12-B in the South Coast Air Quality Management District CEQA handbook (South Coast Air Quality Management District 1993). The equation used to estimate CO, ROG, NOx, and PM10 emissions from natural gas combustion is described in the URBEMIS2002 User's Manual. No changes are proposed to those emission factors.

Mitigation Measures – Natural Gas Combustion

URBEMIS currently includes three categories of area source mitigation measures: residential, commercial, and industrial. The residential and commercial categories include several mitigation measure check boxes that apply to space and water heating. They include:

- Solar water heaters;
- Central water heaters;
- Orient buildings north/south; and
- Increase insulation beyond Title 24.

One additional mitigation measure - all electric landscape maintenance equipment – is included in URBEMIS for residential and commercial land uses. That mitigation measure is described separately below under the landscape fuel combustion heading. Orienting buildings north/south is currently the only industrial mitigation measure included within URBEMIS.

Jones & Stokes proposes modifying the natural gas combustion mitigation measures so that only three measures are included, one each for residential, commercial, and industrial land uses. Each measure would be based on building energy efficiency relative to Title 24, California's energy efficiency regulation for residential and nonresidential buildings. The three URBEMIS measures are as follows:

- ❑ Residential Land Uses: Increase energy efficiency ___% beyond Title 24.
- ❑ Commercial Land Uses: Increase energy efficiency ____% beyond Title 24.
- ❑ Industrial Land Uses: Increase energy efficiency ____% beyond Title 24.

The user would be required to turn on the appropriate measure and enter the percentage increase in energy efficiency. Emission reductions would be proportional to the increase in building energy efficiency beyond Title 24. For example, the developer of a

commercial land use that proposes an increase in energy efficiency 10% beyond the Title 24 requirements would receive a 10% reduction in natural gas combustion emissions compared to uncontrolled emissions.

Title 24 requires that compliance (with Title 24) be demonstrated before a building permit can be issued. This requirement applies to any heated building in California. Consequently, the percentage increase in energy efficiency beyond Title 24 would be based on the required compliance documentation.

Residential natural gas combustion primarily includes space heating, water heating, and cooking. One comment raised during the May 13th conference call was whether natural gas used for cooking is properly accounted for in the above mitigation. Data published by the California Air Resources Board (Emission Inventory Source Category 7.2 Residential Natural Gas Combustion, Revised November 1998) lists the percentage of residential natural gas use by category. That evaluation shows that approximately six percent of natural gas used in California residences is for cooking. Title 24 includes specific measures for natural gas cooking equipment. Since Title 24 covers natural gas cooking and because the cooking category is relatively small compared to total gas use, the mitigation measures listed above for total natural gas are sufficient to account for natural gas used for cooking.

Wood Stoves, Natural Gas Fireplaces, and Wood Fireplaces

Currently, URBEMIS includes wood stoves and wood fireplaces as separate area source emission categories. We propose modifying how these two emission source categories appear within URBEMIS and adding a third category, natural gas fireplaces.

The user, upon selecting this category, would be shown a screen with four tabs, which represent four separate screens that can be selected. As illustrated in the following table, the first screen would list the percentage of woodstoves, natural gas stoves, and fireplaces associated with the selected residential land uses. The remaining three screens would show the values that could be modified by the user for woodstoves, natural gas fireplaces, and wood fireplaces, respectively.

In the San Joaquin Valley, the percentage of homes with each of the three hearth options would vary based on housing density allowed by the SJVUAPCD's Rule 4901. For example, if the residential land uses entered by the user had a housing density of three per acre, then URBEMIS would, on the first "hearth" screen, show the percentages in the second column of Table 1.

The following table illustrates the percentages for the three situations allowed by Rule 4901. Where the housing density is 3 per acre, 2 homes or 67% could use woodstoves and 33% of the homes would be allowed to have wood stoves. For housing densities

exceeding three per acre, the percentage of woodstoves would decrease and the percentage of natural gas stoves would increase. Where the density of homes is between 2 and 3, 100% of homes are assumed to have wood stoves. Finally, when the density of homes is 2 per acre, half are assumed to have a fireplace and half are assumed to have woodstoves.

Table 1. Wood Stove, Natural Gas Fireplace, and Wood Fireplace Percentages

	PERCENTAGE OF HOMES WITH THIS OPTION		
	3 or more homes per acre	More than 2, less than 3 homes per acre	2 or fewer homes per acre
Wood Stoves	67%	100%	50%
Natural Gas Stoves	33%	0%	0%
Fireplaces	0%	0%	50%
None of the Above	0%	0%	0%
Total	100%	100%	100%
Assumption	Assumes 3 per acre	Assumes 2.5 per acre	Assumes 2 per acre
Based on SJVUAPCD Rule 4901.			

For areas outside of the San Joaquin Valley, URBEMIS will assume the following percentages:

- Wood Stoves: 35%
- Natural Gas Stoves: 55%
- Fireplaces: 10%
- None of the above: 0%.

These percentages represent the existing percentages within URBEMIS for wood stoves and fireplaces while also assuming that the remaining homes will have natural gas stoves.

Each air district would have the option to modify these default percentages.

Wood Stove Emission Factors

The emission factors currently used by URBEMIS to calculate wood stove emissions are the most recently available, based on a review of the wood stove emission factors at the U.S. EPA's emission factor web site (http://www.epa.gov/ttn/chief/ap42/ch01/final/c01s10.pdf). Consequently, no changes are proposed to URBEMIS' wood stove emission rates. The emission rate equations are listed in the URBEMIS2002 User's Manual.

Natural Gas Stove Emission Factors

Jones & Stokes will incorporate natural gas stove emission factors into URBEMIS using the AP-42 emission factors for natural gas combustion (U.S. EPA, 1998). Emissions will be estimated using the following equations:

Pounds per day = A * B * C * D

Tons per year = Pounds per day * (E / 2000)

Where: A = fireplace emission rate for each pollutant,

- 94 pounds NOx / standard cubic foot (scf),
- 40 pounds CO/scf,
- 5.5 pounds ROG/scf,
- 7.6 pounds PM10/scf, and
- 0.6 pounds SO_2/scf.

B = amount of natural gas burned per day (scf),
C = number of residential units,
D = percentage of units with natural gas fireplaces, and
E = days per year (for tons per year emission calculations).

The emission equation will assume that the average stove is 30,000 Btu's, that there is 1,020 Btu's per standard cubic foot of gas, that the stove is used for an average of 2 hours per day during the winter months, and 100 days per year (200 hours per year).

Wood Fireplace Emission Factors

The emission factors currently used by URBEMIS to calculate fireplace emissions are the most recently available, based on a review of the fireplace emission factors at the U.S. EPA's emission factor web site http://www.epa.gov/ttn/chief/ap42/ch01/final/c01s09.pdf Consequently, no changes are proposed to URBEMIS' fireplace emission rates.

Wood Stoves, Natural Gas Fireplaces, and Wood Fireplaces Mitigation Measures

Currently, URBEMIS2002 has no mitigation measures for woodstoves or wood fireplaces (Natural gas fireplaces are not currently part of URBEMIS2002.). Mitigation measures will be included in URBEMIS2002. The proposed change will allow the user to make changes to the percentages of wood stoves, natural gas fireplaces, and wood fireplaces that will be installed in new residences.

Landscape Fuel Combustion

Emission Factors

Landscape maintenance equipment generates emissions from fuel combustion, from evaporation of unburned fuel, and from fugitive dust generated by equipment such as leaf blowers. Emissions include NOx, ROG, CO, and PM10. The emission factors used to estimate equipment emissions include exhaust and evaporation. Emission factors have not yet been developed for the fugitive dust generated by certain types of equipment generate.

Equipment in the landscape category includes lawn mowers, roto tillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers used in residential and commercial applications. Engines in this category are 25 horsepower or less. This category also includes air compressors, generators, and pumps used primarily in commercial applications (California Air Resources Board 2004).

The California Air Resources Board has enacted regulations to limit emissions from landscape maintenance equipment. Beginning in 1994 these regulations imposed emission limits on all landscape maintenance equipment sold. Those regulations became more stringent for equipment sold in 1999 and later. Consequently, the emissions from this source category are similar to automobile emissions in that the turnover in the equipment fleet plays an important part in how quickly emission reductions are achieved.

URBEMIS2002 estimates emissions from this source category based on the year in which the user is attempting to estimate emissions. The California Air Resources Board has prepared estimates of emissions in 2000 and 2010. The proposed equations for this source category are divided into residential and commercial categories. The residential equation applies only to SFHU. The commercial equation is based on emissions per business unit and includes multifamily residential land uses.

The equations shown below are similar to those currently used by URBEMIS except that the pounds of pollutant per single-family residential unit and commercial business have been updated to reflect recent data developed by the California Air Resources Board (Cordero, M. and W. Wong, 2003).

2000 Emissions - Residential
ROG (pounds/day) = 0.0077 pounds ROG / SFHU/day * SFHU
CO (pounds/day) = 0.0449 pounds CO / SFHU/day * SFHU
NOx (pounds/day) = 0.0003 pounds NOx / SFHU/day * SFHU
PM10 (pounds/day) = 0.0002 pounds PM10 / SFHU/day * SFHU

2000 Emissions - Commercial
ROG (pounds/day) = 0.1593 pounds ROG / Business Unit * Number Business Units
CO (pounds/day) = 0.9298 pounds CO / Business Unit * Number Business Units
NOx (pounds/day) = 0.0061 pounds NOx / Business Unit * Number Business Units
PM10 (pounds/day) = 0.0041 pounds / PM10 Business Unit * Number Business Units

2010 Emissions - Residential
ROG (pounds/day) = 0.0038 pounds ROG / SFHU/day * SFHU
CO (pounds/day) = 0.0305 pounds CO / SFHU/day * SFHU
NOx (pounds/day) = 0.0005 pounds NOx / SFHU/day * SFHU
PM10 (pounds/day)= 0.0001 pounds PM10 / SFHU/day * SFHU

2010 Emissions - Commercial
ROG (pounds/day) = 0.0899 pounds ROG / Business Unit *Number Business Units
CO (pounds/day) = 0.6310 pounds CO / Business Unit * Number Business Units
NOx (pounds/day) = 0.0094 pounds NOx / Business Unit * Number Business Units
PM10 (pounds/day)= 0.0013 pounds PM10 / Business Unit * Number Business Units

The residential emission factors shown in the 2000 emission equations are based on total California single family residential emissions divided by the total number of California SFHU in 2000. Similarly, the commercial emission factors for 2000 are based on total California non-farm business emissions divided by the California's total 2000 business units (U.S. Department of Commerce 2003). For the commercial equations, URBEMIS2002 bases the number of business units on the number of non single-family housing land uses specified by the user.

The 2010 emission rates are based on ARB's estimates of emissions for this source category, broken into residential and commercial categories.

URBEMIS2002 will use the emission rates shown for 2000 for 2000 emissions. For 2001 through 2009, URBEMIS2002 will use interpolated emission factors by assuming a uniform decrease in the emission rate each year between 2000 and 2010. In 2010 and succeeding years, the 2010 emission rates will be used.

Average annual emissions assume that daily emissions would occur only during the summer period of 180 days. The end user will be able to modify the length of the summer period.

Mitigation Measures – Landscape Fuel Combustion

URBEMIS2002 currently allows the user to specify a mitigation measure in which electric powered equipment can be used to replace gas-powered equipment. However, this is currently an all or none mitigation measure. The following measure will allow the user to enter a percentage representing the proportion of residential and non-residential equipment that will be replaced by electrically powered equipment as follows:

- Replace ____% of residential landscape equipment with electrically powered equipment and provide electrical outlets at the front and rear of residences.

- Replace ____% of non-residential landscape equipment with electrically powered equipment and provide electrical outlets for the use of such equipment.

Consumer Products

Emission Factors

Consumer products comprise one of the largest solvent-use categories of reactive organic gases in California. Consumer product emissions are any chemically formulated product used by household and institutional consumers. They include a wide range of product categories, including air fresheners, automotive products, household cleaners, and personal care products (California Air Resources Board, 2000).

Emissions associated with these products primarily depend on the increased population associated with residential development. URBEMIS estimates consumer products when one or more residential land uses have been selected by the user. ROG emissions associated with consumer product use are currently estimated with the following equation:

ROG (pounds/day) = 0.0171 daily pounds of ROG per person * number of residential units * 2.861 persons per residence

The revised consumer products emission factor equation includes modifications of the pounds ROG per person and persons per residence variables:

ROG (pounds/day) = 0.013 daily pounds of ROG per person * number of residential units * 2.93 persons per residence (will vary by county).

The ROG emission factor is based on an average of the total estimated ROG emissions from consumer products divided by the total California population (California Air Resources Board, 2004; California Department of Finance, 2004). The ROG pounds per person emission factor ranges from 0.1927 in 2003 to 0.2182 in 2020. An average of these emission factors – 0.2055 pounds ROG per person – will be incorporated into URBEMIS as the default emission factor.

The persons-per-residence shown in the equation above is a California average. Within URBEMIS, separate estimates of persons per residence will be included for each county.

Mitigation Measures – Consumer Products

No feasible mitigation measures have been identified to reduce consumer product emissions.

Architectural Coatings

Emission Factors

Currently, URBEMIS estimates architectural coatings emissions as part of the construction module but not as part of area sources. However, a percentage of buildings are repainted each year and the ROG emissions associated with those buildings will be incorporated as an area source emission category.

Architectural coating emissions will be calculated using the same approach as in the construction module except that two additional variables will be added, one for residential coatings and one for non-residential. Those variables, which can be edited by the user, will show the percentage of a project's total square footage that will be repainted each year. We currently propose using 10% for both residential and non-residential buildings. However, this value may change as we continue to research this issue. Also, the individual air districts will have the option of modifying this percentage.

Mitigation Measures – Architectural Coatings

There are few feasible mitigation measures available to reduce evaporative emissions associated with architectural coatings. The best approaches involve using materials that require no architectural coatings during building construction or using coatings with lower ROG content than are currently required by regulation.

Instead of being considered a mitigation measure, we will assume that the use of "no-coatings" building materials is part of the project. Consequently, the use of coatings free building materials would have to be accounted for within the unmitigated portion of URBEMIS. This could be accounted for be reducing the coating thickness or the conversion factors (2.7 for residential, 2.0 for non-residential) that is used to convert building square footage to the amount of surfact area to be painted.

Although the use of low ROG content coatings is a feasible mitigation measure, it is considered unenforceable, especially during the operational phase of a project. Consequently, no mitigation measures will be incorporated into the architectural coatings category of the URBEMIS area source mitigation measures.

References

California Air Resources Board. 2000. Emission inventory source category Section 6.1 Consumer Products. Sacramento, CA.

California Air Resources Board. 2004. Staff Report: Report to the Board on the Potential Electrification Programs for Small Off-Road Engines. Sacramento, CA.

California Air Resources Board. 2004. 2003 Estimated Annual Average Emissions and 2020 Forecasted Annual Average Emissions. 2004 Almanac Emission Projection Data. Sacramento. CA.

California Department of Finance. 2004. Table 1: E-4 Population Estimates for Counties and State, 2001-2004 with 2000 DRU Benchmark. Demographic Research Unit, Sacramento, CA.

California Department of Finance. 2004. Table 1: E-5 County/State Population and Housing Estimates, Revised 1/1/2003. Demographic Research Unit, Sacramento, CA.

Cordero, M. and W. Wong. 2003. OFFROAD Modeling Changes Technical Memo: Change in Population and Activity Factors for Lawn and Garden Equipment. Revised 6/13/023. California Air Resources Board, Sacramento, CA.

South Coast Air Quality Management District. 1993. CEQA Air Quality Handbook. Diamond Bar, CA.

U.S. Department of Commerce. 2003. Table P-30 Households, July 1, 2000. Bureau of the Census, Washington, DC.

U.S. Environmental Protection Agency. 1998. AP-42, Section 1.4 Natural Gas Combustion, Research Triangle Park, NC.

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M E M O R A N D U M

To: Tim Rimpo

From: Patrick Siegman

Date: October 10, 2004

Subject: **Final Recommendations for URBEMIS 2002 Mitigation Measures**

Introduction

This memorandum sets out recommendations to revise the operational mitigation component of URBEMIS 2002. These have been developed with three main aims in mind:

- **Simplify** the existing mitigation component, which while extremely detailed, is daunting to new users and has extensive data requirements. In particularly, the division between "environment factors" and "mitigation measures" can be confusing.
- **Improve consistency.** Many of the inputs to the mitigation component are extremely subjective (e.g. whether some, few or no bike routes provide wide paved shoulders and have few curb cuts). We propose making these more quantitative, and/or providing additional guidance in the users' manual or within the program itself.
- **Improve accuracy and transparency.** While many of the inputs to the current mitigation component have been proven to have an impact of travel behavior, research is still at an early stage of assessing quantitative impacts, and how these interrelate with other mitigation strategies. The recommendations here update the current mitigation component in the light of new research.

An extensive body of research has been compiled as to the impacts of particular mitigation strategies on travel behavior. However, in general, this has either had an academic focus, or been undertaken for the purposes of developing citywide or regional travel models. For example, many agencies have sophisticated procedures for assessing non-single occupancy auto travel at the level of TAZ or above, but not at the development level. There is extremely little guidance on how to use this data in the type of application needed for URBEMIS 2002 – namely, to provide quantitative estimates of the impact on trip generation and vehicle miles traveled (VMT) at the development level.

Many agencies do provide credits for individual developments that implement mitigation measures, for example when assessing impact fees or conducting traffic studies. Some California examples include C/CAG in San Mateo County and VTA in Santa Clara County. A brief, national review was also conducted for purposes of this memorandum.1 In general, however, these credit programs are only loosely based on the latest travel research, and it could be argued that they function more at a policy level, in providing incentives for developers to incorporate elements such as demand management programs that the agency considers desirable.

The recommendations here therefore attempt to bridge the gap between academic studies and complex regional or area-wide models on the one hand, and more site-specific traffic assessments on the other hand. The emphasis is on providing the best possible estimate while minimizing data requirements. The overall effect, compared to the existing mitigation component, is to reduce the number of inputs required, but make them more quantitative.

It cannot be too highly stressed that the trip reductions recommended here are valid at a sketch-planning level only, and are subject to considerable uncertainty. While they should ideally be expressed as a range, in order to expressly account for this uncertainty, a single value is needed for purposes of the Indirect Source Review in order to allow the appropriate fee to be calculated. The same limitations noted in the documentation for the existing mitigation component still apply, and are worth repeating here:

> The URBEMIS 2002 mitigation component is a significant advance over past attempts to quantify the benefits of air quality mitigation measures, however, users should recognize that travel behavior is very complex and difficult to predict. The component relies on the user to determine factors critical to travel behavior that are somewhat subjective. As GIS and electronic traffic monitoring and data collection become a reality in many cities, the ability to identify factors critical to walking, bicycling, and transit use will be enhanced. The URBEMIS 2002 mitigation component provides a starting point for using currently available data to demonstrate the benefits of urban design and traditional mitigation measures in reducing air quality impacts.

1 Agencies contacted included: New York Metropolitan Transportation Council; Atlanta Regional Commission; Alameda County, CA; and San Luis Obispo County, CA.

The mitigation component results, however, should still be interpreted as the mid-point of a range. Recent research has pointed towards the dangers inherent in reporting precise values, when the results are the subject of considerable uncertainty (Shoup, 2003). However, although the methodological dangers are obvious, there is generally no question about the *direction* of the relationship, only its size and the appropriate variable. Some adjustment is better than none at all – which is what most conventional trip generation methodologies provide (Ewing & Cervero, 2001). In addition, existing project-level trip generation methodologies, even though well-accepted within the transportation planning and engineering profession, are themselves subject to considerable uncertainty, and results are reported with unwarranted precision (Shoup, 2003).

Other considerations that should be noted include:

- The key output that is sought here is reduction in *vehicle trips.* Research results, however, often report results in terms of VMT. Where no alternative is available, we assume that VMT is proportional to vehicle trips.
- Elasticities are generally used to make the calculations, since when used with care, they provide a satisfactory, means of preparing first-cut aggregate response estimates for various types of transportation system changes (Pratt *et. al.,* 2000). They also provide a transparent and accessible method of reporting results, that can be transferred from one region to another (Ewing & Cervero, 2001).
- There are major theoretical issues regarding the direction of causality that have still to be resolved in the research. For example, does an increase in density lower vehicle trip generation rates, or do more dense places attract people who tend to make fewer vehicle trips? For the purposes of this analysis, however, the distinction is unimportant. The key issue (using the same example) is that more dense places are associated with fewer vehicle trips.
- Local planning controls and development economics are assumed to provide an important "reasonableness" check on the recommended trip reductions. For example, reductions in parking supply will not normally be allowed unless the local jurisdiction is confident that complementary trip reduction measures will be applied. Equally, it is unlikely that frequent transit service will be provided to a destination with low potential ridership, given competing demands on an agency for service.

About the Trip Generation Manual

At its heart, the URBEMIS mitigation component is a tool for modifying the average trip rates reported in the Institute for Transportation Engineers' *Trip Generation* manual to make

them more accurate, so that they fairly reflect the particular characteristics of a proposed development. Before modifying these average rates, it is therefore useful to understand the manual itself: how the average rates were derived; the original data sources that underlie the manual; and the manual's own recommendations about when, and why, its average trip generation rates should be modified. Some key points are these:

- The ITE manual normally predicts trip generation from new buildings using just two variables. Typically, the user first selects a broad *land use type* (e.g. "High-Rise Residential Condominium/Townhouse"). Second, the user inputs the *quantity* of that land use type (e.g. "100 dwelling units").
- An important advantage of this simple approach is that very little information about a project is needed to predict trip generation, and trip generation calculations are simple.
- A primary disadvantage of such two-variable formulas is that they do not take into account the multiple other variables (parking price, transit service, etc.) that transportation research has shown to strongly affect trip generation, and so the variation in trip rates *within* each land use category is frequently very high.

Recognizing these points, the *Trip Generation* manual therefore advises the reader that the average trip generation rates reported in the manual "represent weighted averages from studies conducted throughout the United States and Canada since the 1960s. Data were primarily collected at suburban locations having little or no transit service, nearby pedestrian amenities, or travel demand management (TDM) programs. At specific sites, the user may wish to modify trip generation rates presented in this document to reflect the presence of public transportation service, ridesharing or other TDM measures, enhanced pedestrian and bicycle trip-making opportunities, or other special characteristics of the site or surrounding area."

However, while the studies may have been *primarily* conducted at such suburban sites, it appears from the sources referenced that for some land uses, particularly higher density residential land uses, many sites studied included at least some transit service, sidewalks, and other characteristics associated with lower vehicle trip rates. For the "High-Rise Residential Condominium/Townhouse", for example, the manual's text shows that sites were surveyed in such cities as Vancouver, Canada: a city where it is difficult to find high-density condominiums that lack sidewalks, transit service, and a mix of uses nearby.

As part of our research, we made several calls to and exchanged correspondence with the staff at the Institute for Transportation Engineers. The staff was unable to provide any additional data (beyond the text of the manual itself) on the characteristics of the developments used in its trip generation studies, and was also unable to provide the actual studies – the original data – which underlie the manual's conclusions. Therefore, it is not possible to define with certainty the precise characteristics of an "average site".

Given this paucity of information available on the original sources for the *Trip Generation* manual's, conclusions about the average characteristics of the different land uses in the manual (e.g., average residential density, or the percentage of neighborhood streets with sidewalks) necessarily must be estimated, rather than precisely calculated. Fortunately, a large body of other research on travel behavior and land use is available, and reasonable estimates can be made based upon this research.

Recommendations

1. Combine "environmental factors" and "mitigation measures."

URBEMIS 2002 distinguishes between "environmental factors" for pedestrians, cyclists and transit (i.e., the character of the existing neighborhood), and "mitigation measures" (i.e. those added by the development). The environmental factors both provide a mitigation measure in themselves (e.g. the credit for existing or planned transit service), and are also used to weight the mitigation measures (i.e., a lower credit is given for a mitigation measure in an area that has a low environmental factor).

The distinction does make it easier to give credits for specific mitigation measures (e.g. bus bulbs, sidewalks and bicycle parking). However, we recommend that the distinction be removed, since it also brings several important disadvantages. Most of these relate to either complexity, or the relative advantages of infill vs. greenfield development, as follows:

- The pedestrian environmental factors appear to be given less weight than the mitigation measures, even when it is taken into account that the environmental factors are also used to weight the mitigation measures. The credit for the surrounding pedestrian environment is 2%, compared to the maximum allowable reduction of 9%. This means that smaller, infill developments will be eligible for lower credits, since by their nature they will be more dependent on the surrounding environment and have more limited ability to fund mitigation measures.
- On a related point, the importance of the environmental factors compared to mitigation measures is largely a function of scale, i.e. development size. Larger projects, particularly on greenfield sites, will be starting from a "blank sheet," and on-site mitigation measures will be paramount. The appropriate trip reductions for smaller, infill developments, in contrast, will be more a function of the surrounding environment.
- Combining the environmental factors and mitigation measures would make the component easier to understand, particularly for inexperienced users. At present, the separation can be confusing.

2. Scale

This question relates to the area that should be analyzed. We recommend that this should be either the area within a half-mile radius from the center of the project, or the entire project area, whichever is larger. This is the same approach taken in the existing URBEMIS mitigation component. In effect, the smaller the development, the greater the consideration given to the wider project area.

3. Provide Post-Modeling Adjustments to Reward Other Mitigation Measures

One of the impacts of these recommendations would be to narrow the range of mitigation measures that are considered in the analysis. Some potential mitigation measures are excluded even though they are likely to have a travel behavior impact, either because they cannot be readily quantified, or because this would risk double counting an impact already quantified elsewhere (i.e. another variable, such as intersection density, serves as a proxy). We therefore recommend consideration of how post-model adjustments can be used to provide financial incentives for developers to incorporate these mitigation measures. This may include all those that are in the current mitigation component, but are not recommended for continued inclusion, including:

- Street trees
- Traffic calming
- Design maximizing visual interest for pedestrians, and “eyes on the street”
- Zero building setbacks
- Direct pedestrian connections
- Street furniture and artwork
- Pedestrian signalization and signage
- Street lighting
- Low speed limits on bicycle routes
- Safe routes to schools
- Bicycle parking ordinance
- Transit stop amenities
- Route signs and displays
- Bus turnouts and bulbs
- Structured parking

4. Modifying Average Trip Generation Rates

In general, both the recommended trip rate modifications and the overall philosophy of the mitigation component are similar to those in the existing URBEMIS model, and build extensively off this work. The major differences between the existing mitigation component and these recommendations are found in (a) the input variables, which are

designed to be more quantitative and less subjective, and are fewer in number, and (b) the formulas, which take advantage of the latest research on residential travel behavior.

Neighborhood-level trip generation and vehicle miles traveled vary by more than 80% in California cities (Figure 1). As the documentation for the existing mitigation component recognizes, areas with low trip generation and VMT levels have the highest development densities, a wide variety of uses within walking distance, safe and comfortable pedestrian access, paid parking requirements, and a high level of transit service.

Similarly, residential trip rates reported in the *Trip Generation* manual vary widely, both *within* individual land use types, and *between* land use types (Figure 2). For the land use type "Single Family Detached Housing", for example, reported rates ranged from a low of 4.31 daily trips per dwelling unit, to a high of 21.85 daily trips. The *Trip Generation* manual reports that, "This land use included data from a wide variety of units with different sizes, price ranges, locations and ages. Consequently, there was a wide variation in trips generated within this category." Between residential land use categories, the variation is still greater, as would be expected. For example, the average trip rate for the "Residential Condominium/Townhouse" land use type is 5.86 (or 39% lower than the average single-family detached house), while the lowest trip rate is 1.83 (or 80.9% lower). At the extremes, considering all residential land uses, the highest residential rate reported (21.85 trips/day) is more than ten-fold higher than the lowest rate reported (1.83 trips/day).

Figure 1 Daily Trips by Density, San Francisco Bay Area

	Households/Residential Acre					
	< 2	**2-5**	**5-10**	**10-20**	**20-50**	**> 50**
Mean Households/Residential Acre	1.4	3.6	6.7	13.5	30.6	121.9
Daily Vehicle Trips/Household	6.4	5.9	5.0	3.8	2.9	1.2
% Reduction in Daily Vehicle Trips/Household compared to lowest density areas	0%	9%	23%	41%	55%	82%

Source: MTC Household Travel Survey, 1990, cited in Holtzclaw, 2002

Figure 2 ITE Trip Rates for Selected Residential Land Uses

Land Use Code	Land Use Type	ITE Trip Rate		
		Low	Average	High
210	Single-Family Detached Housing	4.31	9.57	21.85
221	Low-Rise Apartment	5.1	6.59	9.24
230	Residential Condominium/Townhouse	1.83	5.86	11.79
222	High-Rise Apartment	3	4.2	6.45
232	High-Rise Residential Condo./Townhouse	3.91	4.18	4.93

Based on these data in Figures 1 and 2, and a wide range of additional transportation research, we have developed a set of formulas for modifying the average trip rates for residential land uses has been developed. For the URBEMIS user, the procedure for modifying residential trip generation rates will remain generally similar to the existing process, with three basic steps:

1. In the "Land Use Selection" screen, the user will enter the land use types (e.g. "Apartment, Low-Rise") and the number of dwelling units of each type.
2. Next, if the mitigation component is used, the user will be prompted to review the default values for several key variables (e.g. residential density, level of transit service) for each residential land use type. If the project's land uses have characteristics that are different from the default values (as they usually will be), the user will enter the correct values, in place of the default values.
3. Within the program, the formulas described hereafter will be used to calculate the resulting trip generation rates.

In keeping with the conclusions of current transportation research, a single set of formulas is used to modify the trip rates for all residential land use types. The input variables for these formulas assess five key land use characteristics (or "mitigation measures", in URBEMIS terms):

- Net residential density (measured by Households per Residential Acre)
- Mix of uses (using a jobs/housing measure)
- Presence of local-serving retail
- Level of transit service (measured by a transit service index)
- Bicycle and pedestrian friendliness (measured by an "pedestrian factor" index based on intersection density, sidewalk completeness, and bike lane completeness)

For each ITE residential land use type, a set of default values for these variables has been defined. If the default values for a residential land use type are left unchanged when running the mitigation component, then the resulting trip generation rate will be the standard ITE average trip generation rate for that land use type. For single-family detached housing, for example, the default values include a residential density of three units per residential acre, a transit service index score of 0 (representing no transit service within one-quarter mile of the site), and an intersection density of 250 intersections per square mile (typical of post-war cul-de-sac residential subdivisions). Figure 4 shows the default values for each land use type.

To achieve the lowest residential trip rate reported in *Trip Generation* (a manual which primarily measures stand-alone, single-use projects with little or no transit service), the input values required would include a density of 160 units per residential acre, the maximum level of transit service, the best possible mix of uses and local retail, and a pedestrian score equivalent to a complete sidewalk coverage with a network of blocks no larger than 300 feet on a side. This would result in a rate of 1.83 trips/day, or an 81% reduction from the average single-family house rate).

This is similar to the 82% difference in household trip generation between the lowest density areas with the poorest transit service (6.4 vehicle trips per household per day), and the highest-density areas with good transit and a higher quality pedestrian environment (1.2 vehicle trips per household per day), as shown in Figure 1. Figure 4 shows the input values that would be required to achieve this rate, as well as the input values required to achieve maximum possible reduction allowed.

In theory, choosing the maximum possible values for each of the *physical design variables* described above could result in a residential trip generation rate as low as 0.9 daily trips per unit. This represents a 90% reduction from the average rate for a single-family detached house. To achieve this rate, however, a neighborhood would have to have remarkable characteristics, similar to Manhattan or Hong Kong: a density of 380 units per acre, or more than three times the average density of San Francisco's densest neighborhoods (North Beach and Chinatown), the highest possible level of transit service, and so on.2

The recommended reductions for the individual physical design mitigation measures for residential uses are summarized in Figure 3. The remainder of the memorandum discusses the justification for these levels, along with the mitigation measures for non-residential uses. In general, the recommended maximums for individual components have been set at a level so that this overall 90% maximum reduction from the average single-family house

2 While rare in California, these extreme cases of Manhattan-like densities can be seen in projects such as San Francisco's single-room occupancy hotels for very low income residents, which achieve such densities by omitting parking and providing very small living quarters.

rate is maintained for residential land uses. While a greater reduction may sometimes seem warranted for an individual measure, a lower value has been selected to stay within this 90% maximum – a practice that helps avoid the considerable dangers of double counting.

In addition to the variables above, which primarily measure physical design characteristics, the formulas include mitigation measures that assess *demand management programs and similar measure*s. A maximum additional reduction of 7.75% from the average single-family house rate is possible through these measures.

Non-Residential Land Uses

For non-residential land uses, the general procedure for modifying rates is similar, and based upon many of the same research results. To modify non-residential trip generation rates, the following procedure is used:

1. For *physical design* mitigation measures, the formulas to determine percentage reductions are identical to the formulas for residential land uses, except for the 'Residential Density' measure, which cannot apply.
2. Additional mitigation measures are applied for *demand management programs and similar measures.* For non-residential uses, the number of available demand management measures is greater, as is the possible percentage reduction.

However, there is a key difference between the formulas used to modify residential rates, and the formulas used to modify non-residential rates:

1. For residential land uses, the percentage reductions shown for each mitigation measure refer to the percentage reduction from 9.57 trips per day (the rate for single family homes). The default values for each residential land use (Figure 4) are set at levels such that keeping these values generates the average trip rate for that land use.

2. For non-residential land uses, the percentage reductions shown for each mitigation measure refer simply to the percentage reduction from the average ITE trip generation rate for that land use. No special default values are required: they are simply set to create a 0% reduction as the starting value.

Figure 3 Summary of Recommended Trip Reductions

	Residential	Non-Residential	Comments
Physical Measures			
Net Residential Density	Up to 55%	N/A	
Mix of Uses	Up to 9%	Up to 9%	
Local-Serving Retail	2%	2%	
Transit Service	Up to 15%	Up to 15%	
Pedestrian/Bicycle Friendliness	Up to 9%	Up to 9%	
Physical Measures sub-total	*Up to 90%*	*Up to 35%*	
Demand management and similar measures			
Affordable Housing	Up to 4%	N/A	
Parking Supply	N/A	No limit	Only if greater than sum of other trip reduction measures
Parking Pricing/Cash Out	N/A	Up to 25%	
Free Transit Passes	25% * reduction for transit service	25% * reduction for transit service	
Telecommuting	N/A	No limit	Not additive with other trip reduction measures (see text)
Other TDM Programs	N/A	Up to 2%, plus 10% of the credit for transit and ped/bike friendliness	
Demand Management sub-total3	*Up to 7.75%*	*Up to 31.65%*	

3 This sub-total excepts the measures for parking supply and telecommuting, which have no limit.

Figure 4 Default Values for Residential Land Use Trip Generation Formulas

Default Values for Residential Trip Rate Formulas

Land Use Code	Land Use Type	Residential Density	Housing Units	Employees	Retail?	Transit Service	Intersection Density	Sidewalks	Bike Lanes	Ped factor	ITE Trip Rate Low	ITE Trip Rate Average	ITE Trip Rate High
210	Single-Family Detached Housing	3	100	17	no	0.00	250	0	0	0.06	**4.31**	**9.57**	**21.85**
221	Low-Rise Apartment	16	100	26	no	0.06	250	0.5	0	0.23	**5.1**	**6.59**	**9.24**
230	Residential Condominium/Townhouse	16	100	60	yes	0.10	400	1	0	0.44	**1.83**	**5.86**	**11.79**
223	Mid-Rise Apartment	38	100	60	yes	0.14	400	1	0	0.44	**NA**	**4.68**	**NA**
222	High-Rise Apartment	62	100	60	yes	0.14	400	1	0	0.44	**3**	**4.2**	**6.45**
232	High-Rise Residential Condo./Townhouse	64	100	60	yes	0.14	400	1	0	0.44	**3.91**	**4.18**	**4.93**

Trip Rates Resulting When Default Values Are Used

Land Use Code	Land Use Type	Reductions: Residential Density	Mix of Uses	Local Retail	Transit	Bike/Ped	Total	Resulting Trip Rate
210	Single-Family Detached Housing	0.0%	-0.6%	0.0%	0.0%	0.6%	0.0%	9.57
221	Low-Rise Apartment	27.9%	0.5%	0.0%	0.6%	2.1%	31.1%	6.59
230	Residential Condominium/Townhouse	27.9%	3.9%	2.0%	1.1%	3.9%	38.8%	5.86
223	Mid-Rise Apartment	39.8%	3.9%	2.0%	1.5%	3.9%	51.1%	4.68
222	High-Rise Apartment	44.8%	3.9%	2.0%	1.5%	3.9%	56.1%	4.20
232	High-Rise Residential Condo./Townhouse	45.1%	3.9%	2.0%	1.5%	3.9%	56.3%	4.18

Example Residential Trip Rate Calculations

Land Use Code	Land Use Type	Residential Density	Housing Units	Employees	Retail?	Transit Service	Intersection Density	Sidewalks	Bike Lanes	Ped factor	ITE Trip Rate Low	ITE Trip Rate Average	ITE Trip Rate High
210	"Worst Case" Single-Family	0.1	100	0	no	0.00	80	0	0	0.02	-	-	**21.85**
230	"Best Case" Res. Condo/Townhouse	160	100	150	yes	1.00	1300	1	0	0.67	**1.83**	-	-
NA	Maximum Possible Reduction	380	100	150	yes	1.00	1300	1	1	1.00	**NA**	**NA**	**NA**

Trip Rates Resulting When Example Values Are Used

Land Use Code	Land Use Type	Reductions: Residential Density	Mix of Uses	Local Retail	Transit	Bike/Ped	Total	Resulting Trip Rate
210	"Worst Case" Singe-Family Detached	-20.7%	-3.0%	2.0%	0.0%	0.2%	-21.5%	11.63
230	"Best Case" Res. Condo/Townhouse	51.4%	9.0%	2.0%	12.5%	6.0%	80.9%	1.82
NA	Maximum Possible Reduction	55.0%	9.0%	2.0%	15.0%	9.0%	90.0%	0.95

5. Data Requirements

Figure 5 shows the inputs that are required to complete the mitigation component in full, along with suggested data sources. Note, however, that the mitigation component can still be run, even if some of these inputs are missing. While no reduction would be granted for the particular mitigation measure for which the input was required, credits could be granted for other trip reduction measures.

Figure 5 Data Requirements and Suggested Sources

Required Input	Suggested Source		Comments
	Project	Surrounding Development	
Net residential density	Project plans	Block-level census data	Net residential data excludes land not devoted to residential uses
Number of housing units	Project plans	Block-level census data	Same basic source as for net residential density
Number of jobs	Project plans	Census Transportation Planning Package. Local jurisdiction may provide more current or fine-grained data	If data are only available per square foot, US Dept. Energy produces figures on average employee density
Local serving retail	Project plans	Site observations	
Below-market-rate units	Project plans	N/A	
Parking supply	Project plans	N/A	
Transit service	Transit agency maps/schedules		
Intersection density	Project plans	Street plans	Count can be automated if available in GIS
Sidewalk completeness	Project plans	Site observations	Count can be automated if available in GIS
Bike lane completeness	Project plans	Site observations	Count can be automated if available in GIS
Parking pricing	Development agreement or similar	Site observations (if applicable)	
Free transit pass provision	Development agreement or similar	N/A	
Telecommuting/flexible work schedules	Development agreement or similar	N/A	
Other TDM programs	Development agreement or similar	N/A	

6. Procedure for Small Projects

For developments in an established urban area below a certain size threshold, we recommend allowing them to adjust their trip generation rates based on the mode share in that census tract. This would avoid a disproportionate burden in gathering the data to document their likely trip reduction. (The analyst would need to certify that the project was similar in character to the existing development.) The recommended threshold is 50 average daily baseline vehicle trips, with the baseline being that calculated by URBEMIS before any of the reductions from mitigation measures are applied.

7. Substitute Methodologies

The recommended mitigation levels are, in our judgment, the most appropriate for a model that must apply to an extremely wide range of projects and geographic contexts. However, it must be recognized that there may be "special cases," where these standard reductions may not apply. For this reason, we recommend that any methodology for calculating reductions in VMT and vehicle trips may be substituted, provided that this is mutually agreed between the Air District and project proponent.

8. Measures Reducing VMT

The existing mitigation component allows for reductions in VMT (but not trip generation) for park-and-ride lots and satellite telecommuting centers. We do not recommend any changes to this aspect of the mitigation component.

9. Correction Factors

The existing mitigation component provides for trip type correction factors, based on evidence suggesting that certain trips are more likely to be captured by one mode rather than another. We do not recommend any changes to this aspect of the mitigation component.

A second correction factor in the existing mitigation component relates to trip distance, because, the documentation argues, bicycle and walking trips replace mostly shorter automobile trips. We recommend that this correction factor be eliminated, as there is little evidence to suggest that this phenomenon exists. Indeed, more complex changes in travel behavior are likely, such as mode shift to bicycling and walking trips being accompanied by a shift to closer destinations. For example, rather than drive to a grocery store on a freeway interchange, a household may walk to a smaller store in the neighborhood. Mixed use, compact neighborhoods are characterized by short overall trip lengths (see, for example, Kuzmyak et. al., 2003). Further evidence comes from the elasticities for trip reduction with respect to density, which are the same for both vehicle trips and VMT (Ewing & Cervero, 2001), suggesting that there is no impact on trip length.

Detailed Justification of Recommended Mitigation Levels

Default Values for Residential Land Uses

To develop the default values for residential land uses shown in Figure 4, we had to overcome a significant hurdle: ITE retains no data on the characteristics of the developments used in their trip generation studies. Default values for average density, transit service levels, and other variables had to be estimated using two alternative methods. First, we reviewed representative projects through research of literature and discussions with professionals in the fields of architecture and town planning, to ascertain typical ranges for density and other characteristics of each land use type (for useful summaries, see Calthorpe, 1993, and Local Government Commission,2002).

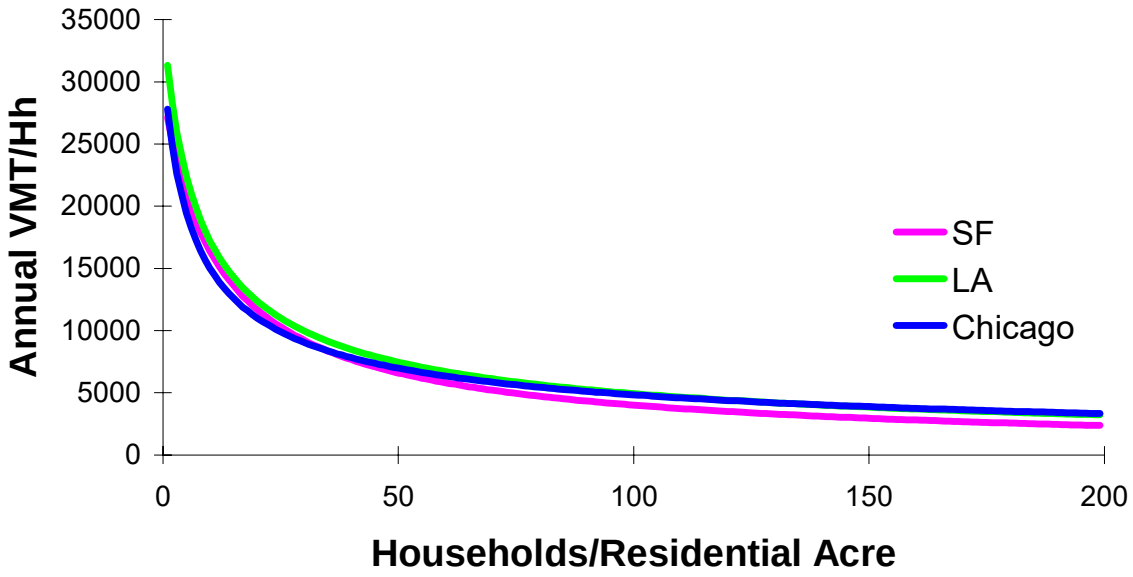
Second, these ranges of values were plugged into the formulas for the mitigation measures, and adjusted until the baseline values for each characteristic equaled the average ITE trip generation rates for each land use. For example, baseline density for Mid-Rise Apartments (64 units per residential acre) falls within the typical range observed from research of 45 to 125 units/acre, and when combined with other baseline characteristics for the land use, results in a 56.1% reduction in trip generation from the average rate for single family homes – the average reduction set forth in the ITE manual.

Finally, since the *Trip Generation* manual provides no daily trip generation rate for the "Mid-Rise Apartment" land use, we estimated a rate by extrapolating from the daily trip rate for the "High-Rise Apartment" land use type. The PM peak hour trip rate of 0.39 trips per unit for mid-rise apartments is 11.4% higher than the PM peak hour rate for high-rise apartments (0.35 trips/unit). Therefore, the daily trip rate for the "Mid-Rise Apartment" land use was estimated to be 4.68 trips per unit, or 11.4% higher than the daily trip for high-rise apartments (4.2 trips/unit).

Density

A considerable volume of research has investigated the links between density, particularly residential density, and travel behavior (for summaries, see Kuzmyak et. al, 2003; Boarnet & Crane, 2001). Overall, the conclusions can be summarized thus: there is a significant, quantifiable relationship between residential density and automobile use (see Figure 6), but there is uncertainty regarding the degree to which this effect is due to the inherent effects of density, as opposed to factors for which density serves as a proxy, such as parking price, local retail, transit service frequency and pedestrian friendliness.

Figure 6 Residential Density Vs. Vehicle Travel



Source: Holtzclaw et. al. (2002).

Fewer studies have attempted to disentangle the effects of density itself. Three of the main exceptions are:

- Typical elasticities for vehicular travel with respect to density are –0.1 to –0.04. These elasticities refer to the effect of density itself, isolated from variables that tend to be correlated with density such as transit frequency, and are additive to elasticities of other built environment factors. When these factors are not isolated, typical elasticities for VMT with respect to density are –0.22 to –0.27 (Kuzmyak et. al, 2003).
- The elasticity of density, when isolated from three other variables (diversity, design and destinations), is –0.043 with respect to vehicle trips, and – 0.035 with respect to VMT (Criterion and Fehr & Peers, 2001). However, this does not control for transit service levels.
- Cervero & Ewing (2001), in an update to this work, suggest a slightly higher elasticity of –0.05 with respect to both vehicle trips and VMT.

Note that density has been shown to have a nonlinear relationship with vehicle travel, with a threshold value of 25-30 units per acre below which the travel impacts of increased density are particularly large (Holtzclaw et. al, 2002). Holtzclaw et. al found that the best single variable equations to predict household vehicle travel (VMT per household, or

VMT/Hh) relied on Households per Residential Acre (Hh/RA). For the Los Angeles region, San Francisco and Chicago regions, these equations varied only slightly, producing the curves shown in Figure 6. For the Los Angeles region, this formula takes the form:

$$\frac{\text{VMT}}{\text{Hh}} = 19749\left(\frac{4.814 + \text{Hh/RA}}{4.814 + 7.140}\right)^{-0.639}$$

Based on this formula, the following elasticity formula is recommended for vehicle trips with respect to density. It is the same as Holtzclaw et. al' work, but reduced by 40% to take account of the fact that much of this impact will be realized through transit service, mix of uses and bicycle and pedestrian levels (which tends to correlate with density). The baseline assumed to correspond to a zero percent trip reduction is three units per acre, at which density the Holtzclaw formula results in 25,914 annual vehicle miles traveled per household. This translates into the following formula:

Trip reduction
$= 0.6*(1-(19749*((4.814 + \text{households per residential acre})/(4.814+7.14))^{-0.639})/25914)$

An apartment development of 16 units per residential acre, for example, would be estimated to generate 27.9% fewer trips than a three unit per acre project. The maximum allowable reduction recommended is 55% (equivalent to a 380 unit per acre development).

With this formula, "negative" reductions also apply, with less dense developments below the baseline level of three units per acre (for example large-lot housing) resulting in higher trip generation rates. (However, as long as the mitigation component is optional for developers or project proponents to complete, they will be unlikely to use it for projects whose overall score, for all components, will result in a finding to their disadvantage. For purposes of more accurately predicting vehicle trips and emissions, however, this negative reduction is useful and reflects the findings of the research literature.

Trip generation at the non-residential end is also influenced by density, but to a much lesser degree (Cervero, 1989, cited in Kuzmyak et. al, 2003). There are also far fewer studies investigating this relationship, and there is no comparable dataset to that for residential density. No reduction is recommended here.

Mix of Uses

Many references point to the impact of "diversity" or mix of uses on travel behavior. This is true both at the macro-scale, e.g. jobs-housing balance, and the micro-scale, e.g. the availability of services within walking distance. Key references, related to both the direction and magnitude of this relationship, include:

- Higher densities are most beneficial to transit ridership when they result in a mix of residential, commercial and office uses (Lund et. al., 2004).
- The elasticity of vehicle trips with respect to "diversity" is –0.051. The elasticity of VMT is –0.032. In this case, "diversity" is a measure of how the project affects regional population/employment balance. (Criterion and Fehr & Peers, 2001)
- Typical elasticities for vehicle trips with respect to local diversity (mix) are –0.03, and those for VMT are –0.05 (Ewing & Cervero, 2001).
- A balance of 1.5 jobs per household is estimated to produce a bus mode share 2 percentage points over the share for a single use area, although the degree of mix is not a useful estimating variable (Messenger & Ewing, 1996, cited in Kuzmyak et. al, 2003).
- Suburban activity centers with some on-site housing had 3-5% more transit, bike and walk commute trips (Cervero, 1989, cited in Kuzmyak et. al, 2003).
- The presence of retail reduces auto mode share by 2-5%, depending on neighborhood density. (Parsons Brinkerhoff, 1996, cited in Kuzmyak et. al, 2003).
- At suburban activity centers, the presence of retail in office buildings lowers vehicle trip rates by 6-8% (NTI, 2000, cited in Kuzmyak et. al, 2003).
- Employment sites with "good" nearby retail and commercial services have a vehicle trip rate 21.5% below the ambient rate. Sites with "fair" services showed an 8.3% reduction, and those with "poor" services a 5.3% reduction. This is attributed not just to the presence of these services, but the fact that they make TDM programs more likely to succeed (Comsis, 1994, cited in Kuzmyak et. al, 2003).

The analysis is complicated by the fact that some of the most beneficial developments from this perspective may be single-use, in an area where another use is predominant (e.g. residential in an employment area). To take this into account, the following procedure is proposed (adapted from Criteron and Fehr & Peers, 2001):

$$\text{Trip reduction} = (1- (\text{ABS} (1.5 * h – e) / (1.5 * h + e)) – 0.25) / 0.25 * 0.03$$

Where: h = study area households (or housing units)
e = study area employment

Negative reductions of up to 3% can result, and should be included.

This formula assumes an "ideal" housing balance of 1.5 jobs per household, based on Messenger & Ewing (1996), and a baseline diversity of 0.25. The maximum possible reduction using this formula is 9%.

This reduction takes into account overall jobs-population balance. The presence of local serving *retail* can be expected to bring further trip reduction benefits, and an additional reduction of 2% is recommended. This is towards the lower end of the values presented in the research discussed above, in order to avoid double counting with the diversity indicator.

Transit

The existing URBEMIS 2002 mitigation model places its primary emphasis on mode, i.e. whether service is provided by high-speed rail, commuter rail or bus. Within this framework, consideration is given to frequency (e.g. bus headways of 15 minutes or less score more highly than headways of 15-30 minutes).

For example, the current mitigation component would award the maximum score of 100 to a development 0.5 miles from a BART station, even if no other transit were available. A part of the city with several bus lines offering 10-minute service, in contrast, would score much lower, even though these transit lines would carry many more passengers.

Current transit planning thinking, however, emphasizes that frequency and speed are two of the most important factors determining mode choice, rather than whether the service is provided by bus, bus rapid transit, or rail. Researchers have found that there is no *inherent* preference for rail over bus, provided that the quality of service is the same (for example, Ben-Akiva & Morikawa, cited in Transportation & Land Use Coalition, 2002).

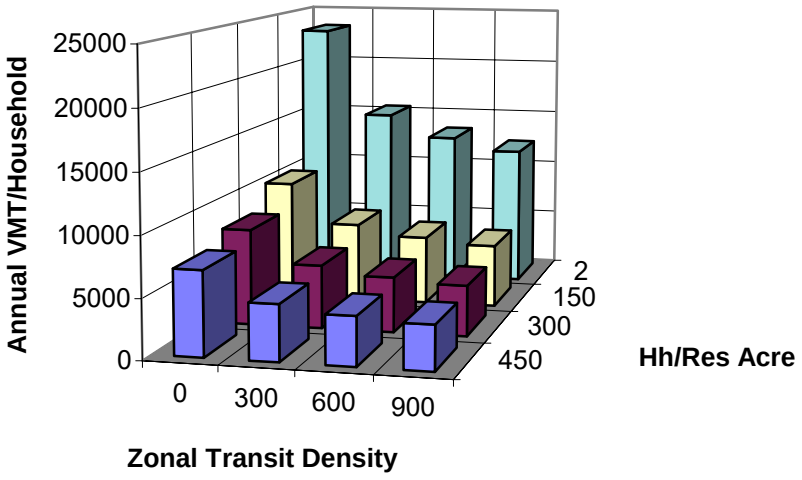
Key references include:

- The average elasticity of ridership with respect to frequency is +0.3 to +0.5. Higher elasticities of +1.0 have been observed in suburban systems, with the +0.3 value more typical of urban systems. (Kittselson & Associates et. al, 2003).
- Pratt et. al. (2003) suggest an elasticity of ridership with respect to service hours (i.e. a combined measure of frequency and service span) of +0.5. Ridership is most sensitive to frequency changes when the past service was infrequent.
- Modeling in Massachusetts suggests that halving transit service headways from 30 to 15 minutes leads to an 8% drop in vehicle trips. A further decrease to 5 minutes leads to a further 4% drop in vehicle trips (Pratt et. al., 2003).
- Holtzclaw et. al. (2002) show that vehicle travel falls as transit service levels increase, even when holding density constant (Figure 7). In the San Francisco Bay Area, a doubling of transit service from 300 to 600 (using the index described below) is associated with a 13% drop in VMT. An increase from 300 to 900 is associated with a 20% drop in VMT. In the Los Angeles region, the decreases in VMT are 12% and 18% respectively. However, the variable was omitted from the

vehicle travel model presented in this paper, since density was used as a proxy for transit service.

- The maximum distance that people are willing to walk to transit tends to be 0.25 miles for bus, and 0.5 miles for rail (and, presumably bus rapid transit). (Kittelson & Associates et. al, 2003). It is unclear whether there is a "distance decay" effect, whereas people are more likely to use transit at closer distances within this range (see Lund et. al, 2004).

Figure 7 VMT vs. Residential Density and Transit Use, San Francisco Bay Area



Source: Holtzclaw et. al. (2002).

Unfortunately, the elasticity of service with respect to transit ridership is difficult to convert to vehicle trip reduction, firstly because the baseline ridership needs to be known, and secondly because only a proportion (18-67% is cited by Pratt et. al., 2003) of new transit trips were formerly made by private auto. While it is clear that there is a direct correlation between transit service and vehicle trips, it is difficult to employ these elasticities directly. For this reason, the approach here is more in line with the existing mitigation component, which assumes a maximum percentage reduction for transit, and then reduces this based on a transit environment factor.

Various frequency-based transit service indices have been developed which have shown strong correlations with ridership. For example:

- In Los Angeles, the quality of four components of transit service (MTA rail, Rapid Bus, local bus and regional services) were rated on a scale of 0-3 for each community area, and then summed to provide the Transit Service Index on a scale of 0-12. (Nelson\Nygaard, 2002b).
- The studies by Holtzclaw et. al. (2002) used Zonal Transit Density, defined as the daily average number of buses or trains per hour times the fraction of the zone within 1/4 mile of the bus stop, or 1/2 mile of the rail station or ferry terminal, summed for all transit routes in or near the zone.

The Transit Service Index recommended here would combine the important features of all these approaches, with emphasis on frequency but with greater weighting given to rail services. Greater weight is also given to dedicated shuttles, in recognition of the fact that these are likely to be more closely targeted to the needs of the development. The Transit Service Index would be determined as follows:

- Number of average daily weekday buses stopping within 1/4 mile of the site; plus
- *Twice* the number of daily rail or bus rapid transit trips stopping within 1/2 mile of the site
- *Twice* the number of dedicated daily shuttle trips
- Divided by 900, the point at which the maximum benefits are assumed. (This equates to a BART station on a single line, plus four bus lines at 15-minute headways.)
- Developments that are larger than 0.5 miles across in any direction must be broken into smaller units for purposes of determining the transit service index. The average of all units would then be used.

Figure 8 shows some examples of how service frequencies translate into Transit Service Index scores (note these are additive, if a location has more than one component).

Figure 8 Example Transit Service Index Scores

Transit Service	Score	Assumptions
BART (single line)	0.33	150 trips per day (15-20 minute headways in each direction from 4 AM-12 AM)
15-minute bus, 5 AM – 12 AM	0.17	
30-minute bus, 5 AM – 7 PM	0.06	
Amtrak San Joaquin	0.03	6 trips per day in each direction
Dedicated commute shuttle	0.02	5 trips per commute period (single direction)

As well as existing service, planned and funded transit service would be included in the calculation. Purely demand responsive service would not be included.

A maximum trip reduction of 15% is recommended. This is the same as the existing URBEMIS 2002 trip reduction for existing and planned transit service.

In order to account for non-motorized access to transit, we also recommend that half the reduction be dependent on the pedestrian/bicycle friendliness score (calculated in the following section), similar to the approach taken in the existing mitigation component. This ensures that places with good pedestrian and bicycle access to transit are rewarded.

Trip reduction = t * 0.075 + t * ped/bike score * 0.075

Where t = transit service index

Bicycle and Pedestrian

Since bicycle mode share and pedestrian mode share depend on similar neighborhood characteristics, such as a fine-grained street grid, we recommend that a single factor be used to account for both modes. The bicycle and pedestrian components of the URBEMIS 2002 mitigation component are already well developed. However, the inputs are largely subjective, and there is still little evidence to justify the precise amount of credits for many of the individual mitigation measures (e.g. street trees).

Many street design factors have, however, been shown to promote walking and cycling. These include:

- Street connectivity, with traditional street networks that are more New Urbanist or grid-like, as opposed to the loops, lollipops and cul-de-sacs of most conventional subdivision. There are various measures of connectivity (summarized in Dill, 2003), such as:
    - Block length, size or density
    - Intersection density
    - Street density
    - Connected node ratio (number of street intersections divided by the number of intersections plus cul-de-sacs)
    - Link-node ratio (links are roadway or pathway segments between two nodes, which are intersections or cul-de-sac ends)
    - Grid pattern (percentage of intersections that are four- or more way).
    - Pedestrian Route Directness (ratio of route distance to straight line distance)
    - Effective Walking Area (% of parcels within 1/4 mile, that are also within 1/4 mile walking distance)

- Human-scale streetscapes with adequate pedestrian amenities, access to shopping and other amenities, and higher densities (Lund et. al., 2004)

Other relevant research includes:

- A composite indicator, the "Pedestrian Environment Factor," provides a statistically significant correlation with trip generation and VMT. It is comprised of four inputs (Parsons Brinkerhoff, 1993):
    - Ease of street crossings
    - Sidewalk continuity
    - Local street characteristics (grid vs. cul de sac)
    - Topography
- In Portland, OR, an increase in the PEF from "pedestrian hostile" to "almost average" reduces daily vehicle trips by 0.4 per household (7%). An increase from "almost average" to "fairly good" provides a daily reduction of 0.2 trips (Parsons Brinkerhoff, 1993, cited in Kuzmyak et. al, 2003).
- Sidewalk completeness, route directness and network density together have a vehicle trip elasticity of –0.05 (Ewing & Cervero, 2001).
- For a high degree of walkability, block lengths of approximately 300 feet are recommended. Short blocks provide more pedestrian crossing opportunities and direct walking routes, and mean that traffic is more likely to be dispersed. Downtown Los Angeles, for comparison, has about 150 intersections per square mile. (Ewing, 1999).

There is a strong tradeoff here between simplicity and low data requirements on the one hand, and robustness and accuracy on the other. Pedestrian and bicycle level of service work for the Florida Department of Transportation and FHWA, for example, has shown that there are numerous statistically significant factors that can be included to assess the quality of the bicycle and pedestrian environment. These include motor vehicle volumes and speeds, truck volumes, roadway widths, urban design, and lateral separation between pedestrians and motor vehicles (for example, FHWA, 1998; Landis et. al, 2001).

However, we recommend that in order to keep data requirements to a minimum, one or two of the street design indicators discussed by Dill (2003) and Ewing and Cervero (2001) be used, together with a single bicycle measure. Since route directness and network density measure similar characteristics, we recommend the use of one of these (network density, which is inversely related to block size) plus sidewalk completeness and bicycle network completeness. The pedestrian/bicycle factor would then be calculated as follows:

Ped/bike factor =
(network density + sidewalk completeness + bike lane completeness) / 3

Where:

Network density = intersections per square mile / 1300 (or 1.0, whichever is less)

Note: In most GIS applications, intersections are counted based on the number of line segment terminations, or each "valence." Intersections have a valence of 3 or higher – a valence of 3 is a "T" intersection, 4 is a four-way intersection, and so on.4 (Georgia Institute of Technology, 2002). Therefore, if intersections are counted manually on a map or project plan, care needs to be taken to distinguish between 3-, 4- and 5-way intersections, and factor them up accordingly. The 1,300 value roughly equates to a dense grid with four-way intersections every 300 feet, per the recommendation of Ewing (1999). Intersections with dedicated routes for pedestrians and/or bicyclists should be included in this calculation.

Sidewalk completeness =

% streets with sidewalks on both sides + 0.5 * % streets with sidewalk on one side

Bike lane completeness =

% arterials and collectors with bicycle lanes, or where suitable, direct parallel routes exist

A maximum reduction of 9% is proposed, based on the existing URBEMIS mitigation component.5 The trip reduction would then be calculated as:

Trip reduction = 9% * ped/bike factor

No reduction should be allowed if the entire area within a half-mile walk of the project center consists of a single use. (Note that this applies to a half-mile walk, rather than straight-line distance, to account for barriers such as freeways.) However, the ped/bike factor can still be used to calculate pedestrian access to transit, as part of the transit mitigation measure.

Affordable and Senior Housing

A significant amount of evidence points to the fact that lower-income households and senior citizens own fewer vehicles and drive less. Research includes:

4 A valence of 1 indicates that a line segment has terminated, e.g. in a cul-de-sac. A valence of 2 means that the street is continuing.

5 Note that this excludes the bicycle reduction in the current mitigation component. However, this compensates for the fact that the reductions recommended for the mixed use and density variables will be realized in practice through pedestrian and bicycle mode share.

- Russo (2001) cites evidence from the San Francisco Bay Area travel survey, which shows that households earning under $25,000 per year make 5.5 vehicle trips per day, compared to a regional average of 7.6. High income households (earning more than $75,000 per year) make an average of 10.5 trips. Note that this data does not control for other factors, such as density and transit access.
- In the San Francisco Bay Area, Los Angeles and Chicago, income was one of four variables with sufficient independent explanatory power to include in the model of VMT and vehicle ownership (Holtzclaw et. al., 2002).

Obviously, it is difficult if not impossible to account for the exact incomes of residents in URBEMIS, most obviously because the occupants are not known at the pre-development stage. However, the percentage of deed-restricted below-market-rate (BMR) housing does offer a way to incorporate this effect.

We recommend a 3% reduction in vehicle trips for each deed-restricted BMR unit.6 Thus, the total reduction is as follows:

Trip reduction = % units that are BMR * 0.04

A development with 20% BMR units would thus gain a 0.8% reduction. A development with 100% BMR units would gain a 4% reduction.

Parking Supply

Significant correlations between parking supply and employee mode split have been observed. For example, a study of the link between parking availability and transit use in eight Canadian downtowns found an extremely high elasticity of –0.77 (Morrall & Bolger, 1996, cited in Kuzmyak et. al., 2003b). In California, the number of parking spaces per worker was found to be one of the main two elements of a binomial logit model predicting transit mode share among TOD office workers (Lund et. al, 2004).

As with residential density, the extent to which parking supply itself is a causal factor is uncertain. In practice, it probably serves as a proxy for variables such as price, high quality public transit, mix of uses, and pedestrian friendliness (Kuzmyak et. al., 2003b). Indeed, in practice there is a two-way relationship between parking supply and mode split. Free parking, for example, can be seen as both a cause of high parking supply (more parking is

6 Calculated from Holtzclaw et. al. (2002), assuming 12,000 average annual VMT per vehicle, median per capita income of $33,000 (2002 figures per California State Department of Finance), and an average income in BMR units 25% below median. Holtzclaw calculate the coefficient of -0.0565. Therefore, expected VMT reduction can be calculated as 0.0565 * 33,000 * 0.25 / 12,000 = 4%

needed to satisfy the greater demand), and a consequence (the market price of parking is zero once an effectively unlimited supply is provided) (see, for example, Shoup, 1999).

Theoretically, it is possible to reduce parking provision to below the level of actual demand, should drivers park in neighboring lots or on-street in surrounding areas. However, planning approval is not likely to be granted for developments that significantly under-provide parking, unless complementary Residential Permit Parking programs or other measures to combat this type of overspill are introduced. Indeed, the main reason for minimum parking requirements levied by local jurisdictions is to address these overspill issues (Shoup, 1999).

Similarly, market realities are likely to prevent a developer from providing too little parking. The challenges in persuading lenders to finance developments that have below-code parking are difficult enough to overcome, even where there is clear, documented evidence to show that parking supply will be enough to meet demand (see for example, Parzen & Sigal, 2004). In contrast, the opposite tendency is likely to be apparent – that developments are prevented from taking full advantage of the opportunities to reduce parking supply by zoning codes (see, for example, Nelson\Nygaard, 2002).

The measure proposed here uses the Institute of Transportation Engineers' *Parking Generation* handbook as the baseline. This is assumed to equate to unconstrained demand. The trip reduction can therefore be calculated as follows:

Trip reduction = Actual parking provision / ITE Parking Generation rate

Since ITE parking generation rates use the same land use codes as the trip generation rates, these could be provided within the URBEMIS model itself. The user would only be required to enter the actual parking provision for each land use.

For land uses with rates for both weekday and weekend, the formula will use whichever rate is higher. The *Parking Generation* handbook covers most common land uses. For some land uses, however, no parking generation rates are available: in these cases, this particular mitigation measure may not be used.7 Those land uses without parking generation rates include:

- Single Family Detached Housing
- Mid-rise Apartments
- High-rise Condominium/Townhouse

7 The next edition of *Parking Generation,* currently under development by an ITE Task Force, is likely to provide date for some of these missing land uses. While it would be ideal to have parking generation data for every single land use before introducing this mitigation measure into URBEMIS, the data does not yet exist. Rather than abandoning this mitigation measure entirely until perfect data exists, we recommend allowing the measure to be used for the many land uses where reasonable data is available.

- Mobile Home Parks
- Residential Planned Unit Development (PUD)
- Day-care center
- Elementary school
- Junior High school
- Library
- City Park
- Discount Superstore
- Discount Club
- Electronic Superstore
- Home Improvement Superstore
- Gas/Service Station
- Pharmacy/Drugstore with and with/out Drive Through
- Medical Office Building
- General Heavy Industry

To avoid double counting with other trip reduction measures, the impacts of parking supply are proposed to be assessed in conjunction with all other non-residential trip reduction measures as follows:

- The total of all other non-residential trip reduction measures should be used if this is greater than or equal to the trip reduction from parking supply measures. For example, if parking supply is reduced 10% from ITE levels, and transit, mixed use and pedestrian/bicycle trip reductions amount to 20%, the 20% figure would be used.
- If the total of all other non-residential trip reduction measures (r_1) is less than the trip reduction from parking supply measures (r_2), the total trip reduction is as follows:

  $$r_1 + 0.5 * (r_2 - r_1)$$

  In effect, the parking supply reduction is only used if it is greater than the impact from other trip reduction measures, and the difference is discounted by 50%. For example, if parking supply is reduced 25% from ITE levels, and transit, mixed use and pedestrian/bicycle credits amount to 15%, the total reduction would be:

  $$15 + 0.5 * (25\text{-}15) = 20\%.$$

This reduction should only be granted if measures to control overspill are in place, such as Residential Permit Parking programs, time limits or meters.

Transportation Demand Management

Transportation Demand Management programs have been shown to have a major impact on travel behavior. Site-level employee vehicle trip reductions of up to 38% have been achieved, particularly for programs that have included parking pricing (Shoup & Willson, 1980; Comsis, 1993; Valk & Wasch, 1998; Pratt, 2000). Parking price elasticities of –0.1 to –0.3 have been reported (Pratt, 2000).

This component of the existing URBEMIS 2002 mitigation component is well developed. However, there is considerable scope to adapt it in two ways:

- Provide greater emphasis for the three elements that have the greatest impact on travel behavior – parking pricing/cash out; free transit passes; and telecommuting.
- Simplify the remaining elements, through offering broader options such as "major program", "minor program", and "no program," for elements that are likely to have a smaller trip reduction potential.

We recommend that none of these reductions be permitted, unless they form part of a legally enforceable agreement specifying, for example, minimum parking prices and other TDM measures. This might form part of a development agreement, be enforced through any TDM ordinance in the local jurisdiction, or consist of another mechanisms mutually agreed by the air district and project proponent. Otherwise, there is little to guarantee that some of the promised measures (e.g. parking pricing) will actually be implemented and maintained.

Parking Pricing and Cash Out

We recommend that a maximum trip reduction of 25% be applied to projects that commit to introducing parking pricing. This is based on the approximate midpoint of observed reductions, which range from 15% to 38% (Shoup & Willson, 1990; Comsis, 1993; Pratt, 2000). Note that most of these studies apply to before-after or with-without comparisons, with no increase in transit service or other measures to reduce vehicle trips. This maximum reduction should apply to prices of $6 per day or greater (in 2004 dollars).

The trip reduction will therefore be as follows:

Trip reduction = daily parking charge / 6 * 0.25

If the parking charge is more than $6, the 25% reduction is taken. If parking charges do not apply to all trips to a site (e.g. customers are exempt), the reduction is pro-rated by the percentage of trips that the charges apply to. If little or no on-site parking is provided, the parking charges should be those of surrounding public facilities.

Parking cash-out programs should be eligible for 50% of the reduction for direct parking charges, in recognition of the fact that their impacts tend to be significantly lower (Pratt, 2000). This is partly due to the fact that cash-out payments are a taxable benefit.

Free Transit Passes

Some California transit agencies, most notably VTA in Santa Clara County, have EcoPass or similar programs, whereby employers or property managers bulk-purchase transit passes for (free) distribution to their employees or tenants. Eco Pass programs have been shown to increase transit ridership by 50-79% (City of Boulder, undated; Caltrans, 2002), and reduce vehicle trips by 19% (Shoup, 1999). (Note that many of these new riders were making new trips, or ones previously made by walking or cycling.)

We therefore recommend that any project committing to providing free transit passes would receive an additional credit equivalent to 25% of the reduction granted for transit service. Thus, the credit is more valuable in places that have good transit service. This reduction would only apply to the portion of trips generated by those granted the free transit passes (e.g. residents and/or employees, but excluding shoppers and other visitors).

Telecommuting

We recommend the retention of the reductions granted for telecommuting and compressed work schedules in the existing mitigation component, with two clarifications:

- As with the reductions for other mitigation measures, there must be an enforceable commitment (e.g. development agreement), which covers both the take-up rate (employees actually telecommuting or using compressed work schedules) as well as the provision of the option.
- The percentage reduction should not be additive (in contrast to most other trip reduction measures). For example, if 20% of employees telecommute, and other trip reduction measures are estimated to reduce vehicle trips from 1,000 to 800 per day, the 20% reduction would apply to the 800 trips, not the original 1,000.

Other TDM Programs

Other TDM program elements, that do not include financial incentives, tend to have a smaller impact on travel behavior. We recommend that reductions be based on the number of the following elements incorporated into the program, per Figure 7:

- Secure bicycle parking (at least one space per 20 vehicle parking spaces)
- Showers/changing facilities
- Guaranteed Ride Home

- Car-sharing services
- Information on transportation alternatives, such as bus schedules and bike maps
- Dedicated employee transportation coordinator
- Carpool matching programs
- Preferential carpool/vanpool parking

The impact of a TDM program will also depend on the travel alternatives available. A program will have more impact if the site is served by frequent transit, for example (although note that a TDM program can do much to promote carpooling even in other locations). For this reason, we recommend that part of the TDM credit be used to adjust the credits granted for transit service and pedestrian/bicycle friendliness (see Figure 9).

Figure 9 Recommended TDM Program Reductions

Level	Number of Elements	Recommended Reduction
Major	At least 5 elements	2%, plus 10% of the credit for transit and pedestrian/bike friendliness
Minor	At least 3 elements	1%, plus 5% of the credit of transit and pedestrian/bike friendliness
No program	None	None

Examples

It is important to recognize that any type of calibration is beyond the scope of this analysis, which relies on existing references to build on the ranges established in the existing mitigation component. Figure 10, however, does provide some examples to indicate the trip reductions that would apply to specific places.

The data are drawn from the database compiled for the Location Efficient Mortgage program (for details, see Holtzclaw et. al., 2002), and from the San Francisco Bay Area Metropolitan Transportation Commission's TAZ files. For these reasons, the examples are limited to the San Francisco Bay Area. Transit service was estimated from schedules and route maps. Sidewalk and bike lane completeness were estimated based on local knowledge. For these reasons of limited data, the examples are intended as illustrations only, rather than to refer to a particular project.

The reductions are calculated for the physical and environmental factors only, for residential uses. They exclude any additional reductions from TDM programs and affordable housing.

The final column compares average vehicle miles traveled (no vehicle trip data were readily available) in these neighborhoods to the Brentwood baseline, as a rough

comparison to the reductions granted through the proposed trip reductions for URBEMIS. As can be seen, while there are significant discrepancies, the overall correspondence is acceptable for this type of sketch planning model.

Figure 10 Example Trip Reductions

								% Reduction in VMT from Brentwood
Example	TAZ	Residential Density	Mix of Uses	Local Retail	Transit	Ped/bike friendliness	Total Reduction	
Brentwood	899	1.4%	-3.0%	0.0%	0.1%	1.7%	0.3%	0.0%
Orinda	831	-9.5%	5.8%	0.0%	3.7%	1.4%	1.4%	5.6%
Pleasant Hill BART	806	14.4%	7.2%	3.0%	8.3%	3.3%	36.3%	40.2%
Emeryville	723	39.0%	1.7%	3.0%	4.4%	4.9%	53.1%	47.8%
Downtown Palo Alto	245	19.8%	4.4%	3.0%	6.1%	7.5%	40.8%	50.6%

References

Boarnet, Marlon and Crane, Randall (2001), *Travel by Design. The Influence of Urban Design Form on Travel.* New York: Oxford University Press.

Calthorpe, Peter (1993), *The Next American Metropolis: Ecology, Community and the American Dream.* New York: Princeton Architectural Press.

Local Government Commission (2002), *Compact Development Compact Disc: A Toolkit to Build Support for Higher Density Housing.* Sacramento, CA: Local Government Commission.

Caltrans (2002), *Special Report: Parking and TOD: Challenges and Opportunities*.

Comsis (1993). *Guidance Manual: Implementing Effective Employer-Based Travel Demand Management Programs*.

Criteron Planner/Engineers and Fehr & Peers Associates (2001). *Index 4D Method. A Quick-Response Method of Estimating Travel Impacts from Land-Use Changes*. Technical Memorandum prepared for US EPA, October 2001.

Dill, Jennifer (2003), *Measuring Network Connectivity for Bicycling and Walking.* Unpublished paper presented at Joint Congress of ACSP-AESOP, Leuven, Belgium, Jul 9 2003.

Ewing, Reid (1999), *Pedestrian- and Transit-Friendly Design: A Primer for Smart Growth*. Washington, DC: Smart Growth Network.

Federal Highway Administration (1998), *The Bicycle Compatibility Index: A Level of Service Concept. Implementation Manual.* Available at www.hsrc.unc.edu/research/pedbike/98095/

Georgia Institute of Technology (2002), *SMARTRAQ – Strategies for Metropolitan Atlanta's Regional Transportation and Air Quality City and Regional Planning Program. Regional Land Use Database: Land Use Measures.* Report available at: www.smartraq.net/pdfs/GDOT_Deliverable_10.pdf

Holtzclaw, John (2002), *How Compact Neighborhoods Affect Modal Choice – Two Examples.* Available at: www.sierraclub.org/sprawl/articles/modal.asp

Kittelsen & Associates et. al. (2003). *Transit Capacity and Quality of Service Manual. 2nd Edition.* TCRP Report 100. Washington, DC: Transportation Research Board.

Kuzmyak, J Richard; Pratt, Richard H and Douglas, G Bruce (2003). *Traveler Response to Transportation System Changes. Chapter 15 – Land Use and Site Design.* Transportation Research Board, TCRP Report 95. [Note that this report has been published on an interim basis in the form of individual chapters.]

Kuzmyak, J Richard; Weinberger, Rachel; Pratt, Richard H and Levinson, Herbert S. (2003b), *Traveler Response to Transportation System Changes. Chapter 18 – Parking Management and Supply.* Transportation Research Board, TCRP Report 95.

Landis, Bruce; Vattikuti, Venkat; Ottenberg, Russell; McLeod, Douglas; and Guttenplan, Martin (2001), "Modeling the Roadside Walking Environment: Pedestrian Level of Service," *Transportation Research Record 1773,* pp 82-88.

Lund, Hollie; Cervero, Robert; and Willson, Richard (2004), *Travel Characteristics of Transit-Oriented Development in California.* Final Report. January 2004.

Nelson\Nygaard (2002), *Housing Shortage/Parking Surplus. Silicon Valley's opportunity to address housing needs and transportation problems with innovative parking policies.* Oakland, CA: Transportation and Land Use Coalition. Available at http://www.transcoalition.org/reports/housing_s/housing_shortage_home.html.

Nelson\Nygaard (2002b), *Transit Impact Review Program. Final Report.* Report for Southern California Association of Governments and Los Angeles Department of Transportation.

Parsons Brinckerhoff Quade and Douglas, Inc., with Cambridge Systematics, Inc. and Calthorpe Associates (1993), *Making the Land Use Transportation Air Quality Connection.*

The Pedestrian Environment. Report prepared for 1000 Friends of Oregon. Available at: ntl.bts.gov/DOCS/tped.html

Parzen, Julia and Sigal, Abby Jo (2004). "Financing Transit Oriented Development," in Dittmar, Hank and Ohland, Gloria (eds), *The New Transit Town. Best Practices in Transit-Oriented Development*. Washington, DC: Island Press.

Pratt, Richard H (2000), *Traveler Response to Transportation System Changes. Chapter 13 – Parking Pricing and Fees.* Transportation Research Board, TCRP Report 95.

Russo, Ryan (2001), *Planning for Residential Parking: A Guide For Housing Developers and Planners*. Non-Profit Housing Association of Northern California. Available at: www.nonprofithousing.org/actioncenter/toolbox/parking/

Schlossberg, Marc and Brown, Nathaniel (2003), *Comparing Transit Oriented Developments Based on Walkability Indicators.* Paper submitted to Transportation Research Board. Available at: www.uoregon.edu/ ~ schlossb/PPPM/schlossberg_trb04.pdf.

Shoup, Donald C. & Willson, Richard W. (1990). *Federal Tax Policy and Employer-paid Parking: The Influence of Parking Prices on Travel Demand*. Prepared for: Commuter Parking Symposium Association for Commuter Transportation Seattle, Washington December 6-7, 1990.

Shoup, Donald (1999). "The Trouble with Minimum Parking Requirements," *Transportation Research Part A*, 33: 549-574.

Shoup, Donald (1999b), "In Lieu of Required Parking," *Journal of Planning Education and Research*, 18: 307-320.

Shoup, Donald (2003), "Truth in Transportation Planning," *Journal of Transportation and Statistics*, 6(1): 1-16.

Transportation and Land Use Coalition (2002), *Revolutionizing Bay Area Transit…on a Budget.* Oakland, CA: Transportation and Land Use Coalition. Available at http://www.transcoalition.org/reports/ revt/revt_home.html.

Valk, Peter & Wasch, Mikal (1998). *Messing with Success: The Boeing Company's Trip Reduction Program.* Presentation at 1998 ACT Annual Conference

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APPENDIX E

Cost Effectiveness Analysis for Proposed Rule 9510 (Indirect Source Review) and Rule 3180 (Administrative Fees for Air Impact Assessment Applications)

November 17, 2005

I. INTRODUCTION

California Health and Safety Code (CH&SC) Section 40920.6(a) requires the San Joaquin Valley Unified Air Pollution Control District (District) to conduct a cost effectiveness analysis of the proposed control options prior to the adoption of the proposed rules. The purpose of conducting a cost effectiveness analysis is the evaluation of the possible economic effect of the pollution control measures (rules). The analysis also serves a guideline in developing the control requirements for the rule.

II. SUMMARY AND CONCLUSION

The CH&SC section cited above requires a cost effectiveness analysis for the most likely compliance scenario, and an incremental cost effectiveness analysis on an alternative compliance scenario. Absolute cost effectiveness of a control option for traditional rules are typically determined by taking the added annual cost (in $/year) of the control technology or technique, divided by the emission reduction achieved (in tons/year). The costs can include capital equipment costs, engineering design costs, installation costs, and any cost savings, such as from decreased energy usage and decreased maintenance costs.

Rule 9510 would require developers to reduce the following project's operational and area source emissions: 33.3% of NOx emissions and 50% of the PM10 emissions, over a ten-year period. Rule 9510 would also require the developers to reduce emissions from equipment used during the construction phase by 20% for NOx and 45% for PM10 emissions compared to the statewide average. The construction emissions may be reduced on-site by using newer fleets than the statewide construction average, using add-on controls, and/or by using clean fuels. The rules are structured to allow flexibility in complying with the rule requirements due to various requirements and limitations imposed by local agencies in the projects' jurisdiction. Methods of compliance include the following: achieving the necessary reductions entirely through on-site emission reduction measures; reducing, in varying degrees, partially on-site and partially off-site through the off-site emission reduction fee; reducing entirely off-site through the payment of an off-site emission reduction fee. The fee for emissions not reduced in the design of the project or with equipment controls would fund off-site emission reduction projects. The fee for these off-site projects would be calculated by multiplying the required emission reductions by a cost effectiveness factor. This rule differs from traditional rules, in that a cost effectiveness value is predetermined and the control costs are based on that cost effectiveness value.

Cost effectiveness is a primary criterion for the District to fund emission reduction projects. Cost effectiveness of a off-site emission reduction project is based on the amount of pollution (per pound or ton of a pollutant) the project eliminates for each

dollar spent. There are different methodologies to determine cost effectiveness for different programs, but in general, cost effectiveness is determined by dividing the cost of the project by the amount of emissions reduced. Several factors are used to determine the emission reductions for a particular mitigation project, including: the age of the vehicle or engine being replaced, project life (how long in terms of time the emission reductions can be expected to be surplus), and activity level, which is usually represented in annual hours of operation or mileage. Project life allows the District to determine how many emission reductions can occur per year. This is important in determining timelines for emission reductions and will assist the District in attaining the ozone and PM10 standards.

To determine the cost effectiveness for the ISR Program, District staff identified NOx emission reduction projects that have previously been funded and the costs associated with each project. Table E–1*, Estimated NOx Emission Reductions from Current and Historical Grant Programs by the District* summarizes the grant programs.

Table E-1
Estimated NOx Emission Reductions from Current and Historical Grant Programs

	Emissions Tons	Emissions Pounds	Grant Funded Dollar Amounts	Cost Effectiveness* $/Pound	Cost Effectiveness* $/Ton
All External Projects					
1992 -1993	400	800,000	$3,665,200	$4.58	$9,163.00
1993 -1994	525	1,050,000	$4,773,814	$4.55	$9,092.98
1994 - 1995	590	1,180,000	$3,594,486	$3.05	$6,092.35
1995 - 1996	650	1,300,000	$3,688,311	$2.84	$5,674.32
1996 - 1998	885	1,770,000	$6,309,952	$3.56	$7,129.89
1998 - 2004	30,419	60,838,805	$60,798,609	$1.00	$1,998.68
Total	***33,469***	***66,938,805***	***$82,830,372***	***$3.26***	***$6,525.20***
REMOVE Program					
1992 - 1993 Phase I	400	800,000	$3,665,200	$4.58	$9,163.00
1993 - 1994 Phase II	525	1,050,000	$4,773,814	$4.55	$9,092.98
1994 - 1995 Phase III	590	1,180,000	$3,594,486	$3.05	$6,092.35
1995 - 1996 Phase IV	325	650,000	$2,688,311	$4.14	$8,271.73
1996 - 1998 Phase V	360	720,000	$5,309,952	$7.37	$14,749.87
1998 - 1999 Phase VI	104	208,247	$2,556,403	$12.28	$24,551.64
1999 - 2000 Phase VII	304	607,640	$2,422,741	$3.99	$7,974.26
2002 - 2003 Phase VIII	156	311,059	$1,210,648	$3.89	$7,784.04
Total	*2,608*	*5,526,946*	*$26,221,555*	*$5.48*	*$10,959.98*
Vehicle Buy-Back					
1995 - 1996	325	650,000	$1,000,000	$1.54	$3,076.92
1997 - 1998	525	1,050,000	$1,000,000	$0.95	$1,904.76
Total	*850*	*1,700,000*	*$2,000,000*	*$1.25*	*$2,490.84*
Heavy-Duty Program					
1997 - Jan 2004	29,811	59,622,859	$53,381,817	$2.28	$4,564.13
Lt. & Med.-Duty Vehicle Program					
2001 - Jan 2003	22	43,000	$750,000	$17.44	$34,883.72
1999 Lawnmower Replacement Program					
2001 - 2002	23	46,000	$477,000	$10.37	$20,739.13

Please note that beginning in 1995-96 vehicle buy-back was no longer included in the REMOVE Program. A separate program for heavy-duty vehicle projects was established beginning in 1997.

III. GRANT PROGRAMS

This section identifies the existing grant programs and different types of projects that are funded under those programs that are possible candidates for any off-site emission reduction fees collected under Rule 9510. In addition, this section identifies additional projects that may be funded through the ISR program. The District will also consider projects and programs for funding in addition to the ones discussed in this section, when other projects and programs are identified.

REMOVE/REMOVE II

The Reduce Motor Vehicle Emissions (REMOVE) Program was the first District grant program implemented in 1992 to fund projects that reduced emissions associated with motor vehicle trips. Due to the lengthy REMOVE evaluation committee process, the District's Governing Board approved the revised REMOVE II Program on March 13, 2005. The REMOVE II Program awards grant funding on a first-come, first-serve basis and consists of a broad range of mobile source incentive projects. The following separate components within the REMOVE II Program have established parameters and funding caps to achieve prudent cost effectiveness levels: E-Mobility (Telecommunications) Incentive Component; Public Transportation and Commuter Vanpool Passenger Subsidy Component Bicycle Infrastructure Component; Light and Medium Duty Incentive Component. The components establish guidelines to maximize the emission reduction potential for individual projects. The criterion for evaluating potential projects is ARB's methodology for calculating cost effectiveness and emission reductions. Additionally, the District has established requirements for applicants to validate the emission reductions generated by REMOVE II incentive program components.

The E-Mobility Component of the REMOVE II Program provides funding for the development or expansion of electronic telecommunications services in municipal government and public education. The electronic technology will serve as direct replacement of vehicle trips to public sites for conferencing, document transactions, general information, work functions, school instruction, and related applications. E-Mobility projects include: distance-learning technology, telecommute center equipment, teleconference systems, E-government technology, E-court technology and related electronic applications.

The Public Transportation and Commuter Vanpool Passenger Subsidy Component of the REMOVE II Program, provides funding to attract new participants to public transportation and commuter vanpools. The passenger subsidies will serve to attract new participants to public transportation and commuter vanpools as an alternative to single occupant vehicle (SOV) commutes. Passenger subsidy projects include: incentives for transit bus agencies, shuttles, commuter vanpools, rail, and park-and-ride lot construction.

The Bicycle Infrastructure Component of the REMOVE II Program will fund the development of a comprehensive bicycle transportation network. The component will

support the expansion and linkage of bicycle transportation facilities that promotes the practice of commuter bicycling as a safe and viable transportation alternative. Bicycle infrastructure projects may include the development of Class I Bicycle Paths (construction) and Class II Bicycle Lanes (striping).

The Light and Medium Duty Incentive Component of the REMOVE II Program will fund a portion of the purchase cost of low-emission light-duty and medium-duty motor vehicles for public agencies. The purpose for the component is to encourage and increase the introduction of reduced emission alternative fuel vehicles. Low-emission vehicles may include Zero Emission Vehicles, Super Ultra Low Emission Vehicles, Ultra Low Emission Vehicles, and Electric Bicycles based on ARB emission standards.

Heavy-Duty Program

The Heavy-Duty Engine Emission Reduction Incentive Program (Heavy-Duty Program) initially evolved from REMOVE in 1997 and the District continues to administer the program. The Heavy-Duty Program replaces older model high polluting engines with newer and cleaner burning engines. The Heavy-Duty Program also encourages the early introduction of on-road and off-road heavy-duty motor vehicles with engines that include reduced-emission technologies. Eligible project types funded under this program include: marine vessels, forklifts, agricultural pump engines, on-road and off road vehicles and equipment, agricultural harvesters, hay bailers, tractors, delivery trucks, sprayers, yard spotters, earthmovers, line haul trucks, back hoes, dump trucks, earth movers and drills, transit and school buses, and forklifts. This program has been expanded to assist in the development of alternative fuel infrastructure, particulate filters on eligible diesel school buses, and idle reduction technologies for heavy-duty vehicles.

Emission reductions are obtained when the project applicant purchases vehicles and engines that are cleaner than required by current emission standards or installs an emission certified retrofit kit on an existing engine. The District pays the differential cost of purchasing the lower emitting technology compared to conventional technology. Emission reduction, calculations, and horsepower categories are used to determine an incentive amount. Project monitoring is conducted to verify eligibility, to ensure proper use of public funds and to validate the emission reductions. Applicants are required to enter into contracts with the District and are required to submit annual usage reports for five years after the technology is purchased.

The Heavy Duty Program is primarily aimed at NOx reductions, but many projects also achieve particulate matter (PM10) reductions. Historically, this incentive program has been exceptionally cost effective, replacing approximately 4,484 engines[1].

[1] *SJVAPCD Heavy-Duty Engine Incentive Program Database*

PM10 Incentive Program

The District currently does not have an incentive program that primarily targets PM10 emissions reductions, however an incentive program will be needed for Rule 9510. Initially, District staff surveyed the PM10 emissions inventory to determine the largest sources of emissions and related factors, the extent of existing or planned control, and types of control options that are available. District staff identified unpaved traffic surfaces and unpaved shoulders as the most viable options for emission reduction projects. Other potential sources include the use of PM10-efficient street sweepers and fireplace retrofits/replacement. The District is proposing to develop an Unpaved Road and Traffic Surface Program that would fund or partially fund the treating or paving of unpaved roads or unpaved shoulders within the San Joaquin Valley Air Basin, in time to implement and achieve the reductions committed to for this rule. Once that program is established, the District will continue to explore and develop other PM10 incentive programs, such as PM10-efficient street sweepers, fireplace retrofits/replacement, and/or leaf blowers.

The duration of the contract will vary depending on the project. Some contracts will be completed upon installation, while others may require reporting for 5 years. For example, a road-paving project would have a contract that is completed upon installation, whereas an engine contract typically contains a 5-year reporting requirement. The staff report will be amended to include this information.

IV. RULE 9510 ESTIMATED COST EFFECTIVENESS

The District's future prospects for funding the most cost effective NOx reduction projects are currently declining. Many of engines that qualify for the Heavy-Duty Program incentive funds have been replaced or retrofitted. Diesel engines greater then 50 horsepower are being regulated by the State and the District resulting in cleaner operating engines with lower emissions. Consequently, the most cost-effective projects (e.g. diesel engines manufactured before 1996) have previously been funded resulting in projects that will cost more in the future to fund.

To determine future cost effectiveness for NOx emission reduction projects, staff reviewed previously funded projects' NOx cost effectiveness, the types of projects, and the future availability of those projects. Attachment 1 compiles the necessary information and determines the resulting cost effectiveness. The general concept for NOx projects in Attachment 1, is that the types of grant applications received will move from the heavy duty projects to lighter duty projects at a rate of 5% per year, and that the cost of heavy duty projects will increase approximately $2000 more per ton. Attachment 1, can be summarized as follows:

NOx Cost-Effectiveness

Year	Cost to Reduce One ton of NOx
2006	$4,650.00
2007	$7,100.00
2008 and beyond	$9,350.00

Presently, most of the Districts incentive funds have been used to fund NOx emission reductions. In order to determine future cost effectiveness for PM10 emission reduction projects, District staff researched PM10 emissions and reductions. Initially, the PM10 emissions inventory was surveyed to determine the largest sources of emission factors, the extent of existing or planned control, and types of control options that are available. District staff identified unpaved traffic surfaces and unpaved shoulders as the most viable options for emission reduction projects. Other potential sources include the use of PM10-efficient street sweepers and fireplace retrofits/replacement.

Once the sources were identified, each source was analyzed in terms of emission factors, thresholds, available control effectiveness, and costs of those controls. Attachment 1 also compiles the necessary information and determines the resulting cost effectiveness for PM10 projects. There are several concepts for PM10 projects that are incorporated in Attachment 1. Initially, the District is anticipating that it will receive a high number of applications to treat or pave unpaved roads, with the most cost effective projects coming in the first few years. The District is also expecting the cost to treat or pave unpaved roads to increase by 75% each year for each ton reduced. The District is anticipating receiving a higher number of applications for unpaved shoulders and street sweepers, each year. Attachment 1, can be summarized as follows for PM10:

PM10 Cost-Effectiveness

Year	Cost to Reduce One ton of PM10
2006	$2,907.00
2007	$5,594.00
2008 and beyond	$9,011.00

V. SOURCES OF COST DATA

District staff used cost effectiveness information derived from actual NOx emissions reduction projects administered by the District. This data is sent to the California Air

Resources Board (ARB) on an annual basis. The following data sources were used for the PM10 analysis:

1. Effectiveness Demonstration of Fugitive Dust Control Methods for Unpaved Roads and Unpaved Shoulders on Paved Roads
   DRI document No. 685-5200.1F1
   Desert Research Institute
   December 31, 1996

2. Methods to find Cost-effectiveness of Funding Air Quality Projects: For Evaluating Motor Vehicle Registration Fee Projects and Congestion Mitigation and Air Quality Improvement (CMAQ) Projects
   California Air Resources Board
   2003 Edition

3. Final BACM Technological and Economic Feasibility Analysis
   Sierra Research, Inc.
   Prepared for the SJVAPCD
   March 2003

4. Entrained Road Dust from Paved Road Travel: Emission Estimation Methodology, Background Document
   Section 7.9
   California Air Resources Board
   Updated July 1997

5. Unpaved Road Dust (non-farm roads, SJV only)
   Section 7.10 SJV
   California Air Resources Board
   Patrick Gaffney
   Updated May 2004

6. Spreadsheet used for San Joaquin Valley Air Pollution Control District PM10 SIP, 2003
   Spreadsheet, “Unpaved1999Mar_13_2003Final.xls”
   California Air Resources Board
   Patrick Gaffney

7. Conversations and E-mail correspondence with Mel Zeldin, consultant

Attachment 1
Anticipated Use of ISR Funds
for Determining Cost Effectiveness

For 2006					
	Projected % of Fund Use	Cost Effectiveness ($/ton reduced)			
		Likely Minimum	Cap[1]	Representative Cost Effectiveness[2]	Weighted Representative Factor
PM10					
Unpaved Roads/Traffic Areas	90%	$1,694	$15,000	$1,819	
Unpaved Shoulders	5%	$11,838	$15,000	$12,907	
Street Sweepers	5%	$10,000	$15,000	$12,500	
Overall PM10		**$1,694**	**$15,000**	**$9,075**	**$ 2,907**
NOx					
Heavy Duty Program	95%	$3,000	$5,000	$4,000	
REMOVE	5%	$14,000	$20,000	$17,000	
Overall NOx		**$3,000**	**$20,000**	**$10,500**	**$ 4,650**

For 2007					
	Projected % of Fund Use	Cost Effectiveness ($/ton reduced)			
		Likely Minimum	Cap[1]	Representative Cost Effectiveness[2]	Weighted Representative Factor
PM10					
Unpaved Roads/Traffic Areas	75%	$1,900	$15,000	$3,183	
Unpaved Shoulders	20%	$11,838	$15,000	$12,907	
Street Sweepers	5%	$10,000	$15,000	$12,500	
Overall PM10		**$1,900**	**$15,000**	**$9,530**	**$ 5,594**
NOx					
Heavy Duty Program	90%	$5,000	$7,000	$6,000	
REMOVE	10%	$14,000	$20,000	$17,000	
Overall NOx		**$5,000**	**$20,000**	**$11,500**	**$ 7,100**

Anticipated Use of ISR Funds
for Determining Cost Effectiveness

For 2008					
	Projected % of Fund Use	Cost Effectiveness ($/ton reduced)			
		Likely Minimum	Cap[1]	Representative Cost Effectiveness[2]	Weighted Representative Factor
PM10					
Unpaved Roads/Traffic Areas	55%	$1,900	$15,000	$5,571	
Unpaved Shoulders	35%	$11,838	$15,000	$13,419	
Street Sweepers	10%	$10,000	$15,000	$12,500	
Overall PM10		**$1,900**	**$15,000**	**$10,497**	**$ 9,011**
NOx					
Heavy Duty Program	85%	$7,000	$9,000	$8,000	
REMOVE	15%	$14,000	$20,000	$17,000	
Overall NOx		**$7,000**	**$20,000**	**$12,500**	**$ 9,350**

For 2009					
	Projected % of Fund Use	Cost Effectiveness ($/ton reduced)			
		Likely Minimum	Cap[1]	Representative Cost Effectiveness[2]	Weighted Representative Factor
PM10					
Unpaved Roads/Traffic Areas	55%	$1,900	$15,000	$9,749	
Unpaved Shoulders	35%	$11,838	$15,000	$13,419	
Street Sweepers	10%	$10,000	$15,000	$12,500	
Overall PM10		**$1,900**	**$15,000**	**$11,889**	**$ 11,308**
NOx					
Heavy Duty Program	80%	$9,000	$12,000	$10,500	
REMOVE	20%	$14,000	$20,000	$17,000	
Overall NOx		**$9,000**	**$20,000**	**$13,750**	**$ 11,800**

Anticipated Use of ISR Funds
for Determining Cost Effectiveness

For 2010					
	Projected % of Fund Use	**Cost Effectiveness ($/ton reduced)**			
		Likely Minimum	Cap[1]	Representative Cost Effectiveness[2]	Weighted Representative Factor
PM10					
Unpaved Roads/Traffic Areas	45%	$1,900	$15,000	$14,682	
Unpaved Shoulders	40%	$11,838	$15,000	$13,419	
Street Sweepers	15%	$10,000	$15,000	$12,500	
Overall PM10		**$1,900**	**$15,000**	**$13,534**	**$ 13,850**
NOx					
Heavy Duty Program	75%	$11,000	$13,000	$12,000	
REMOVE	25%	$14,000	$20,000	$17,000	
Overall NOx		**$11,000**	**$20,000**	**$14,500**	**$ 13,250**

1 The cost effectiveness cap in this column represents the cap that this program would require, not necessarily the historical cap.

2 The representative cost effectiveness is the anticipated cost effectiveness for that year. This is based on district staff forecast.

APPENDIX E
Attachment 1

Project Spending Plan for Proposed Rule 9510 (Indirect Source Review)

November 17, 2005

I. INTRODUCTION

The purpose of this document is to demonstrate that any funds collected by the District will meet their intended purpose of reducing emissions caused by new development in the air basin. It provides a plan for spending any funds generated by the rule in a cost-effective and responsible manner.

Rule 9510 is projected to generate up to $103 million between 2006 and 2008. After 2008 the District will provide a new estimate based on experience with the program and the amount of development occurring in the San Joaquin Valley. The new estimates may be higher or lower than the amounts currently in the rule. To demonstrate the capability to distribute these funds to cost-effective projects, the District has analyzed the potential emission reduction projects available that meet requirements for being surplus, quantifiable, and enforceable. Once the potential projects were identified, staff performed additional research into the cost of individual projects and the potential for owners of the equipment, vehicles, etc. to take advantage of incentive funding.

The District plans on using existing grant programs that are available for immediate funding of projects and to develop new programs for non-traditional sources not eligible for other funding sources such as DMV Surcharge Fees and California Carl Moyer Program funds.

II. Existing Programs

The following existing programs and programs where the District has operated programs in the past are described in Appendix E.

- **Heavy-Duty Engine Incentive Program**
- **REMOVE II Program**
- **Lawnmower Buyback Program**
- **Light and Medium Duty Vehicle Program**
- **Voluntary Accelerated Vehicle Retirement**

The Heavy-Duty Engine Incentive Program and REMOVE II Program are currently in operation and can be used as an outlet for funds from ISR immediately. Other programs where the District has past experience can be implemented quickly.

III. New Programs

Stationary Source Incentive Program

Program concept: Some control options that are in excess of current rule requirements and best available control technology (BACT) thresholds can be implemented with the help of incentive funding. These options typically exceed BACT cost-effectiveness limits or were not required by the rule due to economic impacts; however, relatively cost-effective control options may be available in a variety of industries.

All projects would be required to demonstrate that they are:

- Surplus to all federal, state, and local requirements
- Quantifiable – emission reductions can be determined
- Enforceable – a mechanism is available to ensure that reductions occur
- Permanent – reductions are maintained for the life of the credit

There are several potential ways in which stationary source operators would be attracted to the incentive program:

- Applicant initiated - Applicant proposing expansion or equipment replacement approaches the District with equipment or control technologies in excess of requirements.

- District initiated - District permit engineers identify control technology in excess of BACT requirements and rule requirements during project review and suggest to applicant the potential for going beyond requirements with the help of incentive funding.

- Ongoing program - The District identifies specific equipment or technologies in excess of requirements in a grant program and open application process.

Stationary Source Project Review Process Outline:

1. For projects identified during BACT analysis required under Rule 2201, permit engineers identify potential control technology that exceeds BACT requirements and is surplus of all regulations.
2. The engineer contacts Emission Reduction Incentive Program (ERIP) staff to forward cost effectiveness analysis. *Note: the cost effectiveness performed for ERIP purposes is not the BACT cost effectiveness*.
3. ERIP determines whether project meets ISR funding criteria and contacts PSD and applicant.
4. If not, the project, as initially proposed, is processed by Permit Staff.
5. If yes, 3-parts meeting (ERIP, PSD, Applicant) to review feasible options (technical aspects and funding).

6. Project, as initially proposed, is on hold, waiting for ERIP and applicant final approval/decision.
7. Applicant determines whether the project would be feasible at their facility.
8. If not, the project, as initially proposed, is processed by Permit Staff.
9. If yes, ERIP staff initiates incentive funding application process.
10. For eligible projects, the applicant would complete an application providing contact information and complete project and cost information.
11. Initial project amended to incorporate new proposed control technology.
12. The application would be approved by ERIP and Permit Service Division (PSD).
13. ERIP staff would prepare a contract for the project between the applicant and the District.
14. PSD would incorporate the new controls and emission amounts into the applicant's permit application.
15. PSD issues an Authority to Construct (ATC) allowing the applicant to install the new control.
16. Compliance staff conducts an inspection, that may include a source test for some projects, to verify the emission reductions.
17. Compliance notifies PSD and ERIP that the installation is complete.
18. ERIP approves claim for payment for the contract.
19. Finance issues payment for the project to the applicant.
20. Long term monitoring and reporting is accomplished through the normal process for permitted equipment.
21. ERIP reports emission reductions in periodic reports to the Governing Board.

Projects may also enter the system that are initiated by operators of the permitted sources. In these cases, PSD will conduct an assessment to determine technological feasibility and if the project is surplus and enforceable. PSD would then turn the project over to ERIP for application processing and contracting. Project types that have the potential for large numbers of applications may become an ongoing program component with outreach to recruit applicants.

Example Projects

The following are examples of projects that illustrate the potential to obtain emission reductions through a stationary source incentive program. All projects listed would require additional research and analysis prior to offering incentives.

Example: Replace natural gas fired boilers/burners with cleaner model.

Under District Rule 4306, boilers rated from greater than 5 up to 20 MMBTU per hour are required to achieve a NOx emission rate of 15 ppm. If the applicant currently operated a 30 ppm boiler, when it comes time to replace the boiler, he would be required to install a 15 ppm boiler. Due to advances in technology there are now 9 ppm ultra-low NOx burners available. The cost is in excess of the District's BACT threshold, so the applicant is not required to purchase the 9 ppm boiler. The increment between

the 15 ppm boiler and the 9 ppm boiler are therefore surplus reductions. The incentive amount would be set to cover the extra cost of installing the cleaner boiler. There are approximately 420 units between 5 to 20 MMBTU per hour that are subject to Rule 4306. Complete new burner unit costs are in the range of $28,000 to $57,000 depending on size, based on contact with venders. The differential cost between low emitting and high emitting burners ranges from $5,000 to $7,000

Another possible source of surplus reductions may occur from boilers rated from 2 to 5 MMBTU per hour and subject to proposed Rule 4307, which has a NOx limit of 30 ppm. Some boilers that currently operate above 30 ppm may be exempt from rule retrofit requirements now under development, so the surplus reductions for those units may be calculated from the uncontrolled emissions of 55 ppm down to 9 ppm. The incentive would need to cover 100 percent of the cost of the installation. There are no increased operating costs expected with the 9 ppm burners. There could be more than 300 of these exempt units eligible for an incentive. Unit costs for 2.5 MMBtu/hr 9 ppm burners are about $41,000 based on contact with vendors.

Example: Electrification of stationary non-emergency IC engines.

Stationary engines are required to meet a NOx emission limit specified by Rule 4702. Installing an electric motor in place of the engine would result in a surplus reduction for the increment between the emission limit and the zero emission electric motor. Depending on the current electric rate and price of fuel, there may be a cost increase from changing to electric. The incentive would need to cover the cost of replacing the engine with an electric motor and increased operating costs. There are hundreds of units installed that could take advantage of this program with sufficient incentive amounts. Costs have not been researched.

Example: Install SCR at a flat glass melting furnace.

Glass melting furnaces are required to meet NOx emission limits specified in Rule 4354 when the furnace is next rebuilt. These furnaces are rebuilt approximately every 7 years. The rule requirements can be exceeded with installation of selected catalyst reduction. The surplus reductions can be achieved by using SCR instead of oxy fuel or in addition to oxy fuel in some cases. The cost of control may exceed $10 million per unit, but the large potential emission reductions result in relatively good cost-effectiveness. SCR has high operating costs and would most likely require incentives to cover increased operating costs. There are two potential candidates for this project in the San Joaquin Valley.

Example: Install plenum chambers or additional cyclone separators in cotton gins.

Cotton gins are required to reduce PM10 emissions produced during the ginning process under Rule 4204. Additional controls may be possible for some gins if an

incentive were provided. Installing a plenum chamber before the required cyclone separators may provide reductions if there is room for the equipment in the building. After the cyclone separators there may be potential to add either cyclone separators in or a bag house in series. Feasibility will depend on the gin configuration. There are increased operating costs with adding cyclone separators and bag houses that may impact cost-effectiveness of these options.

PM10 Public Agency Road and Unpaved Surface Program

The District has identified several sources of fugitive PM10 from paved and unpaved roads that provide significant emission reduction potential for the ISR rule. The most promising projects are:

- Paving unpaved roads
- Paving unpaved road shoulders
- Long-term contracts for chemical suppressants on unpaved roads
- Long-term contracts for chemical dust suppressants on unpaved road shoulders
- Purchase of PM10 Efficient Street Sweepers

Program Concept

The District envisions this program as a coordinated effort between the District, Valley Transportation Planning Agencies, city and county road agencies, and public works departments. The funds collected for PM10 will be spent in the county of origin to the extent possible.

The District will develop an application process and evaluation procedure for funding road projects. Some of the key features are outlined below:

General Program Features

1. Each county and the cities within each county will be competing for funds generated in the county
2. The Council of Governments/Transportation Planning Agencies may coordinate the process of identifying funding priorities among the local member jurisdictions.
3. The primary consideration in funding priorities is cost-effectiveness.
4. Projects must not supplant funding from any source.
5. A mix of projects with higher cost-effectiveness may be funded as long as the average cost-effectiveness for the year is consistent with the District's annual target.
6. Once a list of eligible projects is created and ranked, funding would be allocated twice each year as fees are collected by the District.

Unpaved Roads

1. Provide a list of unpaved road segments in descending average daily trip (ADT) sequence (same data used for compliance with Rule 8061).
2. Indicate road segments that will be paved or chemical treated in compliance with Rule 8061.
3. If economic hardship is claimed for Rule 8061, provide justification.
4. As a general rule, the highest ADT road segments should be paved or treated first.
5. Other factors to consider in scoring projects:
   Roads with significant truck traffic should receive added points
   Roads in or near to urban areas should receive added points
6. Payment will be made to the agency after the project is complete.
7. Suppressant projects would be paid annually under a continuing agreement.
8. A single project could be based on total miles of road segments from a jurisdiction so that different roads could be done under one contract.

Paved Road Shoulder Paving Projects

1. Provide a list of unpaved road shoulders in descending average daily trip (ADT) sequence (same list used for compliance with Rule 8061).
2. Indicate road shoulder segments that will be paved or chemical treated in compliance with Rule 8061.
3. Other criteria should be same as unpaved road projects

PM10 Efficient Street Sweepers

1. Provide a description of the existing street sweeping program if any, including sweeping schedule and types of sweepers (PM Efficient or Standard)
2. Demonstrate compliance with Rule 8061 sweeper purchase requirements or provide economic hardship justification.
3. Provide an estimate of the curb miles that will be swept by the new sweeper(s).
4. Projects proposing natural gas vehicles may be eligible for additional funding based on NOx and PM10 exhaust emission reductions.

Agricultural Project Incentive Program

The District has identified several potential projects for agricultural equipment and emission sources not currently eligible for other funding sources. The projects must be surplus to agricultural regulations and be able to demonstrate quantifiable emission reductions.

Program Concept: Although many agricultural sources are now regulated, there are some opportunities for early implementation of controls that are scheduled far enough in the future to result in surplus reductions. In some cases, it is possible to go beyond

current regulations. For example, measures in addition to those required by the Agricultural Conservation Management Program rule.

Agricultural Projects:

- ❖ Lower emitting almond harvester purchase
- ❖ Chippers and shredder purchases as alternative to burning

Project descriptions:

New almond harvesters that emit 35 to 70 percent less PM10 than older units are currently available. Field-testing results completed for the harvesters is currently under analysis by UC Davis. Early introduction of lower emitting almond harvesters will result in significant reductions.

Chipping and shredding wood waste in the orchard instead of burning results in substantial reductions of PM10, NOx, and ROG. Although Rule 4103 phases out most burning by 2010, some will be exempt due to lack of an economic alternative to burning. The District would purchase chippers and shredders for growers that were unable to implement an alternative to burning and had not selected this as a practice for their CMP Plan.

IV. Potential Projects Lists for NOx and PM10

The following tables list potential projects along with estimates of the number of potential projects, costs, emission reductions and cost-effectiveness for each type of project. The purpose of the list is to show that sufficient projects are available at a cost-effectiveness to achieve program goals. The list is not all inclusive. There are many Heavy-Duty Engine Incentive Program and REMOVE II eligible projects that could also be funded. New projects may also become available as retrofit devices are certified and new technologies are released to the market. The conclusion that can be drawn from this information is that projects well in excess of projected funding are available for the ISR program.

Tables are also provided for 2006, 2007, and 2008 containing a demonstration that the cost-effectiveness targets can be met with the types of projects that are available. This is not intended as a funding allocation system. Participation in grant programs is voluntary and on a first come, first served basis. The District may perform targeted outreach and may set up funding pots for the most cost-effective projects if necessary to achieve emission reduction commitments.

NOx Project Availability

	Individual Project Cost	Annual Reduction (t/y)	Project Life	Lifetime Reductions	Project CE $/ton	Projects Available	Total Cost	Cumulative Cost	Category Reductions Life (tons)	Total Reductions t/d	Cumulative Reductions tons	Cumulative CE
Marine Vessels (Harbor Craft) 04 repower	$197,850	7.6	16	121.6	1627.5	1	$197,850	$197,850	121.57	0.02	121.6	$1,627.46
Ag Irrigation Pump Electrification	$21,558	3.0	10	29.9	720.8	142	$3,061,273	$3,259,124	4247.22	0.58	4368.8	$746.00
Marine Vessels (Harbor Craft) 03 repower	$69,288	3.3	16	52.8	1313.3	1	$69,288	$3,328,412	52.8	0.01	4421.6	$752.77
Ag Irrigation Pumps Portable Diesel Repowers	$27,144	2.3	7	15.9	1705.0	50	$1,357,198	$4,685,610	796.0	0.11	5217.6	$898.05
HDD Trucks Idle Reduction	$9,883	0.6	5	3.0	3316.3	320	$3,162,411	$7,848,021	953.6	0.13	6171.2	$1,271.73
Open Burning Chippers Almond	$227,182	5.7	10	57.2	3971.7	1	$227,182	$8,075,203	57.2	0.01	6228.4	$1,296.52
Off-Road Vehicles/Equipment large ag	$48,382	1.7	7	11.8	4100.2	10	$483,820	$8,559,023	118.0	0.02	6346.4	$1,348.65
Auxiliary Power Units (Transportation Refridgeration Units)	$12,518	0.4	5	1.8	6878.1	294	$3,680,348	$12,239,371	535.1	0.07	6881.4	$1,778.61
Ag non self-propelled ICE	$9,200	0.1	7	1.0	8846.2	10	$92,000	$12,331,371	10.4	0.00	6891.8	$1,789.27
On-Road HD Vehicles - Fleet Modernization	$88,756	1.0	10	10.2	8744.4	1000	$88,755,962	$101,087,334	10150.0	1.39	17041.8	$5,931.72
Glass Melting Furnaces - SCR	$22,120,500	239.0	10	2390.0	9255.4	1	$22,120,500	$123,207,834	2390.0	0.33	19431.8	$6,340.52
Off-Road Vehicles/Equipment small ag repowers	$12,677	0.2	7	1.3	9981.9	20	$253,540	$123,461,374	25.4	0.00	19457.2	$6,345.27
Ag non self-propelled ICE - repowers	$15,500	0.2	7	1.5	10402.7	12	$186,000	$123,647,374	17.9	0.00	19475.1	$6,348.99
Small Boilers, Steam Generators, and Process Heaters - replacement	$13,000	0.1	10	1.2	10743.8	1207	$15,691,000	$139,338,374	1460.5	0.20	20935.6	$6,655.58
School Bus Replacement	$110,000	0.3	10	3.1	35483.9	1000	$110,000,000	$249,338,374	3100.0	0.42	24035.6	$10,373.72
Locomotives	$1,414,286	6.0	18.6	111.7	12664.7	10	$14,142,857	$263,481,231	1116.7	0.15	25152.3	$10,475.44
Small Boilers, Steam Generators, and Process Heaters - replacement	$6,000	0.0	10	0.3	18181.8	552	$3,312,000	$266,793,231	182.2	0.02	25334.5	$10,530.85
Forklifts (Electric, ICE, SI)	$44,457	0.4	5	2.0	22798.7	50	$2,222,873	$269,016,104	97.5	0.01	25432.0	$10,577.88
Airport Ground Support Equipment - Electric replacements	$27,889	0.2	5.0	1.1	24753.5	73	$2,035,889	$271,051,993	82.2	0.01	25514.2	$10,623.57
Open Burning Chippers Figs	$185,212	0.6	10	5.7	32379.7	12	$2,222,544	$273,274,537	68.6	0.01	25582.8	$10,681.95
Gross Polluter - VAVR	$3,000	0.1	1	0.08	37500.0	100	$300,000	$273,574,537	8.0	0.00	25590.8	$10,690.33
Old Vehicle - VAVR	$3,000	0.02	3	0.06	50000.0	5000	$15,000,000	$288,574,537	300.0	0.04	25890.8	$11,145.82
									25890.8	3.55		

PM10 Project Availability

	Individual Project Cost	Annual PM10 Reduction (t/y)	Project Life	Lifetime Reductions	Project CE $/ton	Projects Available	Total Cost	Cumulative Cost	Category Reductions Life (tons)	Total Reductions t/d	Cumulative Reductions tons	Cumulative CE
Unpaved Roads - City and County												
Paving 75 ADT roads	$290,000	27.1	20	542.0	535.1	10	$2,900,000	$2,900,000	5420	0.7	5420	$535.06
Paving 25 ADT roads	$290,000	9.0	20	180.7	1605.2	90	$26,100,000	$29,000,000	16260	2.2	21680	$1,337.64
Paving 10 ADT roads	$290,000	3.6	20	72.0	4027.8	100	$29,000,000	$58,000,000	7200	1.0	28880	$2,008.31
Suppressants 10 year contract	$140,080	3.5	10	35.0	4002.3	100	$14,008,000	$72,008,000	3500	1.0	32380	$2,223.84
Paved Roads											32380	
Paving Shoulders	$100,000	0.2	20	3.8	26315.8	500	$50,000,000	$122,008,000	1900	0.5	34280	$3,559.16
Suppresants on Shoulder 10 yr	$48,370	0.2	10	1.6	30231.3	500	$24,185,000	$146,193,000	800	0.2	35080	$4,167.42
PM Efficient Street Sweepers	$152,000	0.9	8	7.3	20821.9	15	$2,280,000	$148,473,000	109.5	0.0	35189.5	$4,219.24
Stationary Source Projects												
Cotton Gin - Install barrel cyclone before master trash 1D3D cyclone	$7,500	1.6	10	16.3	460.1	12	$90,000	$148,563,000	195.6	0.0	35275.6	$4,211.49
Cotton Gin - Install barrel cyclone or 1D2D cyclone before mote system 1D3D cyclone	$60,000	2.8	10	27.6	2173.9	12	$720,000	$149,283,000	331.2	0.0	35606.8	$4,192.54
Cotton Gin - Install plenum chamber before the unloading system and the drying/cleaning systems	$70,000	2.8	10	27.6	2536.2	12	$840,000	$150,123,000	331.2	0.1	35938	$4,177.28
Charbroiler Replacement	$6,600	0.2	10	2.4	2750.0	135.0	$891,000	$151,014,000	324	0.1	36262	$4,164.52
Other Ag Projects												
Almond Harvester Purchase	$145,000	3.6	10	35.7	4061.6	260	$37,700,000	$188,714,000	9282	2.5	45220	$4,173.24
										8.5		

NOx Cost-Effectiveness Demonstration

NOx Project Mix in 2006 to achieve an average cost effectiveness of $4650/ton with $6,006,379 available

	Project Cost	Annual Reduction (t/y)	Project Life	Life Reductions	Total No. Projects Available	Number of Projects in 2006	Total cost	Total tons	Project CE $/ton
Ag Projects									
Ag Irrigation Pump Electrification	$21,558	3.0	10	29.9	142	20	$431,165	598.2	721
Ag Irrigation Pumps Portable Diesel Repowers	$27,144	2.3	7	15.9	50	10	$271,440	159.2	1,705
Off-Road Vehicles/Equipment large ag repowers	$48,382	1.7	7	11.8	10	4	$193,528	47.2	4,100
Ag non self-propelled ICE repowers hay bayler	$9,200	0.1	7	1.0	10	1	$9,200	1.0	8,846
Ag non self-propelled ICE repowers spray rig	$15,500	0.2	7	1.5	12	2	$31,000	3.0	10,403
Off-Road Vehicles/Equipment small ag repowers	$12,677	0.2	7	1.3	20	3	$38,031	3.8	9,982
Open Burning - Chipping Almonds	$227,182	5.7	4	22.9	1	1	$227,182	22.9	9,921
Open Burning - Chipping Figs	$185,212	0.6	4	2.28	12	1	$185,212	2.3	81,233
Marine Projects									
Marine Vessels (Harbor Craft) 03 repower	$69,288	3.3	16	52.8	1	1	$69,288	52.8	1,313
Marine Vessels (Harbor Craft) 04 repower	$197,850	7.6	16	121.6	1	1	$197,850	121.6	1,627
HD Truck/Bus Projects									
HDD Trucks Idle Reduction	$9,883	0.6	5	3.0	320	0	$0	0.0	#DIV/0!

NOx Cost-Effectiveness Demonstration

NOx Project Mix in 2006 to achieve an average cost effectiveness of $4650/ton with $6,006,379 available

HD Truck/Bus Projects *Cont*									
Auxiliary Power Units (Transportation Refridgeration Units) repowers	$12,518	0.4	5	1.8	294	20	$250,364	36.4	6,878
On-Road HD Vehicles Fleet Modernization	$88,756	1.0	10	10.2	1000	10	$887,560	101.5	8,744
School Bus Replacement	$110,000	0.3	10	3.1	1000	9	$990,000	27.9	35,484
Locomotives Tier 0 to Tier 2 or hybrid	$1,414,286	6.0	18.6	111.7	10	1	$1,414,286	111.7	12,665
Stationary Source Projects									
Glass Melting Furnaces	$22,120,500	239.0	10	2390.0	1	0	$0	0.0	#DIV/0!
Small Boilers, Steam Generators, and Process Heaters Replace Existing units with new	$13,000	0.1	10	1.2	1207	1	$13,000	1.2	10,744
Small Boilers, Steam Generators, and Process Heaters Replace Existing units with new	$6,000	0.0	10	0.33	552	12	$72,000	4.0	18,182
Off-Road Mobile									
Forklifts (Electric, ICE, SI)	$44,457	0.4	5	1.95	50	5	$222,287	9.8	22,799
Airport Ground Support Equipment - Electric	$27,889	0.2	5	1.13	73	3	$83,667	3.4	24,753
Other Mobile									
Gross Polluter - VAVR	$3,000	0.1	1	0.08	100	0	$0	0.0	#DIV/0!
Old Vehicle - VAVR	$3,000	0.02	3	0.06	5000	150	$450,000	9.0	50,000
				Overall cost and average CE for 2006			**$6,037,059**	**1316.7**	**4,585**

NOx Project Mix in 2007 to achieve an average cost effectiveness of $7100/ton with $14,407,974 available

	Project Cost	Annual Reduction (t/y)	Project Life	Life Reductions	Total No. Projects Available	Number of Projects in 2007	Total cost	Total tons	Project CE $/ton
Ag Projects									
Ag Irrigation Pump Electrification	21,558	3.0	10	29.9	122	20	$431,165	598.2	721
Ag Irrigation Pumps Portable Diesel Repowers	27,144	2.3	7	15.9	40	20	$542,879	318.4	1,705
Off-Road Vehicles/Equipment large ag repowers	48,382	1.7	7	11.8	6	4	$193,528	47.2	4,100
Ag non self-propelled ICE repowers hay bayler	9,200	0.1	7	1.0	9	4	$36,800	4.2	8,846
Ag non self-propelled ICE repowers spray rig	15,500	0.2	7	1.5	10	4	$62,000	6.0	10,403
Off-Road Vehicles/Equipment small ag repowers	12,677	0.2	7	1.3	17	4	$50,708	5.1	9,982
Open Burning - Chipping Almonds	227,182	5.7	3	17.2	0	0	$0	0.0	#DIV/0!
Open Burning - Chipping Figs	185,212	0.6	3	1.71	11	0	$0	0.0	#DIV/0!
Marine Projects									
Marine Vessels (Harbor Craft) 03 repower	69,288	3.3	16	52.8	0	0	$0	0.0	#DIV/0!
Marine Vessels (Harbor Craft) 04 repower	197,850	7.6	16	121.6	0	0	$0	0.0	#DIV/0!
HD Truck/Bus Projects					0				
HDD Trucks Idle Reduction	9,883	0.6	5	3.0	320	0	$0	0.0	#DIV/0!
Auxiliary Power Units	12,518	0.4	5	1.8	274	40	$500,728	72.8	6,878

NOx Project Mix in 2007 to achieve an average cost effectiveness of $7100/ton with $14,407,974 available

HD Truck/Bus Projects *Cont.*									
On-Road HD Vehicles - Fleet Modernization	88,756	1.0	10	10.2	990	45	$3,994,018	456.8	8,744
School Bus Replacement	110,000	0.3	10	3.1	991	40	$4,400,000	124.0	35,484
Locomotives	1,414,286	6.0	18.6	111.7	9	2	$2,828,571	223.3	12,665
Stationary Source Projects					0				
Glass Melting Furnaces	22,120,500	239.0	10	2390.0	1	0	$0	0.0	#DIV/0!
Small Boilers, Steam Generators, and Process Heaters Replace Existing units with new	13,000	0.1	10	1.2	1206	2	$26,000	2.4	10,744
Small Boilers, Steam Generators, and Process Heaters Replace Existing units with new	6,000	0.0	10	0.33	540	6	$36,000	2.0	18,182
Off-Road Mobile									
Forklifts (Electric, ICE, SI)	44,457	0.4	5	1.95	45	3	$133,372	5.9	22,799
Airport Ground Support Equipment - Electric	27889	0.2	5.0	1.13	70	4	$111,556	4.5	24,753
Other Mobile									
Gross Polluter - VAVR	$3,000	0.1	1	0.08	100	5	$15,000	0.4	37,500
Old Vehicle - VAVR	$3,000	0.02	3	0.06	4850	350	$1,050,000	21.0	50,000
				Overall cost and average CE for 2007			**$14,412,326**	**1892.0**	**7,617**

NOx Project Mix in 2008 to achieve an average cost effectiveness of $9350/ton with $22,373,287 available

	Project Cost	Annual Reduction (t/y)	Project Life	Life Reductions	Total No. Projects Available	Number of Projects in 2008	Total cost	Total tons	Project CE $/ton	Comments
Ag Projects										
Ag Irrigation Pump Electrification	21,558	3.0	10	29.9	102	18	$388,049	538.4	721	
Ag Irrigation Pumps Portable Diesel Repowers	27,144	2.3	7	15.9	20	10	$271,440	159.2	1,705	
Off-Road Vehicles/Equipment large ag repowers	48,382	1.7	7	11.8	2	2	$96,764	23.6	4,100	
Ag non self-propelled ICE repowers hay bayler	9,200	0.1	7	1.0	5	5	$46,000	5.2	8,846	
Ag non self-propelled ICE repowers spray rig	15,500	0.2	7	1.5	6	6	$93,000	8.9	10,403	
Off-Road Vehicles/Equipment small ag repowers	12,677	0.2	7	1.3	13	8	$101,416	10.2	9,982	
Open Burning - Chipping Almonds	227,182	5.6	2	11.1	1	1	$227,182	11.1	20,467	Rule 4103 2010 Implementation
Open Burning - Chipping Figs	185,212	0.6	2	1.14	11	0	$0	0.0	#DIV/0!	Rule 4103 2010 Implementation
Marine Projects										
Marine Vessels (Harbor Craft) 03 repower	69,288	3.3	16	52.8	0	0	$0	0.0	#DIV/0!	
Marine Vessels (Harbor Craft) 04 repower	197,850	7.6	16	121.6	0	0	$0	0.0	#DIV/0!	
HD Truck/Bus Projects					0					
HDD Trucks Idle Reduction	9,883	0.6	5	3.0	320	50	$494,127	149.0	3,316	Idle Aire req. min order of 50 units

NOx Project Mix in 2008 to achieve an average cost effectiveness of $9350/ton with $22,373,287 available

HD Truck/Bus Projects *Cont.*										
Auxiliary Power Units - Repower	12,518	0.4	5	1.8	234	40	$500,728	72.8	6,878	
On-Road HD Vehicles - Fleet Modernization	88,756	1.0	10	10.2	945	66	$5,857,894	669.9	8,744	
School Bus Replacement	110,000	0.3	10	3.1	951	50	$5,500,000	155.0	35,484	
Locomotives	1,414,286	6.0	18.6	111.7	7	4	$5,657,143	446.7	12,665	
Stationary Source Projects					0					
Glass Melting Furnaces	22,120,500	239.0	10	2390.0	1	0	$0	0.0	#DIV/0!	
Small Boilers, Steam Generators, and Process Heaters Replace Existing units with new	13,000	0.1	10	1.2	1204	60	$780,000	72.6	10,744	
Small Boilers, Steam Generators, and Process Heaters Replace Existing units with new	6,000	0.0	10	0.33	534	60	$360,000	19.8	18,182	
Off-Road Mobile					0					
Forklifts (Electric, ICE, SI)	44,457	0.4	5	1.95	42	5	$222,287	9.8	22,799	
Airport Ground Support Equipment - Electric	27889	0.2	5.0	1.13	10	5	$139,444	5.6	24,753	
Other Mobile					0					
Gross Polluter ID & Replace - VAVR	$3,000	0.1	1	0.08	95	50	$150,000	4.0	37,500	
Old Vehicle - VAVR	$3,000	0.02	3	0.06	4500	500	$1,500,000	30.0	50,000	
				Overall cost and average CE for 2008			**$22,385,473**	**2391.7**	**9,359**	

NOx Cost Effectiveness Demonstration

Year	Nox Projected Revenue	NOx CE $/ton
2006	$6,006,379	4,650
2007	$14,407,974	7,100
2008	$22,373,287	9,350
Total	$42,787,640	

PM10 Cost-Effectiveness Demonstration

Project Mix in 2006 to achieve an average cost effectiveness of $2907/ton with $5,941,908 available

	Project Cost	Annual Reduction (t/y)	Project Life	Life Reductions	Total No. Projects Available	Number of Projects in 2006	Total cost	Total tons	Project CE $/ton
Unpaved Roads									
Paving 75 ADT roads	$290,000	27.1	20	542	10	2	$580,000	1084.0	535
Paving 25 ADT roads	$290,000	9.0	20	180.7	90	2	$580,000	361.3	1,605
Paving 10 ADT roads	$290,000	3.6	20	72.0	100	4	$1,160,000	288.0	4,028
Suppressants 10 year contract	$140,080	3.5	10	35.0	100	6	$840,480	210.0	4,002
Paved Roads									
Paving Shoulders	$100,000	0.2	20	3.8	500	14	$1,400,000	53.2	26,316
Suppresants on Shoulder 10 yr	$48,370	0.2	10	1.6	500	16	$773,920	25.6	30,231
PM Efficient Sweeper Purchase	$152,000	0.9	8	7.3	25	2	$304,000	14.6	20,879
Cotton Gins									
Install barrel cyclone before master trash 1D3D cyclone	$7,500	1.6	10	16.3	12	2	$15,000	32.6	460
Install barrel cyclone or 1D2D cyclone before mote system 1D3D cyclone	$60,000	2.8	10	27.6	12	2	$120,000	55.2	2,174
Install plenum chamber before the unloading system and the drying/cleaning systems	$70,000	2.8	10	27.6	12	2	$140,000	55.2	2,536
Other Ag Equipment									
Almond Harvester Purchase	$145,000	3.6	10	35.7	260	0	$0	0.0	#DIV/0!
Average CE in 2006						**Overall cost and CE for 2006**	**$5,913,400**	**2179.7**	**2,713**

Project Mix in 2007 to achieve an average cost effectiveness of $5594/ton with $20,861,575 available

	Project Cost	Annual Reduction (t/y)	Project Life	Life Reductions	Total No. Projects Available	Number of Projects in 2007	Total cost	Total tons	Project CE $/ton
Unpaved Roads									
Paving 75 ADT roads	$290,000	27.1	20	542	8	0	$0	0.0	#DIV/0!
Paving 25 ADT roads	$290,000	9.0	20	180.7	88	5	$1,450,000	903.3	1,605
Paving 10 ADT roads	$290,000	3.6	20	72.0	96	22	$6,380,000	1584.0	4,028
Suppressants 10 year contract	$140,080	3.5	10	35.0	94	16	$2,241,280	560.0	4,002
Paved Roads					0				
Paving Shoulders	$100,000	0.2	20	3.8	486	55	$5,500,000	209.0	26,316
Suppresants on Shoulder 10 yr	$48,370	0.2	10	1.6	484	50	$2,418,500	80.0	30,231
PM Efficient Sweeper Purchase	$152,000	0.9	8	7.3	23	12	$1,824,000	87.4	20,879
Cotton Gins									
Install barrel cyclone before master trash 1D3D cyclone	$7,500	1.6	10	16.3	10	2	$15,000	32.6	460
Install barrel cyclone or 1D2D cyclone before mote system 1D3D cyclone	$60,000	2.8	10	27.6	10	2	$120,000	55.2	2,174
Install plenum chamber before the unloading system and the drying/cleaning systems	$70,000	2.8	10	27.6	10	2	$140,000	55.2	2,536
Other Ag Equipment									
Almond Harvester Purchase	$145,000	3.6	10	35.7	260	2	$290,000	71.4	4,062
Average CE in 2007						**Overall cost and CE for 2007**	**$20,378,780**	**3638.1**	**5,602**

Project Mix in 2008 to achieve an average cost effectiveness of $9011/ton with $33,883,309 available

	Project Cost	Annual Reduction (t/y)	Project Life	Life Reductions	Total No. Projects Available	Number of Projects in 2008	Total cost	Total tons	Project CE $/ton
Unpaved Roads									
Paving 75 ADT roads	$290,000	27.1	20	542	8	1	$290,000	542.0	535
Paving 25 ADT roads	$290,000	9.0	20	180.7	83	5	$1,450,000	903.3	1,605
Paving 10 ADT roads	$290,000	3.6	20	72.0	74	10	$2,900,000	720.0	4,028
Suppressants 10 year contract	$140,080	3.5	10	35.0	78	5	$700,400	175.0	4,002
Paved Roads					0				
Paving Shoulders	$100,000	0.2	20	3.8	431	175	$17,500,000	665.0	26,316
Suppresants on Shoulder 10 yr	$48,370	0.2	10	1.6	434	160	$7,739,200	256.0	30,231
PM Efficient Sweeper Purchase	$152,000	0.9	8	7.3	11	11	$1,672,000	80.1	20,879
Cotton Gins					0				
Install barrel cyclone before master trash 1D3D cyclone	$7,500	1.6	10	16.3	8	2	$15,000	32.6	460
Install barrel cyclone or 1D2D cyclone before mote system 1D3D cyclone	$60,000	2.8	10	27.6	8	2	$120,000	55.2	2,174
Install plenum chamber before the unloading system and the drying/cleaning systems	$70,000	2.8	10	27.6	8	2	$140,000	55.2	2,536
Other Ag Equipment									
Almond Harvester Purchase	$145,000	3.6	10	35.7	258	6	$870,000	214.2	4,062
Average CE in 2008						**Overall cost and CE for 2008**	**$33,396,600**	**3698.6**	**9,029**

PM10 Cost-Effectiveness Demonstration

Year	PM10 Projected Revenue	PM10 CE $/ton
2006	$5,941,908	2,907
2007	$20,306,433	5,594
2008	$33,883,309	9,011
Total	$60,131,650	

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APPENDIX F

Socioeconomic Analysis for Proposed Rule 9510 (Indirect Source Review) and Rule 3180 (Administrative Fees for Air Impact Assessment Applications)

November 17, 2005

SOCIOECONOMIC ANALYSIS PROPOSED INDIRECT SOURCE RULE: DRAFT RULES 9510 AND 3180

4 November 2005

Prepared for

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1. EXECUTIVE SUMMARY

The San Joaquin Valley Unified Air Pollution Control District ("District") seeks to adopt New Rule 9510 and 3180 to meet certain United States Environmental Protection Agency (US EPA) mandates and timelines with regards to improved air quality in the region. This section of the report summarizes the findings of the socioeconomic analysis of Rules 9510 and 3180.

The analysis indicates that while the worst-case residential fee that a typical residential development would pay under Draft Rule 9510 and 3180 can increase the amount of household income required to finance the purchase of a new home, the estimated increase represents a small fraction of the original household income required to finance a new home in the event no air quality fees were in place. The affect of the fees on rents is similarly small.

The analysis also examines the question of housing affordability from the vantage point of low- and moderate-income households. The analysis demonstrates that, even before the imposition of an air quality fees, most low-income and households in the Central Valley are priced out of newly constructed multifamily unit market, the rents for which need to be at levels that account for price of land, development costs, developer fees, and an adequate level of profit, among other things. The analysis discusses how public subsidies can assist in enhancing the financial feasibility of a real estate project in which a certain portion of units are set-aside as below-market rental units.

The analysis also examines the impacts of proposed worst-case off-site emission reduction fees on commercial, industrial and institutional projects. While a typical non-residential development can absorb the 2006 and 2008 fees, projects will have to recover the cost of the fee over a period of time.

It is important to note that any fee identified in the report is the estimated maximum fee in the worst-case scenario for a typical development project, with the understanding that the

actual fee will vary with the particulars of any project. Any fee in the report is presented for the purposes of analyzing potential impacts given costs associated with reducing quantifiable emissions resulting from what constitutes typical residential, commercial and industrial developments. It is also important to note that the developer may reduce fees by incorporating on-site emission reduction measures into the projects. There may or may not be costs associated with on-site measures. In any event, it is anticipated that the developer will choose the least costly option.

2. INTRODUCTION

This report describes the socioeconomic impacts of Rule 9510 (Indirect Source Review – ISR) and 3180 (Administrative Fees for Indirect Source Review). Following this introduction, the report summarizes the proposed amendments and describes the methodology for the socioeconomic analysis. In Section 5, the report describes the economic characteristics of sources affected by Rule 9510 and 3180. The sixth section analyzes the socioeconomic impacts of compliance costs on the regional economy.

The report is prepared pursuant to the provisions of AB2051 (Section 40728.5 of the California Health and Safety Code), which requires an assessment of socioeconomic impacts of proposed air quality rules. The findings in this report can assist District staff in understanding the socioeconomic impacts of Rules 9510 and 3180, and can assist staff in preparing a refined version of the rule. A final report will be presented at the Governing Board hearing by District staff in December 2005. Figure 1 is a map of the eight-county region that comprises the San Joaquin Valley Air Basin. As indicated in the map, Kern County is not completely in the District.

FIGURE 1
San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) Air Basin



3. DESCRIPTION OF NEW RULES 9510 & 3180

The San Joaquin Valley Air Basin (SJVAB) is classified as a nonattainment area for the state and federal health based ambient ozone and PM 10 standards by the California Air Resources Board (ARB) and the U.S. Environmental Protection Agency (EPA). The SJVAB is currently classified as serious nonattainment for the 24-hour and annual National Ambient Air Quality Standards (NAAQS) for particulate matter 10 microns in size and smaller (PM10), extreme nonattainment for the federal 1-hour ozone standard, serious nonattainment for the new federal 8-hour ozone standard, and severe nonattainment for the 1-hour state ozone standard.

The San Joaquin Valley Unified Air Pollution Control District's (District) adopted 2003 PM10 Plan projects attainment of NAAQS for PM10 at the earliest practicable date of December 31, 2010. The Indirect Source Rule[1] (ISR) is one of the commitments contained in the 2003 PM10 Plan to achieve these emissions reductions. The ISR commitment will be implemented through Rules 9510 and 3180. The purpose of Draft Rule 9510 is to reduce emissions of NOx and PM10 from new development projects. The purpose of Draft Rule 3180 is to recover the costs of administering Draft Rule 9510. Implementation of these draft rules is expected to reduce NOx and PM10 emissions by 5.4 and 5.8 tons per day respectively.

The District identified several examples of air pollution agencies in California that are currently reviewing land use projects for indirect source impacts and/or collecting mitigation fees in their districts. District staff reviewed programs being implemented by the Mendocino County and Shasta County Air Quality Management Districts and the Great Basin, Colusa County, and Placer County Air Pollution Control Districts. District staff also considered a number of

[1] Indirect Sources are land uses that attract or generate motor vehicle trips.

program types including District permitting, city/county review, District review, and simple fee.

Despite significant air pollution reductions from both mobile and stationary sources, the District exceeds state and federal air quality standards for ozone and PM10. Although today's new cars pollute about 90 percent less than models produced 25 years ago (due to California's strict vehicle emissions standards), large increases in population and driving partially offset the benefits these cleaner-burning vehicles provide. The District's total population increased by 22 percent between 1990 and 2000; and, California's Department of Finance projects that the SJVAB's population will increase by 24 percent between 2000 and 2010. With increased population, there is an increase in emissions from area sources, such as consumer products, fuel combustion, landscape maintenance equipment, etc.

The total number of vehicle miles traveled (VMT) in the District has increased at a rate faster than population growth. The district witnessed a nine percent increase between 1999 and 2002, and is expecting a 27 percent increase from 2002 to 2010. Entrained and re-entrained paved road dust and corresponding PM10 emissions increase as VMT increases.

To reduce emissions of NOx and PM10, Draft Rule 9510 would apply to development projects that will seek to gain a discretionary approval for projects that, upon full build-out will include any one of the following: 50 residential units, 2,000 square feet of commercial space, 25,000 square feet of industrial space, 20,000 square feet of medical office space, 39,000 square feet of general office space, 9,000 square feet of educational space, 10,000 square feet of government space, 20,000 square feet of recreational space, or 9,000 square feet of unidentified space. Certain transportation projects, transit projects, reconstruction projects that result from a natural disaster, and development projects whose primary source of emissions are subject to District Rule 2201 or 2010 would be exempt from this Draft Rule. Also, development projects that have a mitigated baseline below two tons per year for each pollutant would be exempt from the emission reduction requirements of the rule.

Draft Rule 9510 would require new development project applicants to submit an Air Impact Assessment application to the District prior to or at application for a project's final discretionary approval with a public agency. The application would include an assessment, project location and description, an on-site emission reduction checklist, a proposed Monitoring and Reporting Schedule (MRS), and a fee deferral agreement if necessary. The District would have 10 days to determine whether or not the application is complete. After deeming an application complete, the district would have 30 days to approve the application and notify the applicant of the fee amounts.

Draft Rule 9510 would require developers to reduce cumulative NOx emissions in excess of 50 percent of the project's first-year operational baseline emissions until the emissions reach 50 percent of the first-year baseline emissions (approximately 10 years). Developers would be required to reduce PM10 emissions equal to half of the first-year emissions after build-out for the same time period required for NOx reductions. Developers would also be required to reduce emissions from construction equipment NOx by 20%, and PM10 by 45% compared to the statewide fleet average. Emissions could be reduced through on-site emission reduction measures, by paying the District a fee to fund emission reduction projects off-site, or through a combination of the two.

To recover the costs of administering Draft Rule 9510, Draft Rule 3180 would include a non-refundable application filing fee to be paid when an application is submitted to the District. Once an application and application fee are received, District staff would log the total staff hours spent on the project. So that only the cost of the actual hours spent on the project is recovered, the cost of the hours spent on the project (hours multiplied by a weighted average labor rate) would be subtracted from the application fee. Draft Rule 3180 would also contain a fee, payable when the off-site emission reduction fees are collected, equal to four percent of the off-site fees to recover the cost of administering off-site emission reduction projects.

4. METHODOLOGY

The socioeconomic analysis involves the use of information provided directly by affected sources, as well as secondary data used to describe the industries affected by the proposed provisions of Rule 9510 and 3180. The approach is briefly described below.

This report relies heavily on the most current data available from a variety of sources. For commercial-industrial prices, this report relies on Dataquick, Loopnet.com and Realtor.com. For construction trends, this report relied on the Construction Industry Research Board. When estimating cost of construction, we used "Commercial Square Foot Building Costs: 2004", by Deloitte Saylor Publication, as well as per square foot cost of construction estimates used by many cities when estimating the value of a project. For purposes of estimating profits, ADE relied on Dun and Bradstreet, as well as corporate reports of major home builders and developers of commercial-industrial space operating in California and the Central Valley.

With the above information, ADE was able to estimate profit ratios for sources affected by the draft rule. ADE calculated ratios of profit per dollar of revenue for affected industries. The result of the socioeconomic analysis shows what proportion of profits the compliance costs represent. Based on assumed thresholds of significance, ADE discusses in the report whether the affected sources are likely to pass on costs to consumers or to reduce jobs as a means of recouping the cost of rule compliance or as a result of reducing business operations. To the extent that such job losses appear likely, the indirect multiplier effects of the jobs losses are estimated using a regional IMPLAN input-output model.

When analyzing the socioeconomic impacts of proposed new rules and amendments, ADE works closely within the parameters of accepted methodologies discussed in a 1995 California Air Resources Board report called "Development of a Methodology to Assess the Economic Impact Required by SB513/AB969" (by Peter Berck, PhD, UC Berkeley

Department of Agricultural and Resources Economics, Contract No. 93-314, August, 1995). The author of this report reviewed a methodology to assess the impact that California Environmental Protection Agency proposed regulations would have on the ability of California businesses to compete. The California Air Resources Board (ARB) has incorporated the methodologies described in this report in its own assessment of socioeconomic impacts of rules generated by ARB. One methodology relates to determining a level above or below which a rule and its associated costs is deemed to have significant impacts. When analyzing the degree to which its rules are significant or insignificant, ARB employs a threshold of significance that ADE follows. Berck reviewed the threshold in his analysis and wrote, "The Air Resources Board's (ARB) use of a 10 percent change in [Return on Equity] ROE (i.e. a change in ROE from 10 percent to a ROE of 9 percent) as a threshold for a finding of no significant, adverse impact on either competitiveness or jobs seems reasonable or even conservative."

5. IMPACT INDUSTRIES SUBJECT TO NEW RULES 9510 & 3180 (INDIRECT SOURCE RULE)

This section of the socioeconomic analysis describes demographic and economic trends in the San Joaquin Valley region. The first part of this section compares the San Joaquin Valley region against California as a whole, and provides a context for understanding demographic and economic changes that occurred within the San Joaquin Valley region between 1998 and 2003. Starting with sub-section 5.2, the second part of this section narrows the focus of the socioeconomic analysis to industries affected by New Rules 9510 and 3180. The second part of this section describes the economic characteristics of potentially impacted industries that might be subject to Rules 9510 and 3180.

In this report, the San Joaquin Valley region is defined as Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare counties. Data for Kern County in Tables 1 and 2 are for all of Kern County, although Kern County is only partially in the San Joaquin Valley Air Basin. Starting with Table 3, data for Kern County are for the part of Kern County that is in the San Joaquin Valley Air Basin.

5.1 REGIONAL DEMOGRAPHIC AND ECONOMIC TRENDS

REGIONAL DEMOGRAPHIC TRENDS

The San Joaquin Valley region experienced tremendous population growth during the 1990s. Many came to this area because of affordable housing. As a result, population increased significantly. The eight-county region's population increased by 22 percent (or approximately 2.0 percent annually), from 2.9 million in 1993 to 3.6 million in 2003. While the State of California's population increased by 15 percent (or approximately 1 percent annually), all the counties in the region experienced faster rates of growth, and two counties grew at rates that were triple the State's growth rate, as Table 1 shows. While by many standards Madera County continues to be a small county– at 135,262 residents

according to the Department of Finance–it still experienced a 35 percent growth in population during the last decade (or three percent annually). Kings County also grew by three percent per year. As demonstrated in the following section on regional economic trends, the demographic changes that occurred in the San Joaquin Valley region during the 1990s significantly influenced the economy of this eight-county region.

TABLE 1
Population Growth: San Joaquin Valley Region, 1993 - 2003

	1993	1998	2003	Distribution, 2003	Annual Per. Chng 93-98	Annual Per. Chng 98-03	Annual Per. Chng 93-03
California	31,303,452	32,670,019	36,144,267		1%	2%	1%
SJV Region	2,959,911	3,192,439	3,615,696	10%	2%	3%	2%
Fresno	722,608	781,936	862,642	24%	2%	2%	2%
Kern	593,087	637,227	724,883	20%	1%	3%	2%
Kings	109,648	120,957	141,434	4%	2%	3%	3%
Madera	100,297	114,137	135,262	4%	3%	3%	3%
Merced	191,883	203,181	232,141	6%	1%	3%	2%
San Joaquin	507,170	546,852	630,577	17%	2%	3%	2%
Stanislaus	400,417	428,272	491,929	14%	1%	3%	2%
Tulare	334,801	359,877	396,828	11%	1%	2%	2%

Source: Applied Development Economics, based on California Department of Finance

Housing construction in the San Joaquin Valley Air Basin has paralleled this increase in population. Low interest and the availability of land at prices lower than in coastal areas of California has fueled construction activity in the Central Valley. Tables 2 and 3 track building permits for single-family and multi-family homes. According to the California Construction Industry Research Board, home-builders typically take out building permits only when they are ready to construct housing. Thus, building permits is a good indicator of housing production. As Table 2 shows, the amount of single-family building permits increased by 14 percent annually between 1998 and 2003 in the Central Valley, easily surpassing the statewide annual rate of eight percent. Almost forty percent of all single family building permits was for projects in San Joaquin and Stanislaus County in 2003. As the tables below show, the amount of new construction for single-family homes greatly exceeds new

construction for multi-family housing, for reasons related to market demand, availability of land, and historically low-interest rates, among other reasons.

TABLE 2
Single-Family Residential Building Permit Trends:
San Joaquin Valley, 1993-2003

	---------- SFU Building permits ----------						
	1993	1998	2003	Distribution, 2003	Annual Per. Chng 93-98	Annual Per. Chng 98-03	Annual Per. Chng 93-03
California	69,901	94,298	138,762		6%	8%	7%
SJV Region	15,055	14,280	27,080	20%	-1%	14%	6%
Fresno	3,743	2,742	4,479	17%	-6%	10%	2%
Kern	3,082	3,025	5,529	20%	0%	13%	6%
Kings	530	526	835	3%	0%	10%	5%
Madera	694	473	1,144	4%	-7%	19%	5%
Merced	1,087	960	2,489	9%	-2%	21%	9%
San Joaquin	2,545	3,170	6,727	25%	4%	16%	10%
Stanislaus	1,835	1,997	3,884	14%	2%	14%	8%
Tulare	1,539	1,387	1,993	7%	-2%	8%	3%

Source: Applied Development Economics, based on Construction Industry Research Board

TABLE 3
Multi-Family Residential Building Permit Trends: San Joaquin Valley, 1993-2003

	---------- MFU Building permits ----------						
	1993	1998	2003	Distribution, 2003	Annual Per. Chng 93-98	Annual Per. Chng 98-03	Annual Per. Chng 93-03
California	14,755	31,409	56,920		16%	13%	14%
SJV Region	1,309	1,403	3,699	6%	1%	21%	11%
Fresno	404	292	1,520	41%	-6%	39%	14%
Kern	314	428	583	16%	6%	6%	6%
Kings	13	231	143	4%	78%	-9%	27%
Madera	105	160	90	2%	9%	-11%	-2%
Merced	20	72	457	12%	29%	45%	37%
San Joaquin	83	59	225	6%	-7%	31%	10%
Stanislaus	148	93	284	8%	-9%	25%	7%
Tulare	222	68	397	11%	-21%	42%	6%

Source: Applied Development Economics, based on Construction Industry Research Board

While the value of single-family unit building permits in the Central Valley is lower by almost $40,000 than the value of single family building permits for the state as a whole, it is worth noting that between 1998 and 2003 average values rose

faster in the region as compared to the state (see Table 4). Using average construction cost figures adjusted for regional and historical variations, local officials estimate the value of single-family, multi-family and commercial and industrial building permits for reasons related to calculating fees and maintaining departmental budgets. The actual price of housing on the market is typically higher than the estimated value of the building permit, though changes in the value of building permits are a good indication as to the trajectory of change in the actual housing market.

TABLE 4
Average Value of Single-Family Unit Building Permit, San Joaquin Valley

	---------- Average Value ----------					
	1993	1998	2003	Annual Per. Chng 93-98	Annual Per. Chng 98-03	Annual Per. Chng 93-03
California	$183,559	$218,055	$217,271	4%	0%	2%
SJV Region	$130,879	$141,956	$170,604	2%	4%	3%
Fresno	$135,736	$150,044	$183,122	2%	4%	3%
Kern	$130,191	$130,167	$149,816	0%	3%	1%
Kings	$141,740	$136,190	$119,485	-1%	-3%	-2%
Madera	$100,791	$102,214	$150,562	0%	8%	4%
Merced	$135,439	$140,674	$153,139	1%	2%	1%
San Joaquin	$143,809	$161,303	$197,209	2%	4%	3%
Stanislaus	$119,981	$143,309	$176,566	4%	4%	4%
Tulare	$118,658	$122,141	$153,456	1%	5%	3%

Source: Applied Development Economics, based on Construction Industry Research Board

Table 5 below identifies the median price for for-sale owner-occupied housing in the Central Valley. The data comes from Dataquick. In the last two years, the median selling price of homes sold on the market has increased substantially. Dataquick's median housing price data cover transactions involving newly built homes, reselling of older homes, and condominiums and townhouses. At almost $300,000 the median price of a home in Madera County is almost twice what is was in July 2003.

TABLE 5
Median Home Sale Prices: San Joaquin Valley, 2003-2005 ($2005)

	July 2003	July 2004	July 2005	03-04	04-05
Fresno County	$171,220	$220,955	$265,000	29%	20%
Kern County	$136,353	$176,041	$236,500	29%	34%
Madera County	$151,811	$242,638	$299,500	60%	23%
Merced County	$207,151	$242,638	$335,000	17%	38%
San Joaquin County	$247,295	$320,075	$403,000	29%	26%
Stanislaus County	$245,165	$278,775	$360,000	14%	29%
Tulare County	$131,494	$159,005	$215,500	21%	36%
	$184,356	$234,304	$302,071	27%	29%

Source: Applied Development Economics, based on Dataquick

REGIONAL ECONOMIC TRENDS

The influx of people moving into the region in search of homes that are more affordable than homes in the San Francisco Bay Area affects more than the housing market. The affect of more people in the San Joaquin Valley region can also be seen in the changing economic profile of the region.

Economic development practitioners and planners have traditionally divided economies into two broad industrial categories—the economic base and local support industries. Economic base industries are the drivers of local and regional economies in that these industries draw income into a local economy by selling products outside of the local economy, much like the export industries of a national economy. Accrued earnings then circulate throughout the local area in the form of wages and salaries, investments, purchases of fixed assets, and goods and services, generating more jobs and wealth.

The economic base is typically comprised of industries within the manufacturing, minerals-resource extraction, and agricultural sectors. There are also the "local support industries" such as retail or service sectors, the progress of which is a function of the economic base and demographic changes, and more so the latter than the former. As population increases in a given area, demand for services–such as realtors, teachers, and healthcare–increases, as does

demand for basic retail items like groceries, gas for commuting, or clothing at the local apparel shops.

Agriculture is the economic base of the San Joaquin Valley region by virtue of the amount of goods this sector produces and exports throughout the nation and the globe. Fourteen percent of all workers in the region are employed by industries within agriculture, as Table 2 shows. However, in 1998 the proportion of workers in agriculture was 18 percent. In fact, over the five-year period between 1998 and 2003, employment in agriculture declined by three percent per year, or by 15 percent over five years.

Between 1998 and 2003, local support industries gained in prominence within the San Joaquin Valley region. Service-rendering industries employed the most workers as a proportion of total employment in the region. As Table 2 shows, excluding wholesale, retail and transportation, service-rendering industries comprise the largest employment sector in the region, at 647,100 or 53 percent of all jobs. With retail, transportation and wholesale, services accounts for slightly over 70 percent of all jobs. In 1998, service-rendering industries represented 50 percent of all jobs, and when including retail, wholesale and transportation in the mix, 67 percent.

Increases in employment in service-rendering industries are consistent with regional population growth. In the region, local support industries of construction, education and health, financial activities, and government increased annually by six percent, four percent, three percent and three percent respectively between 1998 and 2003.

TABLE 6
Employment Profile Of The San Joaquin Valley Region 1998 – 2003

MAJOR SECTORS	San Joaquin Valley Region Employment 1998	San Joaquin Valley Region Employment 2003	San Joaquin Valley Region Employment Distribution, 2003	Annual Percent Change 1998 to 2003	California Employment Distribution, 2003	Annual Percent Change 1998 to 2003
Agriculture	204,200	174,900	14%	-3%	3%	-2%
Resources, Mining and Construction	57,400	78,100	6%	6%	5%	5%
Manufacturing	114,300	110,300	9%	-1%	10%	-4%
Wholesale	34,400	39,000	3%	3%	4%	1%
Retail	121,400	133,200	11%	2%	11%	2%
Transportation/Warehousing/Utilities	37,600	45,700	4%	4%	3%	-1%
Information	15,000	14,200	1%	-1%	3%	-0.5%
Financial Activities	40,400	46,600	4%	3%	6%	3%
Professional and Business Services	88,000	95,100	8%	2%	14%	1%
Educational and Health Services	101,500	122,200	10%	4%	10%	3%
Leisure, Hospitality and Other Srvcs	112,500	116,400	9%	1%	13%	2%
Government	221,200	252,600	21%	3%	16%	2%
Total Employment	**1,147,900**	**1,228,300**	**100%**	**1%**	**100%**	**1%**

Source: Applied Development Economics, based on data from California Employment Development Department LMID

The emergence of local support industries in the San Joaquin Valley region mirrors and leads statewide trends, as Table 6 shows. In the region, construction, health-education, and government increased annually by six percent, four percent and three percent, whereas, statewide, these industries grew by five percent, three percent and two percent per year between 1998 and 2003. In short, while agriculture remains the leading edge of the economy, the San Joaquin Valley region's economy has become more diverse, with the growth occurring within population-driven local support industries rather than the export-focused economic base industries of manufacturing and agriculture.

5.2 *DESCRIPTION OF AFFECTED INDUSTRIES*

The analysis below examines trends of industries that will be likely affected by Draft Rules 9510 and 3180. According to the rule, developers of applicable development projects will have to pay a fee to reduce emissions related to the project that are not reduced on-site. The analysis below seeks to understand the possible impact of the fee on the economics of a development project, particularly with respect to project profitability and with respect to impacts on the final user,

which, in the case of housing, is the homebuyer or renter. The report takes into consideration existing fees that are already in place, meaning that the analysis is on the incremental impact of the new fee on top of existing fees.

The following section reviews residential and commercial-industrial trends in certain number of cities in the eight-county region. The report focuses on 27 cities in the region. Table 7 below organizes the 27 cities into different typologies. The consultant obtained information regarding existing fees on residential and commercial development from many of these jurisdictions. In addition, the report references a report issued by State of California's Housing and Community Development Department, called "Pay to Play." This report also tracks residential development fees for many cities in the Central Valley.

TABLE 7
Select Central Valley Cities By Type

Type	Cities
Large Urban	Fresno, Bakersfield
Bay Area Commuter Shed	Stockton, Modesto, Manteca, Lodi, Tracy
Medium	Visalia, Clovis, Merced, Turlock, Hanford, Porterville, Tulare
Small/Med Bedroom Community	Ceres, Sanger, Atwater, Selma, Linden
Small Rural/Farming	Mendota, Wasco, Firebaugh, Avenal, Taft, Orange Cove, Oakhurst, Shafter

Source: San Joaquin Valley Unified Air Pollution Control District

HOUSING TRENDS IN SELECT CITIES

Table 8 below identifies the population for the 27 cities that are the focus of this analysis. These cities consist of over 2 million residents, or 55 percent of all people in the eight-county San Joaquin Valley region. Between 1998 and 2003, population in these cities grew by three percent annually, which is consistent with annual population growth rates for the region as a whole (see Table 1).

TABLE 8
Population Trends of Select Cities in the San Joaquin Valley Region, 1993-2003

			------ Population ------				
	City	**County**	**1993**	**1998**	**2003**	**1993-1998**	**1998-2003**
Large Urban	Bakersfield	Kern	192,351	220,771	268,914	3%	4%
	Fresno	Fresno	385,914	409,070	450,614	1%	2%
			578,265	**629,841**	**719,528**	**2%**	**3%**
Bay Area Commuter Shed	Lodi	San Joaquin	52,936	55,844	60,317	1%	2%
	Manteca	San Joaquin	42,833	47,256	57,485	2%	4%
	Modesto	Stanislaus	176,241	182,929	203,498	1%	2%
	Stockton	San Joaquin	222,992	241,777	262,553	2%	2%
	Tracy	San Joaquin	39,913	47,687	69,987	4%	8%
			534,915	**575,493**	**653,840**	**1%**	**3%**
Medium	Clovis	Fresno	57,036	67,291	76,545	3%	3%
	Hanford	Kings	33,892	39,012	44,833	3%	3%
	Merced	Merced	59,270	61,705	68,155	1%	2%
	Porterville	Tulare	32,310	36,286	42,181	2%	3%
	Tulare	Tulare	37,342	40,848	46,538	2%	3%
	Turlock	Stanislaus	46,481	50,958	62,256	2%	4%
	Visalia	Tulare	84,725	93,856	99,460	2%	1%
			351,056	**389,956**	**439,968**	**2%**	**2%**
Small/Med Bedroom Community	Atwater	Merced	22,528	22,944	26,216	0.4%	3%
	Ceres	Stanislaus	29,331	32,289	36,449	2%	2%
	Linden	San Joaquin	1,090	1,068	1,046	-0.4%	-0.4%
	Mendota	Fresno	7,287	7,521	8,203	1%	2%
	Sanger	Fresno	17,927	18,557	19,993	0.7%	2%
	Selma	Fresno	16,462	17,937	21,003	2%	3%
			94,625	**100,316**	**112,910**	**1%**	**2%**
Small Rural/Farming	Avenal	Kings	11,459	12,178	15,428	1%	5%
	Firebaugh	Fresno	5,031	5,565	6,201	2%	2%
	Oakhurst	Madera	2,570	2,519	2,833	0%	2%
	Orange Cove	Fresno	5,709	7,095	8,782	4%	4%
	Shafter	Kern	10,771	11,182	13,443	0.8%	4%
	Taft	Kern	6,508	7,375	9,027	3%	4%
	Wasco	Kern	17,212	20,083	22,400	3%	2%
			59,260	**65,996**	**78,114**	**2%**	**3%**
San Joaquin Valley Air Basin			**1,618,121**	**1,761,601**	**2,004,360**	**2%**	**3%**

Source: Applied Development Economics, based on California Department of Finance and US Census

Table 9 identifies the number of single-family dwelling unit building permits issued by the 27 cities. As the table shows, the cities issued 17,641 single-family building permits in 2003, which represents almost two-thirds of all single-family building permits issued in the eight-county region as a whole. Table 10 identifies the number of multi-family dwelling units issued by the 27 cities. The amount of these permits represents almost 80 percent of all multi-family building permits issued in the region as a whole in 2003. For these reasons, the cities are representative of the larger region.

TABLE 9 Single-Family Dwelling Units Building Construction Permits, San Joaquin Valley Region 2000-2003

	2000		2001		2002		2003		2000 - 2003	
	Nos. of Permits	Avg. Value	Nos. of Permits	Avg. Value	Nos. of Permits	Avg. Value	Nos. of Permits	Avg. Value	Annual Change in Permits	Annual Change in Avg. Value
01 Large Urban	3,381	$132,038	4019	$132,089	4083	$137,988	5162	$152,257	15%	5%
02 Bay Area Commuter Shed	6,223	$161,757	4699	$172,165	6084	$172,996	6208	$176,852	-0.1%	3%
03 Medium	2,705	$125,488	3585	$141,040	4178	$153,806	5218	$156,243	24%	8%
04 Small/Med Bedroom Community	365	$105,702	542	$112,427	651	$118,285	801	$128,044	30%	7%
05 Small Rural/Farming	190	$83,956	262	$87,732	314	$85,667	252	$98,046	10%	5%
	12,864	$143,580	13107	$147,205	15310	$154,305	17641	$160,217	11%	4%

TABLE 10 Multi-Family Dwelling Units Building Construction Permits, San Joaquin Valley Region 2000-2003

	2000		2001		2002		2003		2000 - 2003	
	Nos. of Permits	Avg. Value	Nos. of Permits	Avg. Value	Nos. of Permits	Avg. Value	Nos. of Permits	Avg. Value	Annual Change in Permits	Annual Change in Avg. Value
01 Large Urban	177	$67,079	182	$73,639	454	$61,259	1150	$67,333	87%	0%
02 Bay Area Commuter Shed	84	$56,183	368	$59,905	514	$65,380	275	$69,075	48.5%	7%
03 Medium	206	$63,512	27	$64,680	155	$76,627	1119	$77,362	76%	7%
04 Small/Med Bedroom Community	51	$48,135	7	$38,617	71	0	162	$22,627	47%	-22%
05 Small Rural/Farming	83	$40,584	135	$36,997	4	$48,978	194	$56,369	33%	12%
	601	$59,067	719	$59,052	1,198	$61,344	2900	$68,137	69%	5%

Source: Applied Development Economics, based on Construction Industry Research Board

Table 11 identifies the average selling price of a new 3 to 4 bedroom home in the select cities. As expected, housing prices in the Bay Area Commuter Shed tend to be higher, in large part because of the close proximity to the San Francisco Bay Area housing market. Prices there are on average $402,644 per 3-4 bedroom unit, versus almost $250,000 for new units in Small/rural farming communities such as Avenal (Kings County) or Orange Cove (Fresno County).

TABLE 11 Average Selling Price of New Single-Family and Multi-Family Housing San Joaquin Valley Region 2005

	------ Single-Family Units ------				------ Multi-Family Units ------		
	Avg 3-4 BR SFU Values	Avg 3-4 BR SFU Size	Lot Size 3-4 BR SFU	Value Per SQFT	Average MFU Values	Average MFU Size	Value Per SQFT
01 Large Urban	$338,047	1,893	5,407	$179	$146,914	1,071	$137
02 Bay Area Commuter Shed	$402,664	2,112	6,034	$191	$180,603	1,071	$169
03 Medium	$296,428	1,779	5,083	$167	$137,357	1,071	$128
04 Small/Med Bedroom Community	$314,030	1,883	5,379	$167	$136,062	1,071	$127
05 Small Rural/Farming	$247,836	1,644	4,697	$151	$125,482	1,071	$117
	$323,966	1,862	5,320	$171	$145,283	1,071	$136

Source: Applied Development Economics, based on Realtor.com, Dataquick, and California Housing and Community Development, "Pay to Play"

Table 12 identifies existing fees on residential development in the 27 cities. As the table shows, fees amount to approximately five to six percent of values for single- and multi-family units. Data for fees comes from a variety of sources, including local jurisdictions and the California Department of Housing and Community Development (HCD), which issued a detailed report on residential developer fees of many cities throughout California. In using the HCD figures, this report adjusted the amount for general inflation and housing price inflation.

TABLE 12 Existing Fees On A Per Unit Basis

	Existing Fees On 3-4 BR SFU Unit	All Fees As Percent of Value	Existing Fees On MFU Unit	All Fees As Percent of Value
01 Large Urban	$17,796	5%	$6,149	4%
02 Bay Area Commuter Shed	$24,576	6%	$8,093	4%
03 Medium	$19,266	6%	$7,355	5%
04 Small/Med Bedroom Community	$21,162	7%	$11,883	9%
05 Small Rural/Farming	$12,689	5%	$5,969	5%
	$18,552	6%	$7,890	5%

Source: Applied Development Economics, based on Realtor.com, Dataquick, and California Housing and Community Development, "Pay to Play"

Tables 13 and 14 compare existing fees against other development costs, including the price of land, to estimate profit and a profit rate. The profit rates calculated below are similar to what would be found in corporate reports of national homebuilders, particularly Centex Homes, Kaufman and Broad, Lennar, and Pulte Homes, whose combined average profit rate is approximately eight percent.[2]

TABLE 13 Home Prices, Construction Costs, Fees and Profit: Single Family Housing

Community Types	Avg 3-4 BR SFU Values	Land Value Per 3-4 BR SFU Unit	All Fees Per 3-4 BR SFU Unit	Site Development Cost Per 3-4 BR Unit	Building Construction Costs Per 3-4 BR Unit	TOTAL COSTS	Profit per Unit	Profit as % Value
Large Urban	$338,047	$77,124	$21,759	$40,233	$167,600	**$306,716**	$31,330	9%
Bay Area Commuter Shed	$402,664	$93,015	$26,957	$46,410	$200,828	**$367,210**	$35,454	9%
Medium-Sized Cities	$296,428	$50,069	$19,266	$37,346	$159,484	**$266,165**	$30,263	10%
Small\Medium Bedroom Communities	$314,030	$74,468	$21,162	$34,570	$157,136	**$287,336**	$26,694	9%
Small Rural\Farming Communities	$247,836	$47,847	$12,689	$28,825	$131,024	**$220,386**	$27,450	11%
	$323,966	$68,505	$20,367	$38,373	$166,739	**$293,983**	$29,982	9%

[2] www.sec.gov see Form 10-K

TABLE 14 Home Prices, Construction Costs, Fees and Profit: Multi-Family Housing

Community Types	Avg MFU Values	Land Value Per MFU Unit	All Fees Per MFU Unit	Site Development Cost Per MFU Unit	Building Construction Costs Per MFU Unit	TOTAL COSTS	Profit per Unit	Profit as % Value
Large Urban	$146,914	$12,999	$6,149	$20,324	$81,295	**$120,767**	$26,147	18%
Bay Area Commuter Shed	$180,603	$14,794	$8,093	$23,116	$92,464	**$138,467**	$42,136	23%
Medium-Sized Cities	$137,357	$10,831	$7,355	$19,519	$80,260	**$117,964**	$19,393	14%
Small\Medium Bedroom Communities	$136,062	$12,868	$11,883	$19,435	$80,926	**$125,113**	$10,949	8%
Small Rural\Farming Communities	$125,482	$10,955	$5,969	$17,085	$77,658	**$111,666**	$13,815	11%
	$145,283	$12,489	$7,890	$20,140	$83,179	**$123,698**	$21,585	15%

Commercial-Industrial Trends

Table 15 below estimates the value, costs and profit associated with developing one acre of commercial, industrial and office development. Information for the table comes from a variety of sources, including Realtor.com and Loopnet.com for current price of new industrial and commercial projects in the Central Valley. When estimating cost of construction, we used "Commercial Square Foot Building Costs: 2004", by Deloitte Saylor Publication, as well as per square foot cost of construction estimates used by many cities when estimating the value of a project. In determining the amount of fees on a commercial-industrial development, we asked building officials in five cities to calculate the amount of fees that would be generated by a 10,000 square feet light industrial development on a 2.5-acre parcel and by a 10,000 square feet retail project on a similarly-sized piece of land. We converted the fees into a per acre amount. The per acre values in the table below were calculated after having calculated the development costs, based on a profit of ten percent, and these values were checked against what we found on Loopnet.com and Realtor.com. The 10 percent profit is based on a review of Deloitte-Saylor's "Commercial Square Foot Building Costs: 2004." It is also based on a review of corporate reports of Catellus (industrial developer) and ProLogis (warehouse

distribution developer). It should be noted that while data in the residential section above represents trends in 27 cities in the Central Valley, information in this section is for five cities that fit the different city types.

As Table 15 shows, existing fees on commercial and office developments are significantly higher than on industrial projects. This is so because of the traffic generated by retail and office is much higher than traffic generated by industrial users, which then requires a corresponding amount of reduction via fees.

TABLE 15 Commercial-Industrial Trends: San Joaquin Valley Region, 2005

		Avg. Value Per Acre (Land and Building)	Unimproved Land Value Per Acre	Fees Per Acre	Site Development Cost Per Acre	Building Construction Costs Per Acre	TOTAL Costs per Acre	Est. Profit Per Acre	Profit As percent of Value
Large Urban									
	Industrial	$1,594,742	$157,518	$14,726	$60,768	$1,202,256	$1,435,268	$159,474	10%
	Commercial	$1,910,201	$546,032	$35,306	$45,576	$1,092,267	$1,719,181	$191,020	10%
	Office	$2,828,107	$546,032	$35,306	$45,576	$1,918,382	$2,545,296	$282,811	10%
Bay Area Commuter Shed									
	Industrial	$1,679,815	$200,905	$47,904	$60,768	$1,202,256	$1,511,833	$167,981	10%
	Commercial	$2,011,879	$522,536	$150,312	$45,576	$1,092,267	$1,810,692	$201,188	10%
	Office	$2,929,785	$522,536	$150,312	$45,576	$1,918,382	$2,636,807	$292,979	10%
Medium-sized Cities									
	Industrial	$1,546,952	$100,000	$29,233	$60,768	$1,202,256	$1,392,257	$154,695	10%
	Commercial	$1,748,583	$303,178	$132,704	$45,576	$1,092,267	$1,573,724	$174,858	10%
	Office	$2,666,489	$303,178	$132,704	$45,576	$1,918,382	$2,399,840	$266,649	10%
Small/Medium Bedroom Community									
	Industrial	$1,631,301	$130,700	$74,447	$60,768	$1,202,256	$1,468,171	$163,130	10%
	Commercial	$1,668,338	$280,576	$83,085	$45,576	$1,092,267	$1,501,504	$166,834	10%
	Office	$2,586,244	$280,576	$83,085	$45,576	$1,918,382	$2,327,619	$258,624	10%
Small Rural\Farming Communities									
	Industrial	$1,877,846	$350,642	$76,395	$60,768	$1,202,256	$1,690,061	$187,785	10%
	Commercial	$1,653,475	$217,800	$136,292	$41,769	$1,092,267	$1,488,127	$165,347	10%
	Office	$2,567,106	$217,800	$132,444	$41,769	$1,918,382	$2,310,395	$256,711	10%

6. SOCIOECONOMIC IMPACTS

This section of the report compares the economic characteristics of affected industries against the possible Rule 9150 and 3180 air quality fees. The first part of this section discusses annual compliance cost. Section 6.2 discusses general business responses to compliance costs. Section 6.3 analyzes the socioeconomic impacts of Draft Rules 9510 and 3180.

6.1 NEW RULE 9510 AND 3180 FEE

Tables 16 through 18 identify the worst-case fees associated with New Rules 9510 and 3180. To reduce emissions of NOx and PM10, Draft Rule 9510 would apply to development projects that will seek to gain a final discretionary approval for projects that, upon full build-out will include any one of the following: 50 residential units, 2,000 square feet of commercial space, 25,000 square feet of industrial space, 20,000 square feet of medical office space, 39,000 square feet of general office space, 9,000 square feet of educational space, 10,000 square feet of government space, 20,000 square feet of recreational space, or 9,000 square feet of unidentified space. Certain transportation projects, transit projects, reconstruction projects that result from a natural disaster, and development projects whose primary source of emissions are subject to District Rule 2201 or 2010 would be exempt from this Draft Rule. Also, development projects that have a mitigated baseline below two tons per year for each pollutant would be exempt from the emission reduction requirements of the rule.

It is important to note that any fee identified below are the estimated maximum fee in the worst case scenario for a typical residential, commercial and or industrial development, with the understanding that the actual fee will vary with the particulars of any project. Any fee below is presented for the purposes of analyzing potential impacts given costs associated with reducing quantifiable emissions resulting from what constitutes typical applicable developments. The fee amounts

identified include all off-site emission reduction fees and all administrative fees.

In the worst case, the fee that a typical residential development will pay is estimated at $784 per unit starting in 2006, climb to $1,268 the following year, and above $1,772 in the years starting in 2008. The fee could be lower depending on the strategies that a developer employs to reduce emissions.

TABLE 16
Worst Case Estimate: Fee That Corresponds to A Typical Residential Development

Year	Per Unit
2006	$784.12
2007	$1,268.09
2008	$1,772

TABLE 17
Worst Case Estimate: Fee That Corresponds To The Typical Industrial Development

Use	Average Acres	Corresponding Fee Total
2006		
Heavy Industrial	300.0	$357,394.75
Light Industrial	75.0	$240,508.75
Warehouses	25.0	$83,645.68
Misc. Industrial (industrial park)	39.0	$143.797.05
2008		
Heavy Industrial	300.0	$747,626
Light Industrial	75.0	$518,237
Warehouses	25.0	$179,956
Misc. Industrial	39.0	$309,965

TABLE 18
Worst Case Estimate: Fee That Corresponds To a Typical Commercial Development

TYPE OF SHOPPING CENTERS	SIZE RANGE	TYPICAL SIZE (sq ft)	Corresponding Fee Total
	2006		
convenience shopping center	up to 30,000	20,000	$24,524.94
neighborhood shopping center	30,000 to 100,000	50,000	$61,599.54
community shopping center	100,000 to 450,000	150,000	$184,647.45
super community shopping center	200,000 to 300,000	250,000	$403,546.91
regional shopping center	300,000 to 700,000	450,000	$626,791.07
superregional shopping center	500,000 to 2 million	900,000	$1,253,582.15
	2008		
convenience shopping center	up to 30,000	20,000	$52,971.24
neighborhood shopping center	30,000 to 100,000	50,000	$131,689.99
community shopping center	100,000 to 450,000	150,000	$397,483.34
super community shopping center	200,000 to 300,000	250,000	$872,322.57
regional shopping center	300,000 to 700,000	450,000	$1,353,824.12
superregional shopping center	500,000 to 2 million	900,000	$2,708,116.82

6.2 BUSINESS RESPONSES TO PROPOSED FEES

Industries impacted by the proposed new rule may respond in a variety of ways when faced with new regulatory costs. These responses may range from simply absorbing the costs and accepting a lower rate of return, to shutting down the affected business operation altogether and, where practical, shift from lower-value to higher-value product. Affected sources may also seek to renew efforts to increase productivity and reduce costs elsewhere in their operation in order to recoup the regulatory costs and maintain profit levels. Based on the discussion during a focus group meeting held in July, 2005, industries impacted by the new rules will in all likelihood seek to pass the costs on to homebuyers and renters in the case of residential fees, to the extent that the market allows.

6.3 IMPACTS ON AFFECTED INDUSTRIES

This section of the report analyzes revenues and profits of affected industries against anticipated costs associated with

implementation of the draft rule. The analysis first examines impacts on builders of single-family homes. Then, it analyzes impacts on builders of multi-family units. In addition to impacts on homebuilders, the section analyzes how changes in price affect prospective homebuyers and renters. Finally, the section below examines impacts on non-residential developments, particularly commercial retail, industrial, and office projects.

Single-Family Dwelling Units

Tables 19 through 21 compare the fee that a typical residential development would pay in the year 2006, 2007 and 2008, or $784, $1,268 and $1,772, against estimated profits. In calculating the impacts of the fee, we have included the additional $400 administrative cost associated with Rule 3180. As Tables 19, 20 and 21 show, the fees do not significantly impact affected builders of single-family homes in a negative manner. The fee amounts to approximately three, four and six percent of estimated net profits, meaning that affected stakeholders would still garner between 94 sand 97 percent of their original profit. Moreover, the impact is below the ten percent significance threshold employed in this analysis.

TABLE 19 Impact Analysis of 2006 Air Quality Fee on Typical Single-Family Development: $784 per unit

Community Types	(1) Profit as % Value	(2) Air Quality Fee on New Res. Cons. @ $.421/sqft	(3) Impact on Profit	(4) Impact Significance	(5) Modified Profit as Percent of Value	(6) Initial Home Value @ 5.85%, 30 yrs and 20% down	(7) Home Value @ 5.85%, 30 yrs and 20% down: With Air Fee	(8) Initial Home Value @ 6.85%, 30 yrs and 20% down	(9) Home Value @ 6.85%, 30 yrs and 20% down: With Air Fee	(10) Affect of Fee	(11) Affect of 1% Change in Interest Rate
Large Urban	11.5%	$797	-2.1%	<significant	11.3%	$93,624	$93,846	$101,737	$101,979	$223	$8,113
Bay Area Commuter Shed	10.8%	$889	-2.1%	<significant	10.6%	$111,520	$111,768	$121,184	$121,454	$248	$9,664
Medium-Sized Cities	8.3%	$749	-3.1%	<significant	8.0%	$82,097	$82,307	$89,212	$89,439	$209	$7,114
Small\Medium Bedroom Communities	8.5%	$793	-3.0%	<significant	8.2%	$86,972	$87,194	$94,509	$94,750	$221	$7,537
Small Rural\Farming Communities	10.6%	$692	-2.7%	<significant	10.3%	$68,639	$68,833	$74,587	$74,798	$193	$5,948
All Select Cities Average	9.3%	$784	-2.6%	<significant	9.0%	$89,724	$89,943	$97,499	$97,737	$219	$7,775

TABLE 20 Impact Analysis of 2007 Air Quality Fee on Typical Single-Family Development: $1,268 per unit

Community Types	(1) Profit as % Value	(2) Air Quality Fee on New Res. Cons. @ $.681/sqft	(3) Profit as % Value	(4) Impact Significance	(5) Modified Profit as Percent of Value	(6) Initial Home Value @ 5.85%, 30 yrs and 20% down	(7) Home Value @ 5.85%, 30 yrs and 20% down: With Air Fee	(8) Initial Home Value @ 6.85%, 30 yrs and 20% down	(9) Home Value @ 6.85%, 30 yrs and 20% down: With Air Fee	(10) Affect of Fee	(11) Affect of 1% Change in Interest Rate
Large Urban	11.5%	$1,289	-3.3%	<significant	11.2%	$93,624	$93,983	$101,737	$102,127	$359	$8,113
Bay Area Commuter Shed	10.8%	$1,438	-3.3%	<significant	10.5%	$111,520	$111,920	$121,184	$121,619	$400	$9,664
Medium-Sized Cities	8.3%	$1,212	-5.0%	<significant	7.9%	$82,097	$82,435	$89,212	$89,578	$337	$7,114
Small\Medium Bedroom Communities	8.5%	$1,282	-4.8%	<significant	8.1%	$86,972	$87,329	$94,509	$94,897	$357	$7,537
Small Rural\Farming Communities	10.6%	$1,120	-4,3%	<significant	10.2%	$68,639	$68,951	$74,587	$74,925	$312	$5,948
All Select Cities Average	9.3%	$1,268	-4.3%	<significant	8.9%	$89,724	$90,007	$97,499	$97,883	$353	$7,775

TABLE 21 Impact Analysis of 2008 Air Quality Fee on Typical Single-Family Development: $1,772 per unit

Community Types	(1) Profit as % Value	(2) Air Quality Fee on New Res. Cons. @ $.952/sqft	(3) Profit as % Value	(4) Impact Significance	(5) Modified Profit as Percent of Value	(6) Initial Home Value @ 5.85%, 30 yrs and 20% down	(7) Home Value @ 5.85%, 30 yrs and 20% down: With Air Fee	(8) Initial Home Value @ 6.85%, 30 yrs and 20% down	(9) Home Value @ 6.85%, 30 yrs and 20% down: With Air Fee	(10) Affect of Fee	(11) Affect of 1% Change in Interest Rate
Large Urban	11.5%	1,802	-4.6	<significant	11.0%	$93,624	$94,125	$101,737	$102,281	$501	$8,113
Bay Area Commuter Shed	10.8%	2,011	-4.6	<significant	10.3%	$111,520	$112,079	$121,184	$121,791	$559	$9,664
Medium-Sized Cities	8.3%	1,694	-6.9	<significant	7.7%	$82,097	$82,568	$89,212	$89,723	$471	$7,114
Small\Medium Bedroom Communities	8.5%	1,792	-6.7	<significant	7.9%	$86,972	$87,471	$94,509	$95,050	$498	$7,537
Small Rural\Farming Communities	10.6%	1,565	-6.0	<significant	10.0%	$68,639	$69,074	$74,587	$75,060	$435	$5,948
All Select Cities Average	9.3%	1,773	-5.9	<significant	8.7%	$89,724	$90,217	$97,499	$98,035	$493	$7,775

TABLE 22 Median Home Sale Prices in Small to Medium Communities, 2003-2005

		July 2003	July 2004	July 2005	03-04 Change	04-05 Change	03-04 Per Chg	04-05 Per Chg
Medium	Merced (Merced)	$204,341	$226,741	$322,500	$22,400	$95,759	11%	42%
	Tulare (Tulare)	$125,379	$161,146	$204,000	$35,767	$42,854	29%	27%
	Turlock (Stanislaus)	$240,088	$284,330	$369,500	$44,242	$85,170	18%	30%
	Visalia (Tulare)	$154,723	$185,938	$270,000	$31,215	$84,062	20%	45%
Small/Medium Bedroom Community	Atwater (Merced)	$207,009	$232,422	$324,250	$25,413	$91,828	12%	40%
	Mendota (Fresno)		$77,438	$120,000		$42,563		55%
	Sanger (Fresno)	$161,659	$171,734	$276,500	$10,075	$104,766	6%	61%
	Selma (Fresno)	$123,245	$177,158	$249,250	$53,912	$72,092	44%	41%
Small Rural/Farming	Oakhurst (Madera)	$209,143	$273,742	$306,000	$64,599	$32,258	31%	12%
	Taft (Kern)	$82,697	$77,474	$110,000	-$5,223	$32,526	-6%	42%
	Wasco (Kern)	$93,101	$103,299	$132,000	$10,198	$28,701	11%	28%
		$160,139	$179,220	$244,000	$19,082	$64,780	12%	36%

Source: Applied Development Economics, based on Dataquick

A close review of Tables 19 through 21 reveals that the fees under consideration could potentially impacts different community types in different ways. For Medium-sized communities, Small\medium bedroom communities, and Small rural\farming communities, the impact of the possible fee on profits is slightly higher than impact to home builders operating in the large urban and Bay Area Commuter Shed markets. This is so because prices of new homes are higher in the latter markets. To understand the influence of the $784, 1,268 or $1,772 fee on home prices in the Medium-sized cities, Small\medium bedroom communities, and Small rural\farming communities, it is worthwhile to compare the fees against recent changes in home prices in cities in these three community types.

Table 22 above includes recent data from Dataquick. Among other things, it shows that between July 2003 and July 2004 and July 2004 and July 2005, median prices of homes increased by $19,000 and $65,000 in specific cities in Medium-sized cities, Small\medium bedroom communities, and Small rural\farming communities. Table 22 includes all homes sold, not just newly constructed three-to-four bedroom homes. While the fee could raise home prices by $784 to $1,772, it is apparent that larger market forces are the primary culprit behind the increase in housing prices in these three community types. The fee associated with Draft Rules 9510 and 3180 would amount to, at most, three percent of recent change in housing prices in these three community types (or $1,772 divided by $65,000).

Tables 19 through 21 above also include an analysis on how the $784, $1,268 or $1,772 fee would impact potential homebuyers. In other words, we assume that the homebuilder will pass this cost on to homebuyers to the fullest extent possible allowed by the market. As Table 11 above previously showed, the price of a new three-to-four bedroom home in the San Joaquin Valley region is approximately $324,000. In large urban areas of Bakersfield and Fresno, the average price of a new three-to-four bedroom home is $338,000, while in the Bay Area Commuter Shed, it is even higher at $402,700. Housing is more affordable in rural communities such as Avenal, where the

average price of a new home is $247,800 (see Table 11 above).

In Column Six of Tables 19 though 21, we estimate the minimum household income required to qualify for conventional financing for new three-to-four bedroom homes in the different market types. We assume that the potential homebuyer is a first-time homebuyer, meaning that there are no proceeds from the sale of a previous home to put towards the purchase of the new home. We assume that the potential homebuyer will have a downpayment equal to 20 percent of the market value of the unit. We also factor in a 5.85 interest rate, monthly bills, homeowners insurance, and property taxes when calculating the minimum household income needed to qualify for a new three-to-four bedroom home in the San Joaquin Valley.

To qualify for financing for a $324,000 home in the Central Valley, a prospective first-time home buying household would need to earn approximately $89,724 annually. Columns Seven and Ten to the tables above show the extent to which the different fees raise the minimum qualifying household income. As a result of the $784, $1,268 and $1,772 fees, minimum qualifying incomes for the region as a whole would rise, on average, by $219, $353, and $493 respectively. The $219 to $493 amount is less than one percent of the original income needed to qualify for a new three-to-four bedroom home in the Central Valley.

For comparative purposes, Tables 19 through 21 include Columns Eight and Eleven, which show what would happen if interest rates rose from 5.85 percent to 6.85 percent. If this occurred, the minimum qualifying income would rise from $89,724 to $97,499, or by $7,775. In other words, while the fees have the potential to increase the amount of income required to qualify for financing, larger market forces such as interest rates and market-driven price fluctuations play a significantly greater role in determining the income level needed to qualify for a new three-to-four bedroom home.

Multi-Family Dwelling Units

Tables 23 through 25 show the affects of the fees on construction of multi-family dwelling units. Small\medium

bedroom communities and Small rural\farming communities are affected negatively more so than the other communities, because the price of multi-family dwelling units elsewhere are higher than in these community types. Columns Six and Seven in each of the tables below estimate the minimum income required to purchase a multi-family unit such as a condominium or townhouse, and the extent to which the impact fee could raise this amount, in the event developers of multi-family units pass costs onto the consumers. The fee could raise the minimum income needed to qualify for financing for the purchase of a condominium or townhouse valued at $145,300 (see Table 14 above), from $40,237 to $40,455 ($784 fee), $40,589 ($1,268 fee) or at most $40,696 ($1,772 fee), which represent at most a one percent change. Tables 23 through 25 below show that the fee would only slightly affect rents, in the event units were rented out as opposed to sold.

TABLE 23 Impact Analysis of 2006 Fee on Typical Multi-Family Housing Development: $784 per unit

Community Types	(1) Profit as % Value	(2) Air Quality Fee on New Res. Cons. @ .732/sqft	(3) Impact on Profit	(4) Impact Significance	(5) Modified Profit as Percent of Value	(6) Initial Condo-Townhouse Value @ 5.85%, 30 yrs and 20% down	(7) Condo-Townhouse Value @ 5.85%, 30 yrs and 20% down: With Air Fee	(8) Minimum Rent without Air Fee	(9) Minimum Rent with Air Fee	(10) Qualifying Rental Household without Air Fee	(11) Qualifying Rental Household with Air Fee
Large Urban	17.7%	$788	-3.0%	<significant	17.3%	$40,689	$40,907	$1,150	$1,157	$41,453	$41,675
Bay Area Commuter Shed	23.3%	$788	-1.9%	<significant	22.9%	$50,019	$50,237	$1,414	$1,420	$50,958	$51,180
Medium	14.1%	$788	-4.1%	<significant	13.5%	$38,042	$38,260	$1,076	$1,082	$38,756	$38,978
Small/Med Bedroom Community	8.0%	$788	-7.2%	<significant	7.5%	$37,683	$37,901	$1,065	$1,072	$38,391	$38,613
Small Rural/Farming	11.0%	$788	-5.7%	<significant	10.4%	$34,753	$34,971	$983	$989	$35,405	$35,628
All Select Cities Average	14.9%	$788	-3.6%	<significant	14.3%	$40,237	$40,455	$1,138	$1,144	$40,992	$41,215

TABLE 24 Impact Analysis of 2007 Fee on Typical Multi-Family Housing Development: $1,268 per unit

Community Types	(1) Profit as % Value	(2) Air Quality Fee on New Res. Cons. @ $1.184/sqft	(3) Impact on Profit	(4) Impact Significance	(5) Modified Profit as Percent of Value	(6) Initial Condo-Townhouse Value @ 5.85%, 30 yrs and 20% down	(7) Condo-Townhouse Value @ 5.85%, 30 yrs and 20% down: With Air Fee	(8) Minimum Rent without Air Fee	(9) Minimum Rent with Air Fee	(10) Qualifying Rental Household without Air Fee	(11) Qualifying Rental Household with Air Fee
Large Urban	17.7%	$1,268	-4.9%	<significant	16.9%	$40,689	$41,041	$1,150	$1,160	$41,453	$41,812
Bay Area Commuter Shed	23.3%	$1,268	-3.0%	<significant	22.6%	$50,019	$50,371	$1,414	$1,424	$50,958	$51,317
Medium	14.1%	$1,268	-6.6%	<significant	13.2%	$38,042	$38,394	$1,076	$1,086	$38,756	$39,115
Small/Med Bedroom Community	8.0%	$1,268	-11.6%	significant	7.1%	$37,683	$38,035	$1,065	$1,075	$38,391	$38,749
Small Rural/Farming	11.0%	$1,268	-9.2%	<significant	10.0%	$34,753	$35,105	$983	$993	$35,405	$35,764
All Select Cities Average	14.9%	$1,268	-5.9%	<significant	14.0%	$40,237	$40,589	$1,138	$1,148	$40,992	$41,351

TABLE 25 Impact Analysis of 2008Fee on Typical Multi-Family Housing Development: $1,772 per unit

Community Types	(1) Profit as % Value	(2) Air Quality Fee on New Res. Cons. @ 1.655/sqft	(3) Impact on Profit	(4) Impact Significance	(5) Modified Profit as Percent of Value	(6) Initial Condo-Townhouse Value @ 5.85%, 30 yrs and 20% down	(7) Condo-Townhouse Value @ 5.*5%, 30 yrs and 20% down: With Air Fee	(8) Minimum Rent without Air Fee	(9) Minimum Rent with Air Fee	(10) Qualifying Rental Household without Air Fee	(11) Qualifying Rental Household with Air Fee
Large Urban	17.7%	$1,657	-6.3%	<significant	16.7%	$40,689	$41,148	$1,150	$1,150	$41,453	$41,920
Bay Area Commuter Shed	23.3%	$1,657	-3.9%	<significant	22.4%	$50,019	$50,478	$1,414	$1,427	$50,958	$51,426
Medium	14.1%	$1,657	-8.5%	<significant	12.9%	$38,042	$38,501	$1,076	$1,089	$38,756	$39,224
Small/Med Bedroom Community	8.0%	$1,657	-15.1%	significant	6.8%	$37,683	$38,142	$1,065	$1,078	$38,391	$38,858
Small Rural/Farming	11.0%	$1,657	-12.0%	significant	9.7%	$34,753	$35,212	$983	$996	$35,405	$35,873
All Select Cities Average	14.9%	$1,657	-7.7%	<significant	13.7%	$40,237	$40,696	$1,138	$1,151	$40,992	$41,460

Affordable Housing For Low-and Moderate Income Households

The discussion above focused on how fees would affect first-time homebuyers of single-family and multi-family units, as well as potential renters. In that context, housing affordability refers to the minimum income required to qualify for either a mortgage or the minimum income needed to pay a certain rent, with the understanding that the annual housing payment must not exceed one-third of annual household income. The federal agency called the Department of Housing and Urban Development (HUD) and private lenders use the one-third threshold as a way to gauge housing affordability. Anyone paying more than one-third of his or her income on housing is living in an unaffordable situation.

Affordable housing also refers to the extent to which low-income and moderate-income households can access housing at affordable rents. Every year, the federal government issues guidelines as to what constitutes low-income and moderate-income households, particularly for the purposes of qualifying households for federal housing programs such as Section 8 or the Low-Income Housing Tax Credit program. In turn, state and local agencies adopt these guidelines when carrying out their respective housing programs.

Table 26 below identifies the federal Housing and Urban Development's (HUD) 2005 income guideline for most of the Central Valley, and this guideline adjusts for number of people in a household. A single individual earning no more than $27,500 is a low-income individual, while a single individual make $27,502 would be a moderate-income person.

TABLE 26 HUD Income Guidelines, 2005

	Low Income		Moderate	
	Minimum	Maximum	Minimum	Maximum
1 person	$0	$27,500	$27,501	$41,250
2 persons	$0	$31,400	$31,401	$47,100
3 persons	$0	$35,350	$35,351	$53,025
4 persons	$0	$39,300	$39,301	$58,950
5 persons	$0	$42,400	$42,401	$63,600
6 persons	$0	$45,550	$45,551	$68,325
7 persons	$0	$48,700	$48,701	$73,050
8 or more persons	$0	$51,850	$51,851	$77,775

Source: Applied Development Economics, based on Department of Housing and Urban Development

More importantly for the purposes of this analysis, a single person making no more than $27,500 a year and who, at the same time, pays a rent that does not exceed one-third of her or his income lives in an affordable situation. Conversely, a single individual making no more than $27,500 who is paying a rent that exceeds one-third of his or her income is living in an unaffordable situation. Table 27 below calculates the rents that would be affordable to low- and moderate-income households. For the most part, rents that low-income households should pay are substantially below the rents that typical new multi-family units constructed in the region should command, even before the imposition of the air fee. For example, 2-person low-income households should pay no more than $785 on rent. As Tables 23 through 25 showed, rent for a newly constructed apartment unit should be $1,138, which is unaffordable to 2-person low-income households by standards established by HUD. On the other hand, a two-person moderate-income household that paid the $1,138 would be living in an affordable situation, since the maximum rent for purposes of calculating affordability is $1,178. A one-person moderate-income household should pay no more than $1,031 toward rent; thus the $1,138 rent calculated in Table 23 through 25 would constitute unaffordable housing.

TABLE 27 Affordable Monthly Rents

	Affordable Rent: Low Income		Affordable Rent: Moderate Income	
	Minimum	Maximum	Minimum	Maximum
1 person	$0	$688	$689	$1,031
2 persons	$0	$785	$786	$1,178
3 persons	$0	$884	$885	$1,326
4 persons	$0	$983	$984	$1,474
5 persons	$0	$1,060	$1,061	$1,590
6 persons	$0	$1,139	$1,140	$1,708
7 persons	$0	$1,218	$1,219	$1,826
8 or more persons	$0	$1,296	$1,297	$1,944

Without public subsidies to either the renting households or to housing developers, most low-income households in the Central Valley are priced out of newly constructed multifamily units, the rents for which need to be at a level to take into account price of land, development costs, developer fees, and an adequate level of profit, among other things. For the region as a whole, the market rate rent for a typical multi-family unit is calculated at $1,138, though rents are higher or lower depending on the community type, with Large Urban communities and the Bay Area Commuter Shed requiring higher rents (see Tables 23 through 25 Column Eight). Moderate-income households consisting of no more than three persons should be able to afford newly constructed multi-family units with monthly rents at or about $1,138, although the same cannot be said for moderate-income households consisting of four or more persons, who will need higher-priced living quarter with additional rooms.

There are a number of housing programs and policies that can assist low- and moderate-income households to live in market rate housing. Federal housing programs such as Section 8 provide the difference between the amount[3] that a low-income household can pay and the actual rent for an apartment in the private sector that is willing to accept Section 8. However, local governments receive only a limited number of Section 8 vouchers from the federal government,

[3] The amount that a Section 8 tenant contributes toward rent on an out of pocket basis must not exceed one-third of the tenant's annual income.

resulting in waiting lists consisting of many households waiting a relatively long time. Other public subsidies are aimed at encouraging the private sector to set-aside some, if not all, newly constructed housing as affordable to low- and moderate-income households. The federal Low-Income Housing Tax Credit (LIHTC) or, at the local level, the twenty percent housing redevelopment tax increment set-aside are just two revenue sources that can increase the feasibility of setting aside units at below market rents for low- and moderate-income households. Like the Section 8 program, there are some inherent limitations to the LIHTC and the tax increment set-aside programs. The financing via the federal LIHTC program is not readily available as it is accessed on a competitive basis. Not all cities have redevelopment agencies, and, of those with such agencies, it takes some time to generate the necessary amount of revenues (also known as tax increment) for a successful housing set-aside program.

Some cities have what are called "inclusionary housing" policies, meaning that in order to obtain approval for this or that housing project, the developer must guarantee that a certain portion (typically 15 percent) is reserved for low- and moderate-income households. Some cities sweeten their inclusionary policies with public financing, and some do not. It is argued that "inclusionary housing" policies without public subsidies result in overall higher rents or home prices, as developers required to set-aside housing at below-market levels for some units make up the difference by driving up the price of rest of the bulk of the units in a project.[4]

Non-Residential Development

Table 28 below analyzes the impacts of the Draft Rule 9510 and 3180 commercial and industrial fees on a per acre basis. In 2006, the fee on a typical retail and office development will amount to $15,286 and $7,914 per acre respectively. In the year 2008, fees on a per acre basis are expected to increase to $33,008 (retail) and $17,099 (office). As the table shows, in

4 Home Builders Association of Northern California - HBA News, (www.hbanc.org/ news2000/ JulAug2001/ JulAug01feat2.html) / "The Inclusionary Housing Debate - Who Really Pays for Affordable ..." (www.realtor.org/sg3.nsf/Pages/housingdebatepays?OpenDocument)

the year 2006 possible off-site emission reduction fees on new typically-sized commercial and office developments will not exceed the threshold of significance. The possible off-site fee amounts to an estimated 21 percent of profits in the year 2006. In 2008, the possible air off-site fees on new typically-sized commercial retail developments will exceed the threshold of significance by six to ten percent, depending on the community in which development occurs. The dollar amount in excess of the threshold in the year 2008 ranges from $12,889 to $16,324 per acre for commercial developments.

TABLE 28 Impact Analysis of 2006 and 2008 Fee on Typical Commercial-Industrial Project

	Avg. Value Per Acre	Est. Profit Per Acre	Profit as percent of Value	Est. Fees Per Acre		Est. Fees As % of Profit		Percent Above Significance Threshold		Dollar Amount Above Significance Threshold	
				2006	2008	2006	2008	2006	2008	2006	2008
Large Urban											
Industrial	$1,594,742	$159,474	10%	$1,880	$4,000	1%	3%	< sig.	< sig.		
Commercial	$1,910,201	$191,020	10%	$15,286	$33,008	8%	17%	< sig.	7%		$13,906
Office	$2,828,107	$282,811	10%	$7,914	$17,099	3%	6%	< sig.	< sig.		
Bay Area Commuter Shed											
Industrial	$1,679,815	$167,981	10%	$1,880	$4,000	1%	2%	< sig.	< sig.		
Commercial	$2,011,879	$201,188	10%	$15,286	$33,008	8%	16%	< sig.	6%		$12,889
Office	$2,929,785	$292,979	10%	$7,914	$17,099	3%	6%	< sig.	< sig.		
Medium-sized Cities											
Industrial	$1,546,952	$154,695	10%	$1,880	$4,000	1%	3%	< sig.	< sig.		
Commercial	$1,748,583	$174,858	10%	$15,286	$33,008	9%	19%	< sig.	9%		$15,522
Office	$2,666,489	$266,649	10%	$7,914	$17,099	3%	6%	< sig.	< sig.		
Small/Medium Bedroom Community											
Industrial	$1,631,301	$163,130	10%	$1,880	$4,000	1%	2%	< sig.	< sig.		
Commercial	$1,668,338	$166,834	10%	$15,286	$33,008	9%	20%	< sig.	10%		$16,324
Office	$2,586,244	$258,624	10%	$7,914	$17,099	3%	7%	< sig.	< sig.		
Small Rural\Farming Communities											
Industrial	$1,877,846	$187,785	10%	$1,880	$4,000	1%	2%	not sig.	not sig.		
Commercial	$1,653,475	$165,347	10%	$15,286	$33,008	9%	20%	not sig.	10%		
Office	$2,567,106	$256,711	10%	$7,914	$17,099	3%	7%	not sig.	not sig.		

It is not clear how the development community will adjust to the additional costs. Rather than absorb the costs, the developer (or a subsequent owner of an affected project site) might seek to pass costs onto commercial tenants in the form of rent increases. Table 29 translates the amount of the total fee into a per square foot rent for significantly impacted commercial uses. While the 2006 fee does not significantly impact developers of commercial uses, the 2008 fee significantly impacts these developers to the tune of $13,905. This amounts to almost one cent per square foot, which developers will pass onto future commercial tenant.

It is worth noting that the 2006 and 2008 fee, in effect, sets the bar slightly higher with respect to lease rates on all new commercial developments in the region. Comparable office developments that have been in place prior to the new fees could conceivably raise monthly rents by one cent. In addition, comparable retail sites in place prior to the new fees could conceivably raise rents by two cents in 2008.

TABLE 29
2006 and 2008 Fee on Typical Commercial-Industrial Project: Affect of Fee on Monthly Rent

	2006 Dollar Amount Significance Threshold	Fee as a Percent of Profit	Amount Above Significance Threshold	2006 Fee Per SqFt	2006 Per Sqft Fee As Monthly Rent Increase Over Typical Amortization Period (15 years)	2008 Dollar Amount Significance Threshold	Fee as a Percent of Profit	Amount Above Significance Threshold	2008 Fee Per SqFt	2008 Per Sqft Fee As Monthly Rent Increase Over Typical Amortization Period (15 years)
Large Urban										
Industrial	< sig.	1%	< sig.			< sig.	3%	< sig.		
Commercial	< sig.	8%	< sig.			$13,906	17%	7%	$1.28	$0.007
Office	< sig.	3%	< sig.			< sig.	6%	< sig.		
Bay Area Commuter Shed										
Industrial	< sig.	1%	< sig.			< sig.	2%	< sig.		
Commercial	< sig.	8%	< sig.			$12,889	16%	6%	$1.18	$0.007
Office	< sig.	3%	< sig.			< sig.	6%	< sig.		
Medium-sized Cities										
Industrial	< sig.	1%	< sig.			< sig.	3%	< sig.		
Commercial	< sig.	9%	< sig.			$15,522	19%	9%	$1.43	$0.008
Office	< sig.	3%	< sig.			< sig.	6%	< sig.		
Small/Medium Bedroom Community										
Industrial	< sig.	1%	< sig.			< sig.	2%	< sig.		
Commercial	< sig.	9%	< sig.			$16,324	20%	10%	$1.50	$0.008
Office	< sig.	3%	< sig.			< sig.	7%	< sig.		
Small Rural\Farming Communities										
Industrial	< sig.	1%	< sig.			< sig.	2%	< sig.		
Commercial	< sig.	9%	< sig.			$16,473	20%	10%	$1.51	$0.008
Office	< sig.	3%	< sig.			< sig.	7%	< sig.		

6.4 IMPACT ON SMALL BUSINESSES

In addition to analyzing the various impacts of the Proposed Indirect Source Rule (Draft Rules 9510 and 3180) that are discussed above, state legislation requires that the socioeconomic analysis assess whether small businesses are disproportionately affected by air quality rules. This section discusses how fees that are assessed on developers of residential and commercial projects are typically passed onto the consumer. Because of the additional costs associated with the proposed off-site emission reduction fee, prospective buyers must either increase their respective household incomes or produce a downpayment that is larger than the typical 20 percent. Thus, prospective homebuyers may have to delay purchasing goods and services as a result of the need to raise additional downpayment, resulting in impacts to local stores, particularly small businesses. This section discusses potential small business impacts resulting from Draft Rule 9510 and 3180.

Off-Site Emission Reduction Fees, Minimum Household Income, and the Downpayment

As the analysis above demonstrated, the 2006, 2007 and 2008 off-site emission reduction fee under consideration could slightly raise the minimum qualifying incomes for obtaining a conventional loan by, on average, $219, $353, and $493. In other words, to finance a new three to four bedroom home valued at $323,966 in the region, a first-time homeowner would need an income of at least $89,724.[5] The 2006 fee could raise this minimum by a slight $219, to $90,217

What if a lender is inflexible and will not extend a loan to household that is $219 to $493 short of the minimum income needed to qualify for financing? In cases such as this, the prospective homeowner will have to produce a larger downpayment or pay a higher interest rate. The table below identifies the amount of additional downpayment above the

[5] This minimum will change depending on the housing market, with households in Large Urban and Bay Area Commuter Shed communities needing more income than households in other part of the region.

amount generated by the typical 20 percent downpayment rate.

As Table 30 shows, in the region in general, a household with at least $89,724 in income can afford to purchase a newly constructed three to four bedroom unit priced at $323,966 so long it has a downpayment in the amount of $64,793, or 20 percent of the value of the home. In general, the 2006 through 2008 off-site emission reduction fees will require prospective homeowners to produce an additional $970 to $2,147 that will go towards the downpayment, in the event a lender is unwilling to exercise flexibility with respect to minimum income needed to qualify for a loan. The amount of additional downpayment differs between housing markets, with households in the Large Urban communities and the Bay Area Commuter Shed having to pay more.

Table 30 Potential Per Household Impact of Off-Site Emission Reduction Fees On Downpayment: Single Family Unit

	Initial Qualifying Household Income Prior to Fee: SFU	Initial Downpayment	Additional Downpayment (2006 fee: $784)	Additional Downpayment (2007 fee: $1,268)	Additional Downpayment (2008 fee: $1,772)
Large Urban	$93,624	$67,609	$1,008	$1,616	$2,231
Bay Area Commuter Shed	$111,520	$80,533	$1,188	$1,906	$2,629
Medium-Sized Cities	$82,097	$59,286	$894	$1,434	$1,980
Small\Medium Bedroom Communities	$86,972	$62,806	$947	$1,519	$2,097
Small Rural\Farming Communities	$68,639	$49,567	$761	$1,221	$1,686
All Select Cities Average	$89,724	$64,793	$970	$1,556	$2,147

Table 31 is similar to Table 30, although it focuses on the additional amount of downpayment required of prospective buyers of townhouses and condominiums. In general, the 2006 through 2008 off-site emission reduction fees will require prospective homeowners to produce an additional downpayment ranging from $932 to $1,948.

Table 31 Potential Per Household Impact of Off-Site Emission Reduction Fees On Downpayment: Multi-Family Unit

	Initial Qualifying Household Income Prior to Fee: MFU	Initial Downpayment	Additional Downpayment (2006 fee: $784)	Additional Downpayment (2007 fee: $1,268)	Additional Downpayment (2008 fee: $1,772)
Large Urban	$40,907	$29,383	$940	$1,529	$1,966
Bay Area Commuter Shed	$50,237	$36,121	$1,119	$1,818	$2,336
Medium-Sized Cities	$38,260	$27,471	$890	$1,447	$1,860
Small\Medium Bedroom Communities	$37,901	$27,212	$883	$1,435	$1,846
Small Rural\Farming Communities	$34,971	$25,096	$827	$1,344	$1,730
All Select Cities Average	$40,455	$29,057	$932	$1,515	$1,948

Prospective Homebuyers and Small Business Disproportionate Impact Analysis

Faced with the need to increase the amount of downpayment, a household will have to save by cutting back on expenditures, which could result in a decline in purchases of discretionary items from local retail and services establishments. Consumers may stop spending altogether, or shift their spending toward lower-priced goods and services. As we shall see, there is ample reason to believe that impacts associated with the decline in spending that corresponds to the 2006, 2007 and 2008 fees will be temporary. Before engaging in that discussion, below is a brief summary of what constitutes a small business for the purposes of analysis.

For purposes of qualifying small businesses for bid preferences on state contracts and other benefits, the State of California defines small businesses in the following manner[6]. To be eligible for small business certification, a business:

- Must be independently owned and operated;
- Cannot be dominant in its field of operation;
- Must have its principal office located in California

[6] State of California. Department of General Services. "California Small Business Certification" (http: www.pd.dgs.ca.gov/smbus/sbcert.htm)

- Must have its owners (or officers in the case of a corporation) domiciled in California; and
- Together with its affiliates, be either:
    - A business with 100 or fewer employees, and an average gross receipts of $10 million or less over the previous tax years, or
    - A manufacturer with 100 or fewer employees

Data is available as to the number of retail and services establishments in the eight-county region, and with this data we can estimate sales by stores with 100 or fewer employees. Table 32 below provides an estimate on the number of retail, accommodations-food services, and arts-entertainment-recreation establishments in the region, including estimates on their respective sales. Data comes from the County Business Patterns and the US Economics Census.

TABLE 32
Number of Commercial Establishments That Sell Goods and Select Discretionary Services: San Joaquin Valley Air Basin, 2002

	Total Establishments	Sales	Total Nos. Small Businesses	Sales By Small Businesses
Commercial				
Retail*	8,792	$21,790,159,759	8,601	$14,971,588,578
Accommodations and Food Services	627	$532,590,300	615	$365,953,623
Arts, Entertainment and Recreations	5,139	$3,048,315,000	5,108	$2,809,025,816
Gasoline stations	1,044	$2,909,895,000	1,044	$2,909,895,000
	15,602	$28,280,960,059	15,368	$21,056,463,017

* Apparel, groceries, home improvement, specialty retail, auto (except gas stations)

As Table 32 shows, in 2002 there were 15,602 stores that sold consumer goods and select number of discretionary services (such as entertainment venues and restaurants) and, of these, 15,368 employed less than 100 workers. These small stores generated approximately $21.1 billion in sales. Based on a review of ten-year's worth of data from Dun and Bradstreet, we estimate that retail generates after tax net profits that amount to 2.2 percent of sales, while both accommodations-

food services and arts-entertainment-recreations generate returns of 5.1 percent of sales. Combined, these industries generated an estimated $548.6 million in net profits.

Table 33 estimates the aggregate amount of additional dollars that households will have to set aside as a result of the 2006, 2007 and 2008 off-site emission reduction fees. The additional downpayment per household is multiplied against the number of new single-family units that are built in the region. According to the California Department of Finance, the eight-county region grew by an average of 15,000 single-family units per year between 1995 and 2005. This amount is somewhat consistent with data in Table 2, which shows that between 1993 and 2003, homebuilders took out building permits to construct 15,000 and 27,000 single-family homes in those years, for an annual average of 18,800 single-family homes. In calculating the aggregate amount of additional dollars that all households will need to set aside because of the air quality fees, we adjusted for the fact that not all are first-time homebuyers.[7]

TABLE 33
Aggregate Amount of Dollars All Households Will Need to Set Aside As A Result of Off-Site Emission Reduction Fees

		Additional Downpayment (2006 fee)	Additional Downpayment (2007 fee)	Additional Downpayment (2008 fee)
		$970	**$1,556**	**$2,147**
Scenario 1: Low	15,000 units	$5,820,000	$9,336,000	$12,882,000
Scenario 2: Mid	19,000 units	$7,760,000	$12,448,000	$17,176,000
Scenario 3: High	30,000 units	$11,640,000	$18,672,000	$25,764,000

If 15,000 newly constructed single-family units are sold in 2006, then the aggregate additional downpayment amount attributable to first-time homebuyers will equal $5.8 million, as Table 33 shows. If the number of units goes as high as 30,000, then the additional downpayment will equal $11.6 million. In the highest scenario in year 2008, the aggregate

[7] Scenario 1 2006 fee = (15,000 x 40% rate of rentership) x $970 = $5,820,000

amount of additional downpayment could equal $25.8 million. Thus, local retail and services establishments, particularly small businesses, could lose anywhere between $5.8 million to $25.8 million.

Table 34 below compares the amounts in Table 33 against the estimated net profits of retail and services establishments that employ less than 100 workers. As the table shows, the aggregate amount of additional dollars that households will need to set aside as a result of the off-site emission reduction fee amounts to one to five percent of net profits of small retail and select services establishments. These impacts are below the ten percent threshold of significance employed in this and other socioeconomic analyses for the purposes of evaluating proposed air quality rules.[8] It is worth noting that the analysis assumes that all of the dollars in Table 33 are spent at small business establishments, which, in reality, would not be the case. As a result, the table below overstates impacts on small businesses. Thus, the proposed rule does not disproportionately impact small businesses.

TABLE 34
Impact on Net Profits of Small Business Retail and Select Services Establishments

		Additional Downpayment (2006 fee)	Additional Downpayment (2007 fee)	Additional Downpayment (2008 fee)
		$970	**$1,556**	**$2,147**
Scenario 1: Low	15,000 units	1%	2%	2%
Scenario 2: Mid	19,000 units	1%	2%	3%
Scenario 3: High	30,000 units	2%	3%	5%

In all likelihood, the impacts identified in Table 34 are temporary. More than likely, the purchase of a new home will spur additional spending at retail and services establishments in excess of what is shown in Table 33. A

[8] It should be noted that the report does not include a corresponding analysis for multi-family units because the impacts on net profits were significantly less than one percent, in large part because the number of newly constructed and sold new townhouses in the eight-county region is so low, ranging from 50 to 100 units per year.

recent Pittsburgh Post-Gazette newspaper article on spending habits of new homeowners quotes the web-site of a marketing data company, which indicated that "New homeowners are golden opportunities for the enterprising businessman. These prospects are full of hope and ready to spend money."[9] Clickdata.com reports that many new homeowners purchase a new car within the first year at their new address.[10]

New homeowners are in a spending mood not simply because of the number of new credit cards and or other financing instruments that lenders eagerly extend to households that have demonstrated the financial wherewithal to purchase something as significant as a new home. For some, a new home represents a new phase in the life cycle of a household, including the addition of new family members such as children or a spouse. Others simply need bigger and better space. Inevitably, the new stage in the life cycle involves corresponding needs for goods and services from retail and service establishments, including small businesses.

Small Business Disproportionate Impact Analysis and Non-Residential Developments

The section directly above examined potential impacts on small businesses that sell retail items to consumers, particularly as the impacts relate to how households shift from funds from spending to saving. The section concludes that impacts will be temporary and more than compensated for when a household purchases a home. New Rule 9510 and 3180 could potentially impact small businesses in other ways as well. In particular, small business may not be able to absorb rent increases contemplated in Section 6.3 above.

This section evaluates the impacts of rent increases discussed in Section 6.3 on small businesses, particularly those that occupy commercial developments. As Section 6.3 demonstrated, new commercial development and are potentially significantly impacted by the proposed new rule.

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[9]Caitlin Cleary, "New homeowners welcomes with onslaught of new mail" (Pittsburgh Post-Gazette), 10-15-05

[10]www.clickdata.com/consumer/newequity.asp

For purposes of analysis, commercial development refers to retailers, restaurants, and entertainment and recreation venues.

The analysis below examines how all commercial small businesses are impacted, not just new ones. As Section 6.3 noted, comparable commercial developments that have been in place prior to the new fees could conceivably have their monthly rents raised by one cent per square foot starting in 2008.

If small businesses cannot pass costs onto consumers, and if they are unable to increase sales, then these businesses will have to absorb the additional rent, resulting in a decline in net profits. Lease rates for new and older but well-maintained commercial space is approximately $1.50 per square foot in the San Joaquin Valley region. Scant data on arts and entertainment space suggest these areas go for $1.25 per square foot a month.[11] Older buildings away from busy commercial corridors will in all likelihood command less than the $1.50 that new buildings in busy areas command. Thus, in using the $1.50 (retail and restaurants), $1.10 (gas stations) and $1.25 (arts and entertainment), we will overstate the cost in relation to net profits.

Table 35 shows that the 2008 fee will impact net profits of commercial small businesses by 1.5 percent. The bulk of impacts are borne by small businesses because these entities comprise almost 98 percent of commercial businesses and gas stations in the region.[12] However, the impacts are less than significant. Thus, small businesses are not disproportionately impacted by the rule.

[11] For the purposes of analysis, we assume that all commercial spaces pay these rents. Similar to the analysis directly above, commercial space refers to retail and select services such as restaurants and arts and entertainment venues. Select services exclude office space for industries such as accounting, medical, legal assistance, etc., because office uses are significantly impacted by the rule, as shows in Section 6.3.

[12] 15,368dividedby15,602 = 98%

TABLE 35
Small Business Impact of Additional Rent Resulting From Proposed Air Quality Mitigation Fee

Total Number of Retail and Select Services Establishments	15,602
Total Number of Small Business Retail and Select Services Establishments	14,324
Total Number of Small Business Retail and Select Services: Sales	$18,146,568,017
Total Number of Small Business Retail and Select Services: Net Profits	$485,376,512
Dollar Amount of One Cent Rent Increase (2008 fee: commercial)	$7,230,586
Impact of One Cent Rent Increase on Net Profit of commercial uses (2008 fee)	1.5%
Impact of One Cent Rent Increase on Net Profit of commercial uses (2008 fee)	Less than significant

APPENDIX A: ECONOMIC BENEFITS ASSOCIATED WITH DRAFT RULE 9510 AND 3180

The San Joaquin Valley Air Pollution Control District (SJVUAPCD) will use the Off-Site Emission Reduction Fees will be used to fund off-site emission reduction projects located within the San Joaquin Valley. Besides providing a health benefit to all Valley residents by reducing overall emissions in the air basin, the funding projects would benefit the Valley's economy. Potential projects for funding through this program are numerous and varied ranging from public works construction project such as road paving, procuring cleaner vehicles and equipment for businesses and local government agencies, to school bus upgrades. If all projects that go through the ISR program only reduce emissions through the off-site fee, the District may receive approximately $11 million dollars in 2006 and approximately $56 million in 2008 (allowing for fee deferrals) for use in the off-site emission reduction program. All of the money received as an off-site fee will be spent on projects within the region that make the air cleaner. The program would benefit the economy through three beneficial impacts:

LOCAL PURCHASES

Projects that require a purchase of equipment, materials, or services will result in money being re-circulated into the regional economy. The District cannot guarantee that the manufacturer or provider would be located within the Valley, but it can be expected that the majority will be Valley businesses that benefit. For example, road-paving projects would require asphalt and similar materials that would be provided by Valley businesses. A project that buys a cleaner engine would benefit the Valley engine dealer that sells the engine.

LOCAL PROJECTS

It has already been stated that the program would fund local projects. This means that the school, city, industry or private group that receives the funding for an emission reduction

project would benefit economically from the program. For example, a school district may receive a new, cleaner school bus. A manufacturing facility may receive assistance in procuring a new, cleaner piece of equipment or pollution control device not required by District rules and regulations. A city or county would receive money that makes a road-paving project possible or enables their fleets to operate cleaner new vehicles.

JOB CREATION

The off-site funding program made possible by the ISR Program may also lead to short-term and perhaps long-term job creation. For a financially strapped company or public agency, the funding allows for the purchase and installation or construction of the item (be it a school bus or road project). The installation and construction aspects of the program may benefit the local economy through short-term job creation. Since the ISR program will provide ongoing funding as development occurs over time, it is expected to continue to provide this type of benefit while the rule is in effect. In addition, more efficient equipment may reduce costs and may allow for later expansion that can create long-term jobs.

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APPENDIX G

Rule Consistency Analysis for Proposed Rule 9510 (Indirect Source Review) and Rule 3180 (Administrative Fees for Air Impact Assessment Applications)

November 17, 2005

RULE CONSISTENCY ANALYSIS FOR DRAFT RULE 9510 (INDIRECT SOURCE REVIEW) AND RULE 3180 (ADMINISTRATIVE FEES FOR AIR IMPACT ASSESSMENT APPLICATIONS)

I. REQUIREMENTS OF ANALYSIS

Pursuant to Section 40727.2 of the California Health and Safety Code, prior to adopting, amending, or repealing a rule or regulation, the District is required to perform a written analysis that identifies and compares the air pollution control elements of draft Rules 3180 and 9510 with the corresponding elements of existing or proposed District and United States Environmental Protection Agency (US EPA) rules, regulations, and guidelines that apply to the same source category.

For this analysis, the comparison with other District and US EPA rules and guidelines mainly cover the rules' purpose and applicability. Unlike other District prohibitory rules, Rule 9510 reduces emissions from area sources, not from distinct units considered as point sources that are amenable to analysis in terms of emissions limits, source testing, or recordkeeping requirements. This approach analyzes whether Rule 9510 is in conflict or is redundant with the purpose of other District or federal rules and guidelines already in place, and it also clarifies the applicability of other rules relevant to the development projects covered by Rule 9510.

II. RESULTS OF ANALYSIS

A. District Rules

Consistency with District Fee Rules

The stated purpose of Rule 3180 is to recover District cost for administering the requirements of Rule 9510 and the applicability of Rule 3180 is specific to developments projects subject to the requirements of Rule 9510. There are no other District fee rules with a similar purpose and applicability. The fee requirements stated in District Rule 3100 (California Environmental Quality Act Fee) is specifically for permitted sources subject to District rules and regulations and does not apply to development projects subject to Rule 9510. The process for Rule 9510 is different from the District Permit Program---development projects are required to submit an Air Impact Assessment application, which the District evaluates and approves, and assesses a off-site emission reduction fee if emissions are not reduced on-site. The exact role Rule 9510 in the CEQA process will be determined when the District revises its Guidelines for Assessing and Mitigating the Air Quality Impacts (GAMAQI) document.

Consistency with Rule 2010 (Permits Required)

The applicability of Rule 9510 concerns development projects that have not been traditionally under the purview of District Permit Requirements. In lieu of permitting requirements, development projects covered by Rule 9510 are required to submit an Air Impact Assessment application, which the District evaluates and approves, and assesses a off-site emission reduction fee if emissions are not reduced on-site. There may be some new developments that could be subject to Rule 2010 for particular piece(s) of equipment, however, Rule 9510 will only apply to the area and operational (motor vehicle) emissions, and will not apply to the stationary sources of emissions from a particular development. Therefore, Rule 9510 requirements will not duplicate the requirements in Rule 2010.

Consistency with Rule 9110 (General Conformity)

Proposed Rule 9510 is designed to reduce emissions of PM10 and PM10 precursors and fulfills commitments in the 2003 PM10 Plan, which has been SIP-approved. After Rule 9510 is adopted, it will be submitted for SIP approval. With the approval of Rule 9510 into the SIP, District Rule 9110 (General Conformity) is triggered. The District's Rule 9110 adopted by reference the federal conformity rule which states that (40 CFR 51.850): "No department, agency or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve any activity which does not conform to an applicable implementation plan." Therefore any development project subject to Rule 9110 (General Conformity) must make a determination of conformity with the District's SIP-approved rules and regulations, including Rule 9510. A federal actions that result in direct and indirect emissions equal to or exceeding 10 tons of ozone precursors (VOCs or NOx) in extreme nonattainment areas or 70 tons of PM10 in serious nonattainment areas is required to perform conformity determination (40 CFR 51.853).

There is no provision in Rule 9510 exempting federal actions in total. Federally sanctioned actions subject to Rule 9110 are exempt from the requirements of Rule 9510 if they fall under any of the following categories: (1) transportation projects that meet specific conditions, (2) transit projects, (3) reconstruction of any development project that is damaged or destroyed and is rebuilt to essentially the same use, or (4) a development project whose primary emission source are from stationary sources subject to Rule 2201 (New and Modified Stationary Source Review) and Rule 2010 (Permits Required). In the event that a project that is subject to Rule 9110 and 9510, any action or emissions used to demonstrate general conformity, can also be used as credit towards the required emission reductions, as long as they meet the requirements in Rule 9510. In the event that there is a shortfall in meeting the emission reduction requirements, the project will need to reduce the remaining emissions either with additional on-site measures or with off-site measures to be in full compliance with the requirements of Rule 9510.

Consistency with Regulation VIII Rules

The baseline emissions for construction, as used in this rule's emission reduction analysis, do not include emissions from fugitive dust, as required by Regulation VIII. However, any control technique performed for purposes of complying with Regulation VIII that reduces the project's construction equipment exhaust emissions will reduce the required reduction and the corresponding fee amount required under Rule 9510.

Consistency with Other District Rules

The baseline emissions attributed to sources subject to Rule 9510 include emissions from area sources that are assumed to be already in compliance with the requirements of other District rules (for residential sources) such as: Rule 4601 (Architectural Coatings), Rule 4901 (Wood Burning Fireplaces and Wood Burning Heaters), Rule 4902 (Residential Water Heaters), and Proposed Rule 4905 (Residential Central-Heating Furnaces). These rules don't require permits for affected units, and the enforcement mechanism is through certification by manufacturers or distributors prior to the sale and installation of these units within the San Joaquin Valley. Other District rules, which regulate non-residential sources and apply to and control specific stationary or area source emissions that are assumed to be already in compliance with other District rules requirements, are not included in the emissions baseline for Rule 9510. These include but may not be limited to: Rule 4351, 4305, 4306 (Boilers, Steam Generators, and Process Heaters), Rule 4622 (Gasoline Transfer into Motor Vehicle Fuel Tanks), Rule 4672 (Petroleum Solvent Dry Cleaning Operations), Rule 4692 (Commercial Charbroiling), and other process-specific District rules.

Consistency with Rule 1070

Rule 1070 provides the basis of authority for the District enforcement activities such as site inspections to verify compliance with mitigation measures.

B. US EPA RULES AND GUIDELINES

There are no specific federal guidelines applying to development projects as a source of NOx, PM10, or PM10 precursors in terms of New Source Performance Standards (NSPS), Control Technique Guidelines (CTG), Maximum Achievable Control Technology (MACT) and National Emission Standards for Hazardous Pollutants (NESHAP).

As previously mentioned, District's Rule 9110 adopted by reference the federal conformity rule which states that (40 CFR 51.850): "No department, agency or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license or permit, or approve any activity which does not conform to an applicable implementation plan." Its relationship to Rule 9501 is discussed above.

BEFORE THE GOVERNING BOARD OF THE
SAN JOAQUIN VALLEY UNIFIED
AIR POLLUTION CONTROL DISTRICT

IN THE MATTER OF: PROPOSED RULE 9510 (Indirect Source Review) and PROPOSED RULE 3180 (Administrative Fees for Indirect Source Review)) **RESOLUTION NO.** 05-12-16

WHEREAS, the San Joaquin Valley Unified Air Pollution Control District (District) is a duly constituted unified district, as provided in California Health and Safety Code (CH&SC) Sections 41050 to 40161; and

WHEREAS, said District is authorized by CH&SC Section 40702 to make and enforce all necessary and proper orders, rules, and regulations to accomplish the purpose of Division 26 of the CH&SC; and

WHEREAS, Section 40716 of the CH&SC authorizes the District to adopt and implement regulations to reduce or mitigate emissions from indirect and areawide sources of pollution; and

WHEREAS, Section 42311(g) of the CH&SC authorizes districts to adopt a schedule of fees on areawide or indirect sources which are regulated, but for which permits are not issued, to cover the costs of District programs related to this source; and

WHEREAS, Section 40604 of the CH&SC (SB 709), directs the San Joaquin Valley Unified Air Pollution Control District to adopt a schedule of fees to be assessed on areawide or indirect sources of emission; and

WHEREAS, pursuant to Section 107 of the Clean Air Act and pursuant to Section 39608 of the CH&SC, the San Joaquin Valley Air Basin has been classified as a nonattainment area for the national and state health based ambient ozone and particulate matter 10 microns in size and smaller (PM10); and

WHEREAS, the District's 2004 Extreme Ozone Attainment Demonstration Plan as amended by the Governing Board on October 20, 2005 and the District's 2003 PM10 Plan as amended by the Governing Board on December 18, 2003 and May 19, 2005 commits the District to adopt and implement control measures to reach attainment; and

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WHEREAS, the Indirect Source Program is a control strategy contained in both the District's 2004 Extreme Ozone Attainment Demonstration Plan and 2003 PM10 Plan to be implemented through Rule 9510 (Indirect Source Review), and Rule 3180 (Administrative Fees for Indirect Source Review); and

WHEREAS, a public hearing for adopting Rule 9510 and Rule 3180 was duly noticed for public hearing on November 3, 2005 in accordance with CH&SC Sections 40725 and 40727.2.

NOW, THEREFORE, BE IT RESOLVED AS FOLLOWS:

1. The Governing Board hereby adopts Rule 9510 (Indirect Source Review), and Rule 3180 (Administrative Fees for Indirect Source Review) as set forth in the attached hereto and incorporated herein by this reference. Said rules shall become effective on December 15, 2005.

2. The Governing Board hereby finds, based on the evidence and information presented at the hearing upon which its decision is based, all notices required to be given by law have been duly given in accordance with CH&SC Section 40725, Section 42311(e) and Section 40727.2, and the Board has allowed public testimony in accordance with CH&SC Section 40726.

3. In connection with the proposed requirements of said rules, the Board makes the following findings as required by CH&SC Section 40727:

a. **NECESSITY.** The Governing Board finds, based on the staff report, public and industry testimony on the record for this rulemaking proceeding, that a need exists for the adoption of Rule 9510 (Indirect Source Review) and Rule 3180 (Administrative Fees for Indirect Source Review). Said action is necessary to meet the commitments of the submitted State Implementation Plan and requirements of the federal Clean Air Act.

b. **AUTHORITY.** The Governing Board finds that it has the legal authority to adopt said rules under the California Health & Safety Code Sections 40000 and 40001.

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c. **CLARITY.** The Governing Board finds that said rules are written or displayed so that their meaning can be easily understood by those persons or industries directly affected by them.

d. **CONSISTENCY.** The Governing Board finds that said rules are in harmony with, and not in conflict with or contradictory to, existing statutes, court decisions, or state or federal regulations.

e. **NONDUPLICATION.** The Governing Board finds that said rules do not impose the same requirements as any existing state or federal regulation.

f. **REFERENCE.** The Governing Board finds that said rulemakings implement Section 40604 of the California Health and Safety Code.

4. The Governing Board hereby finds that the requirements of the California Health and Safety Code Section 40728.5 have been satisfied to the greatest extent possible, and that the Governing Board has actively considered and made a good faith effort to minimize any adverse socioeconomic impacts associated with the proposed rulemakings.

5. The District has completed an Initial Study for said rules that indicate that the project will not result in any significant adverse effects to the environment, and a Proposed Negative Declaration has been prepared and properly noticed pursuant to the California Environmental Quality Act Guidelines (CEQA). The Governing Board of the District has duly considered said Initial Study and Proposed Negative Declaration. Accordingly, the Governing Board of the District (a) certifies that the Initial Study and Negative Declaration reflect the independent judgment of the District; (b) finds that the above-described project will have a de minimis impact on fish and wildlife resources; and (c) approves and adopts a Negative Declaration for said rulemaking effort pursuant to CEQA requirements. In accordance with the provisions of Section 15075 of the *California Environmental Quality Act Guidelines*, the Executive Director/Air Pollution Control Officer is hereby directed to cause to be

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filed a Notice Determination with the County Clerks of each of the counties in the District.

6. To the maximum extent feasible, the offsite emission reduction fees collected by the District shall be expended in a manner that provides for localized air quality benefits commensurate with the emissions from the new development projects.

7. The District shall explore support of legislative initiatives that provide appropriate litigation relief on air quality issues in conjunction with the California Environmental Quality Act (CEQA) process for new development projects that satisfy the District emission reduction requirements of Rule 9510 or more stringent standards set by local communities and land use agencies.

8. No later than December 31, 2010, and after holding at least one series of public workshops, the Air Pollution Control Officer shall submit Rules 9510 and 3180 to the District Governing Board for reevaluation and reauthorization.

9. The District shall prepare an annual report that will be available to the public regarding the expenditure of offsite fee funds, and shall include the following: total amount of offsite fees received; total monies spent; total monies remaining; any refunds distributed; a list of all projects funded; total emissions reductions realized, and; the overall cost-effectiveness factor for the projects funded.

10. The Executive Director/Air Pollution Control Officer is directed to file with all appropriate agencies certified copies of this resolution and the rules adopted herein and is directed to maintain a record of this rulemaking proceeding in accordance with CH&SC Section 40728.

11. The Air Pollution Control Officer is directed to transit Rule 9510 (Indirect Source Review) to the California Air Resources Board for incorporation in the State Implementation Plan.

12. The Governing Board authorizes the Air Pollution Control Officer to

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include in the submittal or subsequent documentation any technical corrections, clarifications, or additions that may be needed to secure EPA approval, provided such changes do not alter the substantive requirements of the approved rule.

THE FOREGOING was passed by the following vote of the Governing Board of the San Joaquin Valley Unified Air Pollution Control District this 15th day of December 2005, to wit:

AYES: Patrick, Anderson, Worthley, Barba, Nelson, Dominici, Sieglock, Prince, Maggard and Mayfield.

NOES: None.

ABSENT: Armentrout.

SAN JOAQUIN VALLEY UNIFIED
AIR POLLUTION CONTROL DISTRICT

By: _____
Thomas W. Mayfield, Chair
Governing Board

ATTEST:

By: _____
Sissy Smith

Appendix F

Biological Assessment

Biological Assessment

- of –

746 Acres +/- at Northeast of Hwy 99 & Imperial Avenue
Portions of Sections 24 & 25, T.28S., R.26E,; and a portion of Sections 29 & 30, T.28S., R.27E.
County of Kern, CA
Assessor's Parcel #091-150-03; #091-160-01, 02, 03, 09, 13, 16;
#091-200-04, 05, 07, 13, 14; #482-040-01, 02, 03, 04, 05; #482-010-01, 02, 03 and 11 M.D.M

Prepared for: Mr. Tom Murray - Malibu Vineyards, LP
c/o Malibu Vineyards LP
9777 Wilshire Blvd., Suite 900
Beverly Hills, CA 90212

Prepared by: MESA Biological LLC
9530 Hageman Road #B-130
Bakersfield, CA 93312

Date: March 26, 2020

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Survey Background.

On August 14-16, 2019, at the request of Ms. Patricia Newquist, a Biological Study was conducted on lands within approximately 746 acres +/-, located northeast of Hwy 99 & Imperial Avenue located in the Northern segment of Bakersfield, CA, (Portions of sections 24 & 25, T.28S., R.26E.; and a portion of Sections 29 & 30, T.28S., R27E, County of Kern, M.D.M., Figures 1-4).

While every effort is made to acurately describe and reproduce survey areas in this report (Figure 4), Planning Staff should refer directly to site plans (Figure 4) or other professionally rendered engineering documents for assessing impact acreage. The estimated Biological Clearance Survey area, not including a minimum 50 foot buffer, is approximately 746 acres.

Site Survey Methodology

Survey Purpose and Methodology. In preparation for review for Zone Change and General Plan Amendment, and California Environmental Quality Act (CEQA) analysis, the Survey and subsequent report are intended to satisfy requirements for species detection and avoidance set forth by regulatory agencies including the California Department of Fish and Wildlife (CDFW) and the United States Fish and Wildlife Service (USFWS).

This Biological Study is intended to evaluate the Site for potential effects to biological resources, including special status species, namely those possessing formal conservation status by federal and state agencies as Threatened or Endangered Species, Species of Special Concern, and California Rare Plant Ranked 1A, 1B, 2A, or 2B. The Site evaluation included an assessment of distinguishing habitat features, which may be provided special conservation status and protections by federal and state agencies. The Site evaluation also included an assessment of potential listed special-status species occurrence and impacts of the proposed project. In preparation of the report, available scientific and regulatory agency literature, previous survey results and experiences in the region, maps, and online databases were consulted.

Permitting and Regulatory Setting

1. The Federal Endangered Species Act (FESA)

The FESA of 1973 (16 USC 1531 et seq., as amended) prohibits federal agencies from authorizing, permitting, or funding any action that would result in biological jeopardy to a plant or animal species listed as Threatened or Endangered under the Act. Listed species are taxa for which proposed and final rules have been published in the Federal Register.

If a proposed Project may jeopardize listed species, Section 7 of the FESA requires consideration of those species through formal consultation with the USFWS. Federal Proposed Species are species for which a proposed listing as Threatened or Endangered under the ESA has been published in the Federal Register.

If a proposed Project may jeopardize a proposed species, Section 7 of the FESA affords

consideration of those species through informal conferences with the USFWS. The USFWS defines federal Candidate species as "those taxa for which we have on file sufficient information on biological vulnerability and threats to support issuance of a proposed rule to list, but issuance of the proposed rule is precluded by other high priority listing actions." (USFWS 2011). Federal Candidate species are not afforded formal protection, although USFWS encourages other federal agencies to give consideration to Candidate species in the environmental planning.

Actions may be determined as having the potential or may affect and is likely to adversely affect species or adversely modify critical habitat. This conclusion is reached if any adverse effect to listed species or critical habitat may occur as a direct or indirect result of the proposed Service action or its interrelated or interdependent actions, and the effect is not discountable, insignificant or beneficial (see definition of "is not likely to adversely affect"). In the event the overall effect of the proposed action is beneficial to the listed species or critical habitat, but may also cause some adverse effect on individuals of the listed species or segments of the critical habitat, then the determination should be "is likely to adversely affect." Such a determination requires formal section 7 consultation.

2. California Environmental Quality Act (CEQA) and California Endangered Species Act (CESA)

Project permitting and approval requires compliance with CEQA, the 1984 CESA, and the 1977 Native Plant Protection Act (NPPA). The CESA and NPPA authorize the California Fish and Game Commission to designate Endangered, Threatened and Rare species and to regulate the taking of those species (§§2050-2098, Fish and Game Code). The California Code of Regulations (Title 14, §670.5) lists animal species considered Endangered or Threatened by the State.

The Natural Heritage Division of the California Department of Fish and Wildlife (CDFW) administers the state rare species program. The CDFW maintains lists of designated Endangered, Threatened, and Rare plant (CDFW 2016) and animal species (CDFW 2016a-b). Listed species either were designated under the NPPA or designated by the Fish and Game Commission. In addition to recognizing three levels of endangerment, the CDFW can afford interim protection to candidate species while they are being reviewed by the Fish and Wildlife Commission.

The CEQA (California Public Resource Code §§ 21000-21177) requires State agencies, local governments, and special districts to evaluate and disclose impacts from "projects" in the State. Section 15380 of the CEQA Guidelines clearly indicates that Species of Special Concern should be included in an analysis of project impacts if they can be shown to meet the criteria of sensitivity outlined therein.

Sections 15063 and 15065 of the CEQA Guidelines, which address how an impact is identified as significant, are partially relevant to the Species of Special Concern. Project-level impacts to listed (rare, Threatened, or Endangered species) species are generally considered significant, thus requiring lead agencies to prepare an Environmental Impact Report to fully analyze and evaluate the impacts. In assigning "impact significance" to populations of non-

listed species, analysts usually consider factors such as population-level effects, proportion of the taxon's range affected by a project, regional effects, and impacts to habitat features.

Sensitive habitats include riparian corridors, wetlands, habitats for legally protected species and CDFW Species of Special Concern, areas of high biological diversity, areas providing important wildlife habitat, and unusual or regionally restricted habitat types. Habitat types considered sensitive include those listed on the California Natural Diversity Database's (CNDDB) working list of "high priority" habitats (i.e., those habitats that are rare or endangered within the borders of California) (Holland 1986).

CEQA specifies that significance of potential effects, resulting from projects, should be determined and stipulates that under certain conditions, project proponents may be required to prepare certain documents including a Negative Declaration (Section 2180c); Mitigated Negative Declaration (Section 21064.5); and Environmental Impact Report (Sections 21100, 21151).

The CEQA Guidelines establish the threshold for significance of impacts and effects: "a substantial or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance."

Effects, Impacts, and Mitigation under CEQA (AEP 2014). Effects and impacts generally refer to a physical change in the environment and the effect resulting from an activity. The effects/impacts may be direct, such as an effect produced immediately as a result of the activity, or indirect, such as those that may occur at a later time or more distant than the immediate area of activity.

3. Take (FESA & CESA).
FESA defines take as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." Further definition of "harm" includes "an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering".

CESA Take, described in The State of California Fish and Game Code, Section 2080, defines take prohibition. Section 86 defines "take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

Legal "take" may be authorized by the state and federal agencies to an otherwise lawful activity. Authorization (USFWS: Section 10 for a non-federal activity, CDFW: Section 2081) usually accompanies stipulations for minimization of impacts, mitigation, and that the action (project or activity) not jeopardize the continued existence of the species.

4. California Native Plant Society (CNPS) Ranking
Under provisions of §15380(d) of the CEQA Guidelines, the Project lead agency and CDFW, in making a determination of significance, must treat non-listed plant and animal species as

equivalent to listed species if such species satisfy the minimum biological criteria for listing. In general, the CDFW considers plant species on List 1A (Plants presumed Extinct in California), List 1B (Plants Rare, Threatened or Endangered in California and elsewhere), or List 2 (Plants Rare, Threatened or Endangered in California, But More Common Elsewhere) of the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (Skinner and Pavlik 1994) (CNPS 2014) as qualifying for legal protection under §15380(d). Species on CNPS List 3 or 4 may, but generally do not, qualify for protection under this provision.

a. California Rare Plant Rank 1A
Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere.

The plants with California Rare Plant Rank of 1A are presumed extirpated because they have not been seen or collected in the wild in California for many years. This rank includes plants that are both presumed extinct as well as those plants that are presumed extirpated in California. A plant is extinct if it no longer occurs anywhere. A plant that is extirpated from California has been eliminated from California, but may still occur elsewhere in it's range.

All of the plants constituting the California Rare Plant Rank 1A meet the definitions of Sections 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. Should these taxa be rediscovered, it is mandatory that they be fully considered during preparation of environmental documents relating to the California Environmental Quality Act (CEQA).

b. California Rare Plant Rank 1B
Plants Rare, Threatened, or Endangered in California and Elsewhere.

Plants with a California Rare Plant Rank of 1B are rare throughout their range with the majority of them endemic to California. Most of the plants that are ranked 1B have declined significantly over the last century. California Rare Plant Rank 1B plants constitute the majority of taxa in the CNPS Inventory, with more than 1,000 plants assigned to this category of rarity.

All of the plants constituting the California Rare Plant Rank 1B meet the definitions of Sections 2062 and 2067 (California Endangered Species Act) of the CDFW code, and are eligible for state listing. It is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.

c. California Rare Plant Rank 2A
Plants Presumed Extirpated in California, But More Common Elsewhere.

The plant taxa of California Rare Plant Rank 2A are presumed extirpated because they have not been observed or documented in California for many years. This list includes only those plant taxa that are presumed extirpated in California, but more common elsewhere in their range.

d. California Rare Plant Rank 2B
Plants Rare, Threatened or Endangered in California, But More Common Elsewhere.

Except for being common beyond the boundaries of California, plants with a California Rare Plant Rank of 2B would have been ranked 1B. From the federal perspective, plants common in other states or countries are not eligible for consideration under the provisions of the Endangered Species Act.

With California Rare Plant Rank 2B, we recognize the importance of protecting the geographic range of widespread species. In this way, we protect the diversity of our own state's flora and help maintain evolutionary processes and genetic diversity within species. All of the plants constituting California Rare Plant Rank B2 meet the definitions of Sections 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. It is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.

5. California Fully Protected Species (Fish and Game Code 3800, 4700, 5050)
Fully Protected species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

6. Native Plant Protection Act (Fish and Game Code 1900 – 1913)
The intent of the Legislature and the purpose of this chapter is to preserve, protect and enhance endangered or rare native plants of this state. The Legislature finds that many species and subspecies of native plants are endangered because their habitats are threatened with destruction, drastic modification, or severe curtailment, or because of commercial exploitation or by other means, or because of disease or other factors.

7. The Migratory Bird Treaty Act (MBTA).
Originally passed in 1918, the MBTA implements the United States' commitment to four bilateral treaties, or conventions, for the protection of a shared migratory bird resource. The MBTA provides that it is unlawful to pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg or any such bird, unless authorized under a permit issued by the Secretary of the Interior. Some regulatory exceptions apply. Take is defined in regulations as: "pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect." The MBTA protects over 800 species of birds that occur in the U.S.

8. Bald and Golden Eagle Protection Act
This law, originally passed in 1940, provides for the protection of the bald eagle and the golden eagle (as amended in 1962) by prohibiting the take, possession, sale, purchase, barter, offer to sell, purchase or barter, transport, export or import, of any bald or golden eagle, alive or dead, including any part, nest, or egg, unless allowed by permit(16 U.S.C. 668(a); 50 CFR 22). "Take" includes pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb (16 U.S.C. 668c; 50 CFR 22.3).10. Lacey Act

9. Lake and Streambed Alteration (Fish and Game Code 1600)
Fish and Game Code section 1602 requires any person, state or local governmental agency, or public utility to notify CDFW prior to beginning any activity that may do one or more of the following:
Divert or obstruct the natural flow of any river, stream, or lake;
Change the bed, channel, or bank of any river, stream, or lake;
Use material from any river, stream, or lake; or
Deposit or dispose of material into any river, stream, or lake.
Please note that "any river, stream, or lake" includes those that are dry for periods of time as well as those that flow year round. If you are not certain a particular activity requires notification, CDFW recommends you notify.

10. Clean Water Act
Section 404 of the Clean Water Act (CWA) establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Proposed activities are regulated through a permit review process. An individual permit is required for potentially significant impacts.

The Survey was conducted by Biologists experienced with regionally occurring animal and plant species, natural communities, and field survey methodologies. A primary focus of the survey was detection of the presence of potentially occurring sensitive biological species, their respective habitats, and sensitive habitat features. The CDFW and USFWS accepted methods for field surveys to detect presence of potentially occurring special-status plant and animal species were consulted (CBOC 1993, CDFG 2009, USFWS 1999 & 2011).

The intent of the Biological Reconnaissance Survey includes documenting site biological conditions and assessing the Site for potential activity and presence of special-status species. A visual survey of the entire Site was conducted by walking the perimeter of the site and linear transects spaced at less than 50 feet within the perimeter resulting in 100% visual coverage. Survey transects were intuitively controlled to focus on maximizing the potential to detect cryptic and rare species. Surveyed buffer areas were limited to visible portions and publicly accessible areas of adjacent lands (Figures 1-2). A photographic record of site conditions was performed (Figures 5-10).

The Site survey was conducted during a time with high probability of visual detection of potentially occurring listed and special-status species including sign (flowering, conspicuous vegetative period, scat, tracks, nests, potential burrows, etc.) of current or previous presence in the vicinity of the site. The Site habitat was evaluated, and determinations were made based on features present, soil qualities, and agricultural impacts that may have altered the habitat to be no longer suitable for special-status species. Special-status species include those possessing formal conservation status by federal or state agencies as Threatened, Endangered, or Species of Special Concern. In preparation of the report, available scientific and regulatory agency literature, previous survey results and experiences in the region, species occurrence maps, and online databases were consulted (Appendix A).

The California Natural Diversity Database and BIOS systems (CDFW), California Native Plan

Society (CNPS) Online Rare Plant Inventory, and Information for Planning and Consulting (USFWS- Sacramento Office) were sourced for the 7.5 Minute USGS Quadrangle and 8 adjacent Quadrangles. Discussions, if applicable, are constrained strictly to those species or habitats are present or may be potentially present within the limits of the Site.

Under CEQA, the following factors are assessed per Site biological conditions, habitat suitability, and species known to occur in the region of the Site. Impacts for the following are assessed in the scale of significance ranging from Potential-to-None, and consider Mitigation to offset significance:

1. Either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.
2. On any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service.
3. On federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or
5. impede the use of native wildlife nursery sites.
6. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
7. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Survey Results

Site Setting. The Site (Assessor's Parcel #091-150-03; #091-160-01, 02, 03, 09, 13, 16; #091-200-04, 05, 07, 13, 14; #482-040-01, 02, 03, 04, 05; #482-010-01, 02, 03 and 11; Figure 4) is located Northeast of Hwy 99 and Imperial Avenue in Kern County, California. Active grape vineyards and intermittent farm equipment dominate the Site area.

Survey Results - Site Conditions. No undisturbed habitat exists within the survey limits. The location currently exists as active grape vineyards, the Lerdo Canal runs through the site, but not located within Site boundaries. Hwy 99 borders the west side of the Site; remaining borders (north, east, and south) are active grape vineyards. Additional disturbance within Site limits includes heavy road compaction along the perimeter and throughout the site. Evidence of recent grading (< 12 mo) was observed at the location.

Dominant herbaceous vegetation at the Site included red brome (*Bromus madritensis* ssp. *rubens*), fiddleneck (*Amsinckia intermedia*), field mustards (*Brassica* spp.), and Russian thistle (*Salsola tragus*). Telegraph weed (*Heterotheca gradiflora*), Horsetail (*Equisetum* sp.),

allscale saltbush (*Atriplex polycarpa*), Rabbitbush (*Ericameria paniculata*), Puncture vine (*Tribulus terrestris*), Datura (*Datura watsonii*), Nightshade (*Solanum elaegnifolium*), Storksbill (*Erdoium circularium*), Goosefoot (*Chenopodium* sp.), and Cheese weed (*Malva neglecta*).

Wildlife observed on Site was limited to visible tracks in the dirt indicative of the black tailed jackrabbit (*Lepus californicus*), domestic dog (*Canis familiaris*), domestic cat (*Felis catus*), stripped skunk (*Mephitis mephitis*), Western toad (*Anaxyrus boreas*), California ground squirrel (*Otospermophilus beecheyi*), common field mouse (*Perognathus inornatus*). Birds observed at the Site consisted of mourning dove (*Zenaida macroura*), feral pigeon (*Columba livia*), and house sparrow (*Passer domesticus*) turkey vulture (*Cathartes aura*), common raven (*Corvous corax*), European starlings (*Sturnus vulgaris*).

No special-status plant species were observed. Conditions at the Site, including periodic clearing and grading from edge to edge, have likely altered the pre-settlement conditions including soil and other microhabitat components necessary for most native plant species. A high density of nonnative annuals combined with competitive exclusion, isolation from source populations due to proximity and prevalence of disturbance on adjacent parcels, and periodic grading and compaction have likely further reduced the potential for native plant species to re-colonize.

No direct sign of occupation by any special-status species was detected. As the Site has been graded, cleared, and disturbed from edge to edge over several decades, and is isolated from source populations, it is unlikely that the Site would contain many of the regionally occurring native wildlife species. No scat/white-wash, feathers, prey remains, track, etc. was identified in proximity to any earthen burrow or "surrogate" artificial structure such that it would directly indicate occupation by any special-status species.

No nests or nesting behavior activities were observed among any detected wildlife.

No dens, burrows, rest sites, or any surrogate structures, were present which would indicate any presence of potentially occurring species status small mammals. No protocol nest survey was completed.

Protected Animals, Plants, and Sensitive Habitat Features

Biological Resources - Impact Analysis

The following sections are evaluated and assessed based on biological, abiotic, habitat features, and those resources known or suspected to occur in the region of the Site. They are arranged per CEQA-type checklist for Biological Resources.

1. Species Impacts: Either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

No sign of occupation in form of direct observation, sign of scat, track, nests, burrows (natural and atypical) was observed.

Due to the isolated nature of the Site, historical land use, lack of nearby source populations of native special status species, and proximity to development, the potential for occurrence of many of the state or federal listed or special-status species is considered unlikely.

Several state or federal listed or special-status species can be considered potentially present within portions of the margin of Site limits. The vagile nature of the species and nature of open lot use and occupation may provide opportunity for future occupation as well as occasional foraging within the Site limits.

Species which should receive consideration include the blunt-nosed leopard lizard (*Gambelia sila*), Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*), San Joaquin kit fox (*Vulpes macrotis mutica*), San Joaquin antelope squirrel (*Ammospermophilus nelsoni*), Willow flycatcher (*Empidonax traillii*), Swainson's hawk (*Buteo swainsoni*), and Tricolored blackbird (*Agelaius tricolor*).

Blunt-nosed leopard lizard (Federal Endangered) While this species was not detected during the biological field surveys; the Site is within the species historical range. Typical sign of use or occupation may include scat, track, and characteristic burrows. No blunt-nosed leopard lizard or their sign was observed at the Site. Due to the lack of suitable habitat, historical land use, lack of nearby source populations, and proximity to development, the potential for occurrence is considered low. An Incidental Take Permit is typically recommended if Take avoidance cannot be fully achieved.

Tipton kangaroo rat (Federal Endangered) The Tipton kangaroo rat occupies desert scrub habitats with friable soils for burrow construction, and vegetation for refuge and food resource (seed) availability and has a known historical range that includes the location of the Site. Typical sign of use or occupation may include characteristic Tipton kangaroo rat burrows with scat, track, and seed caches nearby. No Tipton kangaroo rat or their sign were observed at the Site Due to the lack of suitable habitat, historical land use, lack of nearby source populations, and proximity to development, the potential for occurrence is considered low. An Incidental Take Permit is typically recommended if Take avoidance cannot be fully achieved.

San Joaquin kit fox (Federal Endangered, State Threatened)- The San Joaquin kit fox is known to reside in many locations throughout the region of the Site. Typical sign of use or occupation may include scat, track, characteristic dens with evidence of prey remains or foraged food and trash items. Kit foxes are known to use multiple dens throughout the year and will also enlarge existing holes, such as those made by other burrowing mammals. Kit foxes are also known to use pipes or "surrogate" artificial structures as dens. No kit fox or their sign was observed at the Site. Due to the lack of suitable habitat, historical land use, lack of nearby source populations, and proximity to development, the potential for occurrence is considered low. An Incidental Take Permit is typically recommended if Take avoidance cannot be fully achieved.

San Joaquin antelope squirrel (State Threatened) The San Joaquin antelope squirrel occupies desert scrub habitats with friable soils for burrow construction, and vegetation for refuge and food resource (seed) availability and has a known historical range that includes the location of the Site. Typical sign of use or occupation may include characteristic burrows, scat, and track. No San Joaquin antelope squirrel or their sign were observed at the Site. Due to the lack of suitable habitat, historical land use, lack of nearby source populations, and proximity to development, the potential for occurrence is considered low. An Incidental Take Permit is typically recommended if Take avoidance cannot be fully achieved.

Buena Vista Lake ornate shew (Federal Endangered) The Buena Vista Lake shrew is observed in Valley freshwater marshes with dense wetland vegetative cover and abundant detritus ground cover. No Buena Vista Lake shrew were observed on Site. Due to the lack of suitable habitat, historical land use, lack of nearby source populations, and proximity to development, the potential for occurrence is considered low.

Swainson's hawk (State Threatened) – No Swainson's hawk were observed on Site during the survey; however, the potential for occurrence is moderate due to the suitable foraging habitat. Loss of foraging habitat at the Site from the proposed project activities may displace individuals, but is not likely to result in a substantial adverse effect to this species. While no members of this species were detected, and no protocol search was conducted, it may be appropriate to include avoidance measures and required Agency notification if the Site becomes occupied by the species in the future.

Tricolored blackbird (State Species of Special Concern) – No tricolored blackbird were observed on Site during the survey; however, the potential for occurrence is low due to the suitable foraging and nesting habitat. Modifications to existing conditions may result in some degree of loss of habitat. The Site has habitat throughout that is considered poor quality with respect to use by this species for both nesting and wintering. The loss of potential habitat at the Site may displace individuals, but is not likely to result in substantial adverse effects to this species. While no members of this species were detected, and no protocol search was conducted, it may be appropriate to include avoidance measures and required Agency notification if the Site becomes occupied by the species in the future.

Willow flycatcher (Federal Endangered) No willow flycatcher were observed on Site during the survey; however, the potential for occurrence is low due to the suitable foraging and nesting habitat.. Modifications to existing conditions may result in some degree of loss of habitat. The Site has habitat throughout that is considered poor quality with respect to use by this species for both nesting and wintering. The loss of potential habitat at the Site may displace individuals, but is not likely to result in substantial adverse effects to this species. While no members of this species were detected, and no protocol search was conducted, it may be appropriate to include avoidance measures and required Agency notification if the Site becomes occupied by the species in the future.

Listed plant species that should receive consideration include Bakersfield smallscale (*Atriplex tularensis*), California jewelflower (*Caulanthus californicus*), Bakersfield cactus

(*Opuntia basilaris var. treleasei*), San Joaquin woolythreads (*Monolopia congdonii*), and Kern mallow (*Eremalche parryi ssp. kernensis*).

No listed plant species were observed during the survey. Due to the isolated nature of the Site, historical land use, lack of nearby source populations of native special status species, and proximity to development, the potential for occurrence of many of the state or federal listed or special-status plant species is considered unlikely.

2. Riparian Habitat or Sensitive Natural Communities - On any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service.

The Lerdo Canal runs through the center of the site and is not included within the site boundaries. No evidence of potential wetland habitat was present near the canal, nor immediately onsite in any direction. Also, no sign of any bed, bank, channel, or constituent elements were present at the Site that would indicate wetlands or wetland features present at the Site.

No Army Corps of Engineers Jurisdictional Delineation (JD) was conducted and given the complete lack of sign of any feature, vegetation element, or any remnant indication of wetland elements, it is unlikely that any JD would reveal different findings.

3. Federally protected wetlands - On federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

The Lerdo Canal runs through the center of the site and is not included within the Site boundaries. No evidence of potential wetland habitat was present near the canal, nor immediately onsite in any direction. Also, no sign of any bed, bank, channel, or constituent elements were present at the Site that would indicate wetlands or wetland features present at the Site.

No Army Corps of Engineers Jurisdictional Delineation (JD) was conducted and given the complete lack of sign of any feature, vegetation element, or any remnant indication of wetland elements including hydrological features or hydrophytic vegetation, it is unlikely that any JD would reveal different findings.

4. Wildlife Corridors or Native Wildlife Nursery Sites – Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites.

No nursery, rookery, maternal colony, or any other representative important source of refuge for wildlife or fish are present on Site or in adjacent lands. Given the location, proximity to urban development and predominantly developed lands in the region, no such wildlife or fish features exist on adjacent lands and migratory or natural movement is not

likely to be impeded based on the development of this Site.

5. Local policies or ordinances protecting biological resources - Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Lead Agency review will fully assess impacts and coordinate review with entities to ensure local policy adherence. No known conflict currently exists.

6. Consistent with HCP's and NCCP's - Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Lead Agency review and will fully assess impacts and coordinate review with entities to ensure local policy adherence. No known conflict currently exists.

Recommendations

As no direct sign of site occupation by kit foxes or other special-status species was observed at the site or within visible portions of immediately adjacent developed and undeveloped lands, potential risk of "take" is considered low; however, some risk of take exists. Mitigation requirements are described in the following section.

Given the presence of the canal, Agency notification may be appropriate for informal coordination and confirmation of absence of the historically mapped element.

As no special-status species or their sign was observed during the survey, and no intact habitat exists on Site or on adjacent lands, risk of direct Take is considered low; however, Lead Agency recommendations will aid in determining the mitigation and final avoidance and minimization requirements.

Literature

CDFW. 2020. State and Federally Listed Endangered and Threatened Animals of California. State of California, The Natural Resources Agency, The Department of Fish and Wildlife, Biogeographic Data Branch, California Natural Diversity Database. January 2020.

CDFW. 2020a. State and Federally Listed Endangered, Threatened, and Rare Plants of California. State of California, The Resources Agency, Resource Management and Planning Division, Biogeographic Data Branch, California Natural Diversity Database. January 2020.

CDFW. 2020b. California Natural Diversity Database. State of California, Department of Fish and Wildlife Biogeographic Data Branch. Rarefind Version 5. Accessed January 2020.

CDFW. 2020c. Internet Mapping Application Products and Services: Biogeographic Information and Observation System (BIOS). State of California, Natural Resources Agency: Resource Management and Planning Division, Biogeographic Data Branch. Accessed January

2020.

CDFW. 1994. Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California. California Department of Fish and Wildlife. November 1994.

CDFW. 2009. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. State of California Natural Resources Agency: Department of Fish and Wildlife. November 2009.

CDFW. 2008. California Bird Species of Special Concern. State of California, The Resources Agency, Resource Management and Planning Division, Biogeographic Data Branch, California Natural Diversity Database. April 2008.

Hickman, J.C. (Ed). 1993. The Jepson Manual. Higher Plants of California. University of California Press. Berkeley, CA 1400 p.

Swainson's Hawk Technical Advisory Committee (SHTAC). 2000. Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley. Swainson's Hawk Technical Advisory Committee. May 2000.

USFWS. 1999. San Joaquin Kit Fox Survey Protocol for the Northern Range.
Sacramento Fish and Wildlife Office. June 1999.

USWFW. 1998. Recovery plan for upland species of the San Joaquin Valley, California.
Region 1, Portland, OR. 319 pp



Figure 1. Aerial image of site location (bright green dot) in Bakersfield, CA. Image provided under license by Google Earth Pro 2019.



Figure 2. Aerial image of Site project limits and primary survey area (bright green outline).

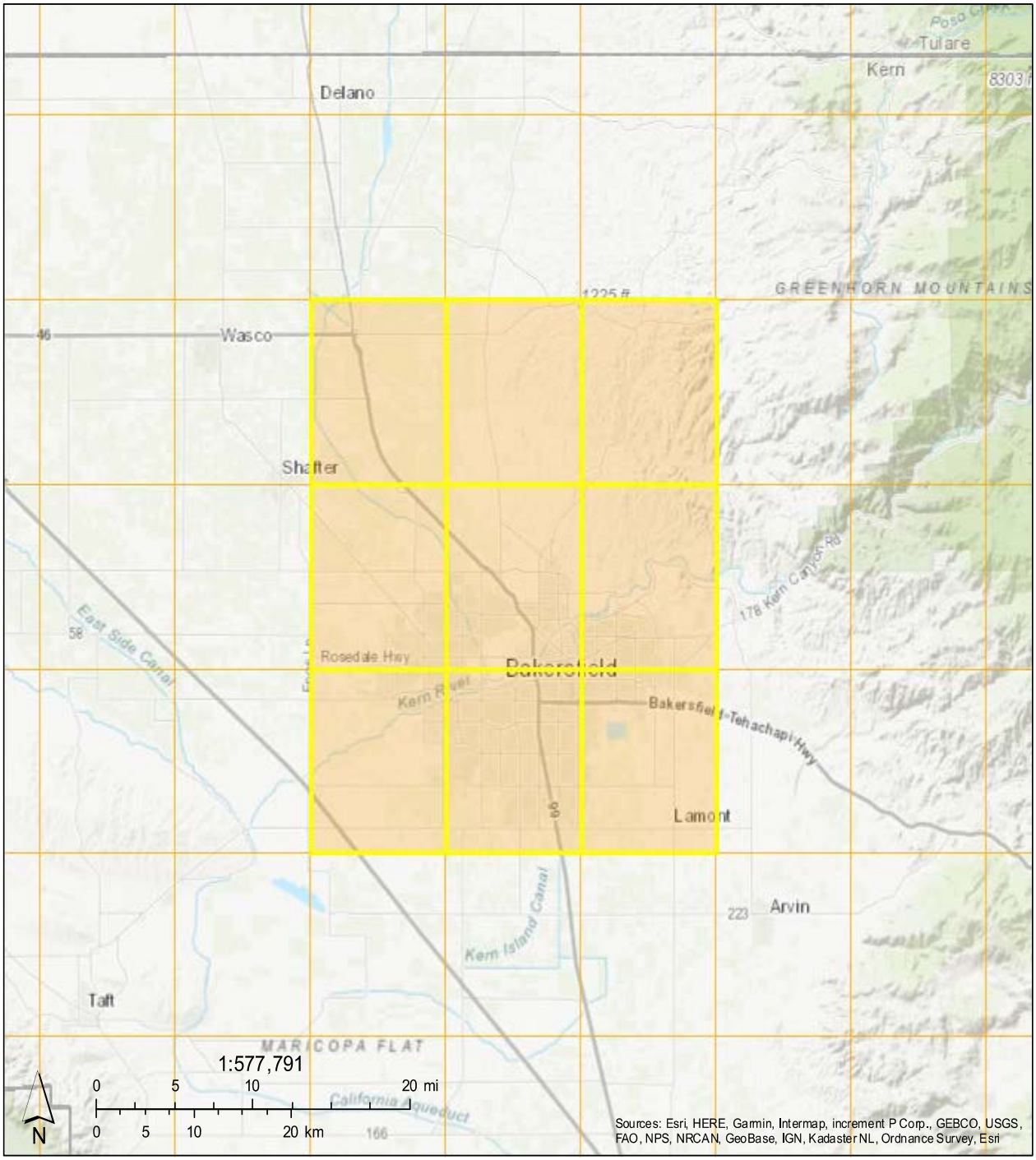

Figure 3. USGS 7.5 Minute Topographic image of Site and surrounding land (National Map Viewer 2018). Red arrow at approximate Site.

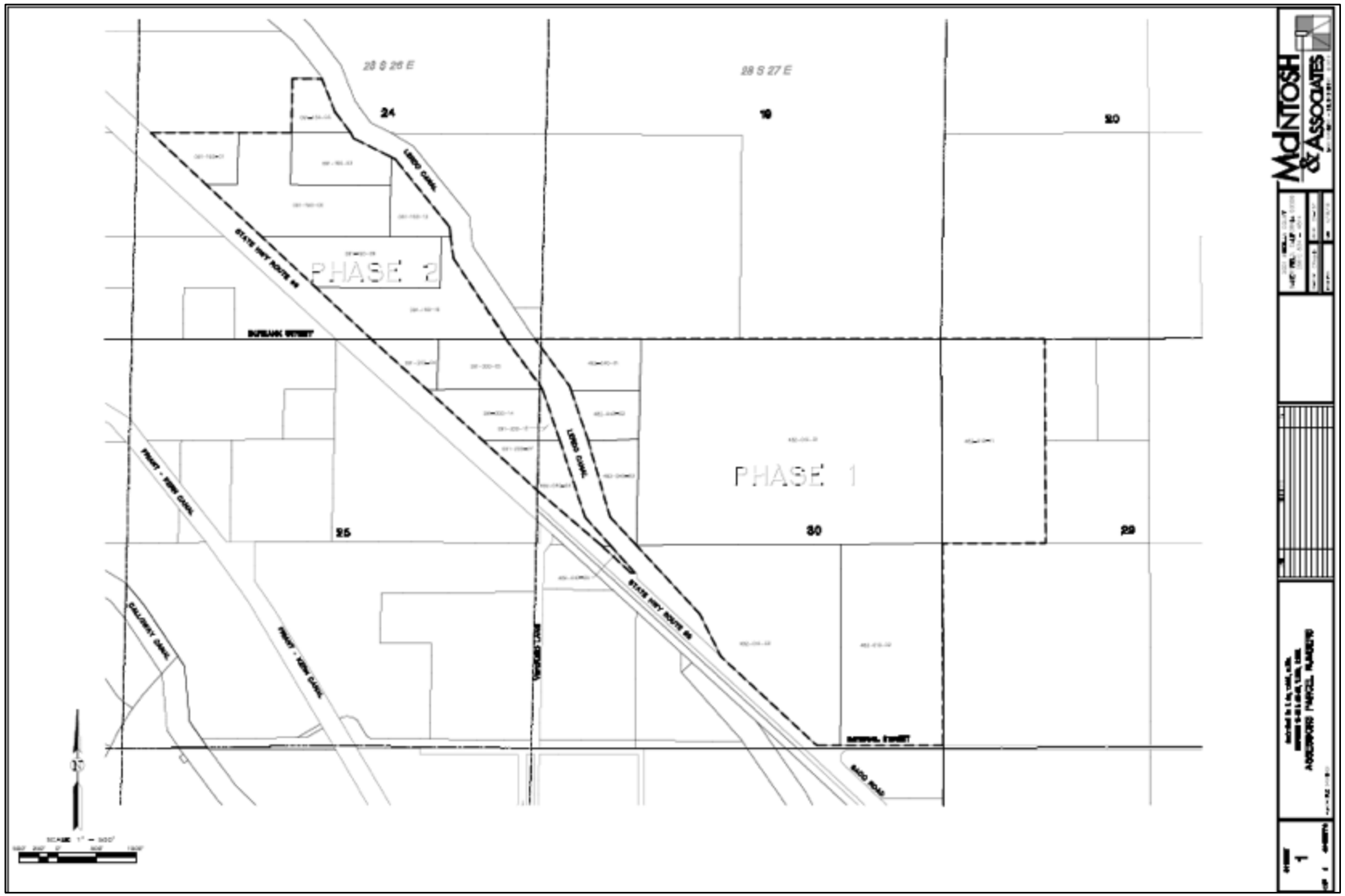

Figure 4. Client provided line drawing.

Phase 1 Figures



Figure 5. Panoramic photograph 180 degrees during survey (August 2019) of Site from approximate northeast corner and photo center oriented approximately southwest.



Figure 6. Panoramic photograph 180 degrees during survey (August 2019) of Site from approximate northwest corner and photo center oriented approximately southeast.



Figure 7. Panoramic photograph 180 degrees during survey (August 2019) of Site from approximate southwest corner and photo center oriented approximately northeast.



Figure 8. Panoramic photograph 180 degrees during survey (August 2019) of Site from approximate southeast corner and photo center oriented approximately northwest.



Figure 9. Panoramic photograph 180 degrees during survey (August 2019) of Site from approximate southeast indent corner and photo center oriented approximately northwest.



Figure 10. Panoramic photograph 180 degrees during survey (August 2019) of Site from approximate eastern corner and photo center oriented approximately northwest.

Phase 2 Figures:



Figure 11. Panoramic photograph 180 degrees during survey (August 2019) of Site from approximate northwest corner and photo center oriented approximately southeast.



Figure 12. Panoramic photograph 180 degrees during survey (August 2019) of Site from approximate southeast corner and photo center oriented approximately northwest.



Figure 13. Panoramic photograph 180 degrees during survey (August 2019) of Site from approximate northeast corner and photo center oriented approximately southwest.



Figure 14. Panoramic photograph 180 degrees during survey (August 2019) of Site from approximate northernmost west corner and photo center oriented approximately southeast.



Figure 15. Panoramic photograph 180 degrees during survey (August 2019) of Site from approximate northwest indent corner and photo center oriented approximately southeast.

Appendix A

Appendix A. CNDDB Species occurrence list generated from nine quad search and U.S. Fish and Wildlife Service IPaC generated species lists. **Species**	**Status**	**Preferred Habitat**	**Habitat present**	**Potential for occurrence**
Avian				
Southwestern Willow Flycatcher *Empidonax traillii extimus*	E	Southwestern willow flycatcher is known to breed in dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands.	Yes	While historic records are within close proximity and suitable habitat occur within the Study Area, species not detected during August 2019 survey
Yellow-billed Cuckoo *Coccyzus americanus*	T	The Yellow-billed Cuckoo inhabits dense leafy groves and thicket during the summer. Preferred habitats include woodlands, thickets, orchards, and streamside groves.	Yes	While historic records are within close proximity and suitable habitat occur within the Study Area, species not detected during August 2019 survey
Swainson's hawk *Buteo swainsoni*	ST	The range of the Swanson Hawk overlaps the Mojave Desert but is mostly observed near agricultural lands where foraging for small rodents is optimal.	Yes	While historic records are within close proximity and suitable habitat occur within the Study Area, species not detected during August 2019 survey
Tricolored blackbird *Agelaius tricolor*	ST/SSC	The Tricolored Blackbird inhabits cattail marshes, marshy meadows, and rangelands. The highest probability of presence of the Tricolored Blackbird to be found in the Study Area is January through July.	Yes	While historic records are within close proximity and suitable habitat occur within the Study Area, species not detected during August 2019 survey
Western mastiff bat *Eumops perotis californicus*	SSC	Roosts – rocky outcrops, crevice, cliffs (50-100% rock) Forage – woodlands, forest scrub, chaparral, grassland, ag. Occurs in Riparian woodlands, and forest, desert wash, desert scrub	No	While historic records are within close proximity and suitable habitat occur within the Study Area, species not detected during August 2019 survey
golden eagle *Aquila chrysaetos*	FP; WL	The Golden Eagles prefer open and semi-open country with native vegetation. They are found primarily in mountains < 4000 m, canyonlands, rimrock terrain, and riverside cliffs and bluffs. Golden Eagles nest on cliffs and steep escarpments in grassland, chapparal, shrubland, forest, and other vegetated areas.	Yes	While historic records are within close proximity and suitable habitat occur within the Study Area, species not detected during August 2019 survey
white-tailed kite Elanus leucurus	FP	Found in a wide variety of open habitats, including open oak grasslands, desert grasslands, farm country, and marshes. Prefers habitats with trees for perching and nesting and open grounds with high rodent populations for hunting.	Yes	While historic records are within close proximity and suitable habitat occur within the Study Area, species not detected during August 2019 survey
mountain plover Charadrius montanus	SSC	Mountain Plovers is generally found in open, flat, dry tablelands with low, sparse vegetation. Nests are simple scrapes in the ground, which males begin forming soon after their arrival in breeding areas. After eggs are laid, lichen grass roots, leaves and dried chips of cow manure are added until eggs are about half buried.	Yes	While historic records are within close proximity and suitable habitat occur within the Study Area, species not detected during August 2019 survey
yellow-breasted chat Icteria virens	SSC	Found in dense deciduous and coniferous forests, shrubby and brushy habitats along stream edges, regenerating burn areas, and upland thickets in fallow lands. Associated with flowering dogwood, red cedar, and sumac trees.	No	While historic records are within close proximity and suitable habitat occur within the Study Area, species not detected during August 2019 survey
loggerhead shrike Lanius ludovicianus	SSC	Prefers open habitats with scattered shrubs, tree, posts, fences, utility lines, or other perches. Found in open-canopied valley foothill hardwood, valley foothill riparian, and Joshua tree habitats hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert	Yes	While historic records are within close proximity and suitable habitat occur within the Study Area, species not detected during August 2019 survey
yellow warbler Setophaga petechia	SSC	Usually found in riparian deciduous habitats in summer: cottonwoods, willows, alders, and other small trees and shrubs typical of low, open-canopy riparian woodland. Also breeds in montane shrubbery in open conifer forests). In migration, visits woodland, forest, and shrub habitats.	Yes	While historic records are within close proximity and suitable habitat occur within the Study Area, species not detected during August 2019 survey
short-eared owl Asio flammeus	SSC	Found in marshes, bogs, and open, flat, treeless areas beneficial for hunting small mammals.	No	While historic records are within close proximity and suitable habitat occur within the Study Area, species not detected during August 2019 survey

burrowing owl Athene cunicularia	SSC	Annual and perennial grasslands, deserts, and scrublands. Inhabits burrows made by fossorial mammals, also cement culverts, debris piles or cement, asphalt, woods and opening beneath cement or asphalt pavement.	Yes	While historic records are within close proximity and suitable habitat occur within the Study Area, species not detected during August 2019 survey
California horned lark Eremophila alpestris actia	WL	Found in grasslands, tundra, sandy regions, areas with scattered low shrubs, desert playas, grazed pastures, open cultivated areas, and rarely in open forest. Nests are often found in ground hollows near grass tufts or manure.	Yes	While historic records are within close proximity and suitable habitat occur within the Study Area, species not detected during August 2019 survey
double-crested cormorant Phalacrocorax auritus	WL	Found in diverse aquatic habitats; rocky coastlines, mangrove swamps, lagoons, estuaries, rivers, small inland ponds, large reservoirs.	No	While historic records are within close proximity and suitable habitat occur within the Study Area, species not detected during August 2019 survey
white-faced ibis Plegadis chihi	WL	Found in wetlands with shallow water or exposed mud. Can feed in fields or open areas with moist soils.	Yes	While historic records are within close proximity and suitable habitat occur within the Study Area, species not detected during August 2019 survey
great egret Ardea alba	None	Found in marshes, ponds, shores, mud flats. Forages in open areas, edges of lakes, marshes, shallow coastal lagoons and estuaries, and along rivers in wooded areas. Nests in trees or shrubs near water, occasionally in thickets away from water.	Yes	While historic records are within close proximity and suitable habitat occur within the Study Area, species not detected during August 2019 survey
great blue heron Ardea herodias	None	Found in marshes, ponds, shores, and tide flats. Forages in calm, fresh waters, slow moving rivers, or coastal bays. Nests in trees or shrubs near water.	No	While historic records are within proximity and suitable habitat occur within the Study Area, species not detected during August 2019 survey
Insect				
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	FT	The valley elderberry longhorn beetle lives throughout California's Central Valley from Shasta County in the north through Madera County in the south; dependent on its host plant, the elderberry, a shrub that grows in riparian areas and foothill oak woodlands in California.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Crotch bumble bee *Bombus crotchii*	S1S2 (NatureServe – CNDDB)	Found in grasslands and shrublands with hot, dry environments. Due to its short tongue, *B. crotchii* has specific food sources: milkweed, dusty maidens, lupines, medics, phacelias, sages, clarkias, poppies, and wild buckwheat.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Moestan blister beetle *Lytta moesta*	G2S2 (NatureServe – CNDDB)	Very little is known about the life history and habitat preferences of *L. moesta*. Adults meloids are often found on angiosperms, although no documentation exists for flower preference. Distribution range includes Kern, Tulare, Freson, Madera, Santa Cruz, and Stanislaus counties; optimal collection period is from March to September.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Morrison's blister beetle *Lytta morrisoni*	G1G2S1S2 (NatureServe – CNDDB).	Very little is known about the life history and habitat preferences of *L. morrisoni*. Adults meloids are often found on angiosperms, *L. morrisoni* has been observed feeding on *Gilia tricolor* and *Linanthus liniflorus*. Found predominantly in the southern Central Valley, most recently at Carrizo Plains in San Luis Obispo County; occurrences recorded from San Benito County to Kern County.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Monarch - California overwintering population *Danaus plexippus* pop. 1	SGCN	Possible habitat includes milkweed and other angiosperms. Roosting is often observed in eucalyptus, Monterey pines, and Monterey cypress trees. Most often observed along the Pacific coast line.	No	No suitable habitat exists within the action area.
Mammal				
Giant Kangaroo Rat *Dipodomys ingens*	E	The Giant Kangaroo Rat is an endemic species of the San Joaquin Desert and is known to occupy annual grasslands, saltbush scrub and valley sink scrub communities. Critical habitat features include vegetation for food resource availability and friable soils for burrow construction.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected during August 2019 survey.
San Joaquin Kit Fox *Vulpes macrotis mutica*	E	The San Joaquin Kit Fox is an endemic species of the San Joaquin Desert and is known to occupy valley saltbush scrub and valley sink scrub communities. Critical habitat features include food resource availability (prey species populations) and friable soils for burrow construction.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected during August 2019 survey.
Tipton Kangaroo Rat *Dipodomys nitratoides nitratoides*	E	The Tipton Kangaroo Rat is an endemic species of the San Joaquin Desert and is known to occupy valley saltbush scrub and valley sink scrub communities. Critical habitat features include vegetation for food resource availability and friable soils for burrow construction.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected during August 2019 survey.
Buena Vista Lake ornate shrew *Sorex ornatus relictus*	FE SSC	Buena Vista Lake ornate shrew prefers freshwater marshes with dense vegetation and detritus. Found only by BV lake, Kern wildlife preserve, and Tulare basin	No	No suitable habitat exists within the action area.

San Joaquin antelope squirrel *Ammospermophilus nelsoni*	ST; FT	The San Joaquin antelope squirrel occurs in deserts, arid steppes, and open shrublands with <23 mm annual precipitation. Plant association – saltbushes, ephedra, bladderpod, goldenbush, matchweed. Loam – sandy loam soils. <360 m elevation	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Tulare grasshopper mouse *Onychomys torridus tularensis*	SSC	The Tulare grasshopper mouse occurs in arid shrublands, arid grasslands, blue oak woodlands, upper Sonoran subshrub scrublands, and alkali sink and mesquite on valley floor. Found west margin of Tulare basin, Carrizo plan, Cuyama valley, SLO, and Panoche Valley	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
American badger *Taxidea taxus*	SSC	The American badger is widespread prefers open, dry grasslands, fields, and pastures. Desert, dunes, savanna, grassland, chaparral, mountain, and marshes.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Heermann's kangaroo rat *Dipodomys heermanni heermanni*	None	The Heermann's kangaroo rat is found in the Central San Joaquin Desert; found most often is dry, grassy plains with friable soils for digging; occurs on hillsides, knolls, and ridges with sparse to moderate chaparral cover.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
San Joaquin Pocket Mouse *Perognathus inornatus*	None	San Joaquin Pocket Mouse occurs in dry, open grasslands of scrub areas on fine-textured soils between 350 and 600 m in the Central and Salinas valleys.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Hoary bat *Lasiurus cinereus*	None	Widespread throughout North America to Central America. Roosting preferences include maple, oak, ash, elder, hemlock, and redwood trees.	No	While historic records are within proximity and suitable habitat occur within the Study Area, species not detected during August 2019 survey.
Mullusk				
Kern shoulderband *Helminthoglypta callistoderma*	E	The Kern shoulderband is a terrestrial pulmonated gastropod mullusk; listed as endangered by the ICUN in 1996. Very little information is available regarding the habitat/ecology of the Kern shoulderband.	No	No suitable habitat exists within the action area.
Western ridged mussel *Gonidea angulata*	None	Western ridged mussel is found more commonly in streams than lakes and prefer constant water flow and well-oxygenated stable substrates in areas of low gradient. They can be found in substrates ranging in size from silt, clay, and sand to boulders. They are rarely found in waters that are continuously turbid such as glacial streams.	No	No suitable habitat exists within the action area.
Fishes				
Delta Smelt *Hypomesus transpacificus*	E	The Delta smelt only occurs in the San Francisco Estuary	No	No suitable habitat exists within the action area.
Crustaceans				
Vernal Pool Fairy Shrimp *Branchinecta lynchi*	T	Vernal pool fairy shrimp are associated with ephemeral habitats including vernal pools, alkali pools, seasonal drainages, stock ponds, vernal swales and rock outcrops, as well as artificially created ephemeral habitats including railroad toe-drains, roadside ditches, agricultural drains, and ruts left by heavy construction vehicles.	No	No suitable habitat exists within the action area.
Vegetation				
Bakersfield Cactus *Opuntia treleasei*	E	The Bakersfield cactus is endemic to a limited area of central Kern County in the city of Bakersfield. Known extant populations occur on flood plains, ridges, bluffs and rolling hills in Saltbush scrub plant communities and riparian woodlands at elevations of 140-850 m.	Yes	Suitable habitat present, Species not detected during August 2019 survey.
San Joaquin Wooly-threads *Monlopia congdonii*	E	San Joaquin wooly-threads occupy nonnative grasslands, valley saltbush scrub, interior coast range saltbush scrub, and upper Sonoran subshrub scrub. Located primarily in the hills and plateaus west of the San Joaquin Valley. Preferred habitat contains < 10% shrub cover and boasts sandy, sandy loam, and/or silty soils at elevations of ~ 60-800 m.	No	No suitable habitat exists within the action area.
Bakersfield smallscale *Atriplex tularensis*	SE; 1A	Bakersfield smallscale is an annual herb found in shadescale scrub and wet-land riparian. Occurring in alkaline soils, and shores of dry lakes between 90-200m. Flowering period: June-Oct.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
California jewelflower *Caulanthus californicus*	SE; FE; 1B.1	California jewelflower is an annual herb found in Chenopod scrub, Pinyon and juniper woodland, Valley and foothill grassland, Shadscale shrub. Occurring in fine-medium sandy moderately saline soils between 61-1000m	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Kern mallow *Eremalche parryi ssp. kernensis*	FE; 1B.2	Kern mallow is an annual herb found in chenopod scrub, shadscale scrub, valley, and foothill grassland. Eroded hillsides and alkali flats in non-wetland under natural conditions. Occurring on alkaline sandy loam or clay soils between 200-5000 m.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Comanche Point layia *Layia leucopappa*	1B.1	Comanche Point layia is an annual herb found in Chenopod scrublands and Valley and foothill grasslands; occurs in grassy or open heavy soils at elevations of 100-350m. Bloom period: Mar-Apr.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.

Oil neststraw *Stylocline citroleum*	1B.1	Oil neststraw is an annual herb found in Chenopod scrub, coastal scrublands, and Valley and foothill grasslands at elevations of 120-150m. Observed frequently in clayey soils. Bloom period: Mar-Apr.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Mason's neststraw *Stylocline masonii*	1B.1	Mason's neststraw is an annual herb found in Chenopod scrublands, Pinyon and Juniper woodlands at elevations of 100-1200m. Observed frequently in sandy soils	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Horn's milk-vetch *Astragalus hornii var. hornii*	1B.1	Horn's milk-vetch is an annual herb, found in meadows and seeps, lake margins, Playas, alkaline soils. 60-850 m.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Hispid salty bird's-beak *Chloropyron molle ssp. hispidum*	1B.1	Hispid salty bird's-beak is an annual herb, blooming from June-September. Found in meadows and seeps, playas, and Valley and foothill grasslands. Observed in alkaline soils 1-155m.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Tejon poppy *Eschscholzia lemmonii ssp. kernensis*	1B.1	Tejon poppy is found in Chenopod scrublands and Valley and foothill grasslands, open areas. 160-1,000 m.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Piute Mountains navarretia *Navarretia setiloba*	1B.1	Piute Mountains navarretia is found in Cismontane woodlands, Pinyon and juniper woodlands, and Valley and foothill grasslands, open areas. Clay soils.	No	No suitable habitat exists within the action area.
Alkali mariposa-lily *Calochortus striatus*	1B.2	Alkali mariposa-lily is a perennial bulbiferious herb, found in moist creosote-bush scrub, Chenopod scrub, Chaparral, alkaline meadows, and seeps. Alikaline and Mesic soils. Bloom period: Apr-Jun. 70-1,595 m.	No	No suitable habitat exists within the action area.
Calico monkeyflower *Diplacus pictus*	1B.2	Calico monkeyflower is found in Broadleafed upland forest, cismontane woodland. In bare ground around gooseberry bushes or around granite rock outcrops. 100-1,430 m.	No	No suitable habitat exists within the action area.
Recurved larkspur *Delphinium recurvatum*	1B.2	Recurved larkspur is a perennial herb found in Chenopod scrub, Cismontane woodland, Valley and foothill grassland. Prefers fine-medium moderately saline soils. 3-790 m.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
California screw moss *Tortula californica*	1B.2	California screw moss is a moss, found in chenopod scrublands and valley and foothill grasslands in sandy soils. 10-1460 m.	No	No suitable habitat exists within the action area.
California satintail *Imperata brevifolia*	2B.1	California satintail is a perennial rhizomatous herb found in chaparrals, coastal scrub areas, Mojavean desert scrub, meadows and seeps (often alkali), and riparian scrublands in mesic soils. Bloom period Sep-May. 0-1215 m.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Vernal barley *Hordeum intercedens*	3.2	Vernal barley is an annual herb, found in coatal dunes, coastal scrub, valley and foothill grasslands (depressions, saline flats), and vernal pools. Bloom period: Mar-Jun. 5-1000m	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Hoover's eriastrum *Eriastrum hooveri.* DELISTED	4.2	Hoover's eriastrum is an annual herb found in Chenopod Scrublands, Pinyon and Juniper Woodlands, and Valley and Foothill Grasslands. Found in moderately saline gravelly soils. 50-915 m.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Hogwallow starfish *Hesperevax caulescens*	4.2	Hogwallow starfish is an annual herb found in mesic clay valley and foothill grasslands and shallow vernal pools. Prefers alkaline soils. 0-505 m. Bloom period: Mar-Jun	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Ferris' goldfields *Lasthenia ferrisiae*	4.2	Ferris' goldfields are an annual herb found in clayey alkaline vernal pools. 20-700 m. Bloom period: Feb-May.	No	No suitable habitat exists within the action area.
Mexican mosquito fern *Azolla microphylla*	4.2	Mexican mosquito fern is an annual/perennial herd found in marshes and swamps (ponds and slow-moving waters). 30-100m. Blooming in August.	No	No suitable habitat exists within the action area.
Small-flowered morning-glory *Convolvulus simulans*	4.2	Small-flowered morning-glory is an annual herb, found in chaparral, coastal scrub, and valley and foothill grass land habitats. Prefers Clayey serpentinite soils and seeps. 20-740m. Blooding period Mar-Jul	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
San Joaquin bluecurls *Trichostema ovatum*	4.2	San Joaquin bluecurls is an annual herb, found in chenopod scrub and valley/foothill grassland habitats. 65-320m. Blooming period: (Apr-Jun)Jul-Oct.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Large-flowered leptosiphon *Leptosiphon grandiflorus*	4.2	Large-flowered leptosiphon is an annual herb, found in several plant communities, including coastal bluff scrub, closed-cone coniferous forest, cismontane woodlands, coastal dunes, coastal prairie, coastal scrub, and valley and foothill grasslands; usually in sandy soils. 5-12220m. Bloom Period: Apr-Aug.	No	No suitable habitat exists within the action area.
Cottony buckwheat *Eriogonum gossypinum*	4.2	Cottony buckwheat is an annual herb, found in chenopod scrub and vally/foothill grasslands, usually in clayey soils. 100-550m. Bloom period: Mar-Sept.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.

Golden goodmania *Goodmania luteola*	4.2	Golden goodmania is an annual herb, found in Mojavean desert scrub, playas, valley and foothill grasslands, and meadows and seep habitats with alkaline and clayey soils. 20-2220m. Blooming period: Apr-Aug.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Howell's onion *Allium howellii* var. *howellii*	4.3	Howell's onion is a perennial bulbiferous herb, found in valley and grassland habitats, occasionally with clayey or serpentinite soil/rock. 50-2200m. Bloom period: Mar-Apr.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Slender clarkia *Clarkia exilis*	4.3	Slender clarkia is an annual herb, found in Cismontane woodlands. 120-1000m. Bloom period: Apr-May.	No	No suitable habitat exists within the action area.
Amphibian/Reptile				
Blunt-nosed Leopard Lizard *Gambelia silus*	E	The Blunt-nosed leopard lizard is endemic to the San Joaquin Valley. They inhabit open, sparsely vegetated areas of low relief and are known to occur in nonnative grasslands, valley sink scrub and valley saltbush scrub Elevation < 800 m. Critical habitat features include food resource availability and friable soils suitable for den construction.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
Giant Garter Snake *Thamnophis gigas*	T	The Giant Garter Snake occurs in perennial wetlands. Critical habitat features include summer aquatic habitat for foraging, bankside basking and vegetation for refuge and thermal regulation.	No	No suitable habitat exists within the action area.
California Red-legged Frog *Rana draytonii*	T	The California Red-legged Frog mainly occur in riparian habitats in close proximity to breeding sites; coastal lagoons, marshes, springs, or ponds (permanent or semi-permanent; natural or artificial).	No	No suitable habitat exists within the action area.
Bakersfield legless lizard *Anniella grinnelli*	SSC	The Bakersfield legless lizard is endemic to Kern and San Luis Obispo counties. A subterranean dweller, the preferred habitat includes loose friable soils for burrow construction.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
California legless lizard *Anniella sp.*	SSC	Common in suitable habitats throughout California. Elevation: 0-1800m. Primarily in areas with sandy or loose organic soils, or abundant leaf litter. Coastal dunes, valley-foothill, chaparral, coastal scrub areas.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
California glossy snake *Arizona elegans occidentalis*	SSC	Found in a variety of habitats including, barren desert, creosote flats, sagebush flats, coastal sage, chaparral, grasslands, ad pinion-juniper, oak or pine woodlands. Prefers open areas with soft, loamy soil. 0-1829m.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
San Joaquin coachwhip *Masticophis flagellum ruddocki*	SSC	The San Joaquin Coachwhip is found in dry, open areas with scattered cover (trees/bushes); valley and foothill grasslands, saltbush scrub lands. Known historic range includes Kern County.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
western pond turtle *Emys marmorata*	SSC	Endemic to western coast of U.S and Mexico, occurring in permanent and intermittent waters; marshes, streams, rivers, ponds, and lakes. Prefers habitats with basking material, emergent logs or boulders.	No	No suitable habitat exists within the action area.
coast horned lizard *Phrynosoma blainvillii*	SSC	Historic home range includes San Joaquin Valley. Preferred habitat includes valley and foothill grasslands and cismontane habitats.	Yes	Suitable habitat present, within the species range, and conditions suitable. Species not detected.
northern leopard frog *Lithobates pipiens*	SSC	Found in marshlands, brushlands, and forests, require a permanent slow-moving water source for breeding, prefer open areas during non-breeding seasons.	No	No suitable habitat exists within the action area.
western spadefoot *Spea hammondii*	SSC	Found in valley and foothill grasslands and pine-oak woodlands. Aquatic habitat (permanent/temporal) required for breeding. Friable soils for breeding.	No	No suitable habitat exists within the action area.

* Federal status designations: Endangered and Threatened = listed under the Endangered Species Act; BCC = USFWS Bird of Conservation Concern.

** State status designations: E (Endangered) and T (Threatened) = listed under the California Endangered Species Act; R = listed as rare by CDFW; SSC = CDFW Species of Special concern; SGCN = Species of Greatest Conservation Need; WL = CDFW Watch List; FP = Fully Protected species by CDFW; CE = listed as candidate endangered species by CDFW; DL = delisted status by CDFW.

California Rare Plant Ranks (CRPR): 1B = Rare, Threatened or Endangered in California and elsewhere; Plants About Which More Information is Needed – A Review List; 0.1 = Seriously threatened in California; 0.2 = fairly threatened in California; 0.3 = not very threatened in California.

† General and Micro-habitats taken from CDFW;s (2016) CNDDB habitat description for each species.

NatureServe – CNDDB ranks: Global rank – G; National, Subnational – N, S; G1 = Critically Imperiled – High risk of extinction or collapse due to restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors; G2 = Imperiled – At high risk of extinction or collapse due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors; G3 – vulnerable; G4 – Apparently secure; G5 – Secure; N1; S1 = Critically Imperiled – at very high risk of extirpation in the jurisdiction due to very restricted range, very few populations or occurrences, very steep declines; N2; S2 = Imperiled – at high risk of extirpation in the jurisdiction due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors; N3; S3 – vulnerable; N4; S4 – Apparently Secure; N5; S5 – Secure.

Highlighted columns are CNDDB species occurrence list.

Appendix B.

Appendix B. U.S. Fish & Wildlife Service IPaC Generated Species List.

Species	Status	Preferred Habitat	Habitat Present?	Potential for Occurrence
Amphibians and Reptiles				
Blunt-nosed Leopard Lizard *Gambelia silus*	E	The Blunt-nosed leopard lizard is endemic to the San Joaquin Valley. They inhabit open, sparsely vegetated areas of low relief and are known to occur in nonnative grasslands, valley sink scrub and valley saltbush scrub Elevation < 800 m. Critical habitat features include food resource availability and friable soils suitable for den construction.	Yes	Potential habitat present, within the species range, and conditions suitable. Species not detected.
Giant Garter Snake *Thamnophis gigas*	T	The Giant Garter Snake occurs in perennial wetlands. Critical habitat features include summer aquatic habitat for foraging, bankside basking and vegetation for refuge and thermal regulation.	No	No suitable habitat exists within the action area.
California Red-legged Frog *Rana draytonii*	T	The California Red-legged Frog mainly occur in riparian habitats in close proximity to breeding sites; coastal lagoons, marshes, springs, or ponds (permanent or semi-permanent; natural or artificial).	No	No suitable habitat exists within the action area.
Birds				
Southwestern Willow Flycatcher *Empidonax traillii extimus*	E	Southwestern willow flycatcher is known to breed in dense riparian tree and shrub communities associated with rivers, swamps, and other wetlands.	Yes	While historic records are within close proximity and potentially suitable habitat occur within the Study Area, species not detected during August 2019 survey
Yellow-billed Cuckoo *Coccyzus americanus*	T	The Yellow-billed Cuckoo inhabits dense leafy groves and thicket during the summer. Preferred habitats include woodlands, thickets, orchards, and streamside groves.	Yes	While historic records are within close proximity and potentially suitable habitat occur within the Study Area, species not detected during August 2019 survey
Mammals				
Giant Kangaroo Rat *Dipodomys ingens*	E	The Giant Kangaroo Rat is an endemic species of the San Joaquin Desert and is known to occupy annual grasslands, saltbush scrub and valley sink scrub communities. Critical habitat features include vegetation for food resource availability and friable soils for burrow construction.	Yes	Potential habitat present, within the species range, and conditions suitable. Species not detected during August 2019 survey.
San Joaquin Kit Fox	E	The San Joaquin Kit Fox is an endemic	Yes	Potential habitat

Vulpes macrotis mutica		species of the San Joaquin Desert and is known to occupy valley saltbush scrub and valley sink scrub communities. Critical habitat features include food resource availability (prey species populations) and friable soils for burrow construction.		present, within the species range, and conditions suitable. Species not detected during August 2019 survey.
Tipton Kangaroo Rat *Dipodomys nitratoides nitratoides*	E	The Tipton Kangaroo Rat is an endemic species of the San Joaquin Desert and is known to occupy valley saltbush scrub and valley sink scrub communities. Critical habitat features include vegetation for food resource availability and friable soils for burrow construction.	Yes	Potential habitat present, within the species range, and conditions suitable. Species not detected during August 2019 survey.
Flowering Plants				
Bakersfield Cactus *Opuntia treleasei*	E	The Bakersfield cactus is endemic to a limited area of central Kern County in the city of Bakersfield. Known extant populations occur on flood plains, ridges, bluffs and rolling hills in Saltbush scrub plant communities and riparian woodlands at elevations of 140-850 m.	Yes	Potential habitat present, Species not detected during August 2019 survey.
San Joaquin Wooly-threads *Monlopia congdonii*	E	San Joaquin wooly-threads occupy nonnative grasslands, valley saltbush scrub, interior coast range saltbush scrub, and upper Sonoran subshrub scrub. Located primarily in the hills and plateaus west of the San Joaquin Valley. Preferred habitat contains < 10% shrub cover and boasts sandy, sandy loam, and/or silty soils at elevations of ~ 60-800 m.	No	No suitable habitat exists within the action area.
Fishes				
Delta Smelt *Hypomesus transpacificus*	E	The Delta smelt only occurs in the San Francisco Estuary	No	No suitable habitat exists within the action area.
Crustaceans				
Vernal Pool Fairy Shrimp *Branchinecta lynchi*	T	Vernal pool fairy shrimp are associated with ephemeral habitats including vernal pools, alkali pools, seasonal drainages, stock ponds, vernal swales and rock outcrops, as well as artificially created ephemeral habitats including railroad toe-drains, roadside ditches, agricultural drains, and ruts left by heavy construction vehicles.	No	No suitable habitat exists within the action area.

Appendix G

Cultural Resource Survey

A
PHASE I CULTURAL RESOURCE SURVEY, MALIBU VINEYARDS GPA/ZC, KERN COUNTY, CALIFORNIA

Submitted to:
McIntosh and Associates
2001 Wheelan Court
Bakersfield, California 93309

Keywords:
Oildale 7.5' Quadrangle, Rosedale 7.5' Quadrangle,
Kern County, California Environmental Quality Act

Submitted by:
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September 2019,
Updated September 2023

Management Summary

At the request of McIntosh and Associates, a Phase I Cultural Resource Survey was conducted on approximately 738.48 acres. The property lies along the eastern side of Highway 99, between Imperial and Burbank Avenues, minus the Lerdo Canal, Kern County, California. The Phase I Cultural Resource Survey consisted of a pedestrian survey of the 738.48-acre site and a cultural resource record search.

Four cultural resources were identified. Sites MV-1 through MV-4 are various agricultural facilities, including two pond complexes and four gypsum loading docks. Three of these facilities are a mixture of old and new equipment, buildings, and structures. Site MV-1 is a pond and pumping complex for irrigating the vineyards and includes a gypsum loading dock. Site MV-2 is a single, abandoned gypsum loading dock. Site MV-3 is a pumping station complex with a gypsum loading dock. Site MV-4 is the primary shop/warehouse/office complex for Malibu Vineyards with a pair of ponds, a bathroom/eating area, various modern outbuildings, a large equipment yard, and a location for a fieldworker's house that is no longer standing. These complexes, except MV-2 pre-date 1952.

Sites MV-1 through MV-4, are highly modified through use, agricultural resources, which are not associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States. Malibu Vineyards is a typical, ordinary, California table grape-growing operation from the second-half of the twentieth-century. Criterion 1 of the California Register of Historical Resources does not apply.

Sites MV-1 through MV-4 are not associated with the lives of persons important to local, California or national history. Steven Gilfenbain, the current owner of Malibu Vineyards, is a wealthy California grower of table grapes, but these cultural resources are not associated with his ownership of the property. These cultural resources are associated with the Mettler family, which was a locally prominent Kern County farming family. However, the Mettler family has not maintained its prominence. As such, Criterion 2 of the California Register of Historical Resources does not apply.

Sites MV-1 through MV-4 do not embody the distinctive characteristics of a type, period, region or method of construction or represent the work of a master or possess high artistic values. These are vernacular, use-built, cultural resources, whose construction is driven by agricultural necessity. Criterion 3 of the California Register of Historical Resources does not apply.

Sites MV-1 through MV-4 will not yield, or do not have the potential to yield, information important to the prehistory or history of the local area, California or the nation. Criterion 4 of the California Register of Historical Resources does not apply, since this Criterion is largely set aside for important resources whose historic or cultural significance is prehistoric in nature or whose value can not be

ascertained without archaeological excavation, a situation that is apparent with Sites Mv-1 through MV-4.

No further work is required. If additional archaeological resources are encountered during the course of construction, a qualified archaeologist, meeting Secretary of Interior Professional Qualifications Standards, will be consulted for further evaluation. The project area has a low archaeological sensitivity based on current conditions, soil types, prehistoric environment, the record search and pedestrian survey results.

If human remains or potential human remains are observed during construction, work in the vicinity of the remains will cease, and the remains will be treated in accordance with the provisions of State Health and Safety Code Section 7050.5. The protection of human remains follows California Public Resources Codes, Sections 5097.94, 5097.98, and 5097.99.

Based on a preliminary review of the geologic mapping for this area, the project site appears to be underlain by a geologic unit assigned a high paleontological sensitivity at the surface (Qc). Therefore, a paleontological resources assessment is recommended for this project.

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1.0 Introduction

At the request of McIntosh and Associates, *Hudlow Cultural Resource Associates* conducted a Phase I Cultural Resource Survey on approximately 738.48 acres for a proposed General Plan Amendment (GPA) and Zone Change (ZC). The property is currently zoned for agricultural; the planned zoning change is for industrial, particularly warehousing. The property lies along the eastern side of Highway 99, between Imperial and Burbank Avenues, minus the Lerdo Canal, Kern County, California. This project is being undertaken in accordance with the California Environmental Quality Act (CEQA) with Kern County responsible as Lead Agency to implement CEQA. The Phase I Cultural Resource Survey consisted of a pedestrian survey and a cultural resource record search.

CEQA is a California statute passed in 1970. Governor Ronald Reagan signed it into law, after the federal government passed the National Environmental Policy Act (NEPA). CEQA institutes a statewide policy of environmental protection. CEQA does not directly regulate land uses, but instead requires state and local agencies within California to follow a protocol of analysis and public disclosure of environmental impacts of proposed projects and, in a departure from NEPA, adopt all feasible measures to mitigate those impacts. CEQA makes environmental protection a mandatory part of every California state and local agency's decision making process.

CEQA was signed into law in 1970, in a time of increasing public concern for the environment. The statute required that for any public project, the government must conduct an environmental study to examine what impacts the project might have on things like air/water quality, noise, transportation, biological resources, or cultural resources, and generate an Environmental Impact Report (EIR) documenting the impacts as well as any potential and planned mitigations. In 1972, state courts interpreted a public project as a development project that needed government approval.

In 1969, NEPA passed into law. It is similar to CEQA in that both statutes set forth a policy of environmental protection, and a protocol by which all agencies in their respective jurisdictions make environmental protection part of their decision making process. NEPA is narrower in scope than CEQA. NEPA applies only to projects receiving federal funding or approval by federal agencies, while CEQA applies to projects receiving any form of state or local approval, permit, or oversight. Thus, development projects in California funded only by private sources and not requiring approval by a federal agency would be exempt from NEPA; but would likely be subject to CEQA.

The CEQA statute, California Public Resources Code § 21000 et seq., codifies a statewide policy of environmental protection. According to CEQA, state and local agencies must give consideration to environmental protection in regulating public and private activities and should not approve projects for

which feasible and environmentally superior mitigation measures or alternatives exist.

CEQA mandates actions that all state and local agencies must do to advance this policy. Specifically, for any project under CEQA's jurisdiction with potentially significant environmental impacts, agencies must identify mitigation measures and alternatives by preparing an Environmental Impact Report and must approve projects with feasible mitigation measures and the environmentally superior alternative. The California Natural Resources Agency promulgates the CEQA Guidelines, California Code of Regulations Title 14 § 15000 et seq., which detail the protocol by which state and local agencies must comply with CEQA requirements. CEQA originally applied to only public projects, but California Supreme Court interpretation of the statute, as well as later revisions, expanded CEQA's jurisdiction to nearly all projects within California, including those proposed by private businesses and individuals. § 21002.1 states "Each public agency shall mitigate or avoid the significant effects on the environment of projects that it carries out or approves whenever it is feasible to do so." For private projects, CEQA applies when a discretionary government permit or other entitlement for use is necessary.

The lead agency, Kern County, is responsible for conducting the CEQA review and has final approval of the project. Kern County is responsible for coordinating with the project applicant, public, and associated agencies during the CEQA process.

2.0 Survey Location

The project area is in Kern County. The parcels, APNs 091-150-03, 091-160-01, 091-160-03, 091-160-02, 091-160-13, 091-160-09, 091-160-16, 091-200-04, 091-200-05, 091-200-14, 091-200-13, 091-200-07, 482-040-04, 482-040-01. 482-040-02, 482-040-03, 482-010-01, 482-010-11, 482-010-03, and 482-010-02, are the entirety of Section 30, east of Highway 99 and the W ½ of the NW ¼ of Section 29, T.28S., R.27E., Mount Diablo Baseline and Meridian, as displayed on the United States Geological Survey (USGS) Oildale and Rosedale 7.5-minute quadrangle maps (Figure 1). The next portion of the project area is the portion of the NE ¼ of Section 25 between Highway 99 and the Lerdo Canal, and the portion of the S ½ of Section 24, south of Burbank Road and between Highway 99 and the Lerdo Canal, and the portion of the SE ¼ of the NW ¼ of Section 24 that is not the Lerdo Canal, T.28S., R.26E., Mount Diablo Baseline and Meridian, as displayed on the United States Geological Survey (USGS) Oildale and Rosedale 7.5-minute quadrangle maps (see Figure 1). The proposed General Plan Amendment/Zone Change lies along the eastern side of Highway 99, between Imperial and Burbank Avenues, minus the Lerdo Canal, Kern County, California.

3.0 Record Searches

A record search of the project area and the environs within one-half mile was conducted at the Southern San Joaquin Archaeological Information Center. Scott M. Hudlow conducted the record search, RS#19-301 on July 29, 2019. The record search revealed that six cultural resource surveys have been conducted within one-half mile radius of the project area (Table 1). No surveys have been conducted within the current project area.

No cultural resources have been recorded within the project area; however, four cultural resources have been recorded within one half-mile of the current project area. Each of these resources is historical and linear. The resources include the Southern Pacific Rail line, and each of these canals: Beardsley (aka Calloway), Friant-Kern, and Lerdo canals (see Figure 1). None of these historical resources are listed on either the California Register of Historical Resources or the National Register of Historic Places.

Table 1
Previously Conducted Cultural Resource Surveys
within one Half-Mile of the Project Area

Author	Title	Year
Robert A. Schiffman	Archaeological Survey of Coherly-Etcheverry Property	1993
Robert A. Schiffman and Alan Gold	Cultural Resource Survey for a 47.69-Acre Parcel, Tentative Tract Map 6420, North of Seventh Standard Road and West of Highway 99 in Northwest Bakersfield	2006
Cindy Arrington	Cultural Resource Final Report of Monitoring and Finding for the Qwest Network Construction Project, State of California, Vol. 1	2006
Catherine Lewis Pruett	Assessment for a Pumping Station, the Friant-Kern Crossing, and a One-Mile Pipeline, Northwest of Bakersfield, Kern County, California	2008
Sarah Johnson and Chris Brewer	Historic Property Survey for the Proposed North Kern Water Storage District Drought Relief Pipeline Project, Kern County, California	2015
Heather Norby and Stephen Wee	Friant-Kern Canal Historical Context	2017

Additionally, a Sacred Lands File search was requested from the Native American Heritage Commission on September 12, 2021. The search revealed that no Native American cultural resources are located in close proximity to the current project area (Appendix II). Although no positive results were obtained from the Sacred Lands File search, which arrived on October 14, 2021; Native American consultation letters were sent out on October 18, 2021, notifying each interested Kern County Native Contact, per the list provided by the Native American Heritage Commission. Ten parties were sent letters. These letters both described the project and provide maps for further reference. By Friday, November 19, 2021, no parties returned any responses (Appendix II).

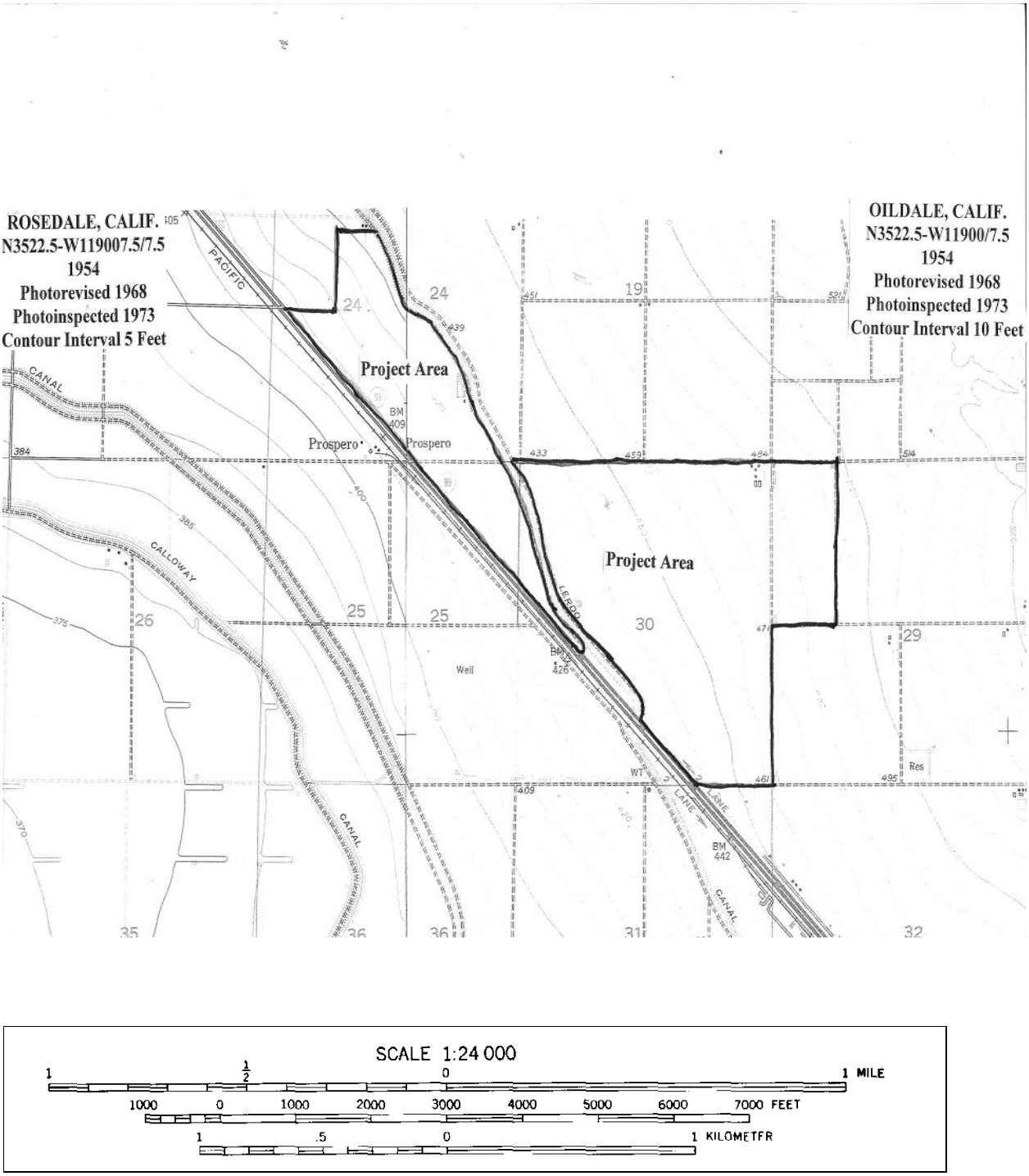

Figure 1
Project Area Location Map

4.0 Environmental Background

The project area is located at elevations between 400 and 500 feet above mean sea level in the Great Central Valley, which is composed of two valleys-- the Sacramento Valley and the San Joaquin Valley. The project area is located in the southwestern portion of the southern San Joaquin Valley, north of the Kern River, which is located approximately 2.5 miles to the southeast. The Kern River flows northeast to the southwest. The soil is composed of nonmarine, Pleistocene Quaternary deposits. The entire acreage is grape vineyards, producing red and green seedless table grapes (Figures 2 and 3). Additionally, a large portion of the acreage is abandoned vineyards that are no longer producing, primarily due to market conditions (Figures 4 and 5). No native vegetation survives.

5.0 Prehistoric Archaeological Context

Limited archaeological research has been conducted in the southern San Joaquin Valley. Consensus on a generally agreed upon regional cultural chronology has yet to be developed. Most cultural sequences can be summarized into several distinct time periods: Early, Middle, and Late. Sequences differ in their inclusion of various "horizons," "technologies," or "stages." A prehistoric archaeological summary of the southern San Joaquin Valley is available in Moratto (Moratto 1984).

Despite the preoccupation with chronological issues in most of the previous research, most suggested chronological sequences are borrowed from other regions with minor modifications based on sparse local data.

The following chronology is based on Parr and Osborne's Paleo-Indian, Proto-Archaic, Archaic, Post-Archaic periods (Parr and Osborne 1992:44-47). Most existing chronologies focus on stylistic changes of time-sensitive artifacts such as projectile points and beads rather than addressing the socioeconomic factors, which produced the myriad variations. In doing so, these attempts have encountered similar difficulties. These cultural changes are implied as environmentally determined, rather than economically driven.

Paleo-Indians, who roamed the region approximately 12,000 years ago, were highly mobile individuals. Their subsistence is assumed to have been primarily big game, which was more plentiful 12,000 years ago than in the early twenty-first century. However, in the Great Basin and California, Paleo people were also foragers who exploited a wide range of resources. Berries, seeds, and small game were also consumed. Their technology was portable, including manos (Parr and Osborne 1992:44). The paleo period is characterized by fluted Clovis and Folsom points, which have been identified throughout North America. The Tulare Lake region in Kings County has yielded several Paleo-Indian sites, which have included fluted points, scrapers, chipped crescents, and Lake Mojave-type points (Morratto 1984:81-2).



Figure 2
Seedless Red Grape Vineyard, View to the West

The Proto-Archaic period, which dates from approximately 11,000 to 8,000 years ago, was characterized by a reduction in mobility and conversely an increase in sedentism. This period is classified as the Western Pluvial Lake Tradition or the Proto-Archaic, of which the San Dieguito complex is a major aspect (Moratto 1984: 90-99; Warren 1967). An archaeological site along Buena Vista Lake in southwestern Kern County displays a similar assemblage to the San Dieguito type-site. Claude Warren proposes that a majority of Proto-Archaic southern California could be culturally classified as the San Dieguito Complex

(Warren 1967). The Buena Vista Lake site yielded manos, millingstones, large stemmed and foliate points, a mortar, and red ochre. During this period, subsistence patterns began to change. Hunting focused on smaller game and plant collecting became more integral. Large stemmed, lancelote (foliate) projectile points represent lithic technology. Millingstones became more prevalent. The increased sedentism possibly began to create regional stylistic and cultural differences not evident in the paleo period.

The Archaic period persisted in California for the next 4,000 years. In 1959, Warren and McKusiak proposed a three-phase chronological sequence based on a small sample of burial data for the Archaic period (Moratto 1984:189; Parr and Osborne 1992:47). It is distinguished by increased sedentism and extensive seed and plant exploitation. Millingstones, shaped through use, were abundant. Manos and metates were the most prevalent types of millingstones (Parr and Osborne 1992:45). The central valley began to develop distinct cultural variations, which can be distinguished by different regions throughout the valley, including Kern County.

In the Post-Archaic period enormous cultural variations began manifesting themselves throughout the entire San Joaquin Valley. This period extends into the contact period in the seventeenth, eighteenth and nineteenth centuries. Sedentary village life was emblematic of the Post-Archaic period, although hunting and gathering continued as the primary subsistence strategy. Agriculture was absent in California, partially due to the dense, predictable, and easily exploitable natural resources. The ancestral Yokuts were possibly living in the San Joaquin Valley by the sixteenth or seventeenth century, and by the eighteenth century were the largest numerical pre-contact native population. The Yokuts, in California, were approximately 40,000 individuals, (Moratto 1984).



Figure 3
Seedless Green Grape Vineyard, View to the East



Figure 4
Abandoned Vineyard, View to the South

The Proto-Archaic period, which dates from approximately 11,000 to 8,000 years ago, was characterized by a reduction in mobility and conversely an increase in sedentism. This period is classified as the Western Pluvial Lake Tradition or the Proto-Archaic, of which the San Dieguito complex is a major aspect (Moratto 1984: 90-99; Warren 1967). An archaeological site along Buena Vista Lake in southwestern Kern County displays a similar assemblage to the San Dieguito type-site. Claude Warren proposes that a majority of Proto-Archaic southern California could be culturally classified as the San Dieguito Complex (Warren 1967). The Buena Vista Lake site yielded manos, millingstones, large stemmed and foliate points, a mortar, and red ochre. During this period, subsistence patterns began to change. Hunting focused on smaller game and

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Figure 5
Abandoned Vineyard, Leaving Trellises, View to the Northwest

In the Post-Archaic period enormous cultural variations began manifesting themselves throughout the entire San Joaquin Valley. This period extends into the contact period in the seventeenth, eighteenth and nineteenth centuries. Sedentary village life was emblematic of the Post-Archaic period, although hunting and gathering continued as the primary subsistence strategy.

Agriculture was absent in California, partially due to the dense, predictable, and easily exploitable natural resources.

6.0 Ethnographic Background

The Yokuts are a Penutian-speaking, non-political cultural group. Penutian speakers inhabit the San Joaquin Valley, the Bay Area, and the Central Sierra Nevada Mountains. The Yokuts are split into three major groups, the Northern Valley Yokuts, the Southern Valley Yokuts, and the Foothill Yokuts.

The southern San Joaquin Valley in the Bakersfield and associated Kern County area was home to the Yokuts tribelet, Yawelmani. The tribelets averaged 350 people in size, had a special name for themselves, and spoke a unique dialect of the Yokuts language. Land was owned collectively and every group member enjoyed the right to utilize food resources. The Yawelmani inhabited a strip of the southeastern San Joaquin Valley, north of the Kern River to the Tehachapi Mountains on the south, and from the mountains on the east, to approximately the old south fork of the Kern River on the west (Wallace 1978:449; Parr and Osborne 1992:19). The Yawelmani were the widest ranging of the Yokuts tribelets. One half dozen villages were located along the Kern River, including *Woilo* ("planting place" or "sowing place"), which was located in downtown Bakersfield, where the original Amtrak station was located. A second village was located across the Kern River from *Woilo*, on the west bank.

The Southern Valley Yokuts established a mixed domestic economy emphasizing fishing, hunting, fowling, and collecting shellfish, roots, and seeds. Fish were the most prevalent natural resource; fishing was a productive activity throughout the entire year. Fish were caught in many different manners, including nets, conical basket traps, catching with bare hands, shooting with bows and arrows, and stunning fish with mild floral toxins. Geese, ducks, mud hens and other waterfowl were caught in snares, long-handled nets, stuffed decoys, and brushing brush to trick the birds to fly low into waiting hunters. Mussels were gathered and steamed on beds of tule. Turtles were consumed, as were dogs, which might have been raised for consumption (Wallace 1978:449-450).

Wild seeds and roots provided a large portion of the Yokuts' diet. Tule seeds, grass seeds, fiddleneck, alfilaria were also consumed. Acorns, the staple crop for many California native cultures, were not common in the San Joaquin Valley. Acorns were traded into the area, particularly from the foothills. Land mammals, such as rabbits, ground squirrels, antelope and tule elk, were not hunted often (Wallace 1978:450).

The Yokuts occupied permanent structures in permanent villages for most of the year. During the late and early summer, families left for several months to gather seeds and plant foods, shifting camp locations when changing crops.

Several different types of fiber-covered structures were common in Yokuts settlements. The largest was a communal tule mat-covered, wedge-shaped structure, which could house upward of ten individuals. These structures were established in a row, with the village chief's house in the middle and his messenger's houses were located at the ends of the house row. Dance houses and assembly buildings were located outside the village living area (Nabokov and Easton 1989:301).

The Yokuts also built smaller, oval, single-family tule dwellings. These houses were covered with tall mohya stalks or with sewn tule mats. These small houses were framed by bent-pole ribs, which met a ridgepole held by two crotched poles. The Yokuts also built a cone-shaped dwelling, which was framed with poles tied together with a hoop and then covered with tule or grass. These cone-shaped dwellings were large enough to contain multiple fireplaces (Nabokov and Easton 1989:301). Other structures included mat-covered granaries for storing food supplies, and a dirt-covered communally owned sweathouse.

Clothing was minimal; men wore a breechclout or were naked. Women wore a narrow-fringed apron. Rabbitskin or mud hen blankets were worn during the cold season. Moccasins were worn in certain places; however, most people went barefoot. Men wore no head coverings, but women wore basketry caps when they carried burden baskets on their heads. Hair was worn long. Women wore tattoos from the corners of the mouth to the chin; both men and women had ear and nose piercings. Bone, wood or shell ornaments were inserted into the ears and noses (Wallace 1978:450-451).

Tule dominated the Yokut's material culture. It was used for many purposes, including sleeping mats, wall coverings, cradles, and basketry. Ceramics are uncommon to Yokuts culture as is true throughout most California native cultures. Basketry was common to Yokuts culture. Yokuts made cooking containers, conical burden baskets, flat winnowing trays, seed beaters, and necked water bottles. Yokuts also manufactured wooden digging sticks, fire drills, mush stirrers, and sinew-backed bows. Knives, projectile points, and scraping tools were chipped from imported lithic materials including obsidian, chert, and chalcedony. Stone mortars and pestles were secured in trade. Cordage was manufactured from milkweed fibers, animal skins were tanned, and awls were made from bone. Marine shells, particularly olivella shells, were used in the manufacture of money and articles of personal adornment. Shells were acquired from the Chumash along the coast (Wallace 1978:451-453).

The basic social and economic unit was the nuclear family. Lineages were organized along patrilineal lines. Fathers transmitted totems, particular to each paternal lineage, to each of his children. The totem was a bird or animal that no lineage member would kill or eat; the totems were dreamed of and prayers were given to the totems. The mother's totem was not passed to her offspring; but was treated with respect. Families sharing the same totem formed

an exogamous lineage. The lineage neither has a formal leader nor does the lineage control land. The lineage was a mechanism for transmitting offices and performing ceremonial functions. The lineages formed two moieties, East and West, which consisted of several different lineages. Moieties were customarily exogamous. Children followed the paternal moiety. Certain official positions within the villages were associated with certain totems. The most important was the Eagle lineage from which the village chief was appointed. A member of the Dove lineage acted as the chief's assistant. He supervised food distribution and gave commands during ceremonies. Another hereditary position was common to the Magpie lineage, was that of spokesman or crier.

7.0 Historical Overview

Kern County was settled in the 1860s, soon after California joined the United States after the passage of the Compromise of 1850. The Compromise of 1850 allowed California to join the Union as a free state even though a major portion of the state lay beneath the Missouri Compromise line; and was potentially subject to southern settlement and slavery. Americans had visited and worked in California prior to the admission of California into the Union.

In 1769, The Spanish moved north from Baja California into Alta California, which began the European settlement of California. Father Junipero Serra, a Franciscan friar founded Mission San Diego de Alcala, beginning California's active European settlement. However, Spanish mission efforts were focused on California's coastal regions. Spanish exploration of the San Joaquin Valley region begins in the 1770s. In 1772, Pedro Fages arrived in the San Joaquin Valley searching for army deserters. Father Francisco Garces, a Franciscan priest, soon explored the vicinity in 1776. The Spanish empire collapsed in 1820, all of Spain's former Central and South American colonies became independent nations, including Mexico. As a result, California became Mexican territory. California stayed in Mexican hands until the end of the Mexican-American War. Mexican California remained a coastal society with little interest in settling in California's hot, dry interior valleys.

American exploration of the San Joaquin Valley began in the 1820s with Jedediah Smith, Kit Carson, and Joseph Walker, who looked for commercial opportunities. Jedediah Smith was a trapper, primarily trapping beavers, whereas Kit Carson and Joseph Walker were known as both trappers and scouts for both migrants and the military. The United States government began exploring California in the 1830s. Soon, the Americans searched for intercontinental railroad routes to link the eastern and western halves of the continent.

The defeat of the Mexicans during the Mexican-American War and the subsequent discovery of gold drastically altered the complicated political realities of the west. The Mexican-American War was ostensible fought to settle a boundary dispute with the Mexicans over the western boundary of the newly-

annexed state of Texas. Texas fought a successful rebellion against Mexico in the mid 1830s. The Republic of Texas was an independent country for nine years until the United States annexed Texas in 1845. One major outcome of the Mexican-American War was that Mexico rescinded its claims to much of the American southwest. In 1848, these territories were folded into the United States, including California.

In January 1848, the discovery of gold in Coloma, California changed the settlement of California, forever. In the summer of 1848, when the gold strike was publicly announced, the chaotic, overnight settlement of California began. The small Mexican population of California was limited to the coasts and a few of southern California's interior valleys. A sizable native population settled the remainder of California; Bakersfield and Kern County were Yokuts territory. The Gold Rush tipped the balance of native communities throughout California, as many of California's natives were decimated.

Many areas experienced smaller gold rushes, including the Kern River Valley, when gold was discovered in Keyesville in 1853. The gold was soon played and the true future of the region was soon identified, farming, as the gold prospectors came down from the mountains and settled in the dry, hot, but fertile San Joaquin Valley. Kern Island, a median point along the Kern Delta, between the mouth of the Kern River and the Kern Lake, was settled in 1860 (Maynard 1997). Christian Bohna settled Kern Island in1860, but seasonal winter flooding destroyed the original community.

Bohna sold the property to Col. Thomas Baker, a former Ohio Militia officer. The settlement of Bakersfield began in earnest. The prospect of gold lured Col. Thomas Baker to California. He was a practicing lawyer and surveyor and slowly moved west from Ohio. He was involved in Iowa's territorial government and served in both the California senate and assembly. Col. Baker realized he had to drain the Kern Delta to manufacture usable farmland and to prevent disastrous flooding. After he improved the land by channelizing the Kern River and moving it away from the city, Baker created one of the only transit locations between Los Angeles and Visalia in the 1860s for the Butterfield Overland Stage line.

Baker laid out the town and began the process of draining, diverting, and controlling the Kern River. In 1873, Bakersfield was incorporated and was the first city in the newly-created Kern County, which was previously a portion of Tulare County. In 1874, Bakersfield got its first rail station with the establishment of the Southern Pacific (SP) line over the Tehachapi Pass, which connected Kern County from northern California to points east, and civic dis-incorporation. Delano was the original stopping point for the Southern Pacific in Kern County as it constructed the line through Bakersfield and over the Tehachapi Pass. Sidings between Bakersfield and Delano allowed trains to stop for critical needs such as water and coal, which was used as fuel. Prospero was one such railroad siding; it was established on the west side of the SP rail line. The Southern Pacific train

station was located in Sumner, a spite town that the Southern Pacific established about a mile east of downtown Bakersfield. Sumner is now a portion of east Bakersfield. The train brought Bakersfield agricultural prosperity, since it now had fast rail connections to larger California and eastern markets for its fruits and grains.

The city of Bakersfield expanded to the north in the early twentieth-century toward the Kern River, after its 1898 reincorporation. The city centered along Chester Avenue, which was the main north/south thoroughfare. The community of Sumner lied to the east, and the surrounding area in all directions was farmland, primarily growing grain crops. The city of Bakersfield was a small community at the turn of the twentieth century, slightly less than 5,000 people lived in Bakersfield; an additional 17,000 people lived in Kern County (Maynard 1997:43). Bakersfield was a quiet, agricultural services city in the center of a farming region.

However, the discovery of the Kern River oil field in May 1899 quickly changed the face of the region. Bakersfield rapidly became the center of a California oil boom, which remade the community. The population more than doubled in less than ten years, which brought economic prosperity to the area (Maynard 1997:43). Many people recognized that economic prosperity could not only be achieved through working in oil, but also through providing necessary services, such as milk products, banking, and lodging. The city of Bakersfield began to grow into a modern city.

Between 1900 and 1950, Bakersfield and the greater Kern County region grew tremendously under the influence of two economic forces: agriculture and oil. As access to water grew through building of canals and aqueducts, the arid region began to move away from a mixed-grain agricultural economy into a fruit and nut agricultural economy. Fruit and nut crops, such as grapes and almonds, require measured, stable, and predictable amounts of water. Cotton was also grown.

By 1950, Bakersfield was a mid-sized city of approximately 50,000. It sported minor league baseball, had a regional airport, and was a major automobile link along Route 99, which connected northern and southern California. By the late 1960s, Bakersfield was beginning to change again, as the Kern County Land Company, a vestige of the nineteenth-century railroad boom, was sold to Tenneco West, and Bakersfield began to suburbanize.

8.0 Field Procedures and Methods

Between September 9, 2019, and October 2, 2019, Scott M. Hudlow (for qualifications see Appendix I) conducted a pedestrian survey of the entire proposed project area. Hudlow surveyed in east/west and north/south transects at 10-meter (33 feet) intervals across the entire project area, depending on the vineyard's field patterns. The entire project area was visible at the ground level,

and the entire project area was accessible. The four cultural resources were .identified before the survey commenced, using aerials and both historic and modern USGS maps. Each identified location was field-verified and recorded at length at the end of the survey. All archaeological material more than fifty years of age or earlier encountered during the inventory was recorded.

9.0 Report of Findings

Four cultural resources were identified. Each of these cultural resources post-dates 1935 (Figure 6). A composite of the 1933 Rosedale and 1935 Oildale quadrangle maps displays no buildings in the project area, except the Lerdo Canal, which is not part of the project (see Figure 6). Willie H. Mettler assembled the property beginning in 1943. Mettler purchased the property from at least three distinct owners. The largest piece of property was purchased from the Lerdo Land Company. Mettler also purchased property from William and Irene Moeller. Moeller was the assistant manager of the gas company. BY 1940, he was promoted to manager and was living in Los Angeles, which probably prompted his sale to Mettler. The other major portion of the property was purchased from the family of William Lee. Lee was a farm manger, growing grapes, cotton, and alfalfa, on his own property, which adjoined Lerdo Land Company property. Lee, worked for the Lerdo Land Company, but also farmed his own land in conjunction. William Lee died in 1933 in an automobile accident in Redlands, California. He was the president of the California Vineyardists Association, and a member of several civic associations. His family sold Willie H. Mettler their property in 1943. Wilheim "Willie" H. Mettler was originally from South Dakota. He came to California in the early twentieth-century and was known as the "Potato King" in Shafter, California, in the 1930s. He grew White Rose potatoes. By 1943, Mettler was consolidating the Malibu Vineyards property, on which potatoes, grapes, and alfalfa were grown. Mettler also developed large tracts of agricultural property in Wheeler Ridge. Willie H. Mettler formed the small agricultural community of Mettler, which is located at the intersection of Highways 99 and 166. At the 2010 census, Mettler had a population of 136. Willie H. Mettler died in 1986, two years after selling the Malibu Vineyards property to Steve Gilfenbain, the current owner.

By 1952, the farm was modernizing and expanding, including building a house to accommodate the Mettler family. However, the house was demolished about fifteen years ago (Figure 7). By 1952, two of the four cultural resources, MV-1 and MV-4, had been established. By 1984, the property was sold to the current owner, agribusiness Malibu Vineyards, which still farms the property in table grapes. Steven Gilfenbain owns Malibu Vineyards. Gilfenbain owns a variety of agricultural properties, producing mainly table grapes in the southern San Joaquin Valley and Medjool dates in Riverside County.

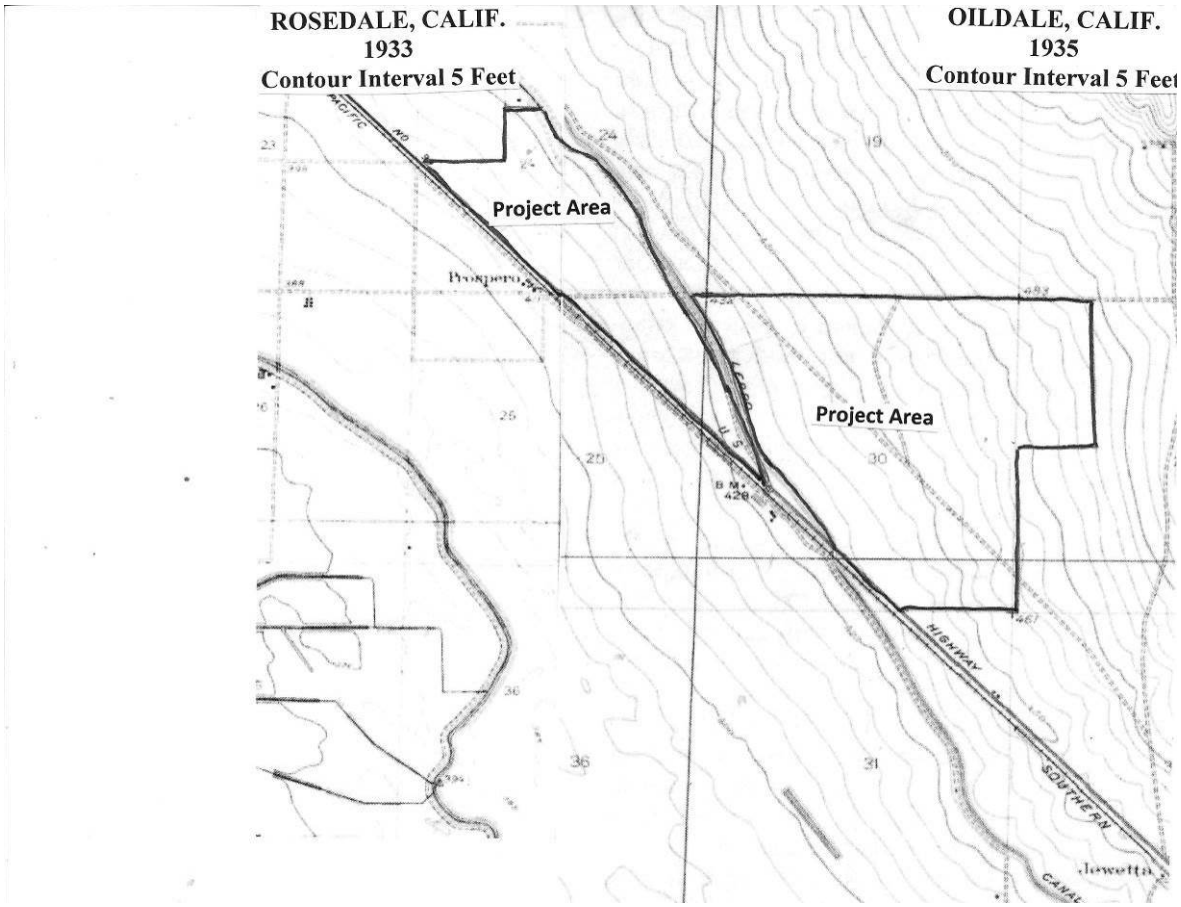


Figure 6
1933 Rosedale and 1935 Oildale Quadrangle Composite



Figure 7
1952 Aerial displaying the embryonic stages of MV-1 and MV-4 and the general area, including Highway 99, the Southern Pacific Rail line, and the Lerdo Canal

MV-1 is a pond complex located west of the Lerdo Canal that was established before 1952 (Figures 8-11). The ponds were expanded between 1952 and 1956 to their current size. Between 1984 and 1994 the large pond was divided into two smaller ponds. The two ponds can create one large pond to irrigate the adjacent vineyards to the west. An equipment yard is located to the south of the ponds (see Figure 9). While the ponds are historical, a majority of the tanks and pumping equipment are new and modern. Adjacent to the ponds to the south is a gypsum loading dock, which has been repurposed as an

eating area for fieldworkers (See Figure 10). Gypsum was formerly used as a fertilizer; it was also used to neutralize the underlying clay soils. The loading dock has a thick poured-in-place concrete foundation with low, approximately eighteen inches in height, walls on the east and west elevations. Although a gable roof is present, currently, the dock would have been open on all sides to provide space for a skip loader to access the gypsum on the dock. Wide plank side walls are present on the east and west elevations to house the gypsum. An abandoned tank stand is also present east of the ponds (see Figure 10). It housed a tank laid horizontally, possibly gravity-feed into the pond to provide fertilizers or pesticides.



Figure 8
Site MV-1, Ponds, View to the North



Figure 9
Site MV-1, Equipment Yard, View to the Northeast



Figure 10
Site MV-1, Gypsum Loading Dock, View to the South



Figure 11
Site MV-1, Tank Stand, View to the North

Site MV-2 is an abandoned, gypsum loading platform (Figures 12 and 13). Gypsum was formerly used as a fertilizer; it was also used to neutralize the underlying clay soils. The loading dock has a thick poured-in-place concrete foundation with low, approximately eighteen inches in height, walls on the north and south elevations. The dock is open on all sides to provide space for a skip loader to access the gypsum on the dock. Wide plank side walls are present on the north and south elevations to house the gypsum.



Figure 12
Site MV-2, Gypsum Loading Platform, View to the West



Figure 13
Site MV-2, Gypsum Loading Platform, View to the East

Site MV-3 is a small pump station complex that was established before 1952 and expanded and contracted through the second half of the twentieth-century depending on the farm's needs (Figures 14 and 15). Primarily, what remains of this complex is two large standpipes and pumps to irrigate the adjacent vineyards. In addition, it has a gypsum loading dock, and an abandoned concrete horizonal tank stand. The tank stand is a pair of large concrete blocks which would have raised the tank off the ground. A modern plastic, cylindrical tank probably replaces this older tank. The current tank is attached to a water heater. Beavertail cactus and two bollards protect this small work complex.



Figure 14
Site MV-3, Pumping Station, View to the West



Figure 15
Site MV-3, Pumping Station, View to the East

Site MV-4 is the largest work/storage/pond complex on the property (Figures 16-21). The complex was established between 1943 and 1952, and originally included a small house that was demolished between 2005 and 2009. The entire complex is surrounded by a barbed-wire edged, chain link fence. A large set of irrigation ponds are located in the northeast corner (See Figure 16). The historical pumping equipment has been replaced with modern equipment. The shop complex is accessed from the east side, and the driving lane is shaped like a "J" with the various structures, ponds, and used equipment located to the east and west of the driving lane. To the south of the ponds is a large one-story modern metal clad office/warehouse (see Figure 17). Office space is located on the east side of the gable-roofed structure, and warehouse space is located on the west side of the structure. The warehouse portion of the structure is accessed via three roll-up doors in the north and west elevations.

Adjacent to the warehouse to the northwest is a series of fuel tanks surrounded by a concrete barrier. Modern chemical storage sheds are located farther to the west. Adjacent to the chemical storage sheds is a drive-up space for fertilizer distribution. To the northwest, is a large workshop structure. It is a metal-clad shed with two sections (see Figure 18). The addition is probably the unit to the north, which houses two locked storage rooms filled with volatile materials. Adjacent to the shop structure is a bathroom/eating area surrounded by a low, decorative wooden fence (Figures 19-21). The bathroom is the oldest standing structure on the property; it is the surviving northern half of a much

larger, rectangular building, which dates to between 1943 and 1952. This is a frame and wooden clad structure covered with a wide shed roof with exposed rafter butts. The bathroom structure has been repaired with modern T-1011 siding, which probably occurred when the southern half of the structure was demolished, which happened between 1994 and 2004. The eating area has a grill, picnic table, and turfgrass. North and east of the eating area is a series of house and shade trees, including a large oak and a large mulberry tree. Currently, the space is storage for old farm equipment, but previously this was the location for a fieldworker's house that was demolished about four years past (see Figure 19).

A new concrete pad has been poured with a depression in the middle. An identical pad is located to the west, directly adjacent to the main shop and storage complex. This space, which is outside the main shop area, is surrounded by its own fence. It is primarily being used as a parking area. Another gypsum loading dock is located against Burbank Street to the north.



Figure 16
Site MV-4, Irrigation Ponds, View to the South



Figure 17
Site MV-4, Warehouse/Office, View to the Southeast



Figure 18
Site MV-4, Workshops, View to the Southwest



Figure 19
Site MV-4, Bathrooms, View to the North



Figure 20
Site MV-4, Turfgrass Eating Area, View to the North



Figure 21
Site MV-4, Shade Trees and former house location, View to the North

10.0 Management Recommendations

At the request of McIntosh and Associates, a Phase I Cultural Resource Survey was conducted on approximately 738.48 acres. The property lies along the eastern side of Highway 99, between Imperial and Burbank Avenues, minus the Lerdo Canal, Kern County, California. The Phase I Cultural Resource Survey consisted of a pedestrian survey of the 738.48-acre site and a cultural resource record search.

Four cultural resources were identified. Sites MV-1 through MV-4 are various agricultural facilities, including two pond complexes and four gypsum loading docks. Three of these facilities are a mixture of old and new equipment, buildings, and structures. Site MV-1 is a pond and pumping complex for irrigating the vineyards and includes a gypsum loading dock. Site MV-2 is a single, abandoned gypsum loading dock. Site MV-3 is a pumping station complex with a gypsum loading dock. Site MV-4 is the primary shop/warehouse/office complex for Malibu Vineyards with a pair of ponds, a bathroom/eating area, various modern outbuildings, a large equipment yard, and a location for a fieldworker's house that is no longer standing. These complexes, except MV-2 pre-date 1952.

Sites MV-1 through MV-4, are highly modified through use, agricultural resources, which are not associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States. Malibu Vineyards is a typical, ordinary, California table grape-growing operation from the second-half of the twentieth-century. Criterion 1 of the California Register of Historical Resources does not apply.

Sites MV-1 through MV-4 are not associated with the lives of persons important to local, California or national history. Steven Gilfenbain, the current owner of Malibu Vineyards, is a wealthy California grower of table grapes, but these cultural resources are not associated with his ownership of the property. These cultural resources are associated with the Mettler family, which was a locally prominent Kern County farming family. However, the Mettler family has not maintained its prominence. As such, Criterion 2 of the California Register of Historical Resources does not apply.

Sites MV-1 through MV-4 do not embody the distinctive characteristics of a type, period, region or method of construction or represent the work of a master or possess high artistic values. These are vernacular, use-built, cultural resources, whose construction is driven by agricultural necessity. Criterion 3 of the
California Register of Historical Resources does not apply.

Sites MV-1 through MV-4 will not yield, or do not have the potential to yield, information important to the prehistory or history of the local area, California or the nation. Criterion 4 of the California Register of Historical Resources does not apply, since this Criterion is largely set aside for important resources whose historic or cultural significance is prehistoric in nature or whose value can not be ascertained without archaeological excavation, a situation that is apparent with Sites Mv-1 through MV-4.

No further work is required. If additional archaeological resources are encountered during the course of construction, a qualified archaeologist, meeting Secretary of Interior Professional Qualifications Standards, will be consulted for further evaluation. The project area has a low archaeological sensitivity based on current conditions, soil types, prehistoric environment, the record search and pedestrian survey results.

If human remains or potential human remains are observed during construction, work in the vicinity of the remains will cease, and the remains will be treated in accordance with the provisions of State Health and Safety Code Section 7050.5. The protection of human remains follows California Public Resources Codes, Sections 5097.94, 5097.98, and 5097.99.

Based on a preliminary review of the geologic mapping for this area, the project site appears to be underlain by a geologic unit assigned a high

paleontological sensitivity at the surface (Qc). Therefore, a paleontological resources assessment is recommended for this project.

11.0 References

Arrington, Cindy

2006 *Cultural Resource Final Report of Monitoring and Finding for the Qwest Network Construction Project, State of California, Vol. 1.* Report on file, Southern San Joaquin Archaeological Information Center, California State University, Bakersfield, Bakersfield, California.

Johnson, Sarah and Chris Brewer

2015 *Historic Property Survey for the Proposed North Kern Water Storage District Drought Relief Pipeline Project, Kern County, California.* Report on file, Southern San Joaquin Archaeological Information Center, California State University, Bakersfield, Bakersfield, California.

Maynard, John A.

1997 *Bakersfield: A Centennial Portrait.* Cherbo Publishing, Encino, California.

Moratto, Michael J.

1984 *California Archaeology*. Orlando, Florida, Academic Press.

Nabokov, Peter and Robert Easton

1989 *Native American Architecture.* Oxford University Press, New York, New York.

Norby, Heather and Stephen Wee

2017 *Friant-Kern Canal Historical Context.* Report on file, Southern San Joaquin Archaeological Information Center, California State University, Bakersfield, Bakersfield, California.

Parr, Robert E. and Richard Osborne

1992 *Route Adoption Study for Highway 58, Kern County, California.* Report on file, Southern San Joaquin Archaeological Information Center, California State University, Bakersfield, Bakersfield, California.

Pruett, Catherine Lewis

2008 *Assessment for a Pumping Station, the Friant-Kern Crossing, and a One-Mile Pipeline, Northwest of Bakersfield, Kern County, California.* Report on file, Southern San Joaquin Archaeological Information Center, California State University, Bakersfield, Bakersfield, California.

Schiffman, Robert A.
1993 *Archaeological Survey of Coherly-Etcheverry Property*. Report on file, Southern San Joaquin Archaeological Information Center, California State University, Bakersfield, Bakersfield, California.

Schiffman, Robert A. and Alan Gold
2006 *Cultural Resource Survey for a 47.69-Acre Parcel, Tentative Tract Map 6420, North of Seventh Standard Road and West of Highway 99 in Northwest Bakersfield.* Report on file, Southern San Joaquin Archaeological Information Center, California State University, Bakersfield, Bakersfield, California.

Wallace, William J.
1978 "Southern Valley Yokuts" in *Handbook of North American Indians*. Vol. 8, California, Robert F. Heizer, ed. Washington, D.C.: Smithsonian Institution, pp. 437-445.

Warren, Claude N. and M. B. McKusiak
1959 A Burial Complex from the southern San Joaquin Valley. Los Angeles: *University of California, Los Angeles, Archaeological Survey Annual Report, 1959*: 17-26.

Warren, Claude N.
1967 "The San Dieguito Complex: A Review and Hypothesis" *American Antiquity* 32(2): 168-185.

Appendix I

Scott M. Hudlow
1405 Sutter Lane
Bakersfield, California 93309
(661) 834-9183

Education

The George Washington University
M.A. American Studies, 1993
Specialization in Historical Archaeology
and Architectural History

University of California, Berkeley
B.A. History, 1987
B.A. Anthropology, 1987
Specialization in Historical Archaeology
and Colonial History

Public Service

3/94-12/02 *Historic Preservation Commission.* City of Bakersfield, Bakersfield, California 93305.

7/97-12/01 *Newsletter Editor. California History Action,* newsletter for the California Council for the Promotion of History.

Relevant Work Experience

8/96- *Adjutant Faculty.* Bakersfield College, 1801 Panorama Drive, Bakersfield, California, 93305. Teach History 17A, Introduction to American History and Anthropology 5, Introduction to North American Indians.

Owner, Sole Proprietorship. Hudlow Cultural Resource Associates. 1405 Sutter Lane, Bakersfield California 93309. Operate small cultural resource management business. Manage contracts, respond to RFP's, bill clients, manage temporary employees. Conduct Phase I archaeological and architectural surveys for private and public clients; including the cultural resource survey, documentary photography, measured drawings, mapping of structures, filing of survey forms, historic research, assessing impact and writing reports. Evaluated archaeological and architectural sites and properties in lieu of their eligibility for the National Register of Historic Places in association with Section 106 and 110 requirements of the National Historic Preservation Act of 1966 and CEQA (California Environmental Quality Act).

Full resume is available upon request.

Appendix II

Sacred Lands File & Native American Contacts List Request

Native American Heritage Commission
1550 Harbor Blvd, Suite 100
West Sacramento, CA 95691
916-373-3710
916-373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: McIntosh 19-01

County: Kern

USGS Quadrangle Name: Oildale & Rosedale

Township: 28S 28S **Range:** 27E 26E **Section(s):** 24 & 29

Company/Firm/Agency: Hudlow Cultural Resource Associates

Street Address: 1405 Sutter Lane

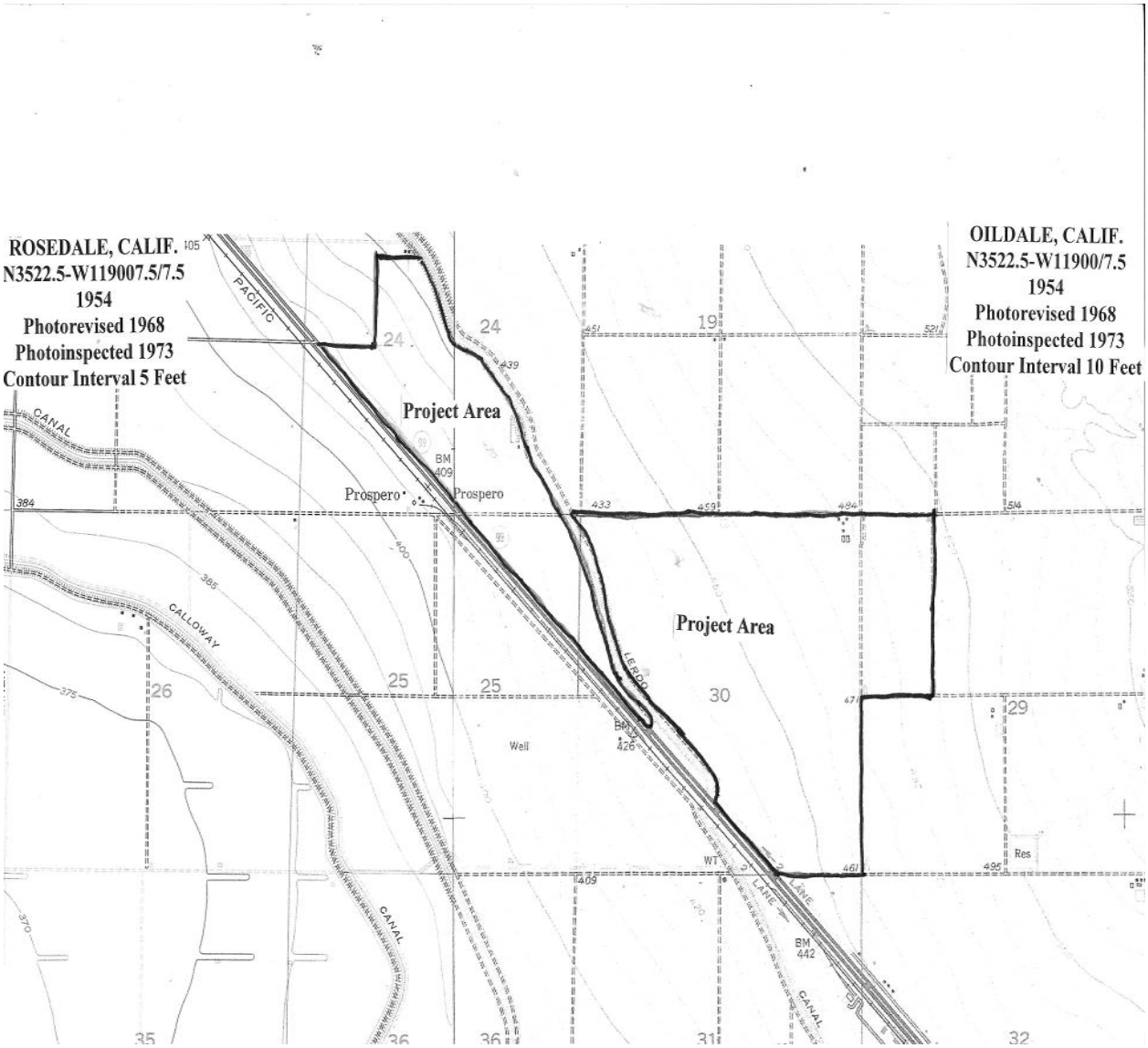
City: Bakersfield, CA **Zip:** 93309

Phone: (661) 834-9183

Fax:

Email: hudlow@sbcglobal.net

Project Description: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N3522.5-W119007.5/7.5
1954
Photorevised 1968
Photoinspected 1973
Contour Interval 5 Feet
OILDALE, CALIF.
N3522.5-W11900/7.5
1954
Photorevised 1968
Photoinspected 1973
Contour Interval 10 Feet
Project Area
Project Area
Prospero
Prospero
PACIFIC
CANAL
CALLOWAY
CANAL
LERDO
LANE
CANAL
Well
Res
BM 409
BM 426
BM 442
24
24
19
25
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31
32

STATE OF CALIFORNIA Gavin Newsom, Governor

NATIVE AMERICAN HERITAGE COMMISSION

October 14, 2021

Scott Hudlow
Hudlow Cultural Resource Associates

Via Email to: shudlow@sbcglobal.net

Re: McIntosh 19-01 Project, Kern County

Dear Mr. Hudlow:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
Chumash

SECRETARY
Merri Lopez-Keifer
Luiseño

PARLIAMENTARIAN
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William Mungary
Paiute/White Mountain Apache

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Julie Tumamait-Stenslie
Chumash

COMMISSIONER
[Vacant]

COMMISSIONER
[Vacant]

COMMISSIONER
[Vacant]

EXECUTIVE SECRETARY
Christina Snider
Pomo

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nahc@nahc.ca.gov
NAHC.ca.gov

James Rambeau, Sr., Chairperson
Big Pine Paiute Tribe of the Owens Valley
P.O. Box 700
Big Pine, California 93513

October 18, 2021

Dear Mr. Rambeau,

Malibu Vineyards announces its intention to pursue a general plan amendment and zone change for 738.48 acres on the eastern side of Highway 99, between Imperial and Burbank Avenues, minus the Lerdo Canal, Kern County, California. After consultation with the Native American Heritage Commission, the project area is not known to have Native American cultural resources in close proximity. The record search and reporting were performed in a manner consistent with SHPO guidelines. These guidelines are prescribed in "Instructions for Recording Historical Resources", "Archaeological Resources Management Reports (ARMR) Recommended Contents and Format," and "Guidelines for Archaeological Research Designs".

Mcintosh and Associates retained Hudlow Cultural Resource Associates of Bakersfield, California on behalf of Malibu Vineyards to conduct a cultural resource survey, an Information Center record search, and a Sacred Land Search.

This project falls within SB 18 guidelines and is subject to Native comment and consultation. As such, this letter informs your group that this project is preceding and requests comments with respect to the proposed project as outlined above.

Four historic sites, associated with the agricultural activities, were identified. The land, currently, is planted in various types of table grapes.

If you have any questions, comments, or need additional information, please inform Scott M. Hudlow in writing on or before Friday, November 19, 2021. My business address is below.

Hudlow Cultural Resource Associates
1405 Sutter Lane
Bakersfield, California 93309
(661) 834-9183
shudlow@sbcglobal.net

Sincerely,

Scott M. Hudlow
Hudlow Cultural Resource Associates

enclosures

STATE OF CALIFORNIA Gavin Newsom, Governor

NATIVE AMERICAN HERITAGE COMMISSION

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Luiseño

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October 14, 2021

Scott Hudlow
Hudlow Cultural Resource Associates

Via Email to: shudlow@sbcglobal.net

Re: McIntosh 19-01 Project, Kern County

Dear Mr. Hudlow:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

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Sincerely,

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Cultural Resources Analyst

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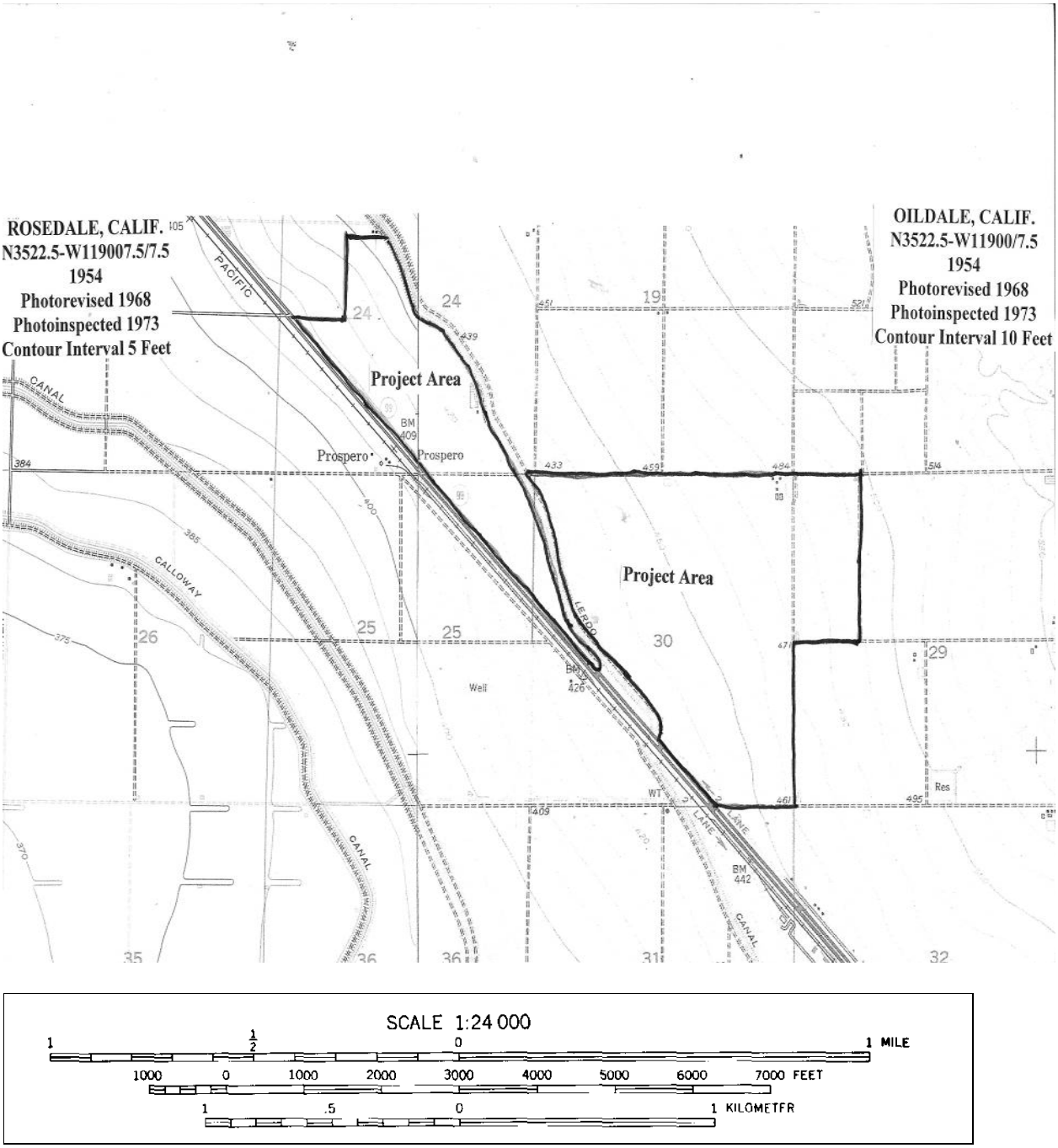

Project Area Location Map

Danelle Gutierrez, Tribal Historic Preservation Officer
Big Pine Paiute Tribe of the Owens Valley
P.O. Box 700
Big Pine, California 93513

October 18, 2021

Dear Mr. Gutierrez,

Malibu Vineyards announces its intention to pursue a general plan amendment and zone change for 738.48 acres on the eastern side of Highway 99, between Imperial and Burbank Avenues, minus the Lerdo Canal, Kern County, California. After consultation with the Native American Heritage Commission, the project area is not known to have Native American cultural resources in close proximity. The record search and reporting were performed in a manner consistent with SHPO guidelines. These guidelines are prescribed in "Instructions for Recording Historical Resources", "Archaeological Resources Management Reports (ARMR) Recommended Contents and Format," and "Guidelines for Archaeological Research Designs".

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shudlow@sbcglobal.net

Sincerely,

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October 14, 2021

Scott Hudlow
Hudlow Cultural Resource Associates

Via Email to: shudlow@sbcglobal.net

Re: McIntosh 19-01 Project, Kern County

Dear Mr. Hudlow:

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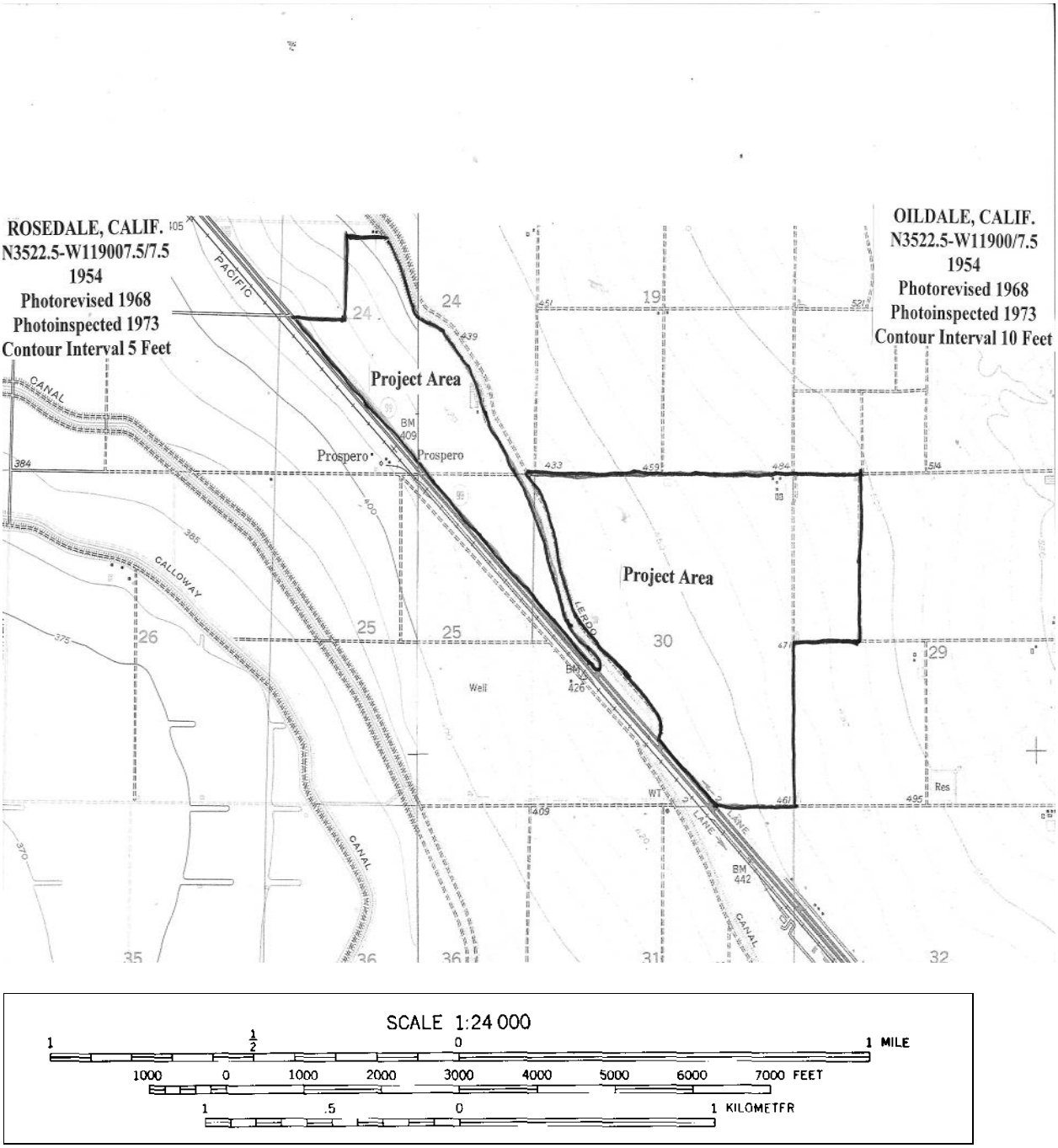

Project Area Location Map

Sally Manning, Environmental Director
Big Pine Paiute Tribe of the Owens Valley
P.O. Box 700
Big Pine, California 93513

October 18, 2021

Dear Ms. Manning,

Malibu Vineyards announces its intention to pursue a general plan amendment and zone change for 738.48 acres on the eastern side of Highway 99, between Imperial and Burbank Avenues, minus the Lerdo Canal, Kern County, California. After consultation with the Native American Heritage Commission, the project area is not known to have Native American cultural resources in close proximity. The record search and reporting were performed in a manner consistent with SHPO guidelines. These guidelines are prescribed in "Instructions for Recording Historical Resources", "Archaeological Resources Management Reports (ARMR) Recommended Contents and Format," and "Guidelines for Archaeological Research Designs".

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Hudlow Cultural Resource Associates
1405 Sutter Lane
Bakersfield, California 93309
(661) 834-9183
shudlow@sbcglobal.net

Sincerely,

Scott M. Hudlow
Hudlow Cultural Resource Associates

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STATE OF CALIFORNIA Gavin Newsom, Governor

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nahc@nahc.ca.gov
NAHC.ca.gov

October 14, 2021

Scott Hudlow
Hudlow Cultural Resource Associates

Via Email to: shudlow@sbcglobal.net

Re: McIntosh 19-01 Project, Kern County

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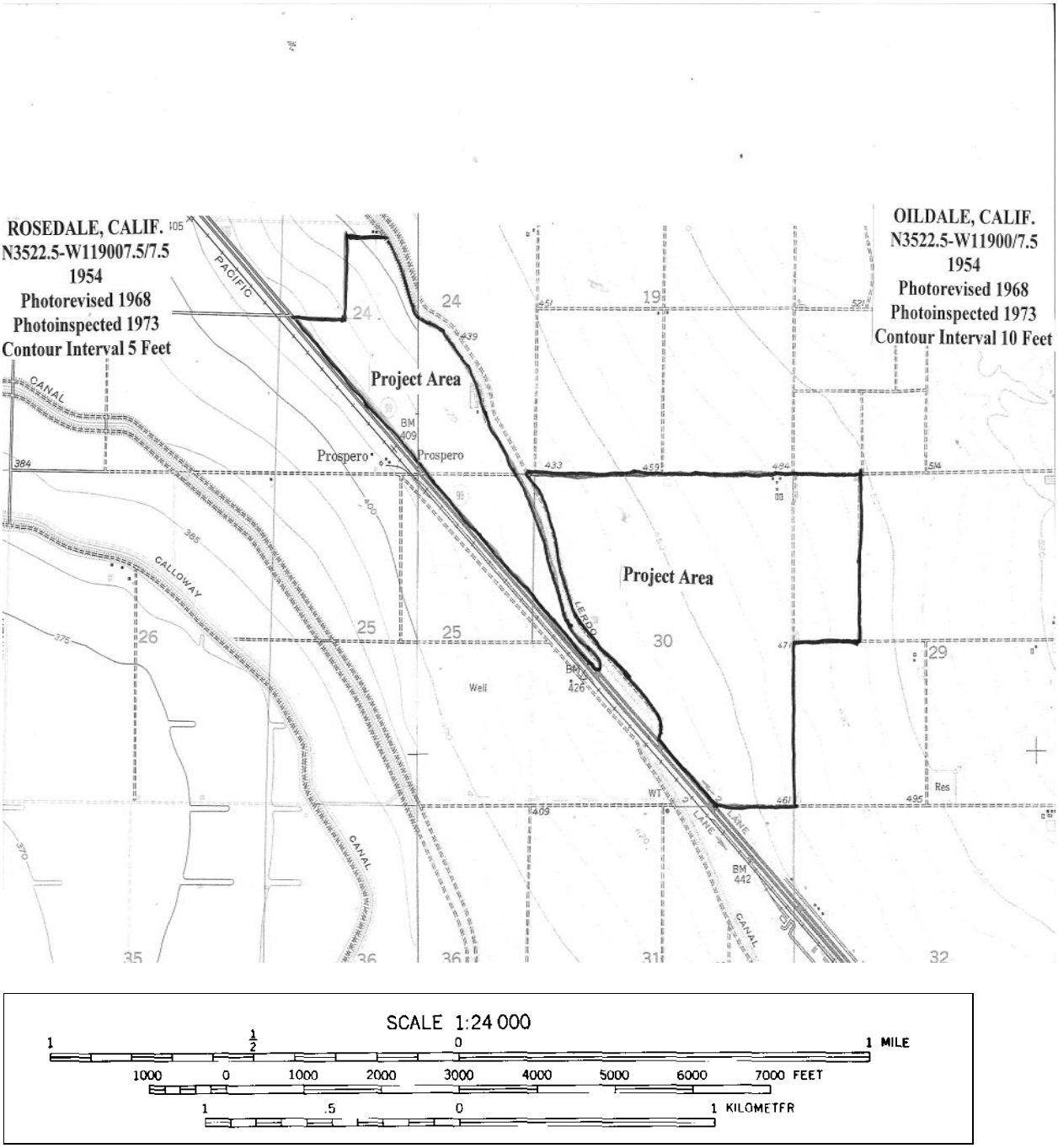
Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment



Project Area Location Map

Julio Quair, Chairperson
Chumash Council of Bakersfield
729 Texas Street
Bakersfield, California 93258

October 18, 2021

Dear Mr. Quair,

Malibu Vineyards announces its intention to pursue a general plan amendment and zone change for 738.48 acres on the eastern side of Highway 99, between Imperial and Burbank Avenues, minus the Lerdo Canal, Kern County, California. After consultation with the Native American Heritage Commission, the project area is not known to have Native American cultural resources in close proximity. The record search and reporting were performed in a manner consistent with SHPO guidelines. These guidelines are prescribed in "Instructions for Recording Historical Resources", "Archaeological Resources Management Reports (ARMR) Recommended Contents and Format," and "Guidelines for Archaeological Research Designs".

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Hudlow Cultural Resource Associates
1405 Sutter Lane
Bakersfield, California 93309
(661) 834-9183
shudlow@sbcglobal.net

Sincerely,

Scott M. Hudlow
Hudlow Cultural Resource Associates

enclosures

STATE OF CALIFORNIA Gavin Newsom, Governor

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nahc@nahc.ca.gov
NAHC.ca.gov

October 14, 2021

Scott Hudlow
Hudlow Cultural Resource Associates

Via Email to: shudlow@sbcglobal.net

Re: McIntosh 19-01 Project, Kern County

Dear Mr. Hudlow:

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Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

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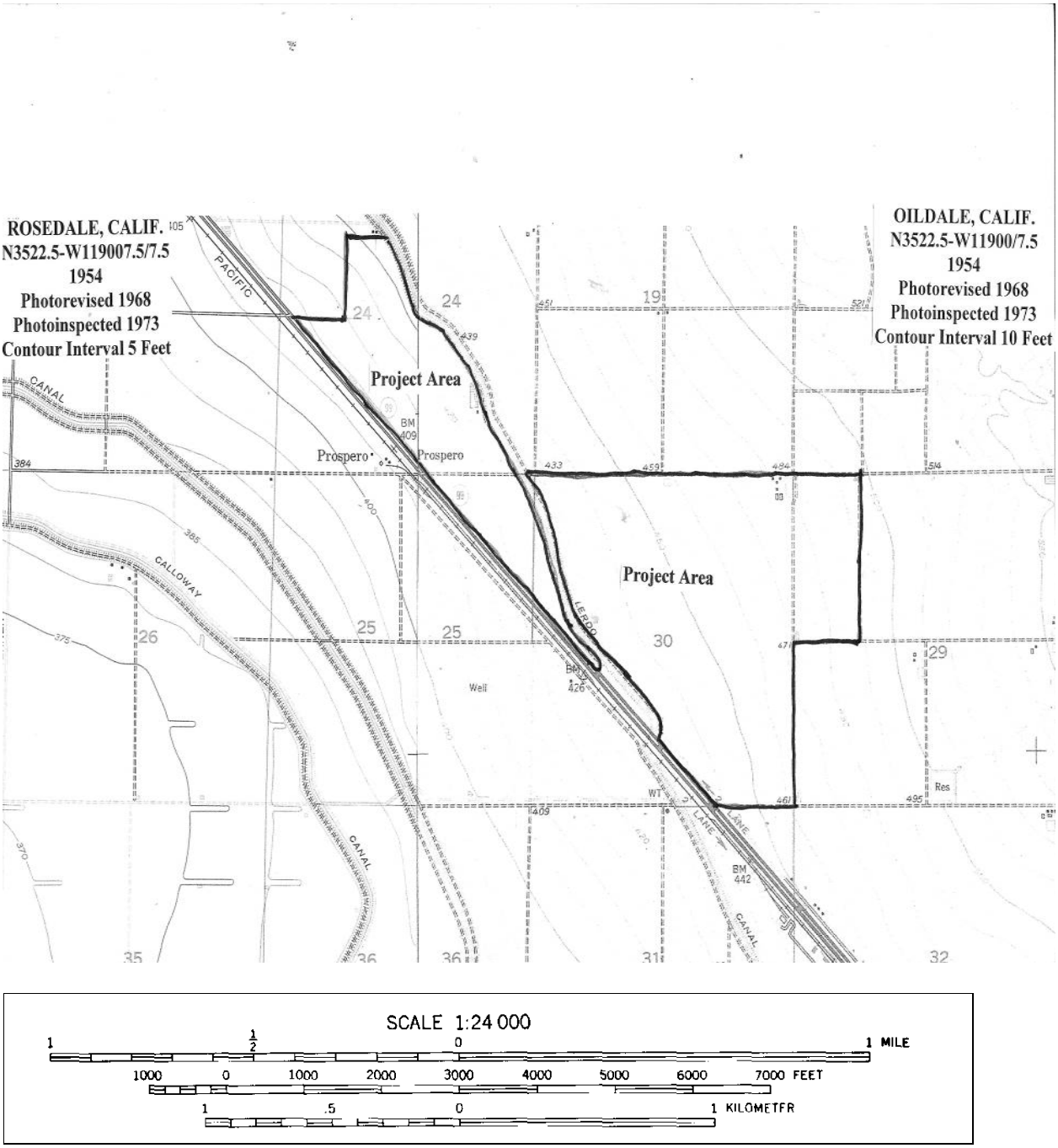

Project Area Location Map

Delia Dominquez, Chairperson
Kitanemuk and Yowlumne Tejon Indians
115 Radio Street
Bakersfield, California 93305

October 18, 2021

Dear Ms. Dominquez,

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If you have any questions, comments, or need additional information, please inform Scott M. Hudlow in writing on or before Friday, November 19, 2021. My business address is below.

Hudlow Cultural Resource Associates
1405 Sutter Lane
Bakersfield, California 93309
(661) 834-9183
shudlow@sbcglobal.net

Sincerely,

Scott M. Hudlow
Hudlow Cultural Resource Associates

enclosures

STATE OF CALIFORNIA Gavin Newsom, Governor

NATIVE AMERICAN HERITAGE COMMISSION

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October 14, 2021

Scott Hudlow
Hudlow Cultural Resource Associates

Via Email to: shudlow@sbcglobal.net

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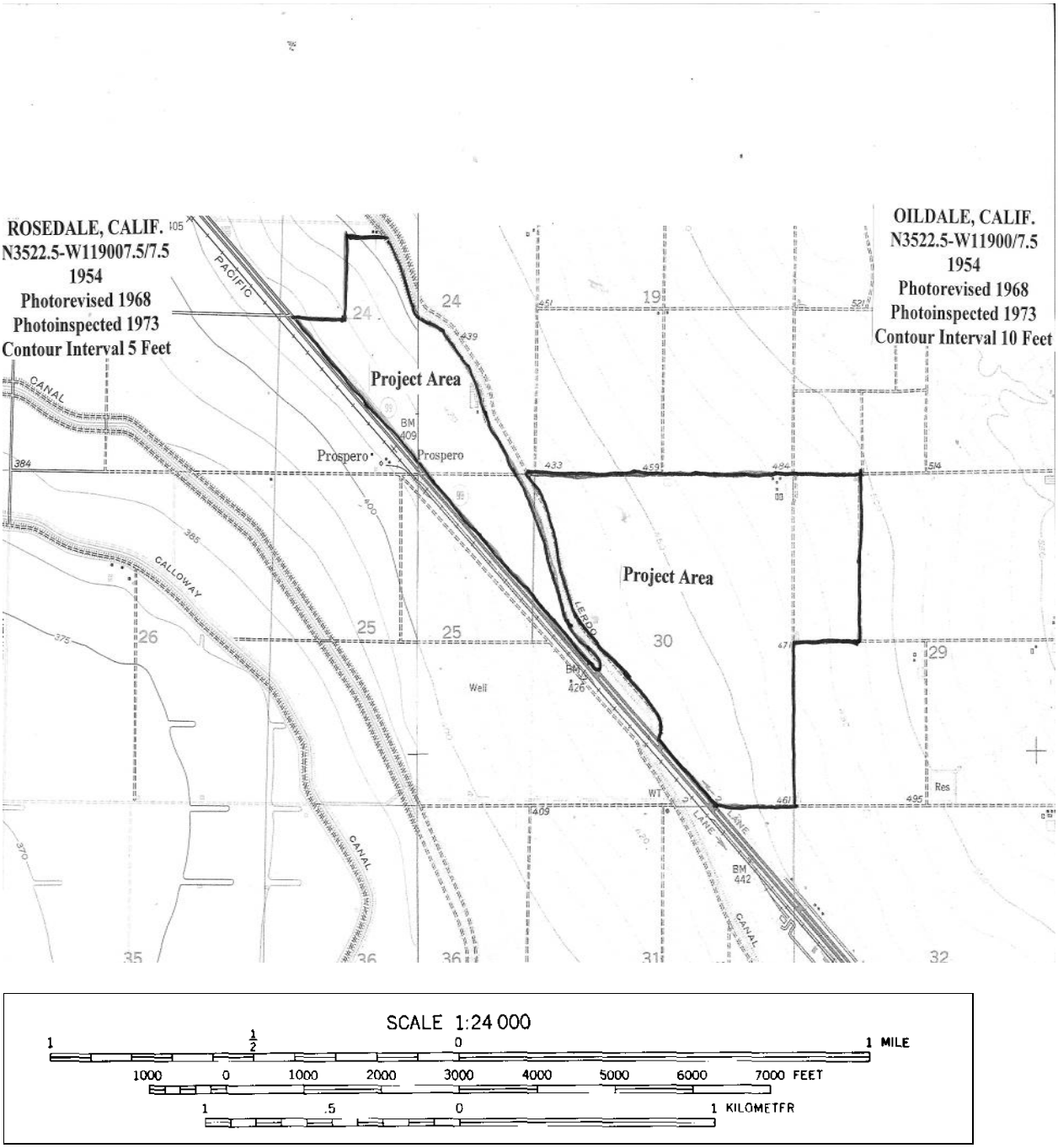

Project Area Location Map

Tejon Indian Tribe
Colin Rambo
P.O. Box 640
Arvin, California 93203

October 18, 2021

Dear Mr. Rambo,

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October 14, 2021

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Hudlow Cultural Resource Associates

Via Email to: shudlow@sbcglobal.net

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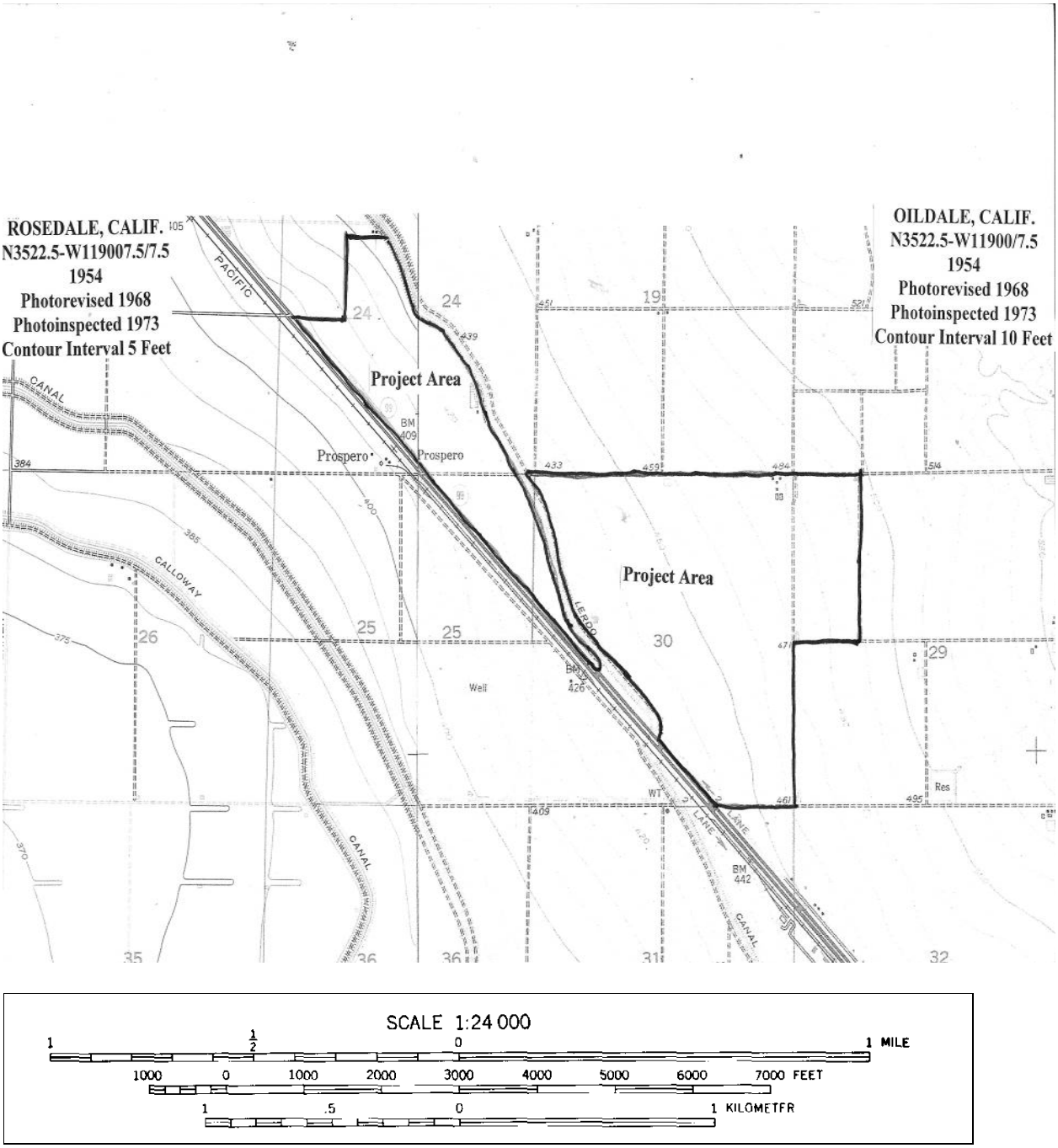

Project Area Location Map

Tejon Indian Tribe
Octavio Escobedo, Chairperson
P.O. Box 640
Arvin, California 93203

October 18, 2021

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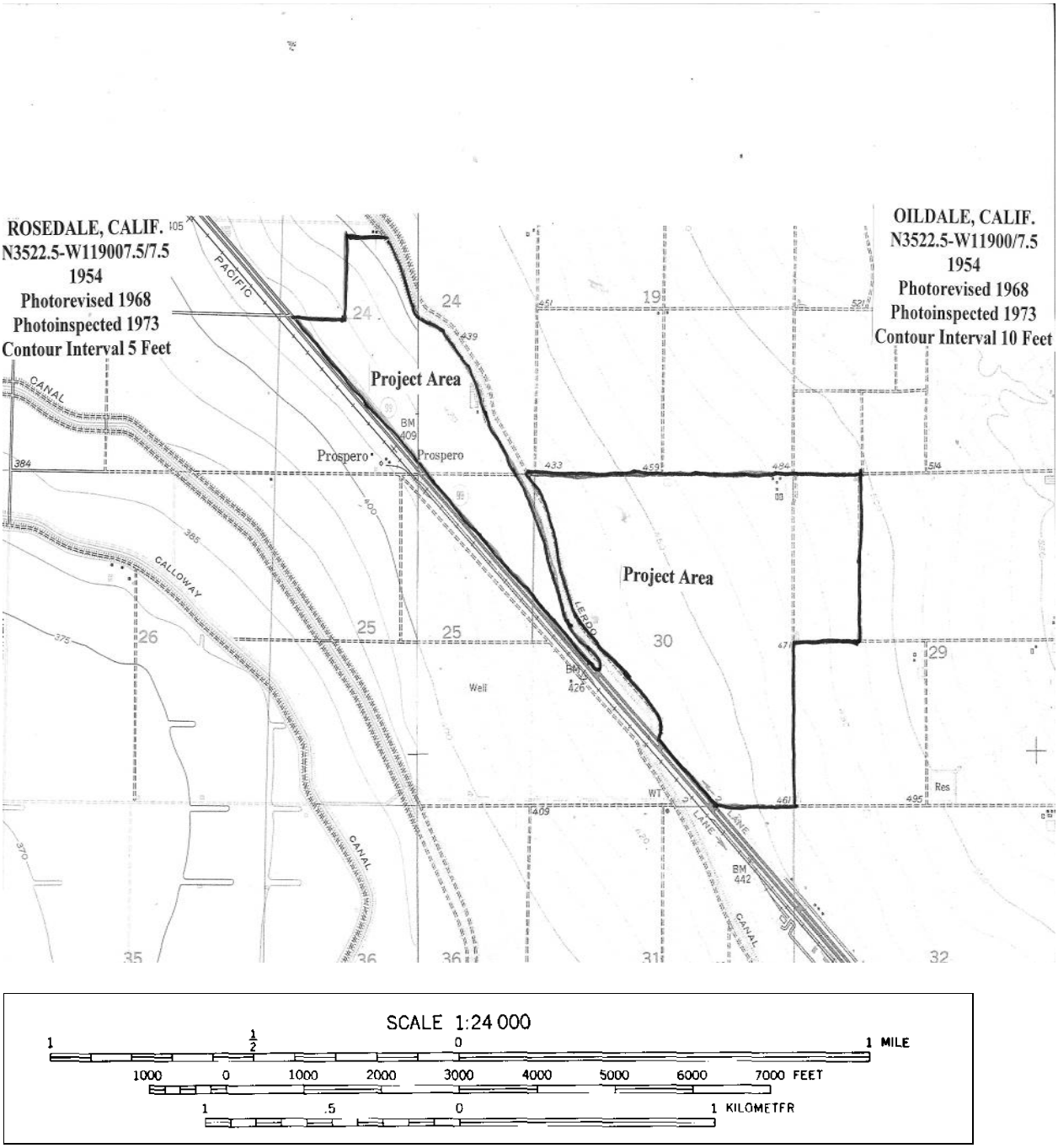

Project Area Location Map

Tule River Indian Reservation
Neil Peyron, Chairperson
P. O. Box 589
Porterville, California 93258

October 18, 2021

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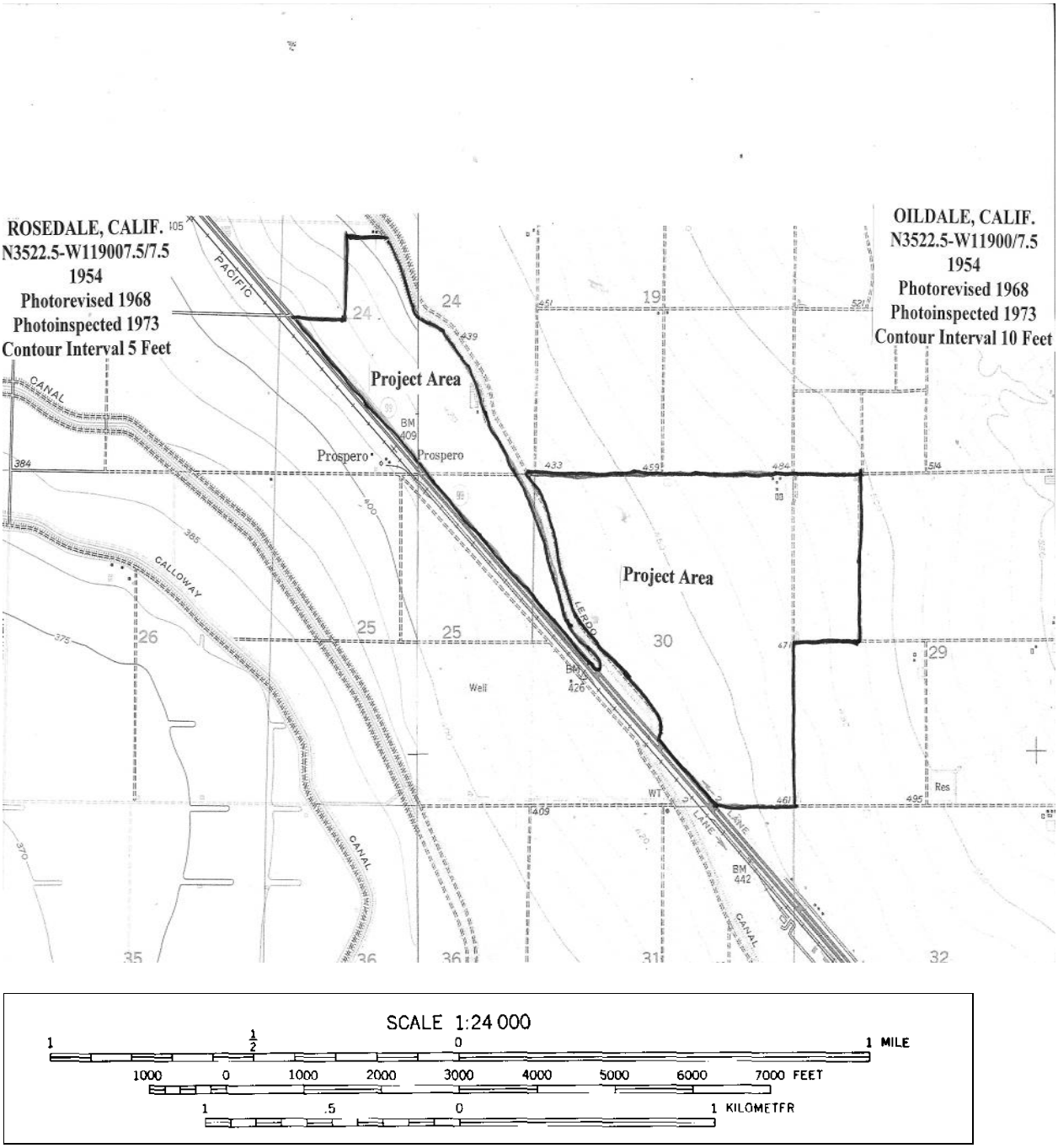

Project Area Location Map

Tule River Indian Reservation
Kerri Vera, Environmental Department
P. O. Box 589
Porterville, California 93258

October 18, 2021

Dear Ms. Vera,

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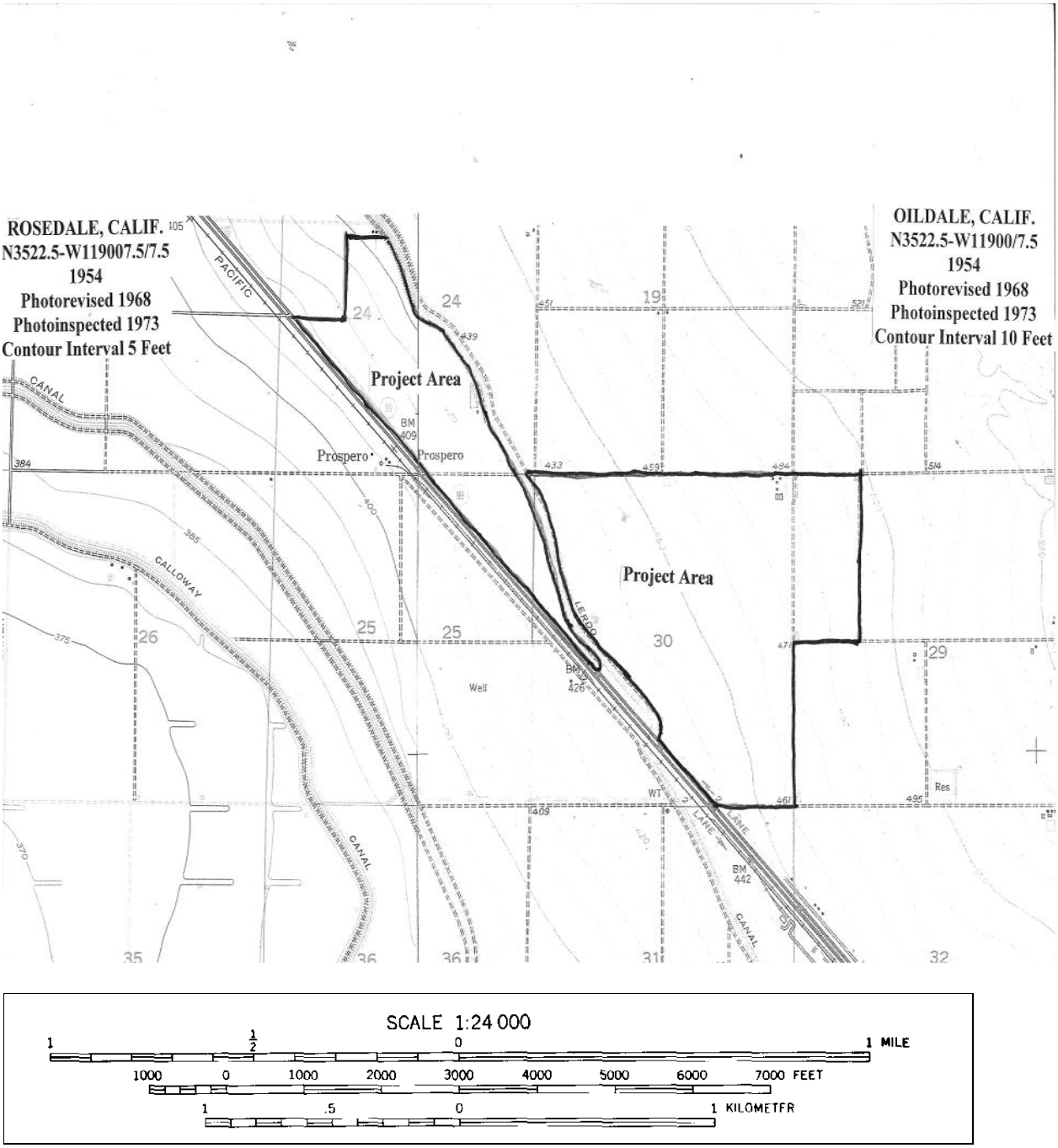

Project Area Location Map

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Joey Garfield, Tribal Archaeologist
P. O. Box 589
Porterville, California 93258

October 18, 2021

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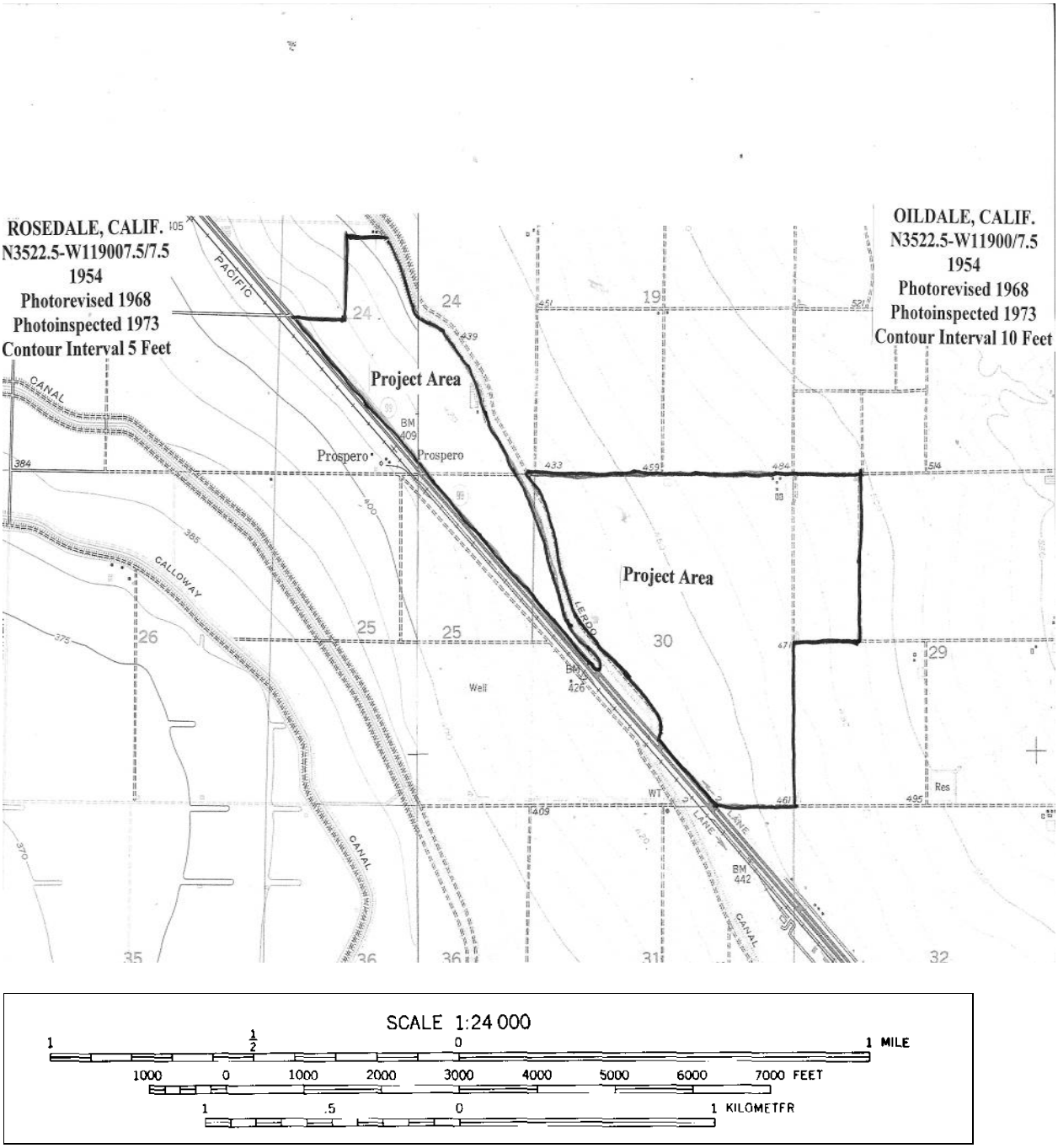

Project Area Location Map

Appendix III
(Confidential Site Records)

REDACTED

Appendix H

Energy Study

ENERGY STUDY REPORT

For:

Malibu Vineyards Industrial Park
738.5 Acres
North of Imperial Road and East of Hwy 99
County of Kern, State of California

Portions of Sections 24 and 25, Township 28 South, Range 26 East,
And, Sections 29 and 30, Township 28 South, Range 27 East M. D. B. & M.

Prepared for:

Malibu Vineyards, LP

Prepared by:

McIntosh & Associates
McIntosh & Associates Engineering, Inc.

2001 Wheelan Court
Bakersfield, California 93309
(661) 834-4814

Project No. 04-157

April 2020 revised April 2022

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1.0 Introduction

1.1 Purpose of Study

This **Energy Study** addresses the potential for energy impacts to occur with the construction and operation of the proposed project in the context of Section 15126.2(b) and Appendix F, Energy Conservation, of the California Environmental Quality Act (CEQA) as amended in 2018. This study discusses the existing energy resources in California with specific concentration on Kern County, applicable regulations that govern energy's use, supply and consumption, and changes to the physical environment that would occur with implementation of the proposed project by analyzing the energy implications of the proposed project, focusing on the following energy resources: electricity, natural gas and transportation-related energy (petroleum-based fuels) consumed during the construction and operation of the proposed project.

The purpose of this report is to identify feasible methods to reduce the consumption of non-renewable energy sources, through methods related to transportation, building design and use, lighting, recycling, alternative energy sources, water use and land use. In accordance with Appendix F of the CEQA Guidelines, the goal of energy conservation is the wise and efficient use of energy through:

- Decreasing overall per capita energy consumption
- Decreasing reliance on natural gas and oil, and
- Increasing reliance on renewable energy sources.

Portions of the analysis in this study rely in part on information and assumptions provided in the Air Quality Impact Analysis (AQIA) prepared for the proposed project, including Greenhouse Gas (GHG) construction and operation emissions.

1.2 Proposed Project Description

The project proposes to revise the existing land use and zoning (Phase 1: R-IA/A, Phase 2 8.1/A) in support of the General Plan Amendment (GPA) and Zone Change (ZC) for the development of a light to medium industrial park (SI/M-2/PD) on approximately 746 gross acres. The project is located North of Imperial Avenue and East of State Route 99 (SR-99) with site access from Saco Road and Imperial Avenue, further described as a portion of Sections 24 & 25, T28S/ R26E, MDB&M; and a portion of Sections 29 & 30, T28S/R27E, MDB&M, County of Kern, State of California. The project will be developed in two phases. Phase 1 is east of the Lerdo Canal; and Phase 2 is west of the Lerdo Canal. *(Refer to Figures A-1 & A-2 Proposed Project Location Maps)* The Assessors' Parcel Numbers (APN) for this proposed project are shown on the attached Exhibit Maps, Figures A-5 through A-9.

The proposed project would allow for development of a light to medium industrial park including distribution warehousing. The proposed project will include 7,242,106 SF of

warehousing on 533.84 gross acres in Phase 1 and 1,544,628 SF of warehousing on 204.64 gross acres in Phase 2.

A mixture of existing land uses surround the project area. The majority of existing land use is A – Agriculture (8.1/R-IA), and M-2 PD (SI).

The proposed project is situated 1.0 miles north of the Bakersfield City Limits in the County of Kern, State of California. Phase 1, the portion north of Imperial Avenue and east of Verdugo Lane is located in the Metropolitan Bakersfield Planning Boundary, but is not within Bakersfield's 2006 Sphere of Influence boundary. The balance of the proposed project is located within the City of Shafter's Planning Area, but outside of the current Sphere of Influence. The northeast portion of Phase 1 is located within the B2 zone and the southeast portion of Phase 1 is located within the C zone of the Meadows Field Airport Land Use Plan.

In addition to the proposed project area development, off-site improvements will include extensions of Oildale Mutual Water District's 6" domestic water line and 12" non-potable water line from Quinn Road west approximately 1 mile west along Imperial Street (CR 1007) to the southeast corner of the proposed project, installation of a new sewer trunk from the future intersection of Imperial Street at Endes Street south to SR 99, then cross under SR 99 and the UPRR tracks, continue to and follow 7th Standard Road west until Coffee Road, then south along Coffee Road 1.5 miles to North of River Sanitary District's 36" trunk line in Norris Road and construction of a new S.R. 99 interchange north of Verdugo Lane. All of Phase 1 will require a sewer lift station to reach the new sewer trunk described above. Sewer service to Phase 2 is unknown at this time. A new SoCal Gas natural gas pressure reducing station, gas main and laterals, and a new PG&E electrical substation and distribution will be required.

A 46 year construction period for Phase 1 and a 23 year construction period for Phase 2 is anticipated to develop the entire 746 acre site. Phase 2 will start construction approximately nine years after Phase 1. Additional details of the project description are located in the Air Quality Impact Analysis (AQIA).

2.0 Regulatory Settings

The following data includes new information that has been compiled based on new reports, studies, and/or responses to questionnaires.

2.1 Federal

2.1.1 Energy Policy and Conservation Act of 1975 and Corporate Average Fuel Standards

The Energy Policy and Conservation Act of 1975 established the first fuel economy standards for on-road motor vehicles sold in the United States. The National Highway Traffic and Safety Administration (NHTSA) is responsible for establishing vehicle standards and revising existing standards. NHTSA's Corporate Average Fuel Economy (CAFE) was created to determine vehicle manufacturers' compliance with the fuel economy standards. The U.S. Environmental Protection Agency (EPA) administers the testing program that generates the fuel economy data. The CAFE standards must be set at the "maximum feasible level" with consideration given for: (1) technological feasibility; (2) economic practicality; (3) effect of other standards on fuel economy; and (4) the need for the nation to conserve energy.

The NHTSA and US EPA are currently attempting to remove California's waiver of preemption under Section 209 of the Clean Air Act to set fuel consumption standards for light duty vehicles, but this study is prepared using the current California standard.

Current fuel efficiency standards (NHTSA 2019) for medium- and heavy-duty trucks have been jointly developed by USEPA and NHSTA. Depending on the vehicle type, the Phase 1 heavy-duty truck standards for model years 2014-2018 resulted in a reduction in fuel consumption from 6 to 23 percent over the 2010 baseline. Model years 2021-2027 covered under the Phase 2 heavy-duty standards will require a fuel consumption reduction of 5 to 25 percent over the 2017 baseline.

2.1.2 Energy Policy Act of 2005

The Energy Policy Act of 2005 was intended to establish a comprehensive, long-term energy policy and is implemented by the U.S. Department of Energy. This act addressed energy production in the U.S., including oil, natural gas, coal and alternative forms of energy, and energy efficiency and tax incentives. The energy efficiency and tax incentive programs include credits for the construction of new energy-efficient homes, production or purchase of energy-efficient appliances, and loan guarantees for entities that develop or use innovative technologies that avoid production of greenhouse gases (GHGs). Some of these programs have expired. Solar tax credits for residential and commercial systems are 26% in 2020, 22% in 2021, and 10% for commercial systems only from 2022 onwards.

2.1.3 Energy Independence and Security Act of 2007

The Energy Independence and Security Act (EISA) was passed to increase the production of clean renewable fuels, to increase the efficiency of appliance & lighting products, buildings and vehicles, to improve the energy performance of the federal government, to increase U.S. energy independence and security, to develop renewable fuel production and improve vehicle fuel economy. This act included the first increase in fuel economy standards for passenger cars since 1975, and also included a new energy grant program for use by local governments in

implementing energy-efficiency initiatives, as well as a variety of green building incentives and programs.

2.2 State

The State of California has established a policy, statutory and regulatory framework that serves to conserve energy, while also reducing GHG, criteria air pollutant and/or toxic air contaminants emissions. Some of the key aspects of the framework are summarized below.

2.2.1 Assembly Bill (AB) 32 & Senate Bill (SB) 32

Assembly Bill 32 (AB 32) is California's major initiative for reducing GHG, and is referred to as the "California Global Warming Solutions Act of 2006." AB 32 codified the statewide goals of Executive Order S-3-05 requiring that GHG emissions be reduced to 2000 levels by 2010, to 1990 levels by 2020 (a 15 percent reduction below "business as usual" 2005 emissions), and to 80 percent below 1990 levels by 2050. AB 32 also requires that the California Air Resources Board (CARB) prepare a Scoping Plan that outlines the main strategies for reducing GHGs to meet the 2020 deadline. In December 2008, CARB approved the initial Scoping Plan which included a list of measures to cut GHGs. After comments, a Final Supplement-Functional Equivalent Document was issued in August 2011. In 2014, CARB approved the First Update to the Climate Change Scoping Plan to establish a broad framework for continued emission reductions beyond 2020-on the path to 80 percent below 1990 levels by 2050. In September 2016, Senate Bill 32 (SB 32) was signed into legislation, this law expands AB 32 and requires that California cut GHG emissions to 40 percent below 1990 levels by 2030. In November 2017, a second update was issued to outline the strategies to meet the SB 32 2030 GHG target. This update includes the continuation of the Cap-and-Trade Program through 2030, incorporates a Mobile source Strategy that is intended to increase zero emission vehicle fleet penetration, and proposes a more stringent Low Carbon Fuel Standard target by 2030.

2.2.2 2008 California Energy Action Plan Update

In 2003, the California Energy Action Plan (EAP) was adopted by the CPUC, CEC and the Consumer Power and Conservation Financing authority (CPA) with the goal to ensure that adequate, reliable, and reasonably-priced electrical power and natural gas supplies, including prudent reserves, are achieved and provided through policies, strategies, and actions that are cost-effective and environmentally sound for California's consumers and taxpayers. The Energy Action Plan is the State's principal energy planning and policy document. In 2005, EAP II was adopted to highlight the importance of taking actions in the near term to mitigate California's contributions to climate change from the electrical and natural gas sectors. EAP II promoted infrastructure enhancements and electric efficiency programs and standards to reduce the reliance on natural gas for various end uses.

The 2008 EAP Update provides a status update to the 2008 EAP II and identifies specific action areas to ensure that California's energy is adequate, affordable, technologically advanced and

environmentally sound. A new EAP was not prepared, rather simply updated due to the passage of AB 32 (see above), which significantly influenced the state's energy policies, as included in the CEC's 2007 Integrated Energy Policy Report, as required by SB 1389 (2002). To address California's increasing energy demands, the Plan's first priority actions include energy efficiency, demand response, the use of renewable sources of power, electricity adequacy, natural gas supply and demand, transportation fuels supply and demand and climate change. The intent is to lower GHG emissions from the use of energy and to adapt the energy sectors to the impacts of climate change already occurring. If the actions are unable to satisfy the increasing energy and capacity needs, the plan supports clean and efficient fossil-fueled generation.

SB 1389 requires the CEC to conduct assessments and forecasts of all aspects of energy industry supply, production, transportation, delivery and distribution, demand, and prices. The Energy Commission shall use these assessments and forecasts to develop energy policies that conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety**.** An Integrated Energy Policy Report is adopted every two years, with an update every other year.

2.2.3 California Building Standards Codes

With certain exceptions, all residential and non-residential building design, construction, use and occupancy within California is required to be performed according to the California Building Standards Codes (CCR, Title 24, Parts 1 through 12), the most recent update was adopted in 2019 and went into effect January 1, 2020. State agencies and local jurisdictions may adopt amendments to the various codes, as Kern County has done with their "2019 Code of Building Regulations", also effective January 1, 2020.

California Green Building Standards Code

The Green Building Standards Code (CCR, Title 24, Part 11), known as the CALGreen Code, requires new residential and non-residential buildings to comply with mandatory measures under five topical areas: planning and design, energy efficiency, water efficiency and conservation, material conservation and resource efficiency, and environmental quality. Voluntary measures are included as appendices, but are not enforced unless adopted by the local agency.

Among the key mandatory energy related provisions are requirements that new buildings:

- Reduce indoor potable water use by at least 20 percent below current standards;
- Recycle or salvage at least 50 percent of construction waste;
- Install separate water meters tracking non-residential buildings' indoor and outdoor water use;

- Receive mandatory inspections by local officials of building energy systems, such as heating, ventilation, and air conditioning (HVAC) and mechanical equipment, to verify performance in accordance with specifications in non-residential buildings exceeding 10,000 square feet; and
- Earmark parking for fuel-efficient and carpool vehicles.

Building Energy Efficiency Standards (Title 24)

CCR, Title 24, part 6, the Energy Efficiency Standards for Residential and Nonresidential Buildings, regulates the design of building shells and building components. The standards contain energy and water efficiency requirements for newly constructed buildings, additions to existing buildings, and alterations to existing buildings. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The 2019 Standards have been adopted and became effective on January 1, 2020. Under the 2019 Standards, homes will use approximately 53 percent less energy and nonresidential building will use approximately 30 percent less energy than building under the 2016 Standards. The primary residential update includes requiring a solar photovoltaic system on newly permitted (2020 and beyond) certain building types, including single-family detached homes that is capable of providing 100% of the dwelling's annual usage per equation 150.1-C of the 2019 Energy Code. For example, a 2,000 square foot home in Bakersfield will require a PV system capable of producing 3.3 kW_{dc}, which will cost approximately $15,040 (GoSolarCalifornia.org). The non-residential usage reduction is expected primarily because of revised lighting standards (LED), water conservation and hot water pipes shall be required to have insulation installed.

The California Public Utilities Commission, CEC, and the ARB also have a shared, established goal of achieving Zero Net Energy (ZNE) for new construction in California. The ZNE goal generally means that new buildings must use a combination of improved efficiency and renewable energy generation to meet 100 percent of their annual energy need, as specifically defined by the CEC: "A ZNE Code Building is one where the value of the energy produced by on-site renewable energy resources is equal to the value of the energy consumed annually by the building, at the level of a single 'project' seeking development entitlements and building code permits, measured using the [CEC]'s Time Dependent Valuation (TDV) metric. A ZNE Code building meets an Energy Use Intensity value designated in the Building Energy Efficiency Standards by building type and climate zone that reflect best practices for highly efficient buildings." The key policy timelines include: (1) all new residential construction in California will be ZNE beginning in 2020, and (2) all new commercial construction in California will be ZNE beginning in 2030.

Although solar equipment (PV panels, conduit, piping and mounting hardware) is not required to be installed on or with new nonresidential structures less than 3 stories, the building must be designed be Solar Ready, which includes a solar zone where solar panels can be installed at a future date, if the owner elects to install or is mandated in further code revisions. The

solar zone can be located on the roof of the building, overhang of the building, covered parking installed with the building project, roof or overhang of other structure(s) within 250 feet. The solar zone must have a total area of at least 15% of the total roof area, less skylights area, meeting the following size specifications: each subarea dimension must be at least five feet, If the total roof area is less than 10,000 sf, each subarea must be at least 80 sf, if the total roof area is greater than 10,000 sf, each subarea must be at least 160 sf. Exceptions to the solar zone are provided in the code, including reduction of the solar area by non-project obstructions to determine the potential solar zone for the project building requirement, i.e. the solar zone may be reduced to 50% of the potential solar area, and also if the roof is designed for a heliport or vehicle parking.

2006 Appliance Efficiency Standards (Title 20)

The CEC periodically amends and enforces Appliance Efficiency Regulations contained in Title 20 of the California Code of Regulations. The regulations establish water and energy efficiency standards for both federally-regulated appliances and non-federally regulated appliances. The most current Appliance Efficiency Regulations, effective October 1, 2018, cover 23 categories of appliances (e.g., refrigerators; plumbing fixtures; dishwashers; clothes washer and dryers; televisions) and apply to appliances offered for sale in California. These regulations are currently being updated to ensure consistency with federal law.

2.2.4 Senate Bills 1078 and 107; Executive Order S-14-08, S-21-09 and SB 2X

SB 1078 (2002) requires retail sellers of electricity to provide at least 20 percent of their supply from renewable sources by 2017. SB 107 (2006) accelerated the target date of 20 percent to 2010 for investor-owned utilities instead of 2017. In November 2008, Governor Executive Order S-14-08 expanded the state's Renewable Portfolio Standard (RPS described below) to 33 percent renewable by 2020. In September 2009, Executive Order S-21-09 directed CARB under its AB 32 authority (Section 2.2.1) to enact regulations to enable the state to meet its RPS goad of 33 percent by 2030. CARB approved the Renewable Electricity Standard September 2010 by Resolution 10-23, and SB1X-2 (SB2X) was codified march 2011.

2.2.5 Senate Bill 375; Sustainable Communities Strategy (SCS)

The Sustainable Communities and Climate Protection Act of 2008 (SB 375), coordinates land use planning, regional transportation plans (RTP), and funding priorities to help California meet it GHG emissions mandates. SB 375 requires metropolitan regional planning organizations (i.e. KernCOG) to include a Sustainable Communities Strategy (SCS) in its RTP. The primary focus of the SCS is to plan for growth in a fashion that will ultimately reduce GHG emissions from passenger vehicles and light-duty trucks, but the strategy is also part of a larger effort to address other development issues, including transit and vehicle miles traveled (VMT), which influence the consumption of petroleum-based fuels. California law (GC Section 65080(b)(2)(K)) specifically, states that neither a sustainable communities strategy nor an

alternative planning strategy regulates the use of land, nor is it subject to any state approval. Nothing in an SCS supersedes the exercise of the land use authority of cities and counties within the region, and a city's or county's land use policies and regulations, including its general plan, are not required to be consistent with the RTP. KernCOG updated its RTP and SCS in August 2018 (KernCOG 2020a).

2.2.6 Assembly Bill 1257; Natural Gas Act (2013)

As California lacked a long-term strategy to maximize the benefits of natural gas as part of the state's alternative energy portfolio, AB 1257, the Natural Gas Act of 2013 required the CEC to report on strategies to maximize the benefits of natural gas as an energy source, including for transportation, electricity generations, and heating. The report would also be required to include recommendations for long-term policies to ensure adequate infrastructure and storage for natural gas to meet future natural gas demands. This report shall be included into the Integrated Energy Policy Report (IPER). The intent was to include the benefits of natural gas as part of develop balanced energy policy, including the alternative energy portfolio.

In November 2015, CEC issued a Staff Report, AB 1257 Natural Gas Act Report Strategies to Maximize the Benefits Obtained from Natural Gas as an Energy Source. In this report the gas supply and distribution system was described, focusing on safety issues, costs of improving the transmission and distribution systems and the release of methane emissions from the pipeline system as a potential significant source of GHG, lack of natural gas and RNG fueling infrastructure for automobiles. During preparation of this report, SB 350 was passed increasing the RPS to 50% by 2030, and to electrify California's transportation sector. Since SB 350, the CEC, although not mandated, is favoring a single-source energy system to decarbonize California's economy (SCG 2020a), through all-electric buildings and electric transportation modes, and is supporting research calling for the elimination of the natural gas system. SoCalGas, maybe for its own interests, has provided the CEC many comment letters, reports, and studies leading up to the adoption of the 2019 IEPR update highlighting the benefits of natural gas and RNG, including affordability, reliability, resiliency, customer choice, and GHG and criteria air pollutant emissions reduction. It is SoCal Gas' opinion that the CEC's all-electric approach and failure to fully comply with AB 1257 is a violation of what the CEC was mandated to do by the Legislature since its inception: develop balanced energy policy (SCG 2020a), making the best use of natural gas as a transportation fuel, and identifying methods to develop natural gas refueling infrastructure. In February 2020, SoCal Gas continues "Natural gas and renewable gases (such as hydrogen, synthetic natural gas, and biomethane/renewable natural gas (RNG)) are clean, reliable, affordable, and resilient sources of energy that should be part of the solution to California's energy concerns. Instead of pursuing an all-electrification approach and strategizing how to eliminate the natural gas system, the CEC must explore how the benefits of the natural gas system can be maximized in a changing energy landscape" (SCG 2020b).

2.2.7 Executive Order S-30-15; Senate Bills 100 (2018) and 350 (Clean Energy and Pollution Reduction Act of 2015)

SB 350, the Clean Energy and Pollution Reduction Act of 2015 increased the amount of renewable energy that must be delivered by most load-serving entities, i.e. IOU's and Public Owned Utilities (POU's), to their customers from 33% of total annual retail sales by the end of the 2017-2020 compliance period, to 50% of their total annual retail sales by the end of the 2028-2030 compliance period, and the doubling of energy efficiency savings in electricity and natural gas end uses for existing buildings. SB 350 also directed state agencies to identify and assess barriers and opportunities of low-income customers to renewable energy, energy efficiency and weatherization investments, zero- and near zero-emission transportation options (guidance issued February 2018), including those in DAC's. In September 2018, SB 100, the California Renewables Portfolio Standard Program: emissions of greenhouse gasses, was signed into law, increasing from 50% to 60% of California's electricity portfolio that must come from renewable by 2030, and established state policy that 100% of retail electricity sales must come from RPS-eligible or carbon-free resources by 2045. Renewable Portfolio Standard (RPS) is discussed below. Renewable generation resources, for purposes of the RPS requirement, include bioenergy such as biogas and biomass, certain hydroelectric facilities (30 MW or less), wind, solar and geothermal energy.

2.2.8 State Vehicle Standards (AB 1493, Pavley I Standards)

AB 1493 requires CARB to adopt regulation to reduce GHG emissions from non-commercial passenger vehicles and light-duty trucks for model years 2009-2016. Carb received a waiver from the EPA that allows for the implementation of these regulations nothwithstanding possible federal preemption concerns.

2.2.9 Low Carbon Fuel Standard

Executive Order S-1-07 requires a 10 percent or greater reduction in the average fuel carbon intensity for transportation fuels in California regulated by CARB by 2010[1]. In 2009, the ARB approved the Low Carbon Fuel Standard (LCFS) regulations, which became fully effective in April 2010. The LCFS is designed to decrease the carbon intensity of California's transportation fuel pool and provide an increasing range of low-carbon and renewable alternatives, which reduce petroleum dependency and achieve air quality benefits. The regulations were subsequently readopted in September 2015 in response to related litigation. In 2018, the ARB adopted an update to the regulations that requires a 20 percent reduction in the carbon intensity of transportation fuels by 2030. This standard (along with SB 350 (2015) and AB 345 (2019)) is one of the primary reasons international crude oil imports to California have increased (see Figure 1, Section 3.1) as the carbon intensity of most OPEC crude oils is less than Kern County's Midway–Sunset and Kern River benchmarks and Canada's oil sands based

[1] Carbon intensity is a measure of the GHG emissions associated with the various production, distribution and use steps in the "lifecycle" of a transportation fuel.)

crude oil. Support and import of domestic production from North Dakota and Texas shale reservoirs would complement LCFS as well as imports.

2.2.10 Advanced Clean Cars Program (Pavley II Standards)

In 2012, the ARB approved the Advanced Clean Cars (ACC) program, a new emissions-control program for model years 2017–2025. The program combines the control of smog, soot, and GHGs with requirements for greater numbers of zero-emission vehicles. By 2025, when the rules will be fully implemented, new automobiles will emit 34 percent fewer GHGs.

2.11 Zero Emission Vehicles

Zero emission vehicles (ZEVs) include plug-in electric vehicles, such as battery electric vehicles and plug-in hybrid electric vehicles, and hydrogen fuel cell electric vehicles.
In 2012, Executive Order B-16-2012 was issued, which calls for the increased penetration of ZEVs into California's vehicle fleet in order to help California achieve a reduction of GHG emissions from the transportation sector equaling 80 percent less than 1990 levels by 2050. In furtherance of that statewide target for the transportation sector, the Executive Order also calls upon the ARB, CEC and the California Public Utilities Commission to establish benchmarks that will: (1) allow over 1.5 million ZEVs to be on California roadways by 2025, and (2) provide the State's residents with easy access to ZEV infrastructure.

In its First Update, the ARB recognized that the light-duty vehicle fleet "will need to become largely electrified by 2050 in order to meet California's emission reduction goals." Accordingly, the ARB's ACC program – summarized above – requires about 15 percent of new cars sold in California in 2025 to be a plug-in hybrid, battery electric or fuel cell vehicle. Further, one of the elements of SB 350 (2015) establishes a statewide policy for widespread electrification of the transportation sector, recognizing that such electrification is required for achievement of the State's 2030 and 2050 reduction. The ARB's 2017 Scoping Plan also identified, as an element of its framework to achieve the statewide 2030 emissions reduction target codified by SB 32, the objective to put 4.2 million zero emission and plug-in hybrid light-duty electric vehicles on the road by 2030.

In 2018, Executive Order B-48-18 was issued, which served to launch an eight-year initiative to accelerate the sale of ZEVs through a mix of rebate programs and infrastructure improvements. The Executive Order also sets a new ZEV target of five million EVs in California by 2030 and includes funding for multiple state agencies, including the CEC (in order to increase charging infrastructure) and the ARB (in order to provide rebates for the purchase of new ZEVs and incentives for low-income customers). Southern California Edison Company (SCE) indicates that current policies are expected to result in only 3.6 million EV's by 2030, and

that to meet California's decarbonization goal will require 8 million EV's by 2030, and to reach carbon neutrality by 2045, will require 27 million EV's (SCE 2020a).

The proliferation of zero emission vehicles is being supported in multiple ways. For example, California is incentivizing the purchase of ZEVs through implementation of the Clean Vehicle Rebate Project (CVRP), which is administered by a non-profit organization (The Center for Sustainable Energy, CSE) for the ARB and currently subsidizes the purchase of passenger near-zero and zero emission vehicles. Additionally, CALGreen requires new residential and non-residential construction to be pre-wired to facilitate the future installation and use of electric vehicle chargers (see Section 4.106.4 and Section 5.106.5.3 of 2016 CALGreen Standards for the residential and non-residential pre-wiring requirements, respectively). The state has a target of 250,000 installed charging stations by 2025 (CSE 2020a).

Also of note is AB 1236 (2015), as enacted in California's Planning and Zoning Law, which requires local land use jurisdictions to approve applications for the installation of electric vehicle charging stations (EVCS) , as defined, through the issuance of specified permits unless there is substantial evidence in the record that the proposed installation would have a specific, adverse impact upon the public health or safety, and there is no feasible method to satisfactorily mitigate or avoid the specific, adverse impact. The bill requires local land use jurisdictions with a population of 200,000 or more residents to adopt an ordinance, by September 30, 2016, that creates an expedited and streamlined permitting process for electric vehicle charging stations, as specified. On December 6, 2016, the Kern County Board of Supervisors (BOS) enacted Ordinance G-8675 adding a section 17.58 to the County Code related to the expedited permitting procedures for electric vehicle charging stations consistent with AB 1236. A checklist for non-residential EVCS is available on the Kern County Public Works Building Inspection website. In May 2019, KernCOG provided an Electric Vehicle Charging Station Blueprint to address EV vehicles and parking/charging in Kern County (KernCOG 2020c), including guidelines for adopting a streamlined permitting process and various Electric Vehicle Infrastructure toolkits to implement the blueprint. KernCOG estimates the permitting process to be two months.

According to the 2018 ZEV Action Plan-Priorities Update issued in September 2018 by the Governor's Interagency Working Group on ZEV, CARB is to prepare a technical and cost analysis to determine the need for a change in building standards supporting an increase in electric vehicle charging infrastructure in new and existing commercial buildings (currently 6% of parking spaces in new buildings must be electric vehicle-capable) to realize infrastructure needs in 2025 and beyond.

2.2.12 Renewable Portfolio Standard

The Renewable Portfolio Standard (RPS) was adopted in 2011 as a requirement of SB X_{1-2}, and set a three-stage compliance schedule for all California utilities to generate 33% of their electricity from eligible renewable resources by 2020. The first stage required 20% of their electricity from eligible renewable resources by 2013, then 25% of their electricity from

eligible renewable resources by 2016, and the final stage requiring 33% of their electricity from eligible renewable resources by December 31, 2020.

As described above, SB 350 requires IOU's & POU's to procure 50% of their electricity sales from renewables by 2030, then SB 100 accelerated the 50% renewable resources requirement to 2026, to 60% by 2030, and to 100% by 2045.

2.3 Local

2.3.1 Kern County General Plan, Energy Element

The Kern County General Plan was originally adopted June 15, 2004, and last amended on September 22, 2009. The General Plan is currently being updated, and will be expected to include additional energy goals, policies, and implementation measures in the Energy Element to reflect California's current goal to a fossil fuel free economy and the reduction of GHG's. The current Energy Element primarily discusses the County's wealth of existing and potential energy sources which includes oil, natural gas, and renewable electricity production, including wind, geothermal, transformational (waste to energy) development, hydropower and solar. The Energy Element has three objectives: resource management and protection; establishing development standards provide for the protection of the environment, public health, and safety; and promoting and facilitating energy development. In general, the policies listed in the Energy Element are primarily directed at the County and are municipal policies rather than project specific.

The current Energy Element includes the following with respect to solar energy development, primarily commercial, but since solar (rooftop and/or common field arrays) will be required to be included in the development of the proposed project, it is included in this discussion.

Goal:

Encourage safe and orderly commercial solar development.

Policies:

Policy 1. The County shall encourage domestic and commercial solar energy uses to conserve fossil fuel and improve air quality.

Policy 2. The County should attempt to identify and remove disincentives to domestic and commercial solar energy development.

Policy 3. The County should permit solar energy development in the desert and valley planning regions that does not pose significant environmental or public health and safety hazards.

Policy 4. The County should encourage solar development in the desert and valley regions previously disturbed, and discourage development of energy projects on undisturbed land supporting State or federally protected plant and wildlife species.

Implementation Measures:

A. The County shall continue to maintain, and update as necessary, provisions in the Kern County Zoning Ordinance to provide adequate development standards for commercial solar energy development.

B. The County should work with affected State and federal agencies and interest groups to establish consistent policies for solar energy development.

2.3.2 Metropolitan Bakersfield General Plan

All of Phase 1 and the portion of Phase 2 east of Verdugo Lane are included in the Metropolitan Bakersfield General Plan (MBGP). See Fig B-1 There are currently no energy-related policies included in the MBGP.

2.3.3 Shafter General Plan

The portion of Phase 2 west of Verdugo Lane is located within the City of Shafter's Planning Area but not the Sphere of Influence. See Fig B-5 The Energy Resources section in the Shafter General Plan has one objective: reduce the reliance on nonrenewable energy sources in existing and new commercial, industrial and public structures. The following policies relevant to the project are outlined to achieve this objective.

Policies:

Policy 1. Continue to implement Title 24 of the State Building Code, and provide incentives to new development to exceed its energy efficiency standards through increased use of passive solar design and day-lighting.

Policy 2. Promote the use of site design, landscaping, and solar orientation to decrease the need for summer cooling and winter heating.

Policy 3. Encourage the installation of energy efficient lighting, reduced thermostat settings, and elimination of unnecessary lighting in public facilities.

Policy 4. Encourage the incorporation of recycled materials in new construction, where feasible.

Policy 5. Facilitate the installation of environmentally acceptable forms of small-scale electrical generation (e.g., micro-turbines, fuel cells, photovoltaics, and co-generation reuse of waste heat) where they can be economically and effectively located within office parks, industrial facilities, and other large buildings.

Policy 6. Promote coordination of new public facilities with transit services and non-motorized transportation facilities, including bicycles, and design structures to enhance transit, bicycle, and pedestrian use.

2.3.4 Meadows Field Airport Land Use Plan

The northeast portion of Phase 1 is located within the B2 zone and the southeast portion of Phase 1 is located within the C zone of the Meadows Field Airport Land Use Plan. See Fig B-6. There are currently no energy-related policies included in the Meadows Field Airport Land Use Plan.

3.0 Environmental Setting

The Environmental Setting describes the existing setting of the Proposed Project site as it relates to energy conservation.

3.1 State Energy Resources and Use

California has a diverse portfolio of energy resources that produced approximately 2,535.8 trillion British Thermal Units (BTU's) in 2017.[2] Excluding Federal offshore areas, the state ranked fourth in the nation in crude oil production in 2017 (California has since dropped to seventh as of 2019 due to increased production in Texas and North Dakota, and declining producing reserves in California), producing the equivalent of 996.4 trillion BTU's. Federal offshore production was 32.7 trillion BTU's. The state ranked first in total renewable energy production, with 1,115.3 trillion BTU's. Other energy sources in California include natural gas (234.7 trillion BTU's), nuclear (187.2 trillion BTU's), and biofuels (29.8 trillion BTU's). Overall, California was ranked eleventh in energy production (U.S. Energy Information Administration 2020, USEIA). Coal is not produced in California.

According to the USEIA Table CT2 (2020b), California consumed approximately 7,881.3 trillion BTU's of energy in 2017. Natural gas accounted for the greatest consumption of energy (27.8%), followed by motor gasoline (21.8%), renewable energy, including nuclear electric power, hydroelectric power, biomass and other renewables (15.6%), distillate and jet fuel (16.1%), and interstate electricity (8.4%), with the remaining 10.3% coming from a variety of other sources. The transportation sector consumed the greatest quantity of energy (40.3%), followed by the industrial (23.1%), commercial (18.7%) and the residential (18%) sectors (USEIA 2020b). It should be noted that with the 2013 shutdown of the San Onofre Nuclear Generating Station (2,200 MW capacity), with the Diablo Canyon Power Plant reactors (2,256 MW capacity) set to close in 2024 and 2025 (PG&E 2020c), the 2010 State Water Resources Control Board resolution to shut down nineteen coastal Once-Through Cooling (OTC) generating plants that utilize marine water for cooling by 2020 (ten have shut down, four recently received extensions) and non-renewals of many wood biomass generating plant contracts in the San Joaquin Valley with investor owned utilities (IOU's), this distribution will significantly change for 2020.

California consumed 284,436 gigawatt hours (GWh) of electricity in 2018, which is the most recent year for which data is available. Of this total, Kern County consumed 15942.4 GWh (CEC 2020c). As shown in Table 1, both consumption values are reductions from the previous year. In 2018, the California electricity generation mix included natural gas (34.9%), large hydroelectric plants (10.7%), nuclear (9.1%), coal (3.3%), oil (0.01%), petroleum coke (0.15%)

[2] 2017 data are the most recent available at the U.S. Energy Information Administration website, at https://www.eia.gov/state/seds/seds-data-complete.php. While partial national and California production and consumption data for 2018 have been released, a final data 2018 update is expected June 26, 2020. Accessed January 27, 2020, with updates as needed.

and unspecified sources of power (10.5%). The remaining 31.4% was supplied from renewable resources, such as wind (11.5%), solar (11.4%), geothermal (4.5%), biomass and biowaste (2.4%) and small hydroelectric facilities (1.6%) (CEC 2020b). In 2018, California consumed 12,666.4 million therms of natural gas, Kern County consumed 2,455.53 million therms of natural gas (CEC 2020c), or 19.4% of the state total. Note: the U.S. EIA reports that total 2018 consumption of natural gas in California was 2,136,907 MMCF, or 21,460.7 million therms (USEIA 2020d). As shown in Table 2, California consumed 0.7% less natural gas in 2018 than in 2017, but Kern County consumed 2.4% more natural gas than in 2017. In 2018, Kern County

Table 1 Electricity Consumption in California and Kern County, 2007-2018

Year	Electricity Consumption (million kWh/GWh)	
	California	Kern County
2007	287,169	17,243.3
2008	287,249	15,450.3
2009	279,080	14,443.2
2010	274,601	14,955.5
2011	277,381	15,953.2
2012	282,849	16,675.4
2013	280,984	15,023.5
2014	283,594	14,294.7
2015	283,109	15,169.9
2016	284,777	16,529.7
2017	289,913	18,500.4
2018	284,436	15,942.4

Source: CEC 2020c

Table 2 Natural Gas Consumption in California and Kern County, 2007-2018

Year	Natural Gas Consumption (millions of Therms)	
	California	Kern County
2007	13,008	2,635.6
2008	12,932	2,590.9
2009	12,539	2,497.4
2010	12,690	2,327.0
2011	12,915	2,375.5
2012	12,634	2,326.0
2013	13,235	2,696.7
2014	12,262	2,714.8
2015	12,316	2,761.8
2016	12,463	2,520.1
2017	12,571	2,397.1
2018	12,666	2,455.5

Source: CEC 2020c

ranked second in the state for the greatest total gas consumption, first for non-residential gas consumption, and fifteenth for residential gas consumption in 2018. From 2007-2018, average County non-residential natural gas usage was 96.1% of total consumption.

While California's total energy consumption was the second highest in the nation in 2017, the per capita consumption (i.e., total energy consumption divided by the total population) in California is among the lowest in the United States, approximately 200 million BTU's in 2017, or 48th out of 51 (USEIA includes the District of Columbia in its rankings). Per capita energy consumption is declining because of improvements in energy efficiency and design. However, despite this reduction in per capita energy use, California's total overall energy consumption is expected to increase over the next several decades as a result of growth in population, jobs and vehicle travel. As an example, electricity usage is anticipated to grow about 12% to 20% by 2027 of 2017 consumption (California Energy Commission [CEC] 2020b).

California has a significant deficit in the amount of energy consumed versus produced in the state. According to the USEIA Table P3 (2020a), California required the import of 5,346 trillion BTU's in 2017, the most of any state, and 56% of the national import need. Figure 1 shows that California's production of crude is rapidly declining, while foreign imports are escalating. Since 2000, crude oil supply to the California refineries from California production has reduced from 326,371,000 barrels (50% of demand) to 183,158,000 barrels (30% of demand) in 2019, supply from Alaska has also reduced from 163,233,000 barrels (25%) to 73,252,000 barrels (12%), whereas foreign imports have increased from 169,105,000 barrels (26%) to 359,712,000 barrels (58%) (CEC 2020e).

California only produced 8% of its natural gas requirements in 2017. Most of the natural gas used in California comes from out-of-state natural gas basins. Approximately 38% came from the U.S. Southwest, 27% from Canada, and 27% from the U.S Rocky mountain area. Most of the gas imported into California is delivered to the PG&E and SoCal Gas intrastate pipelines systems at/near the state border, and then delivered to the local transmission and distribution pipeline systems, or to natural gas storage fields. To help meet seasonal demand, PG&E and SoCal Gas own and operate several natural gas storage fields located within their respective service territories (CPUC 2020a). Figure 2 shows California's reliance on natural gas to generate electricity is declining in favor of renewables, but remains a major factor to compensate for the ups and downs of renewable production.

Figure 1. Crude Oil Supply Sources, 1983-2019

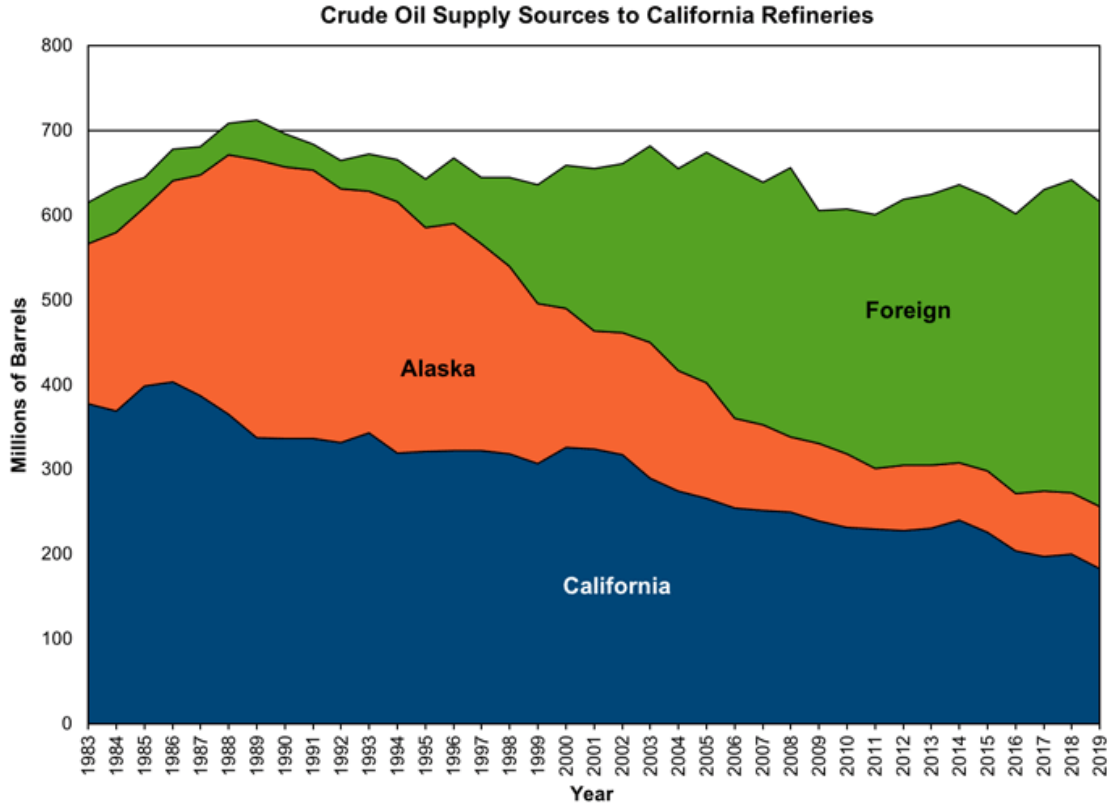
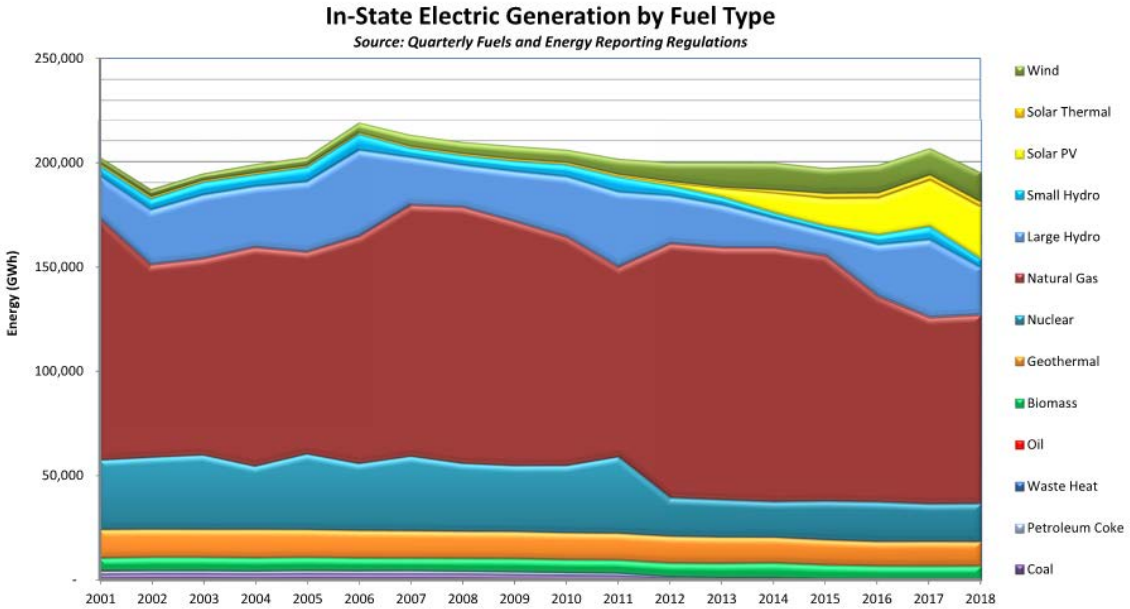


Figure 2 In-State Electricity Generation by Source, 2001-2018



3.2 Regional Energy Resources and Use

Gas and electricity are served to Kern County retail customers by three primary utility providers; Pacific Gas & Electric (PG&E), Southern California Gas Company (SoCal Gas), and Southern California Edison Company (SCE). The proposed project will be served by PG&E for electricity and SoCal Gas for natural gas. Power generation and power use are not linked geographically. Electricity generated with the Kern County region is not dedicated to users in the PG&E or SCE service areas. Instead, power that is generated in Kern County is fed into the statewide utility grid and made generally available to users statewide. Each utility is described below.

Pacific Gas and Electric Company

PG&E is an investor-owned utility company that provides electricity and natural gas services throughout a 70,000 square mile service area (PG&E 2020a) serving approximately 16 million people through 5.43 million electric distribution accounts and 4.4 million natural gas distribution accounts (PG&E 2020b). The proposed project is within the PG&E Kern Division service territory, which includes approximately the western half of Kern County, a majority of Santa Barbara County and San Luis Obispo County for electricity service.

PG&E's electricity is approximately two-thirds cleaner than the industry average, as measured by PG&E's carbon dioxide emissions rate. About 85% of the electricity delivered is a combination of renewable and greenhouse gas-free (including nuclear) resources. As required by the CEC's Power Source Disclosure program, PG&E's 2018 electric power mix provided in its Power Content Label is detailed in Table 1 below. Electric energy use by sector is outlined in Table 2.

Table 3 PG&E and the State of California 2018 Power Mix

Energy Resource	PG&E Power Mix	California Power Mix
Eligible Renewable	39%	31%
Biomass & Biowaste	4%	2%
Geothermal	4%	5%
Eligible Hydroelectric	3%	2%
Solar	18%	11%
Wind	10%	11%
Coal	0%	3%
Large Hydroelectric	13%	11%
Natural Gas	15%	35%
Nuclear	34%	9%
Other	0%	<1%
Unspecified[1]	0%	11%
Total	100%	100%

Source: CEC 2020a

[1] Electricity from transaction that are not traceable to specific generation sources.

Table 4 Electricity Consumption in PG&E Service Area (2018)

Agricultural and Water Pump	5,832
Commercial Building	30,148
Commercial Other	4,266
Industry	10,519
Mining & Construction	1,594
Residential	27,700
Street Light	311
Total Usage	80,369

Source: CEC 2020c
Note: All usage expressed in millions of KWh (GWh).

PG&E provides natural gas transportation services to "core" and "non-core" customers (i.e. industrial, large commercial and natural gas-fired electric generation and cogeneration facilities) that are connected to its gas system in its service territory. Core customers can purchase natural gas from either PG&E or non-utility third-party gas procurement service providers. PG&E offers backbone gas transmission, gas delivery (local transmission and distribution), and gas storage services as separate and distinct services to its non-core customers. Access to PG&E's backbone gas transmission system is available for all natural gas marketers and shippers, as well as non-core customers. PG&E also delivers gas to some customers outside of PG&E's service territory and to third-party gas storage customers.

PG&E also maintains approximately 6,700 miles of gas transmission and 42,000 miles of gas distribution pipelines and provides 970 billion cubic feet natural gas to customers annually, or 2.6 billion cubic feet per day (PG&E 2020c). Natural gas consumption by sector is outlined in Table 3 below.

Table 5 Natural Gas Consumption in PG&E Service Territory (2018)

Agricultural and Water Pump	37
Commercial Building	899
Commercial Other	59
Industry	1,776
Mining & Construction	190
Residential	1,833
Total Usage	4,794

Source: CEC 2020c
Note: All usage expressed in millions of therms.

Southern California Gas Company

SoCal Gas is an investor-owned utility company that is the principal distributor of natural gas in southern California, providing retail and wholesale customers with transportation, exchange and storage services, as well as procurement services to more retail core customers.

SoCal Gas is a gas-only utility and in addition to serving the residential, commercial and industrial markets, it provides gas for enhanced oil recovery and electric generation customers (California Gas and Electric Utilities, CGEU 2018). Table 4 below details the natural gas consumption by sector for 2018.

Table 6 Natural Gas Consumption in SoCal Gas Co. Service Territory (2018)

Agricultural and Water Pump	78
Commercial Building	913
Commercial Other	75
Industry	1,714
Mining & Construction	229
Residential	2,147
Total Usage	5,156

Source: CEC 2020c
Note: All usage expressed in millions of therms.

Southern California Edison Company

SCE is an investor-owned utility that serves only electricity to Southern California and the rest of Kern County not served by PG&E, including the mountain, foothill and southern desert communities of the county.

About 46% of the electricity delivered is a combination of renewable and greenhouse gas-free (including nuclear) resources. As required by the CEC's Power Source Disclosure program, SCE's 2018 electric power mix provided in its Power Content Label is detailed in Table 5 below. A portion of the "Unspecified" category may be from a renewable resource. Electric energy use by sector is outlined in Table 6.

Table 7 SCE and the State of California 2018 Power Mix

Energy Resource	PG&E Power Mix	California Power Mix
Eligible Renewable	36%	31%
Biomass & Biowaste	1%	2%
Geothermal	8%	5%
Eligible Hydroelectric	1%	2%
Solar	13%	11%
Wind	13%	11%
Coal	0%	3%
Large Hydroelectric	4%	11%
Natural Gas	17%	35%
Nuclear	6%	9%
Other	0%	<1%
Unspecified[1]	37%	11%
Total	100%	100%

Source: CEC 2020a
[1] Electricity from transaction that are not traceable to specific generation sources.

Table 8 Electricity Consumption in SCE Service Area (2018)

Agricultural and Water Pump	3,192
Commercial Building	31,574
Commercial Other	4,367
Industry	13,392
Mining & Construction	2,390
Residential	26,865
Street Light	496
Total Usage	85,276

Source: CEC 2020c
Note: All usage expressed in millions of KWh (GWh).

Kern River Gas Transmission Co. and Mojave Pipelines

When constructed and placed into service in 1992, the Kern River Gas Transmission Company (KRGTC), now a subsidiary of Berkshire Hathaway Energy Company, and the Mojave Pipeline Company pipelines were the only interstate pipelines to cross the state line and deliver gas directly to industrial customers [primarily gas-fired power generation and enhance oil recovery (EOR) cogeneration plants] in the southern San Joaquin Valley near Bakersfield and Taft, as well as near Mountain Pass and Adelanto in San Bernardino County. KRGTC operates two 36" pipelines from Opal, Wyoming to Daggett, CA where it ties into the Mojave System. KRGTC's design capacity is 2.17 billion cubic feet per day (KRGTC, CEC 2020d). The Mojave pipeline is operated by the Mojave Pipeline Operating Company, LLC (MPOC), a subsidiary of Kinder Morgan, Inc. The Mojave pipeline originates at near Topock at the Arizona border as a 30-inch pipeline and runs approximately 143 miles to Daggett, where it interconnects with the KRGTC pipelines. From Daggett, it continues as a 42-inch pipeline to Arvin, where it splits into two lines, a 42-inch continuing to the oilfields and power plants near Taft and McKittrick, and a 30-inch continuing to the Kern River oilfield. Mojave's design capacity is 1.1 billion cubic feet per day (MPOC, CRC 2020c). While MPOC operates the combined facilities from Daggett, KRGTC has exclusive rights to 79.6% of the capacity, and Mojave the balance (KRGTC).

3.3 Existing Infrastructure

As mentioned in Section 3.2, the proposed project is in the PG&E service area for electricity and the SoCal Gas service area for natural gas.

PG&E operates a 70 KV overhead transmission line along the east side of S.R. 99, which is also the west boundary of Phases 1 and 2, from the Saco Road intersection with Imperial Street 2.25 miles northwesterly to the north project boundary near the extension of Kyte Avenue. At the

intersection with Burbank Street, a 70 KC overhead distribution line proceeds east 0.40 miles to a substation at Cawelo Water Storage District's (WSD) Station B pumping plant on the east side of the Lerdo Canal, at the northwest corner of the intersection of Burbank Street and Burbank Avenue. A 12 KV distribution system is supported on the same pole structures as the 70 KV system.

One mile east of the proposed project, PG&E operates a pair of 115 KV overhead transmission lines on the east side of Quinn Road From 7th Standard road to a point 0.10 miles north of Imperial Street, where they turn east and cross S.R. 65. PG&E also operates a 115 KV transmission line from four cogeneration plants in the Kern Front oilfield, which run south along the east side of S.R. 65, then turn west along the north side of Street, then turn south along the west side of Quinn Road, then turn west along the north side of Petrol Road, then head south along the west side of Endes Street crossing S.R. 99 and continuing to Cal Water's North Garden Water Plant at Coffee Road and Norris Road. The nearest point of connection is 0.75 miles to the east portion of Phase 1. (CEC 2020g) A new PG&E electrical substation and distribution within the proposed project will be required.

A minor amount of 12 KV distribution exists within/near the proposed project. An overhead line exists on the north side of Imperial Street from S.R 65 to the east project boundary, then turns north along the east side of Imperial Road where it enters the project boundary one half mile north of Imperial Street, where it continues north to Burbank Street and services Malibu Vineyard's field operations and maintenance (O&M) facility, water well(s) and irrigation storage pond, and east to an agricultural facility and storage pond. This distribution line along Burbank Street also continues east 0.25 miles to serve a Malibu water well. Additional distribution is located on the north side of Burbank Street from Malibu's maintenance facility west 1 mile to Burbank Avenue at the Cawelo WSD Station B pump plant, from where it turns north and also continues west to the west bank of the Lerdo Canal, then turn northerly to support some North Kern WSD wells. (site inspection and Google Earth)

The nearest natural gas pipeline is a 24" high pressure transmission line operated by SoCal Gas in Petrol Road 0.5 miles south of the project. A 4" gas line lies in the east portion of Quinn Road south of Lencioni Avenue. A new SoCal Gas natural gas pressure reducing station, gas main extension and distribution laterals within the proposed project will be required.

3.4 California Transportation Fuel Usage

California's transportation sector uses just over 40% of the energy consumed in the state. In 2019, Californians consumed approximately 15.4 billion gallons of gasoline and 3.05 gallons of diesel fuel. Table 9 indicates the total California gasoline (including aviation fuel) and diesel fuel taxable sales for 2007 to 2019 as reported by the California Department of Tax and Fee Administration (CDTFA 2020a). Although gasoline consumption declined 8.9 percent between 2004 and 2012, strong recovery from the recession and continued population growth pushed consumption up by 6.9 percent between 2012 and 2016 (CRC 2020i). Diesel fuel use followed the same general trend. The gasoline reduction since 2017 may be a result from the states promotion of requiring more

electric, hybrid and alternative fuel vehicles in lieu of gasoline powered vehicles in addition to increased fuel economy resulting from the federal CAFÉ regulations as more new automobiles are purchased (CEC 2020 j). Table 9 excludes dyed diesel fuel (tax-exempt use such as agriculture, construction, mining and other types of non-road activity) sales. Dyed diesel fuel consumption averaged 762.1 million gallons/year from 2004-2010, or 21.7% of the total diesel usage, and 839.8 million gallons/year from 2011-2016, or 24.1% of the total diesel usage (CEC 2020i).

Table 9 Automotive Fuels Consumption in California, 2010-2019

Year	On-Road Automotive Fuel Consumption (Gallons)	Heavy-Duty Vehicle/Diesel Fuel Consumption (Gallons)
2010	14,868,892,787	2,590,655,088
2011	14,600,133,763	2,622,534,125
2012	14,504,794,174	2,603,545,631
2013	14,532,944,431	2,740,305,652
2014	14,702,632,422	2,776,180,357
2015	15,105,348,840	2,824,659,806
2016	15,487,956,872	3,005,270,626
2017	15,579,525,920	3,123,808,747
2018	15,517,383,271	3,073,917,507
2019	15,428,040,813	3,086,003,945

Source: CDTFA 2020a

3.5 Kern County Transportation Fuel Usage

Estimated automotive fuel usage in Kern County from 2008 to 2019 is shown in Table 10 as available from the California Air Resources Board; EMFAC2017 Web Database. Also presented are projections for 2020, 2025 and 2030. As Kern County is divided into two Air Pollution Control Districts (Valley portion in the San Joaquin Valley (SJVAPCD) and the eastern mountain and desert portions in the Kern County (KCAPCD)), and since the proposed project is located in the SJVAPCD, data from the SJV portion of Kern County is also shown. As shown in Table 10, on-road automotive fuel consumption in Kern County declined steadily from 2008, although 2013 through 2016 increased as the county recovered from the recent recession, and is now continuing to decline. In 2015 and 2018, Kern County ranked tenth for the most gasoline sold of all California counties (CEC 2020i & k). Also heavy-duty fuel consumption has shown a steady increase since 2012 as a result of recovery from the recession and the County's effort to attract warehousing and logistics to the local economic base to provide needed employment, including within the DAC communities. In 2015, Kern County ranked third, and in 2018 dropped to fourth for the most diesel sold of California's counties (CEC 2020i & k).

Table 10 Automotive Fuels Consumption in Kern County, 2008-2019

Year	On-Road Automotive Fuel Consumption (Gallons)		Heavy-Duty Vehicle/Diesel Fuel Consumption (Gallons)	
	Kern County	Kern (SJV)	Kern County	Kern (SJV)
2008	467,282,258	380,631,798	275,614,151	227,550,883
2009	457,753,568	375,206,972	254,307,817	209,973,260
2010	459,769,506	377,702,967	255,617,083	210,604,579
2011	453,029,571	373,905,909	256,460,303	213,073,015
2012	452,705,414	375,277,666	256,810,320	213,931,690
2013	454,062,915	377,878,185	275,920,754	230,764,690
2014	458,973,481	383,277,906	281,393,332	235,593,273
2015	469,620,303	392,908,908	284,648,995	238,105,317
2016	476,390,995	398,562,041	301,260,345	251,819,302
2017	463,754,740	387,936,266	304,118,169	254,394,141
2018	454,207,143	379,799,864	308,064,466	257,899,702
2019	445,151,657	372,167,475	311,403,744	260,911,351
2020 (projected)	437,374,947	365,618,374	312,996,641	262,449,326
2025 (projected)	395,539,506	330,472,917	300,336,275	251,828,653
2030 (projected)	365,032,185	304,633,210	284,290,786	238,718,995

Source: California Air Resources Board; EMFAC2017 Web Database

4.0 Energy/Environmental Impacts

4.1 Approach to the Analysis and Methodology

In accordance with CEQA and Appendix F, Energy Conservation, of the 2018 CEQA Guidelines, and to assure that energy implications are considered in project decisions, EIRs are required to include a discussion of the potential significant energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. Appendix F of the CEQA Guidelines provides a list of energy-related topics to be analyzed in the EIR. In addition, while not described or required as significance thresholds for determining the significance of impacts related to energy, Appendix F provides the following topics for consideration in the discussion of energy use in an EIR, to the extent the topics are applicable or relevant to the project:

> The Project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project including construction, operation, maintenance, and/or removal. If appropriate, the energy intensiveness of materials may be discussed;
>
> The effects of the Project on local and regional energy supplies and on requirements for additional capacity;

The effects of the Project on peak and base period demands for electricity and other forms of energy;

The degree to which the Project complies with existing energy standards;

The effects of the Project on energy resources; and

The Project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

In late 2018, the California Natural Resources Agency finalized updates to the 2018 CEQA Guidelines (California Natural Resources Agency 2019). Appendix G, Energy, was amended to now include the analysis of energy and provides energy criteria for the analysis of wasteful energy consumption and conflicts with state or local energy efficiency plans. (California Natural Resources Agency, 2018).

Appendix F did not describe or require significance thresholds for determining the significance of impacts related to energy. According to the updated Appendix G Checklist, Issue VI. Energy, a project would have a significant impact on energy and energy resources if it would:

a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation; or
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

4.2 Impacts and Mitigation Measures

This section describes energy consumption on three sources of energy that are relevant to the proposed project: electricity, natural gas, and transportation fuel for vehicle trips associated with new development, as well as fuel necessary for project construction.

Thresholds of Significance

The Kern County CEQA Implementation Document and Kern County Environmental Checklist identify the following criteria, as established in Appendix G of the CEQA Guidelines, to determine if a project could potentially have a significant impact. Appendix F does not prescribe a threshold for the determination of significance, but focuses on reducing and minimizing inefficient, wasteful, and unnecessary consumption of energy. Such an impact would occur if the proposed project would:

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.
- Conflict with or obstruct state or local plan for renewable energy or energy efficiency.

The analysis below generally follows Appendix F of the State CEQA Guidelines, which states that the goal of conserving energy includes decreasing overall per capita energy consumption; decreasing reliance on fossil fuels such as coal, natural gas, and oil; and increasing reliance on renewable energy.

Impact Assessment Methodology

In determining whether implementation of the Project would result in the inefficient, wasteful or unnecessary consumption of fuel or energy, this analysis considers the recommendations of Appendix F (as described above), which states that environmental impact analyses of energy conservation may include:

1. The project's energy requirements and its energy use efficiencies by amount and fuel type for each stage of the project's life cycle including construction, operation, maintenance and/or removal. If appropriate, the energy intensiveness of materials maybe discussed. The effects of the project on local and regional energy supplies and on requirements for additional capacity.
2. The degree to which the project complies with existing energy standards.
3. The effects of the project on energy resources.
4. The project's projected transportation energy use requirements and its overall use of efficient transportation alternatives.

This section analyzes energy consumption on three sources of energy that are relevant to the proposed project: electricity, natural gas, and transportation fuel for vehicle trips associated with new development, as well as the fuel necessary for project construction.

- The analysis of project electricity/natural gas usage is based on California Emission Estimator Model (CalEEMod) modeling, which quantifies energy use for occupancy. The results of the CalEEMod modeling are included in the Air Quality Impact Analysis (AQIA) prepared for the proposed project, including Greenhouse Gas (GHG) construction and operation emissions.
- Modeling related to transportation fuel consumption was based primarily on the default settings in the computer program for Kern County, which results in very conservative consumption values. The amount of operational fuel use was estimated using CalEEMod outputs for the proposed Project and the California Air Resources Board's Emissions Factor 2017 (EMFAC2017) computer program for typical daily fuel usage in Kern County and the SJV portion of Kern County. Construction fuel consumption was calculated based on CalEEMod emissions outputs and conversion ratios from the Climate Registry. The results of EMFAC2017 modeling and construction fuel estimates are included in the AQIA.

4.3 Project Impacts

Criteria 1: The Project Would Result in Potentially Significant Environmental Impact Due to Wasteful, Inefficient, or Unnecessary Consumption of Energy Resources, During Project Construction or Operation.

Construction (Short-Term)

The energy consumption associated with buildout of the proposed Project includes electricity usage, fuel consumption for construction diesel and gasoline powered equipment, and fuel consumption from on-road worker commute and vendor trips. Temporary electric power for as-necessary lighting and electronic equipment (such as computers inside temporary construction trailers, and heating, ventilation, and air conditioning) would be powered by a generator or temporary electricity connection. The amount of electricity used during construction would be minimal; typical demand would stem from the use of electrically powered hand tools and several construction trailers by managerial staff during the hours of construction activities. The majority of the energy used during construction would be from petroleum. The methodology for each category is discussed below. This analysis relies in part on the construction equipment list and operational characteristics, as stated in the Air Quality Impact Analysis. Quantifications of energy consumption are provided for the proposed Project, followed by an analysis of impacts based on those quantifications.

ELECTRICITY USAGE

Water Consumption for Construction Dust Control

Electricity use associated with water use for construction dust control is calculated based on total water use and the energy intensity for supply, distribution, and treatment of water.

The total number of gallons of water usage is calculated based on acreage disturbed during grading and site preparation, as well as the daily water consumption rate per acre disturbed.

- The total acres disturbed are calculated using the methodology described in Chapter 4.2 of Appendix A of the CalEEMod® User's Guide (Grading Equipment Passes).
- The water application rate of 3,020 gallons per acre per day is from Air and Waste Management Association's Air Pollution Engineering Manual.

The energy intensity value is based on the CalEEMod® default energy intensity per gallon of water for Kern County.

As summarized in Table 11 (Project Energy Consumption during Construction), the annual electricity consumption associated with water consumption for site preparation and construction dust control would be approximately 82,001 kWh/yr (82 megawatt hours [MWh] per year) for Phase 1, 35,363 kWh/yr (35.4 MWh per year) for Phase 2, and 79,951 kWh/yr (80 MWh per year) average for the years both phases are under construction.

PETROLEUM-DIESEL FUEL USAGE

On-Road Diesel Construction Trips

The diesel usage associated with on-road construction mobile trips is calculated based on vehicle miles traveled (VMT) from vehicle trips (i.e., worker, vendor, and hauling), the CalEEMod default diesel fleet percentage, and vehicle fuel efficiency in miles per gallon. Fuel consumption is based on VMT for the entire construction period. Construction fuel consumption was calculated based on CalEEMod emissions outputs and conversion ratios from the Climate Registry. The CalEEMod emissions are specific to construction year and include fleet adjustments based on current regulations and equipment turnover.

As summarized in Table 11, Project Energy Consumption during Construction, the annual diesel consumption associated with on-road construction trips would be approximately 1,626,144 gallons for Phase 1, 701,075 gallons for Phase 2, or 1,585,418 gallons average for the years both phases are under construction. The exact timing and duration of construction phases are currently unknown and would depend on various market factors. As discussed in the Project Description, Phase 1 of the proposed Project is planned to be developed in phases over a 46 year period with site construction of 18 years, Phase 2 being developed over a 23 year period with site construction of 8 years, the start period after Phase 1 starts is undetermined, whereas the overall proposed project will be developed over the 46 years of Phase 1 with site construction of 22 years. The modeled construction timing and phasing is conservative, but represents a realistic worst-case scenario. As such, the analysis accounts for minor modifications as project plans evolve from conceptual planning to final mapping. If construction phases start at a later time, or phases have a longer duration, construction fuel consumption would be lower on an annual basis because the intensity of construction activities would be lower and spread out over a longer period of time. Construction equipment in future years would also be required to comply with more stringent fuel efficiency standards. Project construction fuel demand would have a lower effect on regional energy supplies.

Off-Road Diesel Construction Equipment

The construction diesel usage associated with the off-road construction equipment is calculated based on CalEEMod emissions outputs and conversion ratios from the Climate

Table 11 Project Energy Consumption during Construction (Phase 1, 2 and Combined)

Phase 1 – 46/18 Years [d] **Phase 2 – 23/8 Years** [d] **Combined – 46/22 Years** [d]

Source	Vehicle Miles Travelled (VMT) Total Annual [d]	Project Construction Usage Total Annual [d]	Kern County Annual Energy Consumption	Percentage Increase Countywide Total Annual [d]
Electricity Use		**Megawatt Hours (MWH)**		
Water Consumption-Phase 1 [a]		1,476.0	15,942,398	-
		82.0		0.00051%
Water Consumption-Phase 2 [a]		282.9		-
		35.4		0.00022%
Construction Electricity Total-Combined		**1,758.9**		**-**
		80.0		**0.00050%**
Diesel Use	**Miles**	**Gallons**		
Phase 1[d]: On-Road Construction Trips [b]	6,546,540	29,270,588	312,996,641	-
	363,697	1,626,144		0.5195%
Off-Road Construction Equipment [c]	943,800	1,495,440		-
	52,433	83,080		0.0265%
Construction Diesel Total	**7,490,340**	**30,766,028**		-
	416,130	**1,709,224**		**0.5461%**
Phase 2[d]: On-Road Construction Trips [b]	2,508,792	5,608,598		-
	313,599	701,075		0.2240%
Off-Road Construction Equipment [c]	876,600	747,720		-
	109,575	93,465		0.0299%
Construction Diesel Total	**3,385,392**	**6,356,318**		-
	423,174	**794,540**		**0.2538%**
Combined[d]: On-Road Construction Trips [b]	9,055,332	34,879,185		-
	503,074	1,585,418		0.5065%
Off-Road Construction Equipment [c]	1,820,400	2,243,160		-
	101,133	101,962		0.0326%
Construction Diesel Total	**10,875,732**	**37,122,345**		-
	604,207	**1,687,379**		**0.5391%**
Gasoline Use	**Miles**	**Gallons**		
On-Road Construction Trips-Phase 1 [b]	51,476,880	77,491,159	437,374,947	-
	3,431,792	4,305,064		0.9843%
On-Road Construction Trips-Phase 2 [b]	19,845,840	14,858,096		-
	2,480,730	1,857,262		0.4246%
Construction Gasoline Total-Combined	**71,322,720**	**92,349,256**		-
	3,962375	**4,197,693**		**0.9597%**

Notes:

a. Construction water use estimated based on acres disturbed per day per construction sequencing and estimated water use per acre (AWMA 1992).

b. On-road mobile source fuel use based on vehicle miles traveled (VMT) from CalEEMod and fleet-average fuel consumption in gallons per mile from EMFAC2017. Electricity demand based on VMT and calculated average electric vehicle fuel economy for 2015 models (in kWh per mile) from the DOE Fuel Economy Guide.

c. Construction fuel consumption was calculated based on CalEEMod emissions outputs and conversion ratios from the Climate Registry.

d. Estimated construction for Phase 1: 18 years, Phase 2: 8 years, Combined: 22 years. Phased, non-consecutive, estimated completion of construction for Phase 1: 46 years, Phase 2: 23 years.
Abbreviations:
CalEEMod: California Emission Estimation Model; EMFAC: Emission Factor Model 2017; kWh: kilowatt-hour; MWh: megawatt-hour.
Sources: AWMA, 1992; DOE 2016; USEPA 1996; CARB 2017

Registry. As summarized in Table 11, the annual diesel consumption associated with off-road construction equipment is approximately 83,080 gallons for Phase 1, 93,465 gallons for Phase 2, or 101,962 gallons average for the years both phases are under construction.

PETROLEUM-GASOLINE FUEL USAGE

On-Road Gasoline Construction Trips

The gasoline usage associated with on-road construction mobile trips is calculated based on VMT from vehicle trips (i.e., worker, vendor, and hauling), the CalEEMod default gasoline fleet percentage, and vehicle fuel efficiency in miles per gallon using the same methodology as the construction on-road trip diesel usage calculation discussed above. As summarized in Table 11, the total gasoline consumption associated with on-road construction trips would be approximately 4,305,064 gallons for Phase 1, 1,857,262 gallons for Phase 2, or 4,197,693 gallons average for the years both phases are under construction.

CONSTRUCTION ANALYSIS

Construction activities for the proposed Project are needed to grade and modify the approximate 746 acre site for the development of a light to medium industrial park (SI/M-2/PD) would occur over several phases over a forty-six-year period and energy use is shown in Table 11, Project Energy Consumption during Construction. The 533.84 acre Phase 1 of the proposed Project is planned to be developed in phases over a 46 year period with site construction of 18 years, the 204.64 acre Phase 2 being developed over a 23 year period with site construction of 8 years, the overall proposed project will be developed over the 46 years of Phase 1 with site construction of 22 years. Although the specific layout for the proposed uses are unknown (a preliminary project layout with unmitigated impacts is shown in Appendix D), the uses would be as listed above and the approximate construction period used for analysis purposes represents the most conservative construction phasing impacts). Construction would include the use of fuels and electricity to operate equipment and machinery including graders, scrapers, and other earthmoving equipment, employee vehicles needed for transportation to and from the project site, operation of hand tools, and other common equipment used on construction sites.

Large-scale construction activities can consume a substantial amount of electricity, but the exact level of consumption will vary on a case by case basis depending on the nature and extent of the activities. While smaller scale projects will typically incur fewer construction related energy costs, due to increasing transportation costs and fuel prices and the overall increase in expense of energy needed to run machinery and perform necessary tasks, these larger-scale construction activities strive to be energy efficient, in part, because contractors and owners have a strong financial incentive to avoid wasteful, inefficient, and unnecessary consumption of energy. There is growing recognition among developers and retailers that sustainable construction is not prohibitively expensive, and that there is a significant cost-savings potential in green building practices and materials. Substantial reductions in energy inputs for construction materials can be achieved by selecting building materials composed of recycled materials that require substantially less energy to produce than non-recycled materials. The incremental increase in the use of energy from the proposed Project for construction materials such as asphalt, steel, concrete, pipes, and manufactured or processed materials (e.g., lumber and gas) would not substantially increase demand for energy compared to overall local and regional demand for construction materials. It is reasonable to assume that production of building materials such as concrete, steel, etc., would employ all available and reasonable energy conservation practices in the interest in minimizing the cost of doing business.

As indicated in the environmental setting above, Kern County consumed 15,942,398 MWh of electricity in 2018 (CEC, 2020c). The proposed Project is estimated to annually consume 82 MWh of electricity in Phase 1, 35.4 MWh of electricity in Phase 2, and an 80 MWh average of electricity for the years both phases are under construction through water consumption which would represent approximately 0.00051%, 0.00022%, and 0.00050% of the County's electricity use, respectively. This consumption would cease upon completion of construction activities. Therefore, it is anticipated that construction electricity consumption associated with the proposed Project would not be inefficient, wasteful, or unnecessary.

Additionally, in 2020, Kern County was projected to consume approximately 437,374,947 gallons of gasoline and 312,996,641 gallons of diesel fuel. Kern County occupies approximately 8,161 square miles and has an estimated population of 927,500 people (KCOG 2020b). The proposed Project would require the annual consumption of approximately 1,709,224 gallons of diesel in Phase 1, 794,540 gallons of diesel in Phase 2, and 1,687,379 gallons average of diesel for the years both phases are under construction. The proposed Project would require the annual consumption of approximately 4,305,064 gallons of gasoline in Phase 1, 1,857,262 gallons of gasoline in Phase 2, and average 4,197,693 gallons of gasoline for the years both phases are under construction. As described above, the proposed Project's fuel use from the entire construction period would increase fuel use in the Kern County by approximately 0.55, 0.25 and 0.54 percent for diesel and 0.98, 0.42 and 0.96 percent for gasoline. Based on

the total Project's relatively low construction fuel use proportional to annual State and County use, the Project would not substantially affect existing energy fuel supplies or resources. As noted above, fuel consumption is based on a conservative construction phasing and conservative estimates for annual construction fuel consumption. Longer phases would result in lower construction intensity and a lower annual fuel consumption, resulting in lower annual demand on energy supplies. Additionally, use of construction fuel would cease once the Project is fully developed. Additionally, it can be expected that over the 46, 23, 46 year Phase 1, Phase 2, combined build-out scenario that equipment and machinery will become more fuel and energy efficient thereby reducing energy consumption over the long term. As such, Project construction would have a nominal effect on the local and regional energy supplies, but would not be inefficient, wasteful, or unnecessary.

Furthermore, there are no unusual project characteristics that would necessitate the use of construction equipment that would be less energy-efficient than at comparable construction sites in the region or state. In addition, some incidental energy conservation would occur during construction through compliance with State requirements that equipment not in use for more than five minutes be turned off. Project construction equipment would also be required to comply with the latest EPA and CARB engine emissions standards. These engines use highly efficient combustion engines to minimize unnecessary fuel consumption. Contractors would be required to minimize air quality emissions of construction activities with mitigation as proposed in the Air Quality Impact Analysis.

Therefore, it is anticipated that construction fuel consumption associated with the proposed Project would not be inefficient, wasteful, or unnecessary. The proposed Project would not substantially affect existing energy or fuel supplies, or resources, and new capacity would not be required. With the listed mitigation, impacts would be less than significant in this regard.

Operations (Long-Term)

The energy consumption associated with operation of uses pursuant to the proposed Project would include building electricity and water, natural gas usage, as well as fuel usage from on-road vehicles. The methodology for each category is discussed below. The values of this energy resources analysis is consistent with the analysis presented in the Air Quality Impact Analysis (AQIA) prepared for the proposed project, including GHG emissions. Quantifications of operational energy consumption are provided for the complete buildout of each phases of the proposed Project; 7,242,106 sf in Phase 1 and 1,544,628 sf in Phase 2. All facilities are conservatively assumed to operate 365 days per year, realistically, some may operate only 260 days per year. The project's energy consumption would not be wasteful, inefficient or unnecessary. The project related

emissions will be necessary for operations and these will meet all of the current California Green Code requirements at the time of development.

ELECTRICITY USAGE

The electricity usage associated with operation of the proposed Project is based on CalEEMod defaults for the746 acre light to medium industrial park (SI/M-2/PD) site. The proposed project would occur over several phases over a forty-six year period. As summarized in Table 12, Project Annual Energy Consumption during Operations, the buildings would increase electrical demand approximately 76,056 MWh per year for Phase 1, 23,182 MWh per year for Phase 2, and 99,238 MWh per year for both phases.

NATURAL GAS USAGE

The methodology used to calculate the natural gas usage associated with the building envelopes constructed pursuant to the proposed Project is based on CalEEMod default usage rates. As summarized in Table 12, Project Annual Energy Consumption during Operations, the Phase 1 building area would use 158,227,500 thousand British Thermal Units (kBTU) (1,582,653,254 therms) of natural gas per year, the Phase 2 building area would use 47,292,500 kBTUs (473,038,056 therms) of natural gas per year, and the total proposed project building area would use 205,520,000 kBTU (2,055,691,310 therms) of natural gas per year.

PETROLEUM FUEL

The gasoline and diesel usage associated with on-road vehicular trips is calculated based on total VMT from the CalEEMod analyses, as well as the average fuel efficiency from EMFAC2017 model. The EMFAC2017 fuel efficiency data incorporates the Pavley Clean Car Standards and the Advanced Clean Cars Program. As summarized in Table 12, Project Annual Energy Consumption during Operations, the total gasoline and diesel consumption associated with on-road trips would be approximately 2,798,377 gallons per year and 3,273,594 gallons per year for Phase 1, respectively, approximately 814,148 gallons per year and 1,122,843 gallons per year for Phase 2, respectively, and approximately 3,612,524 gallons per year and 4,396,436 gallons per year for total proposed project, respectively.

OPERATIONS ANALYSIS

Operation of uses implemented pursuant to the proposed Project would consume approximately 76,056 MWh of electricity annually in Phase 1, 23,182 MWh of electricity in Phase 2 and 99,238 MWh of electricity for the total proposed Project. The proposed project would annually consume approximately 158,227.5 MM BTUs of natural gas in

Phase 1, 47,292.5 MM BTUs of natural gas in Phase 2, and 205,520 MM BTUs of natural gas for the total proposed Project. Project operations would annually consume approximately 3,273,594 gallons of diesel and 2,798,377 gallons of gasoline in Phase 1, 1,122,843 gallons of diesel and 814,148 gallons of gasoline in Phase 2, and 4,396,436 gallons of diesel and 3,612,524 gallons of gasoline for the total proposed Project.

Table 12 Project Annual Energy Consumption during Operations

Source	Vehicle Miles Travelled (VMT)	Project Operational Usage	Kern County Annual Energy Consumption	Percentage Increase Countywide
Electricity Use		**Megawatt Hours (MWH)**		
Buildings Phase 1 [a]		76,056	15,942,398	0.4771%
Phase 2 [a]		23,182		0.1454%
Total Electricity Use		**99,238**		**0.6225%**
Natural Gas Use		**MM BTUs/year**		
Buildings Phase 1 [a]		158,227.5	245,494,392	0.0645%
Phase 2 [a]		47,292.5		0.0193%
Total Natural Gas Use		**205,520.0**		**0.0837%**
Diesel Use - Distribution	**Miles**	**Gallons**		
Phase 1 [b]	26,188,750	3,273,594	312,996,641	1.0459%
Phase 2 [b]	8,982,741	1,122,843		0.3587%
Total Project Diesel Use:	**35,171,491**	**4,396,436**		**1.4046%**
Gasoline Use	**Miles**	**Gallons**		
Phase 1: Distribution [b]	28,168,875	1,408,444	437,374,947	0.3220%
Warehouse [b]	27,798,656	1,389,933		0.3178%
Total Phase 1	**55,967,531**	**2,798,377**		**0.6398%**
Phase 2: Distribution [b]	9,924,834	496,242		0.1135%
Warehouse [b]	6,358,118	317,906		0.0727%
Total Phase 2	**16,282,952**	**814,148**		**0.1861%**
Total Gasoline Use: Distribution [b]	**38,093,709**	**1,904,685**		**0.4355%**
Warehouse [b]	**34,156,774**	**1,707,839**		**0.3904%**
Total Project Gasoline Use [b]	**72,250,483**	**3,612,524**		**0.8260%**

Notes:

a. The electricity and natural gas usage are based on project-specific estimates and CalEEMod defaults.

b. Calculated based on the mobile source fuel use based on vehicle miles traveled (VMT) and fleet-average fuel consumption (in gallons per mile) from EMFAC2017. For electric vehicles, model year 2015 electric vehicle fuel economy is used from the DOE Fuel Economy Guide. 365 days per year operations assumed.

Abbreviations: CalEEMod: California Emission Estimation Model; EMFAC2017: California Air Resources Board Emission Factor Model; kBTU: thousand British Thermal Units; kWh: kilowatt-hour; MWh: Megawatt-hour.

Kern County consumed 15,942.4 MWh of electricity in 2018 (CEC, 2020c). The proposed Project's operational electricity consumption would represent 0.48, 0.15 and 0.62 percent of the electrical energy consumption in Kern County for Phase 1, Phase 2 and the total proposed Project, respectively. Regarding natural gas, Kern County consumed 2,455.5 million therms (or

245,494 million kBTUs) of natural gas in 2018. Therefore, the proposed Project's operational natural gas consumption would represent 0.065, 0.019 and 0.084 percent of the natural gas consumption in the County for Phase 1, Phase 2 and the total proposed Project, respectively, and not posing an inefficient, wasteful or unnecessary energy consumption comparatively. Off-site energy-related improvements will be required such as a natural gas pressure reducing station, gas main and laterals, and a new PG&E electrical substation with distribution, as previously discussed in Section 1.2. The new energy infrastructure designed and built with these improvements will be sufficient in supporting the Project's energy capacity needs. Additional energy capacity would not be necessary with the improvements, based upon the energy consumption required for the Project.

In 2019, Californians consumed approximately 15,380,304,831 gallons of gasoline and approximately 3,048,057,463 gallons of diesel fuel. Kern County's projected annual gasoline fuel use in 2020 is 437,374,947 gallons and the projected diesel fuel use is 312,996,641 gallons. Expected proposed Project operational use of gasoline and diesel would represent 0.64, 0.19 and 0.83 percent of current gasoline use and 1.05, 0.36 and 1.40 percent of current diesel use in the County.

The non-transportation project energy uses do not exceed one percent of current Kern County energy uses. Therefore, the proposed Project operations of the buildings would not substantially affect existing energy supplies or resources. The buildings and operations within the buildings of the proposed Project would comply with applicable energy standards and new capacity would not be required. Impacts would be less than significant in this regard.

With respect to the transportation project energy uses, the gasoline fuel uses associated with the proposed Project do not exceed one percent of Kern County's current use. Impacts would be less than significant in this regard. However, the diesel fuel uses associated with the proposed Project do exceed one percent of Kern County's current use, and without mitigation, the impacts would be potentially significant.

ENERGY EFFICIENCY MEASURES

Expected Mitigation Measures will require the proposed Project to be designed to include various design features that would improve energy efficiency but at this time, the exact level of design and implementation is not yet know. This is due in part because the final designs of the proposed Project have not been developed and over the expected forty-six year proposed project duration, it is not known what new technology will become available. Over the life of project construction, the proposed Project would promote and encourage green building practices to encourage innovative and sustainable design and construction techniques that reduce energy consumption. Therefore, benefits associated

with these have not been quantified, which provides a conservative (or "worst case") estimate of analyzed impacts.

As discussed above, California's Energy Efficiency Standards for Non-Residential Buildings create uniform building codes to reduce California's energy consumption, and provide energy efficiency standards for residential and non-residential buildings. These standards are incorporated within the California Building, Energy and Green Codes and are expected to substantially reduce electricity and natural gas use. For example, requirements for energy efficient lighting, heating and cooling systems, and green building materials are expected to save additional electricity and natural gas. These savings are cumulative, increasing as years go by. The proposed Project will expect to incorporate energy conservation and design features such as building orientation, encouraging solar panel installation, including bicycle friendly features, installing LED lights, and including electric vehicle (EV) charging stations.

Title 24 measures would be used to minimize overall energy consumption. Renewable energy generation would be required and shortfalls in renewable energy generation can be offset with excess renewable energy generation from other buildings or common solar arrays. Regarding water energy conservation, the proposed Project would incorporate water-conserving landscaping on the site and reduce lawn and turf areas. Water-efficient irrigation controls would also be used in landscape areas as well as recycled water for irrigation. Buildings would incorporate water-efficient fixtures and appliances, to comply with Title 24.

Furthermore, the electricity provider, PG&E, is subject to California's Renewables Portfolio Standard (RPS). The RPS requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020 and to 50 percent of total procurement by 2030. SB 100 revised the goal of the program to achieve the 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target by December 31, 2030. SB 100 also established a further goal to have an electric grid that is entirely powered by clean energy by 2045. Renewable energy is generally defined as energy that comes from resources which are naturally replenished within a human timescale such as sunlight, wind, tides, waves, and geothermal heat.

Mitigation Measures

The proposed Project, may to the extent feasible and to the satisfaction of the Kern County Planning Department consider incorporating the following energy conservation and design features to reduce the level of energy consumption of the proposed Project. The following list is non-inclusive of all potential mitigation that may be included and may

be added to at the discretion of Kern County as new technologies become available and feasible to be incorporated:

- Solar photovoltaics (PV) mounted on proposed structure's roofs to provide a portion of the future electrical demand and offset emissions from fossil fuel fired power plants. Encourage green building measures that contribute to reducing energy use to 25-30% less than Title 24 requirements;

- Depending on the usage, portions of parking lots may be covered, and the parking lot roofs contain solar PV;

- Solar water heating to provide non-industrial water heating;

- Ground mounted solar PV arrays to provide a portion of the estimated electrical demand for the proposed Project;

- Commercial buildings shall be designed to meet LEED Silver standards;

- Include passive solar design and site orientation principles during the site design to take advantage of the sun in the winter for heating and reduce heat gain and cooling needs during the summer;

- Include vertical landscape elements such as trees and large shrubs to provide shade on the southern and western building facades to reduce energy required for heating and cooling;

- Roofs on all buildings shall be of a light color to reduce heat generation;

- Portions of parking lots (drive aisles) may be paved with concrete versus asphalt to reduce initial solar reflectance;

- Use LED lighting fixtures on all indoor and exterior site lighting;

- Use LED lighting fixtures on all public streets and site lighting;

- Include dedicated EV parking at a rate more than required by current codes;

- Include Level 2 EV charging facilities to encourage the usage of zero emission vehicles, including trucks as they and statewide charging stations for trucks become available; include additional facility conduits for dedicated 208/240 volt branch circuits to expand if the demand expands.

- Include EV charging facilities to encourage the utilization of electric forklifts, electric trucks and other material handling vehicles to reduce usage of fossil fuels;

- Encourage the usage of high efficiency electric motors for the industrial uses.

- Encourage the operations workers to car-pool to work or to retail establishments for lunch, or to remain on-site during lunch breaks.

- Coordinate with Golden Empire Transit (GET) to evaluate the feasibility of providing bus service to the development;

- Coordinate with GET to evaluate the feasibility of purchasing an electric bus to provide emission free transit service to the development;

- Design circulation features into the public street improvements to include bus stops and/or other public transportation;

- Include bicycle friendly features to reduce Vehicle Miles Traveled (VMT) and to encourage non-vehicular transportation;

- Provide for a maximum travel speed of 30 mile per hour on the public roads throughout the development to reduce transportation fuel usage and encourage the safe usage of bicycles;

- Interior appliances shall carry the EPA's ENERGYSTAR© certification as applicable.

Level of Significance after Mitigation

As discussed above, the proposed Project would be required to adhere to all Federal, State, and Local requirements for energy efficiency, including the latest Title 24 standards. The identified significant impact related to diesel fuel consumption will be mitigated through encouraging usage of high efficiency electric motors for all industrial uses and by providing EV chargers throughout the project site. These mitigation measures will reduce diesel fuel consumption to a less than significant impact. Considering these requirements in addition to the potential mitigation described above, the Project would not result in the inefficient, wasteful, or unnecessary use of building energy. Therefore, potential impacts are less than significant.

Criteria 2: Would The Project Conflict with or Obstruct a State or Local Plan for Renewable Energy or Energy Efficiency.

At of the time of this writing, the Kern County does not have an adopted Energy Plan. Kern County does have an Energy Element in their General Plan, but focuses primarily on the County's energy resources and municipal measures such as encouraging the County to seek State and federal energy grants, have discussions with various energy industries, and developing long-term compensation for wildlife habitat to name a few. The proposed Project design conforms to, and operation would comply with, State Building Energy Efficiency Standards, appliance efficiency regulations, and green building standards. Conformance to the State requirements would substantially reduce the energy consumption from fossil fuels and shift consumption to renewable sources. Mitigation measures may require design features such as incorporating passive solar design, heat island mitigation, energy efficient low voltage lighting, and encouraging electric trucks, forklifts and other material handling vehicles to name a few. Even with implementation of the various mitigation measures, the project's GHG emissions would not be reduced by more than 29 percent. However, mitigation measures applied to the project would further reduce energy consumption and cumulative contribution impacts to less than significant levels (AQIA, 2020).

The proposed Project would not conflict with or obstruct the implementation of any state or local plan for renewable or energy efficiency. Implementation of the proposed Project would not conflict with existing energy standards, including standards for energy conservation. For example, the California Energy Commission's Renewables Portfolio Standard program will continuously set escalating renewable energy procurement requirements in place for the state's load-serving entities. This program will also ensure the proposed project will meet the required goals for conservation. However, approval of and future implementation of the proposed Project would increase electricity demand over baseline conditions in Kern County. Electric and natural gas services are provided upon demand from consumers and consistent with local, state, and federal regulations, these services are expanded based on demand. As discussed above in Impact Criteria 1, development of the proposed Project would not cause inefficient, wasteful or unnecessary energy use, and impacts would be less than significant with mitigation. Therefore, the project would not conflict with or obstruct state or regional plans and impacts would be less than significant.

Level of Significance after Mitigation

Impacts would be less than significant after mitigation.

Cumulative Impacts

Construction associated with implementation of the proposed Project would result in the consumption of fuel and energy, but it would not do so in a wasteful manner, as discussed above. The consumption of fuel and energy would not be substantial in comparison to statewide electricity, natural gas, gasoline, and diesel demand; refer to Table 11. Initial years of operation associated with implementation of the proposed Project would result in the consumption of fuel and energy, but it would not do so in a wasteful manner, as discussed above. The consumption of fuel and energy would not be substantial in comparison to statewide electricity, natural gas, and gasoline demand; refer to Table 12. As mentioned in Section 1.2, vehicle manufacturers are required to achieve increased miles per gallon rates and annual efficiency gains for light-duty trucks and passenger cars, in accordance with the federal CAFE fleet standards. Additionally, CARB's Advanced Clean Cars program adopted in 2012, requires automakers to control and regulate GHG and criteria pollutant emissions from new passenger vehicles. A reduction in overall smog-forming pollution will be achieved through this program, to reduce wasteful consumption. New capacity or supplies of these energy resources would not be required. As the completed development approaches 7,650,000 sf of installed and operating building space, the consumption of diesel fuel for distribution may cross the 1% threshold used for consideration as wasteful. New capacity or supplies of energy resources would not be required as new technology (i.e. electric trucks) and increased fuel efficiencies for diesel engines will assist in the reduction of the California truck fleet. Additionally, the proposed Project would be subject to compliance with all Federal, State, and local requirements for energy efficiency.

The anticipated project impacts, in conjunction with cumulative development in the site vicinity, would increase urbanization and result in increased energy consumption. Potential land use impacts are site-specific and require evaluation on a case-by-case basis. Each cumulative project would require separate discretionary approval and CEQA assessment, which would address potential energy consumption impacts and identify necessary mitigation measures, where appropriate.

As noted above, except for on the road diesel distribution fuel usage as the proposed project nears 75 percent buildout, the proposed Project would not result in significant energy consumption impacts. The proposed Project would not be considered inefficient, wasteful, or unnecessary with regard to energy. Thus, the proposed Project and identified cumulative projects are not anticipated to result in a significant cumulative impact.

Level of Significance after Mitigation

Impacts would be less than significant.

5.0 Conclusions

Impacts related to energy consumption are considered site specific and are generally mitigated to less than significant levels on a project-by-project basis. In the case of the proposed Project, all potential consumption of energy, with the exception of diesel fuel consumption during the operations after 71 percent of the proposed project is operating, are currently at less than significant levels. With mitigation as described, the consumption of diesel fuel for distribution will also be at less than significant levels.

This Energy Study Report has determined that the proposed project at the Malibu Vineyards Industrial Park would not have a significant impact, either individually or cumulatively, for impacts relating to the energy consumption during the construction or the operation with the incorporation of mitigation measures.

McIntosh & Associates Engineering, Inc. has completed this Energy Study with the best available information at the time the evaluation was performed for proposed project. This report was prepared to satisfy the California Environmental Quality Act Guidelines (CCR Section 15000) Appendix F using current standards of professional care.

McIntosh & Associates Engineering, Inc.

6.0 Resources

- **Auto Alliance.org**

  Advanced Technology Vehicle Sales Dashboard; https://autoalliance.org/energy-environment/advanced-technology-vehicle-sales-dashboard/, Accessed April 7, 2020.

- **California Air Resources Board**

  2020a. EMFAC: Emission Factor Model 2017; https://www.arb.ca.gov/emfac/2017/, Accessed March 11, 2020.

  Climate Change Scoping Plan, December 2008.

  Attachment D-Final Supplement to the AB 32 Scoping Plan-Functional Equivalent Document, August 2011.

  First Update to the Climate Change Scoping Plan, May 2014.

  California's 2017 Climate Change Scoping Plan, November 2017.

  2022b. State of California Air Resources Board, Advanced Clean Cars II Standardized Regulatory Impact Assessment, January 26, 2022; https://dof.ca.gov/wp-content/uploads/Forecasting/Economics/Documents/ACCII-SRIA.pdf, Accessed April 20, 2022.

- **California Department of Tax and Fee Administration (CDTFA)**

  2020a. Fuel Taxes Statistics & Reports; https://www.cdtfa.ca.gov/taxes-and-fees/spftrpts.htm, Accessed 1/27/20, 2/10/20, 3/11/20 & 4/9/20.

- **California Energy Commission (CEC)**

  2020a, 2018 Power Content Label-Pacific Gas & Electric; https://www.energy.ca.gov/sites/default/files/2020-01/2018_PCL_PG_and_E.pdf & Southern California Edison Company; https://www.energy.ca.gov/sites/default/files/2020-01/2018_PCL_Southern_California_Edison.pdf, Accessed February 1, 2020.

  2020b. California Total System Electric Generation; https://ww2.energy.ca.gov/almanac/electricity_data/total_system_power.html, Accessed January 24, 2020.

  2020c. California Energy Consumption Database; http://www.ecdms.energy.ca.gov/, Accessed January 24, 2020.

  2020d. California Natural Gas Pipeline and Station-Facilities Map; https://cecgis-caenergy.opendata.arcgis.com/app/california-natural-gas-pipeline-and-station-web-app, Accessed March 30, 2020.

2020e. California's Petroleum Market; https://www.energy.ca.gov/data-reports/energy-almanac/californias-petroleum-market, Accessed March 31, 2020.

2020f. California Natural Gas Pipeline-GIS data; https:// https://cecgis-caenergy.opendata.arcgis.com/datasets/, Accessed March 30, 2020.

2020g. California Electric Infrastructure-GIS data; https://cecgis-caenergy.opendata.arcgis.com/datasets/, Accessed March 30, 2020.

2020h. Thermal Efficiency of Natural Gas Fired Generation Report-2018; https://ww2.energy.ca.gov/almanac/electricity_data/Thermal_Efficiency_reports.html, Accessed March 31, 2020.

2020i. Transportation Fuel Supply Outlook-2017 – Staff Report, September 2017; https://www.energy.ca.gov/programs-and-topics/topics/energy-assessment, Accessed April 7, 2020.

2020j. Revised Transportation Energy Demand Forecast, 2018-2030 - Staff Report, February 2018; https://www.energy.ca.gov/programs-and-topics/topics/energy-assessment, Accessed April 7, 2020.

2020k. California Retail Fuel Outlet Annual Reporting Results, July 1, 2019; https://ww2.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html, Accessed February 18, 2020.

2020l. 2019 California Energy Efficiency Action Plan-Final Staff Report, November 2019; https://ww2.energy.ca.gov/business_meetings/2019_packets/2019-12-11/Item_06_2019%20California%20Energy%20Efficiency%20Action%20Plan%20(19-IEPR-06).pdf.

2022m. California Energy Commission, Renewables Portfolio Standard Eligibility Ninth Edition (Revised) Commission Guidebook, January 2017; https://www.energy.ca.gov/programs-and-topics/programs/renewables-portfolio-standard/renewables-portfolio-standard, Accessed April 20, 2022.

- **California Gas and Electric Utilities**

  2018 California Gas Report; https://www.socalgas.com/regulatory/documents/cgr/2018_California_Gas_Report.pdf, Accessed February 1, 2020.

- **California Public Utilities Commission (CPUC)**

  2020a, Natural Gas and California; https://www.cpuc.ca.gov/natural_gas/, Accessed March 2020.

- **Center for Sustainable Energy, The (CSE)**

2020a. 2020 CEC IEPR Scoping Comments (ZEV Forecasting); https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2020-integrated-energy-policy-report-update, Accessed April 8, 2020.

- **City of Bakersfield**

  Metropolitan Bakersfield General Plan
  Metropolitan Bakersfield General Plan Map – February 17, 2017
  Metropolitan Bakersfield General Plan Circulation Element Map

  Municipal Service Review, Sphere of Influence Update and Amendment, prepared for Kern County LAFCO, December 2015.

- **City of Shafter**

  City of Shafter; Shafter General Plan Land Use Map; dated April 6, 2005;

  Shafter General Plan – April 2005
  Shafter General Plan Map – Year 2005
  Shafter General Plan Circulation Element Map – MSR Fig 3-7-1

  Municipal Service Review, Sphere of Influence Update and Amendment, prepared for Kern County LAFCO, July 2014.

- **Insight Environmental Consultants/Trinity Consultants**

  2020a, Air Quality Impact Analysis, Malibu Vineyards Light Industrial, Bakersfield, California; Malibu Vineyards, August 2020, AQIA Data for Energy Study_v1.0.xlsx, (Fuel Consumption, Energy Demands and VMTs); Received August 3, 2020.

- **Google Earth**

  (Aerial Photographs)

- **Kern Council of Governments**

  2020a, 2018 Regional Transportation Plan and Sustainable Communities Strategy, August 2018; https://www.kerncog.org/wp-content/uploads/2018/10/2018_RTP.pdf, Accessed January 27, 2020.

  2020b, Regional Growth Forecast for Kern Council of Governments-Methodology and Forecasts 2020 to 2050, December 2019; https://www.kerncog.org/wp-content/uploads/2009/ 10/Kern_2020-2050_Regional_Growth_Forecast.pdf, Accessed April 4, 2020.

2020c, Kern County Electric Vehicle Charging Station Blueprint, May 2019; https://www.kerncog.org/wp-content/uploads/2019/06/EV_Blueprint_2019.pdf, Accessed April 7, 2020.

- **Kern County Planning and Development Services Department**

  (Assessor's Parcel Map Nos. 091-15, -16 & -20, 482-01 & -04)

  (Zoning Maps 80 and 81)

  Kern County Public Works

  Building Inspection Division-Permitting, Non-Residential EVCS Checklist; https://kernpublicworks.com/building-and-development/building-inspection/bulletinsdocumentsforms/

- **Kern County Geographic Information System (GIS)**

  Planning and Public Works information; https://maps.kerncounty.com/H5/index.html?viewer=KCPublic

- **Kern River Gas Transmission Company**

  https://www.kernrivergas.com/, Access March 30, 2020.

- **Mojave Pipeline Operating Company, LLC**

  Mojave pipeline; https://pipeportal.kindermorgan.com/PortalUI/DefaultKM.aspx?TSP=MOJD, Accessed March 31, 2020.

- **Pacific Gas & Electric Company (PG&E)**

  2020a. Company Profile; https://www.pge.com/en_US/about-pge/company-information/profile/profile.page, Accessed March 30, 2020.

  2020b. Company Overview; http://www.pgecorp.com/corp_responsibility/reports/2019/bu01_pge_overview.html, Accessed March 30, 2020.

  2020c. 2018 Annual Joint Report to Shareholders; http://www.pgecorp.com/investors/financial_reports/annual_report_proxy_statement/ar_pdf/2018/2018_Annual_Report.pdf, Accessed March 30, 2020.

  2020d. 2020 CEC IEPR Scoping Comments (PV Forecasting); https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2020-integrated-energy-policy-report-update, Accessed April 8, 2020.

- **Southern California Edison Company (SCE)**

2020a. 2020 CEC IEPR Scoping Comments (ZEV Forecasting); https://www.energy.ca.gov/data-reports/reports/integrated-energy-policy-report/2020-integrated-energy-policy-report-update, Accessed April 8, 2020.

- **Southern California Gas Company (SCG)**

  2020a. SoCalGas Comments on AB 1257 - The Natural Gas Act, 11/15/2019; https://ww2.energy.ca.gov/2019_energypolicy/, Accessed April 8, 2020.

  2020b. SoCalGas Comments on Draft 2019 IEPR, 11/27/2019; https://efiling.energy.ca.gov/GetDocument.aspx?tn=230895&DocumentContentId=62538, and SoCalGas Comments on Final 2019 IEPR, 2/11/2020; https://ww2.energy.ca.gov/2019_energypolicy/documents/final_2019_report_comments.php, Accessed April 9, 2020.

- **State of California**

  California Environmental Quality Act, Statutes & Guidelines (CEQA), California Natural Resources Agency, Sacramento - January 2019.

  AB 32, California Global Warming Solutions Act of 2006.

  SB 32, California Global Warming Solutions Act of 2006: Emissions Limit.

  SB 350, Clean Energy and Pollution Reduction Act of 2015.

  SB 100, California Renewables Portfolio Standard Program: emissions of greenhouse gasses, September 2018.

  2020a. 2018 ZEV Action Plan-Priorities Update, Governor's Working Group on ZEV, September 2018; https://static.business.ca.gov/wp-content/uploads/2019/12/2018-ZEV-Action-Plan-Priorities-Update.pdf, Accessed April 8, 2020.

- **United States Energy Information Administration**

  State Energy Data System; https://www.eia.gov/state/seds/seds-data-complete.php?sid=CA, Accessed January 27, 2020.

  2020a. State Energy Production Estimates 2017, SEDS_Production_Report_2017.pdf; https://www.eia.gov/state/seds/seds-data-complete.php?sid=CA#Production.

  2020b. State Energy Consumption Estimates 2017, SEDS2017.pdf; https://www.eia.gov/state/seds/seds-data-complete.php?sid=CA#Consumption.

  2020c. State Energy Consumption by End-User Sector, 2017 & 2018; https://www.eia.gov/state/?sid=CA.

2020d. State Energy Consumption: 2018 updates; https://www.eia.gov/state/seds/seds-data-fuel.php?sid=CA.

2012 Commercial Buildings Energy Consumption Survey: Building Characteristics Tables, Revised December 20, 2016; https://www.eia.gov/consumption/commercial/data/2012/pdf/user_guide_public_use_aug2016.pdf.

2012 Commercial Buildings Energy Consumption Survey: Water Consumption in Large Buildings Summary, Released February 9, 2017; https://www.eia.gov/consumption/commercial/reports/2012/water/pdf/users%20guide%20to%202012%20water%20public%20use.pdf.

- **United States Department of Energy, Office of Energy Efficiency and Renewable Energy, Vehicle Technologies Office**

  Transportation Energy Data Book, Edition 37; by Oak Ridge National Laboratory, January 2019, https://info.ornl.gov/sites/publications/Files/Pub116893.pdf, Accessed February 1, 2020.

- **United States Department of Transportation - Pipeline and Hazardous Materials Safety Administration (PHMSA)**

  (National Pipeline Mapping System (NPMS) – Kern, California); https://pvnpms.phmsa.dot.gov/PublicViewer/.

  2022. National Highway Traffic Safety Administration, Final Regulatory Impact Analysis: Final Rulemaking for Model Years 2024-2026 Light-Duty Vehicle Corporate Average Fuel Economy Standards, Released March 2022; https://www.nhtsa.gov/sites/nhtsa.gov/files/2022-04/FRIA_CAFE-MY-2024-2026.pdf, Accessed April 20, 2022.

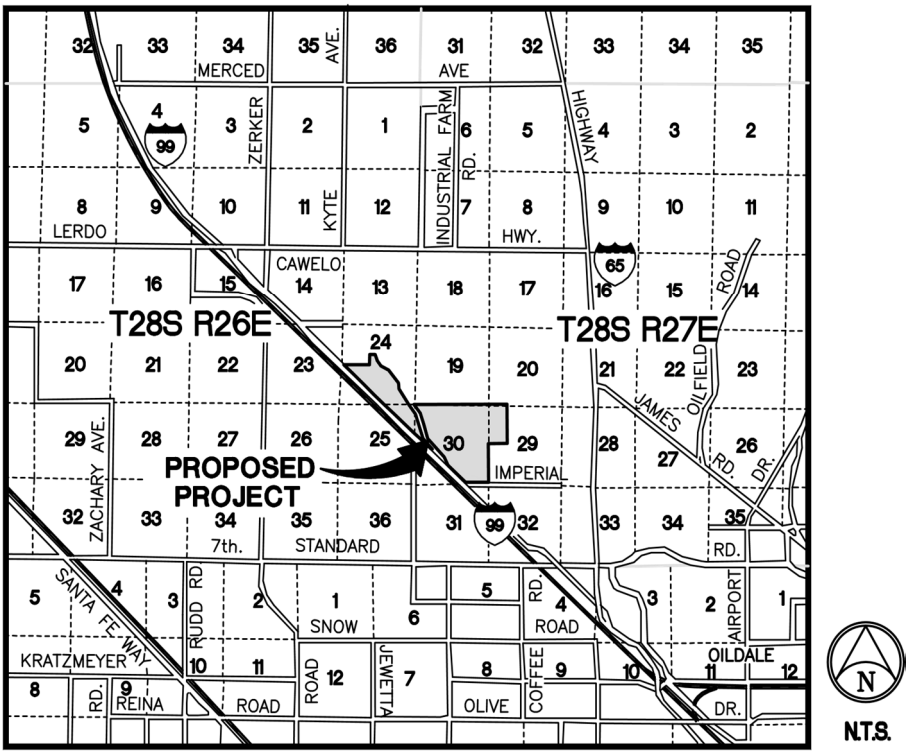
- **Zoom Earth**

  Live Satellite Images - www.mapsm.com & https://zoom.earth/.

APPENDIX A

Figures





PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Project Location Maps

Figure A-1

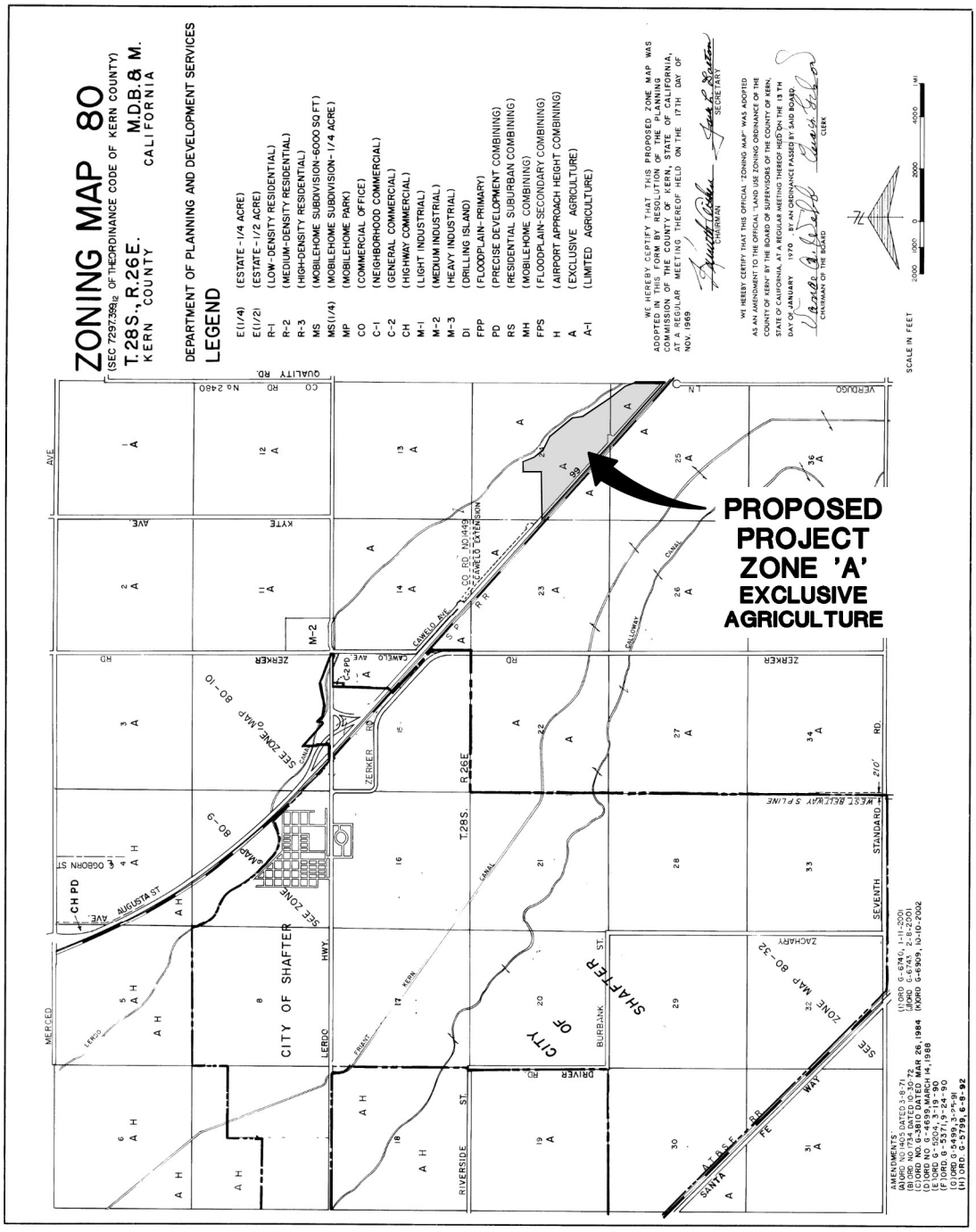


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph Proposed Project Location Map

Figure A-2

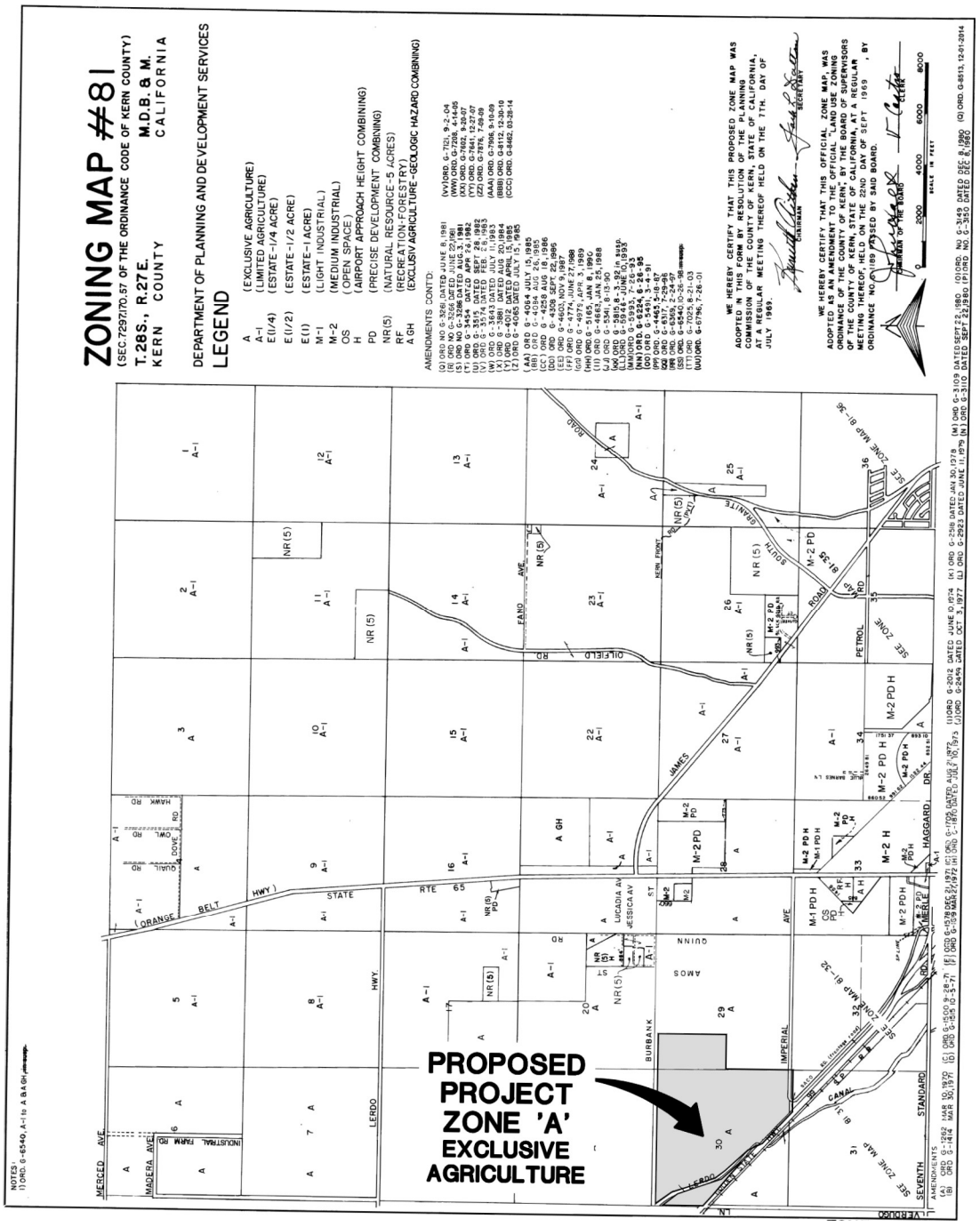


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

County of Kern Zoning Map 80

Figure A-3

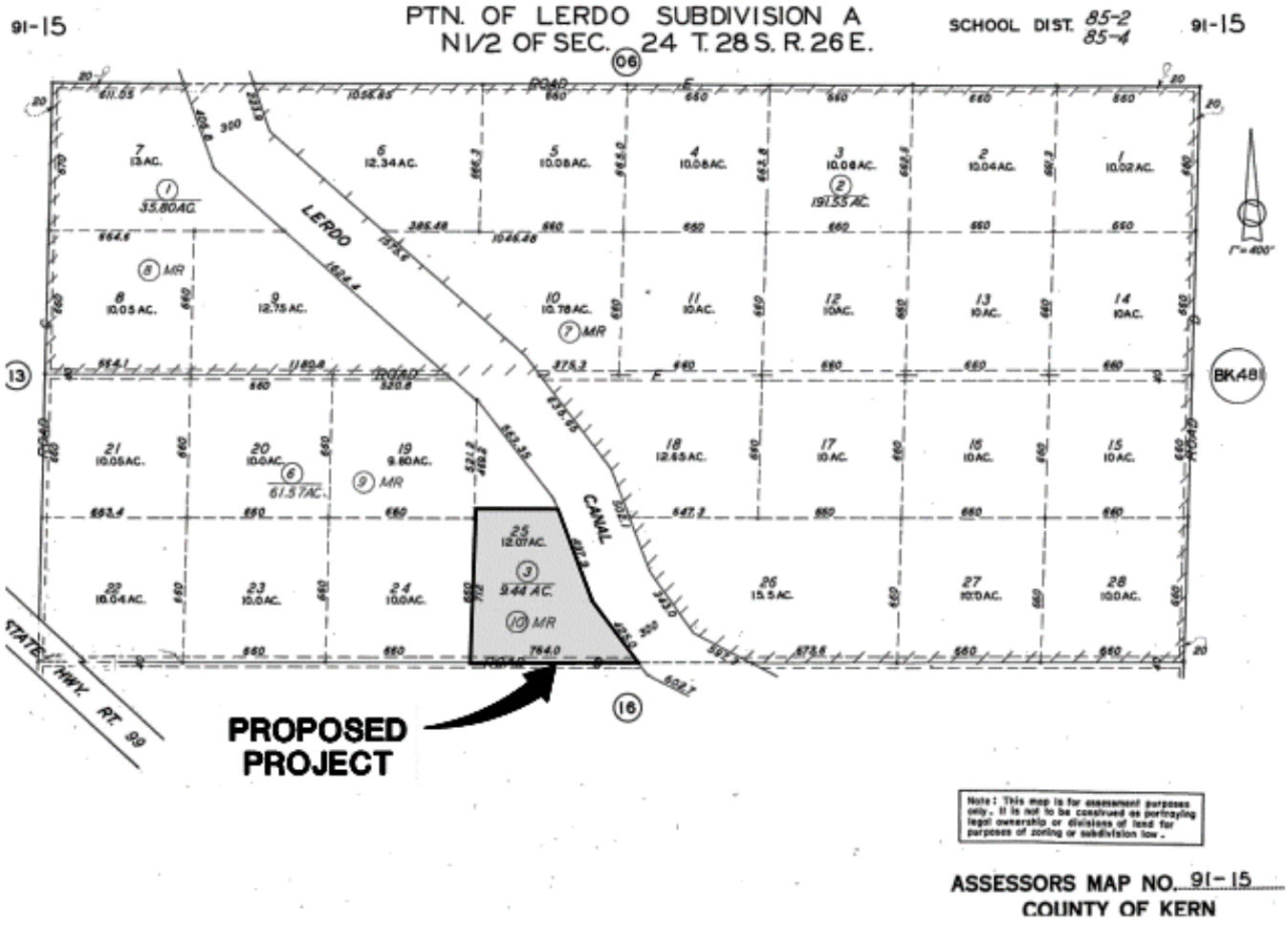


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

County of Kern Zoning Map 81

Figure A-4

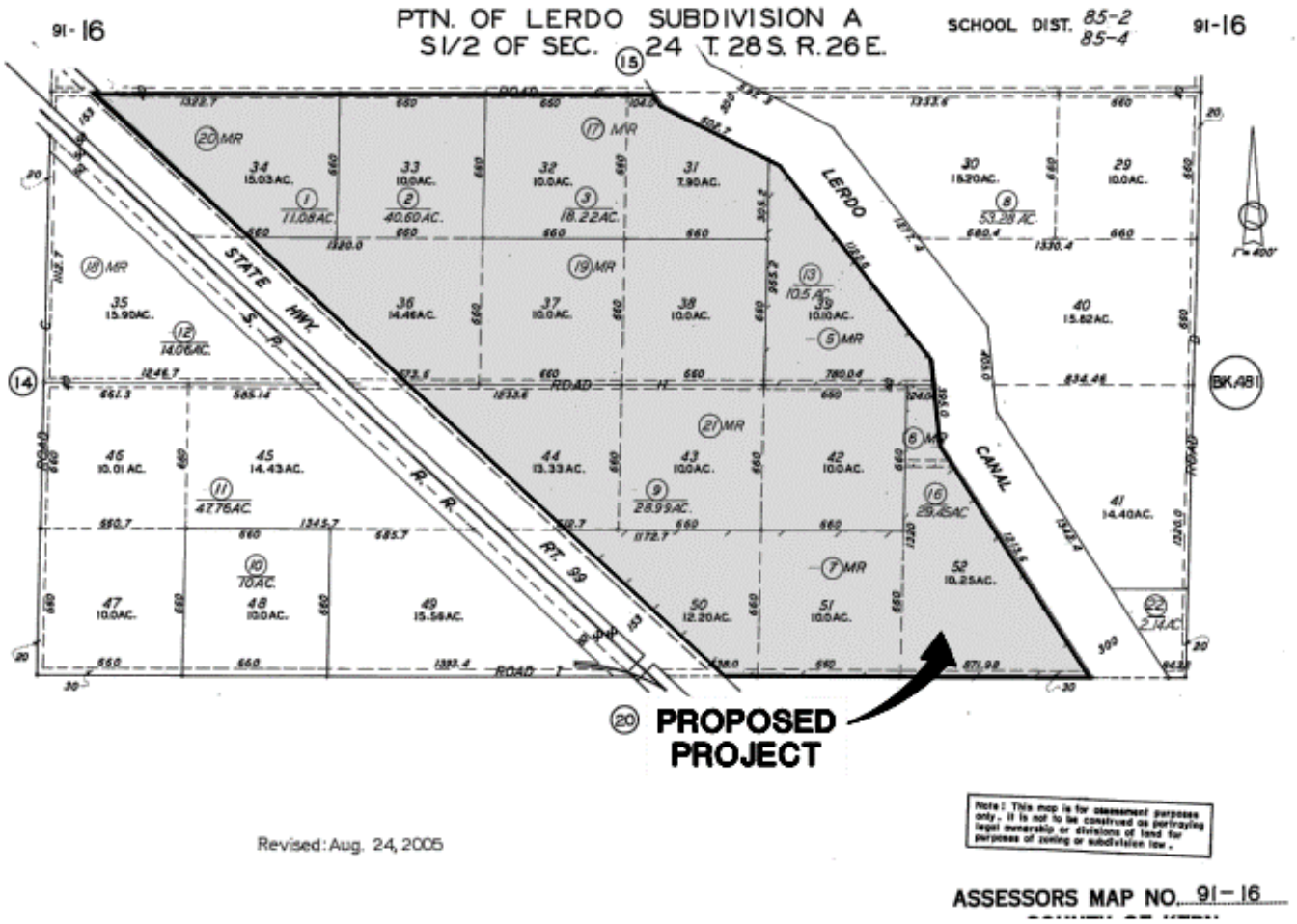


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Assessor's Parcel Map 91-15

Figure A-5

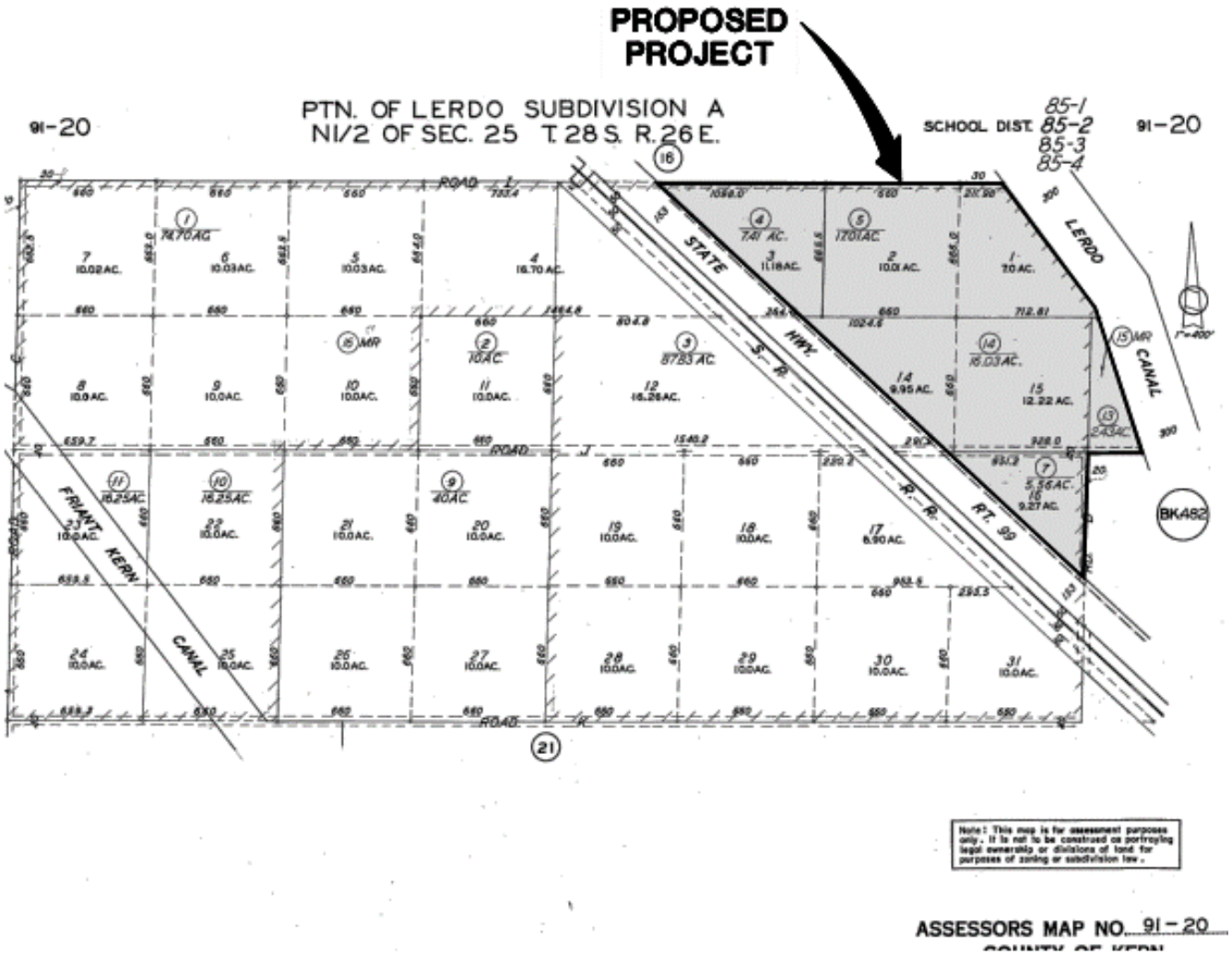


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Assessor's Parcel Map 91-16

Figure A-6

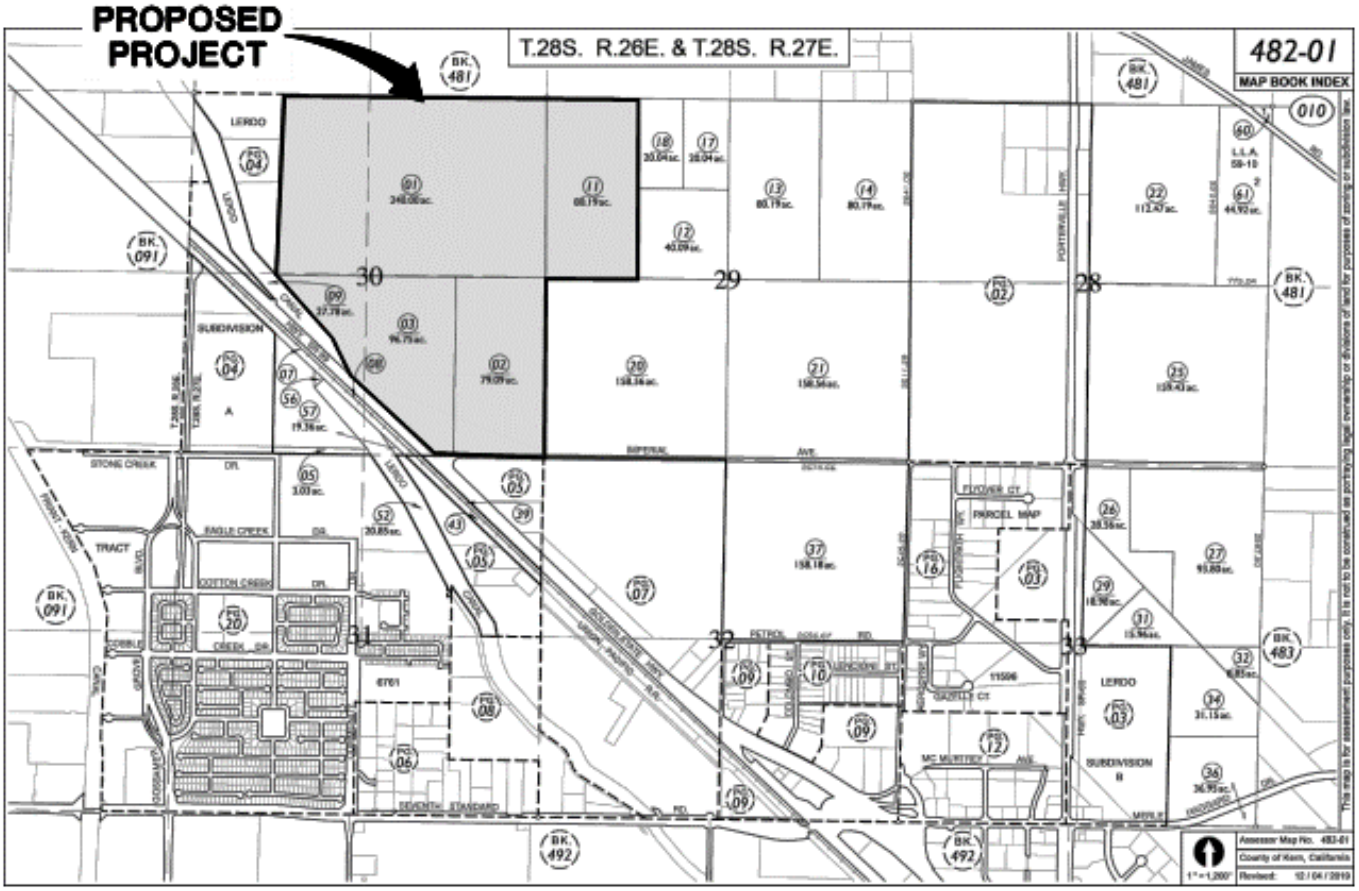


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Assessor's Parcel Map 91-20

Figure A-7

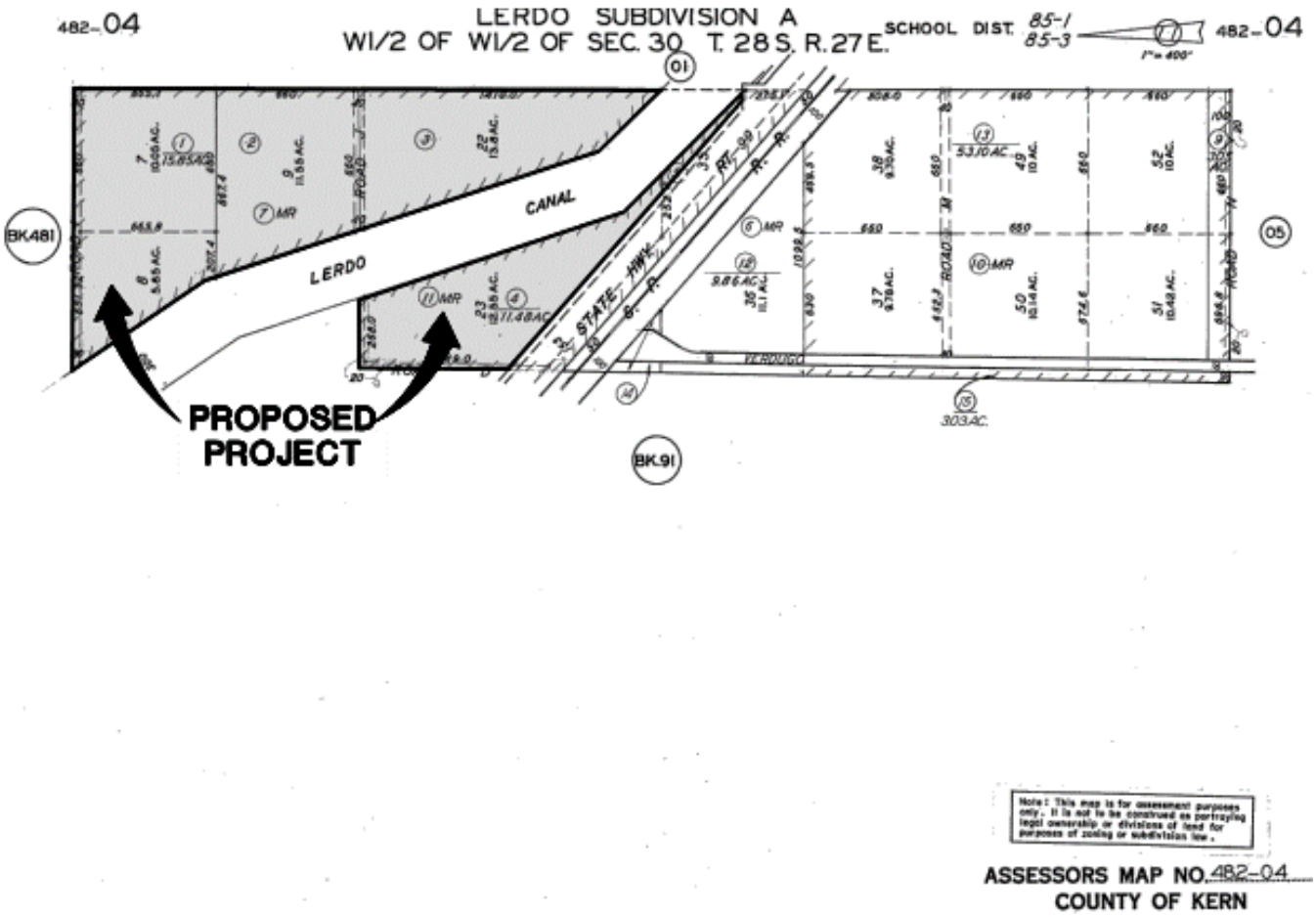


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Assessor's Parcel Map 482-01

Figure A-8



PROPOSED PROJECT

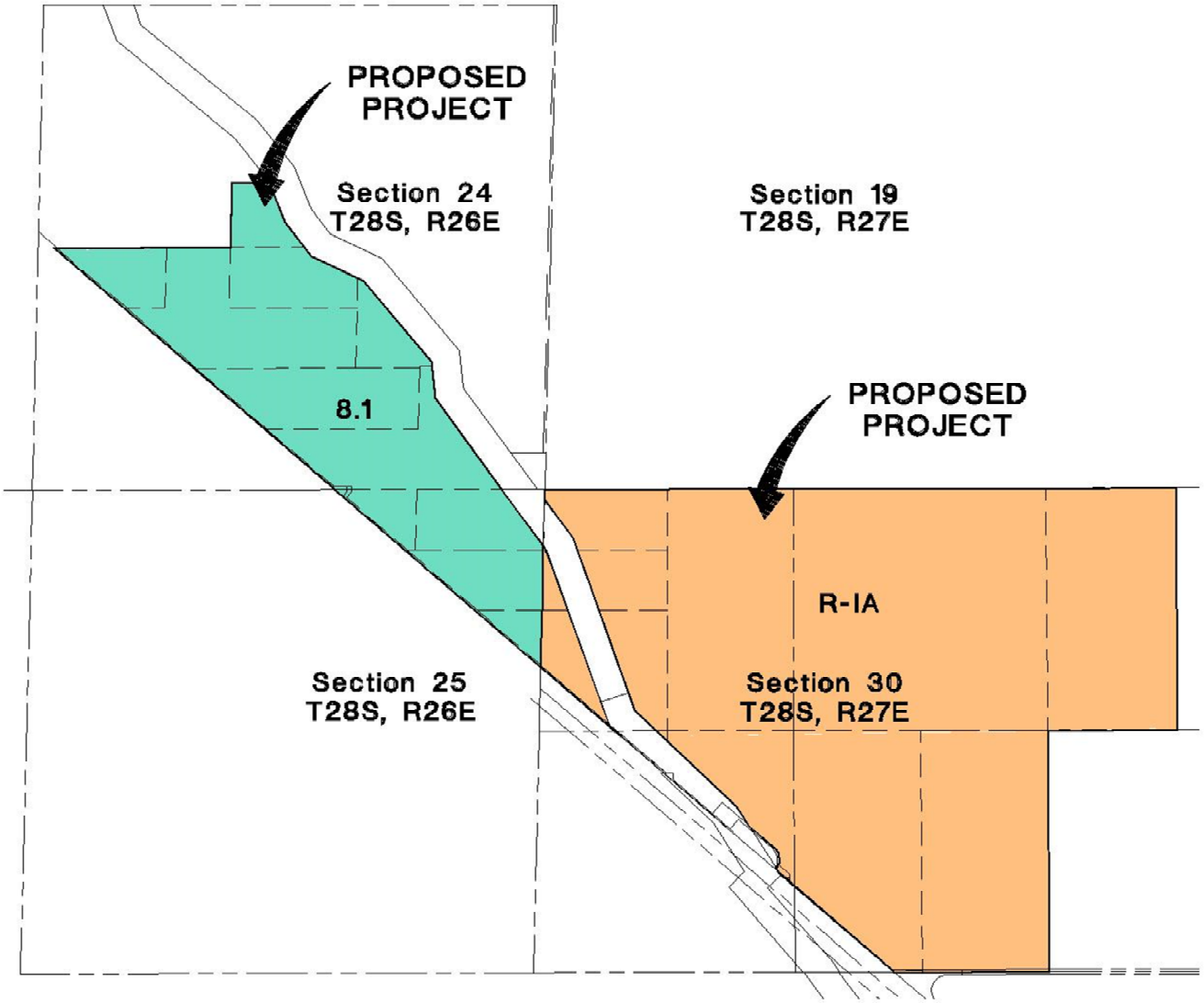
Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Assessor's Parcel Map 482-04

Figure A-9

APPENDIX B

Figures



ZONE LEGEND:

8.1 - INTENSIVE AGRICULTURE

R-IA - INTENSIVE AGRICULTURE

N

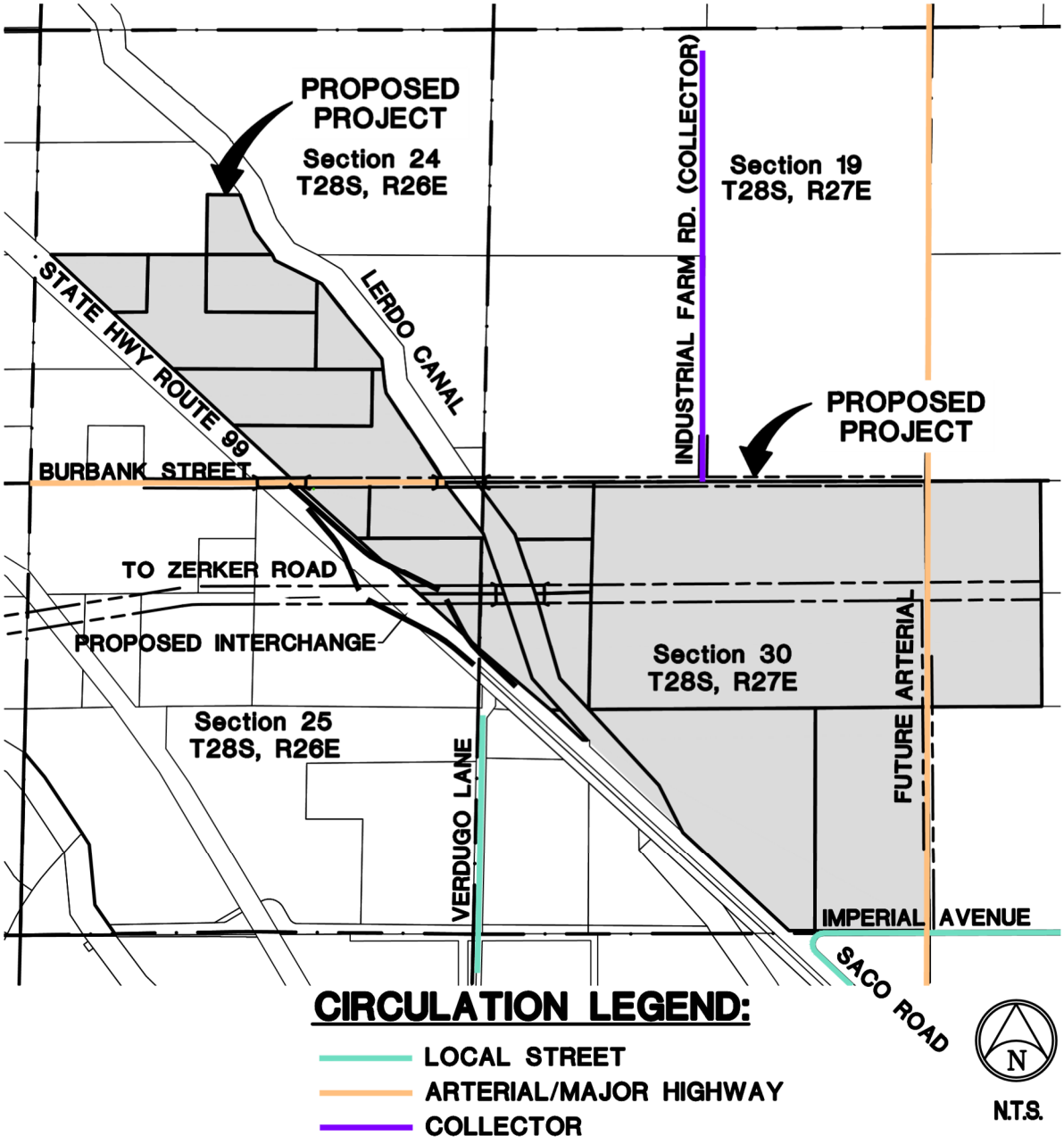
N.T.S.

PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Kern County General Plan

Figure B-1

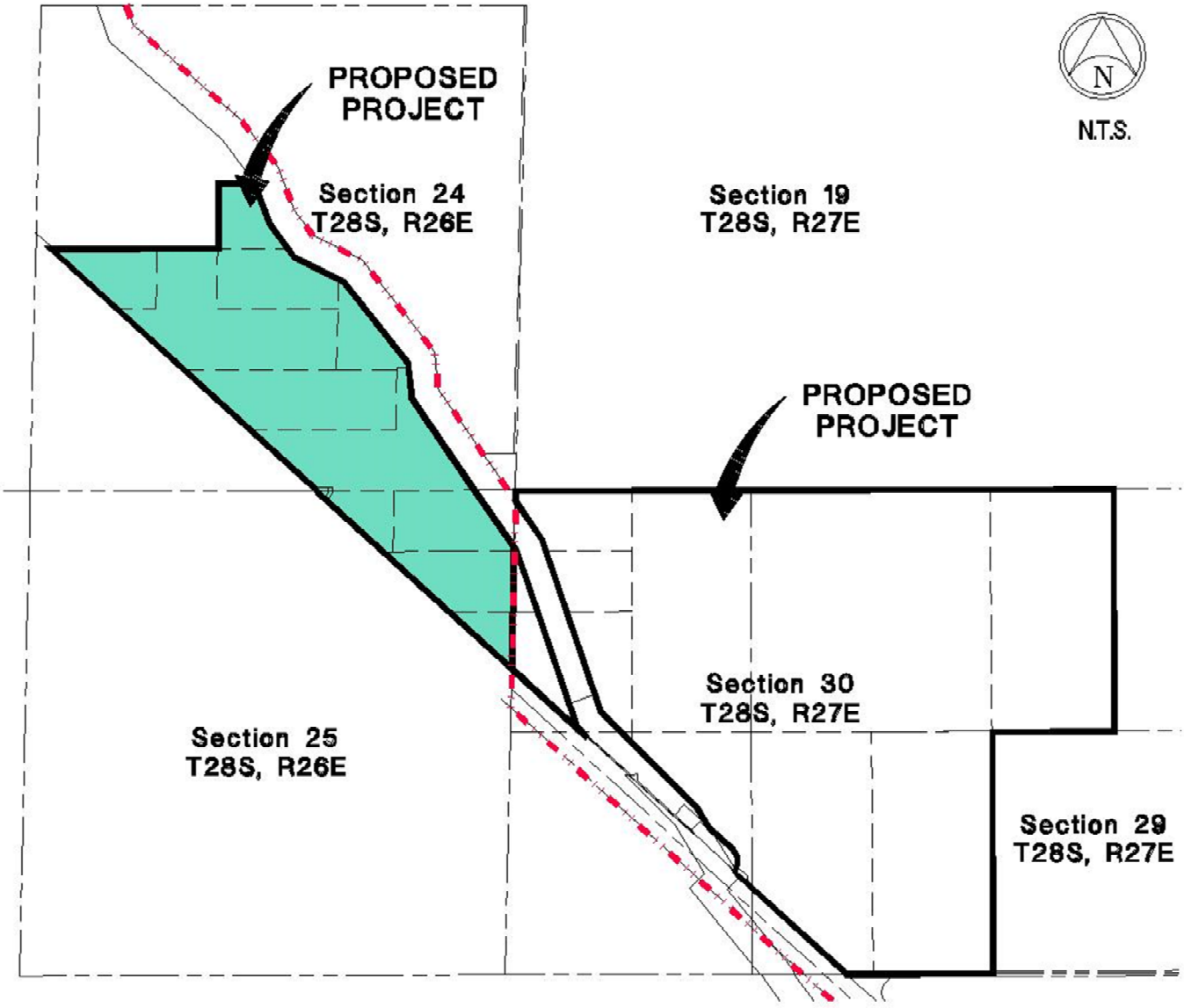


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Kern County Circulation Map

Figure B-2



GENERAL PLAN LAND USE LEGEND:

AGRICULTURE/OPEN SPACE

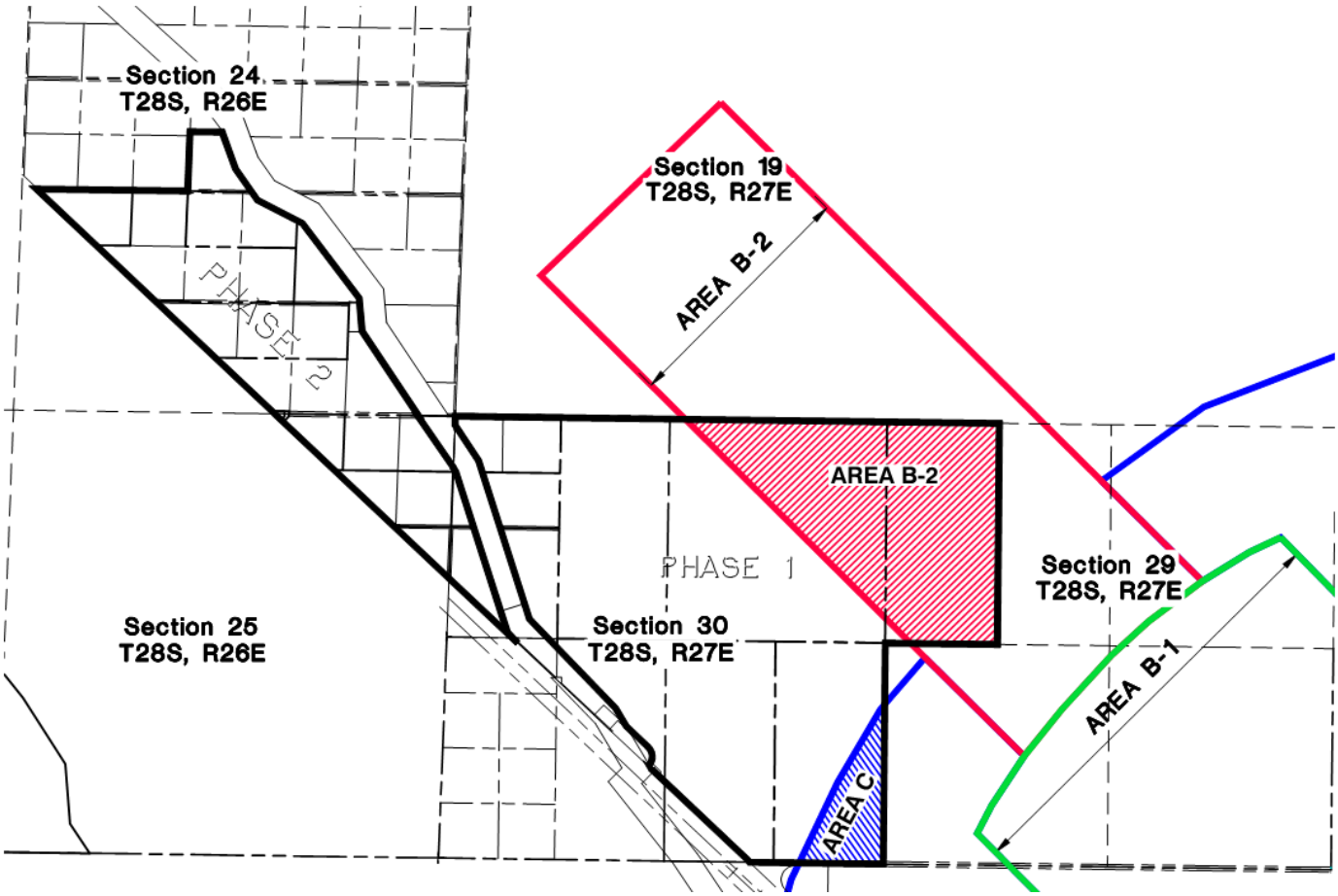
SPHERE OF INFLUENCE

PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

City of Shafter General Plan & Sphere of Influence

Figure B-3



PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Meadows Field Airport Land Use Plan Map

Figure B-4

APPENDIX C

Figures

Existing Utilities

Figure C-1

NATURAL GAS PIPELINES

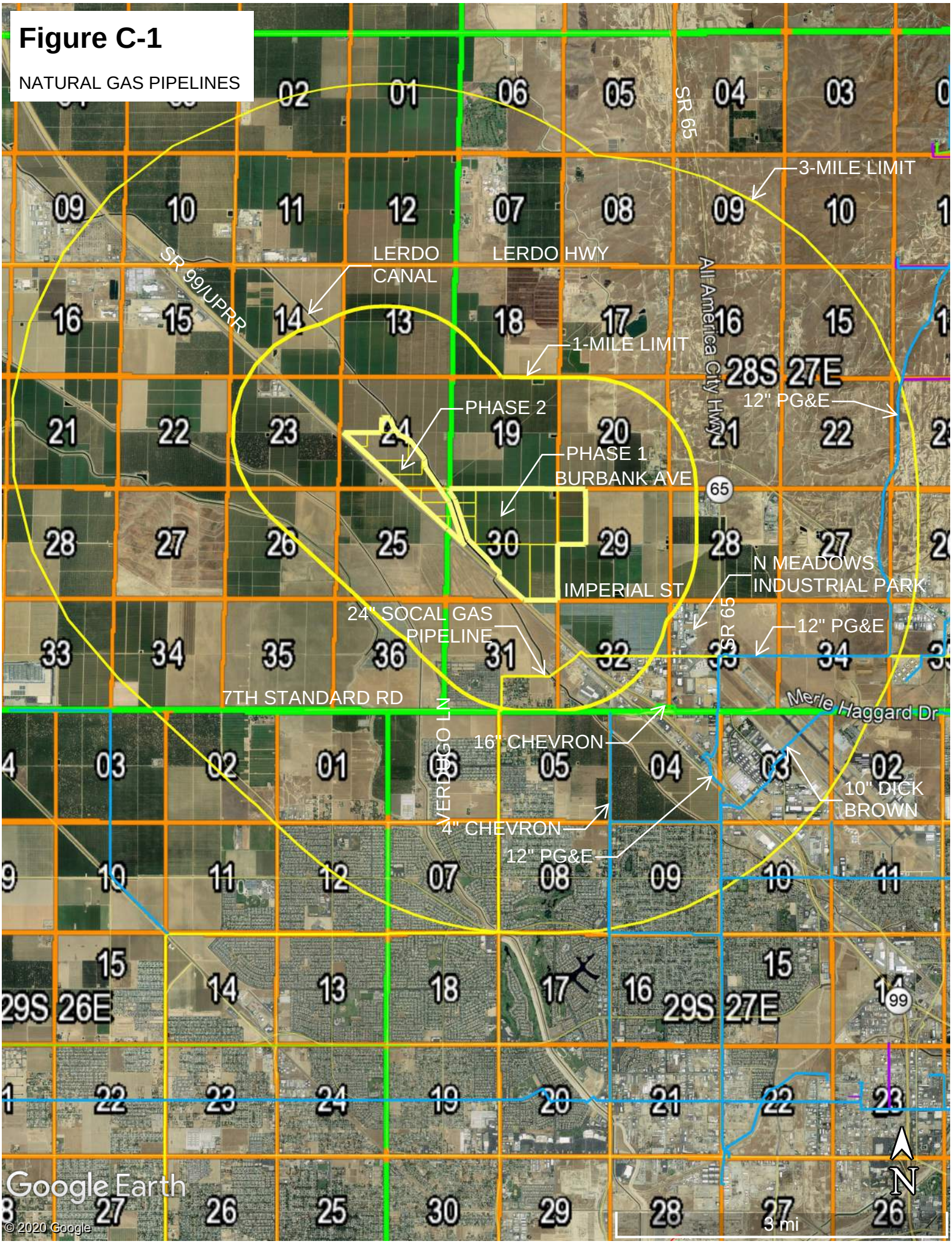
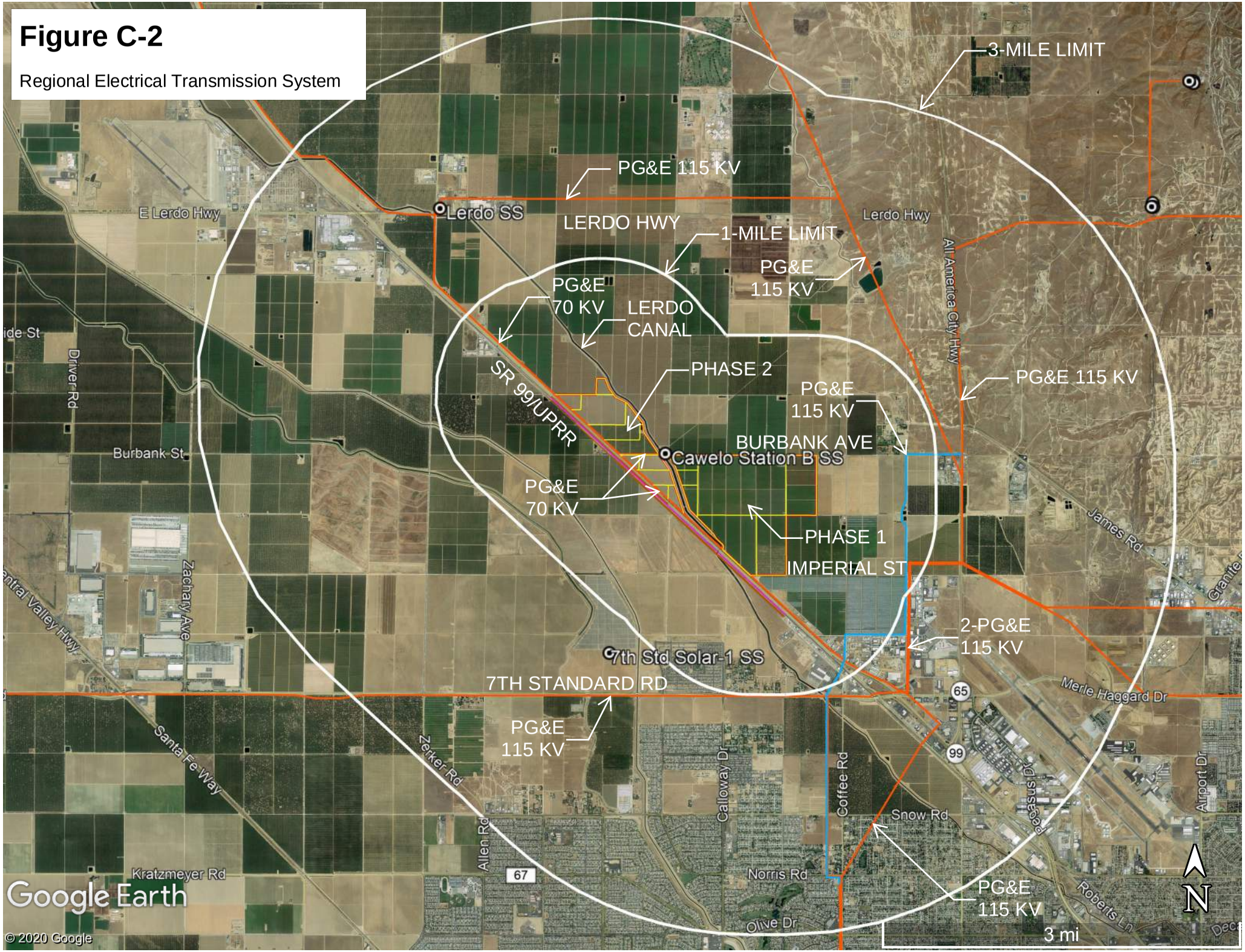


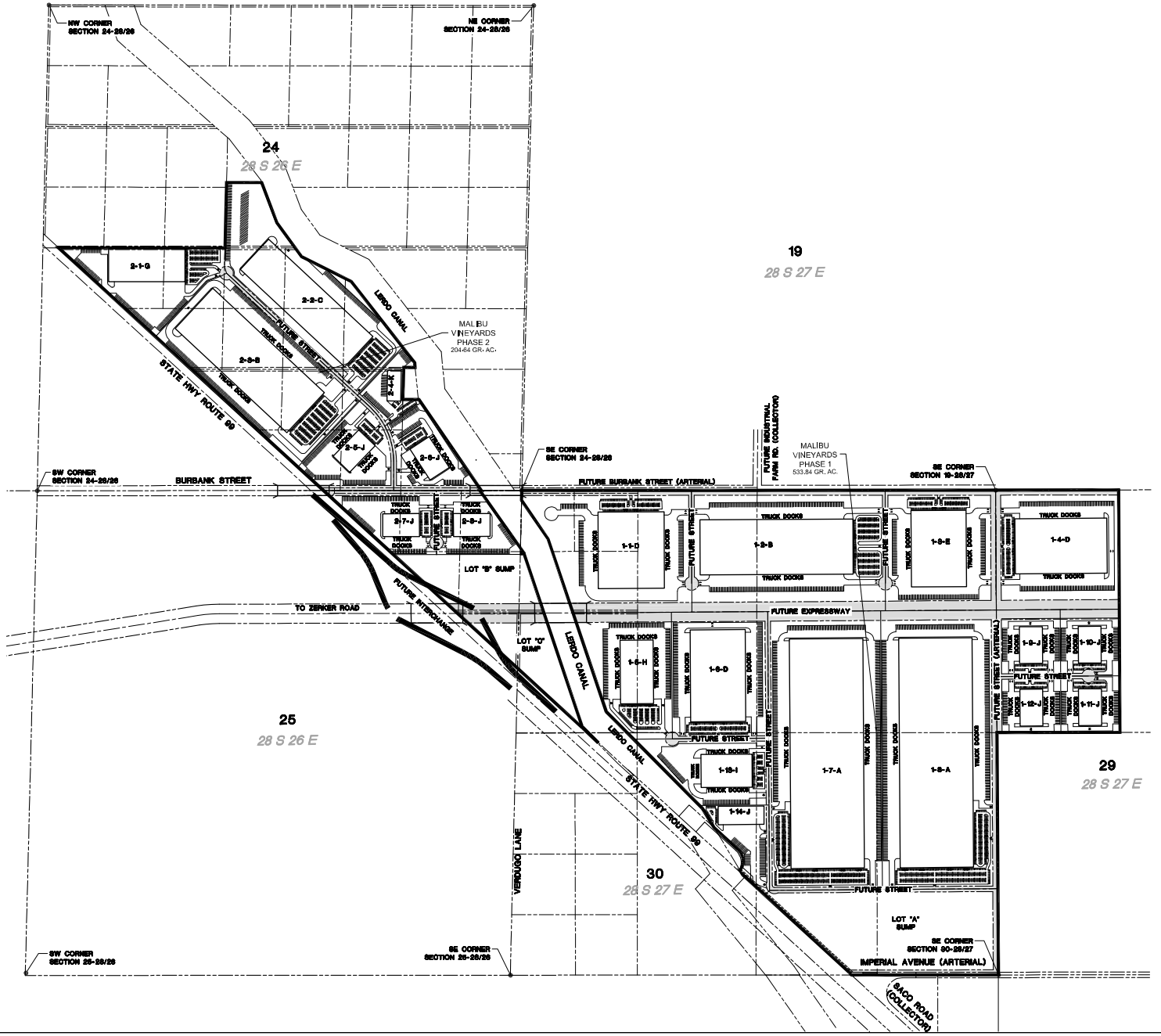
Figure C-2

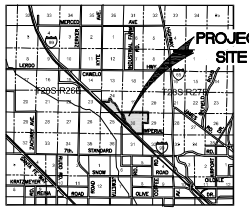
Regional Electrical Transmission System



APPENDIX D

Figure





VICINITY MAP
NOT TO SCALE

PROPOSED SITE PLAN
MALIBU VINEYARDS



LEGEND:

- SECTION LINE
- PROPOSED PROJECT BOUNDARY
- EXIST. PACEL LINES PER KERN COUNTY ASSESSORS MAPS
- 24 SECTION NUMBER
- 28-26 TOWNSHIP – RANGE
- 1-4-D PHASE–PARCEL–BUILDING TYPE

BUILDING SUMMARY

BLDG TYPE	SIZE (Sq. Ft.)	PROPOSED USE	Sq.Ft.	PARKING REQUIRED	TOTAL REQUIRED
A	2,002,000	WAREHOUSE	1,982,000	667	747
		OFFICE	20,000	80	
B	1,003,000	WAREHOUSE	990,280	337	377
		OFFICE	10,000	40	
C	700,000	WAREHOUSE	691,360	238	266
		OFFICE	7,039	28	
D	600,000	WAREHOUSE	592,390	201	229
		OFFICE	6,039	24	
E	500,000	WAREHOUSE	495,390	173	192
		OFFICE	5,039	20	
F	400,000	WAREHOUSE	396,390	139	155
		OFFICE	4,039	16	
G	300,000	WAREHOUSE	297,390	106	118
		OFFICE	3,039	12	
H	250,000	WAREHOUSE	247,590	90	120
		OFFICE	2,139	10	
I	200,000	WAREHOUSE	198,390	73	81
		OFFICE	2,039	8	
J	100,000	WAREHOUSE	99,000	40	44
		OFFICE	1,039	4	
K	50,000	WAREHOUSE	49,400	24	26
		OFFICE	500	2	

MALIBU VINEYARDS - PHASE 1 PARCEL SUMMARY

PARCEL	PROPOSED USE	SIZE (Sq. Ft.) NET	SIZE (ACRES) NET	BUILDING SIZE (Sq. Ft.)	BUILDING COVERAGE
PARCEL 1	M-1 PD / SI	1,756,179	41.00	600,000	34%
PARCEL 2	M-1 PD / SI	1,874,580	54.51	1,000,000	42%
PARCEL 3	M-1 PD / SI	1,264,138	29.48	500,000	39%
PARCEL 4	M-1 PD / SI	1,456,158	33.65	600,000	41%
PARCEL 5	M-1 PD / SI	1,022,306	23.47	250,000	24%
PARCEL 6	M-1 PD / SI	1,263,355	29.00	600,000	47%
PARCEL 7	M-1 PD / SI	1,471,436	79.88	7,000,000	57%
PARCEL 8	M-1 PD / SI	1,450,951	80.14	2,000,000	57%
PARCEL 9	M-1 PD / SI	376,969	8.65	100,000	27%
PARCEL 10	M-1 PD / SI	383,788	8.81	100,000	26%
PARCEL 11	M-1 PD / SI	379,967	8.72	100,000	26%
PARCEL 12	M-1 PD / SI	372,483	8.35	100,000	27%
PARCEL 13	M-1 PD / SI	749,605	17.21	200,000	27%
PARCEL 14	M-1 PD / SI	367,345	8.43	100,000	27%
LOT 'A' SUMP	DRAINAGE	1,717,393	39.85	-	
	NET TOTALS:	20,536,523	471.41	8,250,000	40%

MALIBU VINEYARDS - PHASE 2 PARCEL SUMMARY

PARCEL	PROPOSED USE	SIZE (Sq. Ft.)	SIZE (ACRES)	BUILDING SIZE (Sq. Ft.)	BUILDING COVERAGE
PARCEL 1	M-1 PD / SI	940,855	21.60	300,000	32%
PARCEL 2	M-1 PD / SI	1,757,632	41.27	750,000	42%
PARCEL 3	M-1 PD / SI	1,076,592	47.67	1,000,000	48%
PARCEL 4	M-1 PD / SI	252,815	5.83	50,000	20%
PARCEL 5	M-1 PD / SI	598,211	13.79	100,000	17%
PARCEL 6	M-1 PD / SI	513,128	11.78	100,000	19%
PARCEL 7	M-1 PD / SI	502,866	11.54	100,000	20%
PARCEL 8	M-1 PD / SI	449,618	10.32	100,000	22%
LOT 'B' SUMP	DRAINAGE	655,990	15.06	-	
LOT 'C' SUMP	DRAINAGE	195,735	11.38	-	
	NET TOTALS:	7,284,363	190.19	2,500,000	30%

McINTOSH & ASSOCIATES
LAND SURVEYING CIVIL ENGINEERING
2001 WHEELAN COURT
BAKERSFIELD, CALIFORNIA 93309
(661) 834 – 4814

DRAWN BY: EBT
JOB NO. 04-157
DATE 07/30/20
CHKD BY:

REVISIONS
BY:
DATE:

SECTIONS 24 & 25, T.28S., R.26E.
SECTIONS 19-21 & 28-30, T.28S., R.27E.
PROPOSED SITE PLAN

AutoCAD FILE: 04157PSD-SWITCH.dwg

SHEET 1 OF 1 SHEETS

APPENDIX E

Exhibits

Exhibit E-1

Construction Fuel Consumption

Phase 1

Construction Phase	Number[1] of Days	Daily Off-Road[1] Equipment Hours	Daily Worker[1] Trips	Worker Trip[1] Distance	Daily Worker VMT	Daily Vendor[1] Trips	Vendor Trip[1] Distance	Daily Vendor VMT	Daily Diesel[2] Usage (gallons)	Daily Gasoline[3] Usage (gallons)	Total Diesel Usage (gallons)	Total Gasoline Usage (gallons)
Site Preparation	360	56	18	16.8	302	0	6.6	0	112	15	40,320	5,443
Grading	930	64	20	16.8	336	0	6.6	0	128	17	119,040	15,624
Building Construction	9300	68	9777	16.8	164254	3815	6.6	25179	3283	8213	30,535,388	76,377,924
Paving	660	48	15	16.8	252	0	6.6	0	96	13	63,360	8,316
Architectural Coating	660	6	1955	16.8	32,844	0	6.6	0	12	1642	7,920	1,083,852
										Total	**30,766,028**	**77,491,159**

[1] *Data taken from CalEEMod (worker trips are calculated as 1.25 trips per equipment for site prep, grading, and paving, as 0.42 trips per total ksf for building construction, and 20% of that value for paving)*

[2] *Off road equipment are conservatively estimated to use 2 gallons per hour operating in place and medium duty diesel trucks are conservatively estimated to use 8 gallons per mile*

[3] *Light duty trucks are conservatively estimated to use 20 miles per gallon.*

Phase 2

Construction Phase	Number[1] of Days	Daily Off-Road[1] Equipment Hours	Daily Worker[1] Trips	Worker Trip[1] Distance	Daily Worker VMT	Daily Vendor[1] Trips	Vendor Trip[1] Distance	Daily Vendor VMT	Daily Diesel[2] Usage (gallons)	Daily Gasoline[3] Usage (gallons)	Total Diesel Usage (gallons)	Total Gasoline Usage (gallons)
Site Preparation	180	56	18	16.8	302	0	6.6	0	112	15	20,160	2,722
Grading	465	64	20	16.8	336	0	6.6	0	128	17	59,520	7,812
Building Construction	4650	68	3747	16.8	62,950	1462	6.6	9,649	1342	3147	6,240,998	14,635,782
Paving	330	48	15	16.8	252	0	6.6	0	96	13	31,680	4,158
Architectural Coating	330	6	749	16.8	12,583	0	6.6	0	12	629	3,960	207,623
										Total	**6,356,318**	**14,858,096**

[1] *Data taken from CalEEMod (worker trips are calculated as 1.25 trips per equipment for site prep, grading, and paving, as 0.42 trips per total ksf for building construction, and 20% of that value for paving)*

[2] *Off road equipment are conservatively estimated to use 2 gallons per hour operating in place and medium duty diesel trucks are conservatively estimated to use 8 gallons per mile*

[3] *Light duty trucks are conservatively estimated to use 20 miles per gallon.*

Operational Fuel Consumption

Phase 1

Land Use Type	Annual VMT	Total Annual[1] Diesel Usage (gallons)	Total Annual[1] Gasoline Usage (gallons)
Distribution (diesel trucks)	26,188,750	3,273,594	
Distribution (gas vehicles)	28,168,875		1,408,444
Warehouse (gas vehicles)	27,798,656		1,389,933
Total	**82,156,281**	**3,273,594**	**2,798,377**

[1] *Fuel usages were estimated assuming a conservative 8 miles per gallon for diesel efficiency and a conservative 20 miles per gallon for gasoline efficiency.*

Phase 2

Land Use Type	Annual VMT	Total Annual[1] Diesel Usage (gallons)	Total Annual[1] Gasoline Usage (gallons)
Distribution (diesel trucks)	8,982,741	1,122,843	
Distribution (gas vehicles)	9,924,834		496,242
Warehouse (gas vehicles)	6,358,118		317,906
Total	**25,265,693**	**1,122,843**	**814,148**

[1] *Fuel usages were estimated assuming a conservative 8 miles per gallon for diesel efficiency and a conservative 20 miles per gallon for gasoline efficiency.*

Exhibit E-2

Operational Energy Consumption

Phase 1

Land Use Type	Operational[1] Natural Gas (kBTU/year)	Operational[1] Electricity (kWh/yr)
General Light Industry	67,827,500	28,665,000
Unrefrigerated Warehouse-No Rail	90,400,000	46,950,000
Other Asphalt Surfaces	0	0
Parking Lot	0	441,140
Total	**158,227,500**	**76,056,140**

1. Data taken from CalEEMod

Phase 2

Land Use Type	Operational[1] Natural Gas (kBTU/year)	Operational[1] Electricity (kWh/yr)
General Light Industry	15,652,500	6,615,000
Unrefrigerated Warehouse-No Rail	31,640,000	16,432,500
Other Asphalt Surfaces	0	0
Parking Lot	0	134,820
Total	**47,292,500**	**23,182,320**

1. Data taken from CalEEMod

2018 Total Regional Demand (most recent data available at time of assessment)

Sector	Electricty[1] (GWh/year)	Natural Gas[1] (MM therms/year)	Natural Gas[2] (MMBtu/year)
Residential	2,382	94	9,368,104
Non-Residential	13,561	2,362	236,126,288
Total	**15,942**	**2,456**	**245,494,392**

1. CEC energy consumption database: http://ecdms.energy.ca.gov/

2. Natural gas converted from therms to btu using 1 therm = 99,976.1 btu conversion factor.

Project Total

Phase	Operational Natural Gas (MMBtu/year)	Operational Electricity (GWh/yr)
Phase 1	158,227.5	76.1
Phase 2	47,292.5	23.2
Total Project	**205,520**	**99.2**
2018 Total Regional Demand	245,494,392	15,942
Percent of Regional Demand	*0.0837%*	*0.6225%*

Exhibit E-3

Construction VMTs

Phase 1

Construction Phase	Number[1] of Days	Daily Off-Road[1] Equipment Hours	Max. Speed Limit (mph)[1]	Max. Equipment Annual VMT[2]	Daily Worker[1] Trips	Worker Trip[1] Distance	Daily Worker VMT	Annual Worker VMT[2]	Daily Vendor[1] Trips	Vendor Trip[1] Distance	Daily Vendor VMT	Annual Vendor VMT[2]	Total Annual VMT
Site Preparation	360	56	15	218,400	18	16.8	302	78,624	0	6.6	0	0	297,024
Grading	930	64	15	249,600	20	16.8	336	87,360	0	6.6	0	0	336,960
Building Construction	9300	68	15	265,200	9,777	16.8	164,254	42,705,936	3,815	6.6	25,179	6,546,540	49,517,676
Paving	660	48	15	187,200	15	16.8	252	65,520	0	6.6	0	0	252,720
Architectural Coating	660	6	15	23,400	1,955	16.8	32,844	8,539,440	0	6.6	0	0	8,562,840
Total				**943,800**				**51,476,880**				**6,546,540**	**58,967,220**

[1] *Data taken from CalEEMod (worker trips are calculated as 1.25 trips per equipment for site prep, grading, and paving, as 0.42 trips per total ksf for building construction, and 20% of that value for paving)*

[2] *CalEEMod default assumes 5 workdays per week, which equates to approximately 260 workdays per year (adjustments made where construction phase is < 260 days)*

Phase 2

Construction Phase	Number[1] of Days	Daily Off-Road[1] Equipment Hours	Max. Speed Limit (mph)[1]	Max. Equipment Annual VMT[2]	Daily Worker[1] Trips	Worker Trip[1] Distance	Daily Worker VMT	Annual Worker VMT[2]	Daily Vendor[1] Trips	Vendor Trip[1] Distance	Daily Vendor VMT	Annual Vendor VMT[2]	Total Annual VMT
Site Preparation	180	56	15	151,200	18	16.8	302	54,432	0	6.6	0	0	205,632
Grading	465	64	15	249,600	20	16.8	336	87,360	0	6.6	0	0	336,960
Building Construction	4650	68	15	265,200	3,747	16.8	62,950	16,366,896	1,462	6.6	9,649	2,508,792	19,140,888
Paving	330	48	15	187,200	15	16.8	252	65,520	0	6.6	0	0	252,720
Architectural Coating	330	6	15	23,400	749	16.8	12,583	3,271,632	0	6.6	0	0	3,295,032
Total				**876,600**				**19,845,840**				**2,508,792**	**23,231,232**

[1] *Data taken from CalEEMod (worker trips are calculated as 1.25 trips per equipment for site prep, grading, and paving, as 0.42 trips per total ksf for building construction, and 20% of that value for paving)*

[2] *CalEEMod default assumes 5 workdays per week, which equates to approximately 260 workdays per year (adjustments made where construction phase is < 260 days)*

Operation VMTs

Phase 1

ITE Code	Development Type	Variable	Units	Vehicle Type	ADT Rate	ADT Rate Split	ADT[1]	Average Miles/Day[2]	Annual VMT
154	High-Cube Transload and Short-Term Storage	5,000	1000 sf	HHD (diesel)	1.40	0.35	1,750	71,750	26,188,750
				LDA, LDT, MDV, LHD, MCY (gas)		1.05	5,250	77,175	28,168,875
150	Warehousing	3,250	1000 sf	LDA, LDT, MDV, LHD, MCY (gas)	1.59		5,181	76,161	27,798,656
								Total	**82,156,281**

[1] *ADT data provided by Ruettgers & Schuler Traffic Study (June 2020)*

[2] *HHD trips were split 20% at 5-mile trip lengths and 80% at 50-mile trip lengths, per client info and SJVAPCD default (also confirmed by client). Other vehicle trips assume 14.7-mile trip length, per CalEEMod default for rural worker trips.*

Phase 2

ITE Code	Development Type	Variable	Units	Vehicle Type	ADT Rate	ADT Rate Split	ADT[1]	Average Miles/Day[2]	VMT
154	High-Cube Transload and Short-Term Storage	1,750	1000 sf	HHD (diesel)	1.40	0.343	600	24,610	8,982,741
				LDA, LDT, MDV, LHD, MCY (gas)		1.057	1,850	27,191	9,924,834
150	Warehousing	750	1000 sf	LDA, LDT, MDV, LHD, MCY (gas)	1.58		1,185	17,420	6,358,118
								Total	**25,265,692**

[1] *ADT data provided by Ruettgers & Schuler Traffic Study (June 2020)*

[2] *HHD trips were split 20% at 5-mile trip lengths and 80% at 50-mile trip lengths, per client info and SJVAPCD default (also confirmed by client). Other vehicle trips assume 14.7-mile trip length, per CalEEMod default for rural worker trips.*

Appendix I

Geotechnical Feasibility Report Final

FINAL GEOTECHNICAL FEASIBILITY STUDY
PROPOSED MALIBU VINEYARDS DEVELOPMENT
NE OF HIGHWAY 99 AND IMPERIAL STREET
KERN COUNTY, CALIFORNIA

PROJECT NO. 022-20027
NOVEMBER 8, 2021

Prepared For:

MR. TOM MURRAY
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Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

November 8, 2021

Project No. 022-20027

Mr. Tom Murray
% Malibu Vineyards, LP
9777 Wilshire Boulevard, Suite 900
Beverly Hills, California 90212

RE: Final Geotechnical Feasibility Study
Proposed Malibu Vineyards Development
NE of Highway 99 and Imperial Street
Kern County, California

Dear Mr. Murray:

In accordance with your request, we have completed a Geotechnical Feasibility Study for the above-referenced site. The results of our investigation are presented in the attached report.

If you have any questions or if we may be of further assistance, please do not hesitate to contact our office at (661) 837-9200.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

Ryan K. Privett, PE
Project Engineer
RCE No. 59372

REGISTERED PROFESSIONAL ENGINEER
RYAN K. PRIVETT
NO. 59372
CIVIL
STATE OF CALIFORNIA

RKP:ht

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November 8, 2021 Project No. 022-20027

FINAL GEOTECHNICAL FEASIBILITY STUDY
PROPOSED MALIBU VINEYARDS DEVELOPMENT
HIGHWAY 99 AND IMPERIAL STREET
KERN COUNTY, CALIFORNIA

INTRODUCTION

This report presents the results of our Final Geotechnical Feasibility Study for the proposed Malibu Vineyards Development, to be located northeast of Highway 99 and Imperial Street, in Kern County, California. Discussions regarding site conditions are presented herein, together with conclusions and recommendations pertaining to site preparation, Engineered Fill, utility trench backfill, drainage and landscaping, foundations, concrete floor slabs and exterior flatwork, retaining walls, pavement design, and soil cement reactivity.

It should be understood that the intent of this report is to provide a general evaluation of the property with respect to the feasibility of its proposed use. The information provided in this report is intended to be used in the preliminary evaluation of the project site only. It is not intended for use in design. As the project is developed, each successive phase of development will require a separate in-depth design-level investigation to evaluate the site-specific soil conditions as related to the proposed use.

Site plans showing the approximate boring locations are presented following the text of this report. A description of the field investigation, boring logs, and the boring log legend are presented in Appendix A. Appendix A also contains a description of the laboratory testing phase of this study, along with the laboratory test results. Appendices B and C contain guides to earthwork and pavement specifications. When conflicts in the text of the report occur with the general specifications in the appendices, the recommendations in the text of the report have precedence.

PURPOSE AND SCOPE

This investigation was conducted to evaluate the soil and groundwater conditions in order to gain an understanding of the range of various engineering parameters which could typically be expected to be recommended for use in design of specific construction elements within the study area, and to provide general criteria for site preparation and Engineered Fill construction. It was not intended for purposes of developing design-level recommendations.

Our scope of services was outlined in our proposal dated February 18, 2020 (KA Proposal No. P145-20) and included the following:

- A site reconnaissance by a member of our engineering staff to evaluate the surface conditions at the project site.

- A field investigation consisting of drilling 38 borings to depths ranging from approximately 10 to 50 feet for evaluation of the subsurface conditions at the project site.

- Performing laboratory tests on representative soil samples obtained from the borings to evaluate the physical and index properties of the subsurface soils.

- Evaluation of the data obtained from the investigation and an engineering analysis to provide recommendations for use in the project design and preparation of construction specifications.

- Preparation of this report summarizing the results, conclusions, recommendations, and findings of our investigation.

PROPOSED CONSTRUCTION

We understand that design of the proposed development is currently underway; structural load information and other final details pertaining to the structures are unavailable. On a preliminary basis, it is understood that the site will be developed into a Medium Industrial/Planned Development, in accordance with zoning designation M-2/PD. Proposed structure types and sizes are presently unknown, but may include single- and multi-story structures of wood-frame, metal-frame, concrete tilt-up, and/or concrete masonry unit (CMU) block construction. It is anticipated the buildings will utilize shallow reinforced concrete spread footings and concrete slab-on-grade construction. Footing loads are anticipated to be light to moderate. On-site paved areas and landscaping are also planned for the development.

The project is planned to be provided with waste water collection by the North of River Sanitary District No. 1. Thus, on-site septic systems are not anticipated to be utilized. Other utilities, such as water, gas, electric, etc., are anticipated to be installed underground, consistent with other local developments, as the project development advances.

In the event, these structural or grading details are inconsistent with the final design criteria, the Soils Engineer should be notified so that we may update this writing as applicable.

SITE LOCATION AND SITE DESCRIPTION

The entire site is irregular in shape and encompasses approximately 746 acres of existing vineyard. Phase 1 will include approximately 537 acres. Phase 2 will include approximately 209 acres. The site is located north of Imperial Street and east of Highway 99 in Kern County, California. The site includes portions of Sections 24 and 25, T28S, R26E, and Sections 29 and 30, T28S, R27E. Highway 99 is located west of the site. The remainder of the site is predominately surrounded by agricultural land.

Presently, the majority of the site consists of agricultural land planted in vineyards. Lerdo Canal trends northwest-southeast through the center of the site, essentially separating Phase 1 and Phase 2 of the proposed development. This unlined irrigation canal with elevated earth embankments originates at the

Kern River and generally flows in a northwesterly direction. Buried utility lines, anticipated to predominately consist of irrigation and, to a lesser degree gas and/or electric, are likely to be located throughout and along the edges of the site.

A shop building and associated ag-related equipment are located in the northern portion of Phase 1 of the site, along the south side of Burbank Street. Two irrigation sumps are located within the property; one in the northeastern portion of Phase 1, along the northern site boundary, and a second in the eastern portion of Phase 2, adjacent to the Lerdo Canal. The majority of the various vineyard sections are separated by unpaved access roads with an oiled surface (oilcake) which has been densified through frequent vehicular traffic associated with vineyard farming operations. The surface soils in the vineyard areas have a loose consistency. The site is located in a relatively flat-lying plain at approximately 400 feet above sea level. With the exception of the 6 to 12-inch roadway elevations, the majority of the site is relatively level with no major changes in grade.

The majority of the Phase 2 area is presently within the Kern County General Plan, designated as Map Code 8.1 (Intensive Agriculture), and is proposed to be changed to designation Map Code 7.2 (Service Industrial). A small area at the southern end of Phase 2 and all of Phase 1 are within the Metropolitan Bakersfield General Plan, designated R-IA (Intensive Agriculture), and are proposed to be changed to designation SI (Service Industrial). The entire project site is also subject to the Kern County Zoning Ordinance, currently zoned A (Exclusive Agriculture), and is proposed to be changed to designation M2-PD (Medium Industrial/Precise Development).

FIELD AND LABORATORY INVESTIGATIONS

Subsurface soil conditions were explored by drilling 38 borings to depths ranging from approximately 10 to 50 feet below existing site grade, using a truck-mounted drill rig. In addition, 6 bulk subgrade samples were obtained from the site for laboratory R-value testing. The approximate boring and bulk sample locations are shown on the site plans. During drilling operations, penetration tests were performed at regular intervals to evaluate the soil consistency and to obtain information regarding the engineering properties of the subsoils. Soil samples were retained for laboratory testing. The soils encountered were continuously examined and visually classified in accordance with the Unified Soil Classification System. A more detailed description of the field investigation is presented in Appendix A.

Laboratory tests were performed on selected soil samples to evaluate their physical characteristics and engineering properties. The laboratory testing program was formulated with emphasis on the evaluation of natural moisture, density, gradation, shear strength, consolidation potential, expansion potential, plasticity, R-value and moisture-density relationships of the materials encountered. In addition, chemical tests were performed to evaluate the soil-cement reactivity. Details of the laboratory test program and results of the laboratory tests are summarized in Appendix A. This information, along with the field observations, was used to prepare the final boring logs in Appendix A.

SOIL PROFILE AND SUBSURFACE CONDITIONS

Based on our findings, the subsurface conditions encountered appear typical of those found in the geologic region of the site. In general, approximately 1 foot of fill material was encountered along the edges and

within the unpaved roadway areas of the site. The fill material predominately consisted of silty sand or silty sand with trace clay soils. Oiled sand, commonly referred to as "oilcake," was present in the unpaved roadway areas as well. The thickness and extent of fill material was determined based on limited test borings and visual observation. Thicker fill may be present at the site. Limited testing was performed on the fill soils during the time of our field and laboratory investigations. The limited testing indicates that the fill soils had varying strength characteristics ranging from loosely placed to compacted.

In areas not covered by fill material, the surface soils consisted of approximately 6 to 12 inches of very loose silty sand, silty sand with trace clay, clayey silty sand, clayey sand, clayey sandy silt, or silty sand/sandy silt. These soils are disturbed, have low strength characteristics, and are highly compressible when saturated.

Below the loose surface soils and fill material, approximately 3 to 4 feet of loose to very dense silty sand, sandy silt, silty sand/sandy silt, or clayey sand were encountered. These soils contained varying amounts of clay. Some of these soils were weakly cemented in parts. The clayey soils have a very low to low expansion potential. Field and laboratory tests suggest that these soils are relatively strong and slightly to moderately compressible. Penetration resistance ranged from 7 blows per foot to more than 50 blows per 6 inches. Dry densities ranged from 99 to 123 pcf. Representative soil samples consolidated approximately 1 to 8½ percent under a 2 ksf load when saturated. Representative soil samples had angles of internal friction of 32, 37, and 39 degrees. Representative samples of the clayey soils had expansion indices of 19 and 38.

Below approximately 4 to 5 feet, predominately medium dense to very dense silty sand, clayey silty sand, clayey sandy silt, sandy silt, clayey sand, silty sand/sandy silt or very stiff to hard silty clay and sandy clay were encountered. These soils contained varying amounts of clay. Field and laboratory tests suggest that these soils are moderately strong and slightly compressible. Penetration resistance ranged from 17 blows per foot to greater than 50 blows per 6 inches. Dry densities ranged from 89 to 135 pcf. These soils extended to the termination depth of our borings.

For additional information about the soils encountered, please refer to the boring logs in Appendix A.

GROUNDWATER

Test boring locations were checked for the presence of groundwater during and immediately following the drilling operations. Free groundwater was not encountered.

The State of California, Department of Water Resources, Water Data Library website (https://wdl.water.ca.gov) was utilized to verify the depth to groundwater in the vicinity of the site. A total of 10 wells, ranging in distance from approximately 400 feet to 1½ miles from the site, were reviewed through the database. The shallowest recorded depth to ground water was 121.9 feet below ground surface, measured from well number 354486N1191053W001 in 1970, approximately ½ mile south of the site. Findings from the database review are tabulated below. A map of the individual wells is included as Figure 2, followed by the Groundwater Level Report for each well.

Malibu Vineyards – Depth to Groundwater			
Well Number	**Distance/Direction**	**Shallow Water Depth (ft)**	**Measurement Date**
354486N1191053W001	0.51 miles South	121.9	09/22/1970
354886N1191468W001	1.11 miles NW	179	02/02/1987
354556N1190878W001	0.70 miles East	335	03/02/1998
354919N1191092W001	1.32 miles NE	357	03/01/2007
354703N1190834W001	0.72 miles East	401	03/26/2001
354714N1191377W001	0.43 miles NE	182.3	01/27/1971
354858N1191092W001	1.05 miles SW	450	09/24/1969
354589N1191137W001	0.18 miles NE	NA	No Records
354772N1191009W001	0.47 miles South	NA	No Records
354844N1191092W001	0.96 miles South	NA	No Records

It should be recognized that water table elevations may fluctuate with time, being dependent upon seasonal precipitation, irrigation, land use, and climatic conditions, as well as other factors. Therefore, water level observations at the time of the field investigation may vary from those encountered during the construction phase of the project. The evaluation of such factors is beyond the scope of this report.

GEOLOGIC HAZARDS

Soil Liquefaction

Soil liquefaction is a state of soil particle suspension, caused by a complete loss of strength when the effective stress drops to zero. Liquefaction normally occurs in soils, such as sands, in which the strength is purely frictional. However, liquefaction has occurred in soils other than clean sands. Liquefaction usually occurs under vibratory conditions, such as those induced by seismic events.

To evaluate the liquefaction potential of the site, the following items were evaluated:

1) Soil type

2) Groundwater depth

3) Relative density

4) Initial confining pressure

5) Intensity and duration of ground shaking

The predominant soils within the project site consist of alternating layers of silty sand, silty sand/sandy silt, clayey sand, and sandy clay. Groundwater was not encountered within the project site during our subsurface exploratory drilling. Historical groundwater depth is typically greater than 50 feet within the

project site and vicinity. Due to the depth of groundwater and moderate penetration resistance of the soils below a depth of 5 feet, liquefaction potential at the site is very low. However, within the vicinity of the canal, shallow groundwater may be encountered during periods of significant precipitation. Accordingly, liquefaction potential should be evaluated during site specific analysis for structures planned to be located within close proximity of the canal.

Proximity to Active Faults

While the project site itself does not fall within a designated earthquake fault zone, nor within any known areas of surface fault rupture, several faults, both active and dormant, are located within the project site vicinity. The nearest active fault is the Premier Fault, located approximately 1.3 miles east of the northeast corner of the site. The Kern Front Fault, the largest fault in the area, is located approximately 3.7 miles east-southeast of the site. Other known faults within the site vicinity are the New Hope Fault (5.5 miles northeast), Poso Creek Fault (6 miles north), Mt. Poso Fault (11 miles northeast), Kern Gorge Fault (13 miles northeast), Pond Fault (17 miles northwest), Breckenridge Fault (33 miles east), and Kern Canyon Fault (34 miles east). Several unnamed faults, associated with ground breaks of the 1952 Kern County earthquake near Wheeler Ridge, are located approximately 12 miles east-southeast of the site. The largest faults in the region are the White Wolf Fault (27 miles southeast), the San Andreas Fault (38 miles southwest), and the Garlock Fault (43 miles southeast). (Reference: USGS Interactive Fault Map, U.S. Quaternary Faults (arcgis.com)).

Historical Fault Rupture in the Region

The most well-known instances of historical fault rupture in the region are several unnamed faults, associated with ground breaks of the 1952 Kern County earthquake near Wheeler Ridge, located approximately 12 miles east-southeast of the site. There are no known instances of historical fault rupture at or in the immediate vicinity of the site.

Potential for Ground Shaking

The potential for ground shaking is moderate within this portion of Kern County, with ground shaking intensities on the order of 0.459g within the project site vicinity. The San Andreas fault, located approximately 38 miles southwest of the site, is capable of moderate to large seismic events and corresponding ground shaking intensity.

Potential for Impacts from Slope Failure

Several slopes are located throughout the area of proposed development associated with the banks of the Lerdo Canal. The canal banks should be properly maintained, periodically monitored by the designated regulatory authority, and repaired as needed. The proposed development area is located in a relatively flat plain. Other than the canal banks, there are no known potential impacts to the development resulting from slope failure.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of our field and laboratory investigations, along with previous geotechnical experience in the project area, the following is a summary of our evaluations, conclusions, and recommendations.

Administrative Summary

In brief, the subject site and soil conditions, with the exception of the fill material, upper, moisture-sensitive native soils, expansive nature of the clayey soils, and surrounding development, appear to be conducive to the development of the project. Approximately 1 foot of fill material was encountered along the edges and within the unpaved roadway areas of the site. The fill material predominately consisted of silty sand or silty sand with trace clay soils. Oiled sand, commonly referred to as "oilcake," was present in the unpaved roadway areas as well. The thickness and extent of fill material was determined based on limited test borings and visual observation. Thicker fill may be present at the site. Limited testing was performed on the fill soils during the time of our field and laboratory investigations. The limited testing indicates that the fill soils had varying strength characteristics ranging from loosely placed to compacted. Therefore, it is recommended the fill soils be excavated and stockpiled so that the native soils can be properly prepared. The fill material will be suitable for reuse as Engineered Fill, provided it is cleansed of excessive organics, debris, and fragments larger than 4 inches in maximum dimension.

Of primary importance in the development of this site is the removal of the moisture sensitive upper native soils from the proposed development. These soils are moderately compressible and/or collapsible under saturated conditions. Structures within the general vicinity have experienced excessive post-construction settlement when the foundation soils become near-saturated. Accordingly, mitigation measures are recommended to reduce the potential of excessive soil settlement. It is recommended that following stripping and fill removal operations, and demolition activities, the upper 3 feet of native soils within the proposed building areas be excavated, moisture-conditioned to at least 2 percent above optimum moisture content, and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. Over-excavation should extend to a minimum of 5 feet beyond proposed footing lines. The base width of the over-excavation should be established on the basis of a 60 degree upward projection from the bottom of the footings. In addition, it is recommended that proposed structural elements within the proposed building areas be supported by a minimum of 24inches of Engineered Fill. Prior to fill placement, the exposed subgrade soils should be scarified to a depth of 6 inches, moisture-conditioned to at least 2 percent above optimum moisture content, and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

The upper on-site native soils and fill material are predominately silty sands, sandy silts, and clayey sands. The clayey soils appeared to have a low swell potential. The estimated swell pressures of the clayey soils may cause minor movement effecting slabs and possible stucco or similar brittle exterior finishes. To reduce potential soil movement, it is recommended the upper 12 inches of soil within slab-on-grade and exterior flatwork areas consist of non-expansive Engineered Fill. The on-site soils that do not contain clay will be suitable for reuse as non-expansive Engineered Fill provided they are cleansed of excessive

organics and debris. During construction, it is recommended that additional tests should be performed on the on-site soils to verify their physical and index properties.

The site is presently utilized as agricultural land. A shop building and ag-related equipment are located in the northern portion of the site. In addition, the site is surrounded by existing agricultural developments. Associated with these developments may be buried structures that extend into the project site. Any buried structures, including utilities or loosely backfilled excavations, encountered during construction should be properly removed and the resulting excavations backfilled with Engineered Fill. It is suspected demolition activities will disturb the upper soils. Disturbed areas caused by demolition activities should be removed and/or recompacted.

The majority of the site is covered by existing vineyards. Removal operations should include roots greater than 1 inch in diameter. The resulting excavation should be backfilled with Engineered Fill, compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Sandy soil conditions were encountered at the site. These cohesionless soils have a tendency to cave in trench wall excavations. Shoring or sloping back trench sidewalls may be required within these sandy soils.

After completion of the recommended site preparation and over-excavation, the site should be suitable for shallow footing support. The proposed structure footings may be designed utilizing conventional, spread, or mat foundations. Conventional foundations, if utilized, should have a minimum embedment of 18 inches.

It is recommended that once the final site layout and anticipated foundation loads have been determined, a site-specific design-level geotechnical engineering investigation should be performed for each individual phase (individual or groups of buildings) of development. The recommendations provided in this report are for feasibility analysis only and need to be confirmed with the site specific analysis.

Groundwater Influence on Structures/Construction

Based on our findings and historical records, it is not anticipated that groundwater will rise within the zone of structural influence or affect the construction of foundations and pavements for the project. However, if earthwork is performed during or soon after periods of precipitation, the subgrade soils may become saturated, "pump," or not respond to densification techniques. Typical remedial measures include: discing and aerating the soil during dry weather; mixing the soil with dryer materials; removing and replacing the soil with an approved fill material; or mixing the soil with an approved lime or cement product. Our firm should be consulted prior to implementing remedial measures to observe the unstable subgrade conditions and provide appropriate recommendations.

Site Preparation

General site clearing should include removal of vegetation; existing utilities; structures including foundations; basement walls and floors; existing stockpiled soil; trees and associated root systems; rubble;

rubbish; and any loose and/or saturated materials. Site stripping should extend to a minimum depth of 2 to 4 inches, or until all organics in excess of 3 percent by volume are removed. Deeper stripping may be required in localized areas. These materials will not be suitable for use as Engineered Fill. However, stripped topsoil may be stockpiled and reused in landscape or non-structural areas.

Approximately 1 foot of fill material was encountered along the edges and within the unpaved roadway areas of the site. The fill material predominately consisted of silty sand or silty sand with trace clay soils. Oiled sand, commonly referred to as "oilcake," was present in the unpaved roadway areas as well. The thickness and extent of fill material was determined based on limited test borings and visual observation. Thicker fill may be present at the site. Limited testing was performed on the fill soils during the time of our field and laboratory investigations. The limited testing indicates that the fill soils had varying strength characteristics ranging from loosely placed to compacted. Therefore, it is recommended the fill soils be excavated and stockpiled so that the native soils can be properly prepared. The fill material will be suitable for reuse as Engineered Fill, provided it is cleansed of excessive organics, debris, and fragments larger than 4 inches in maximum dimension.

The site is presently utilized as agricultural land. A shop building and ag-related equipment are located in the northern portion of the site. In addition, agricultural developments are located within the project site vicinity. Associated with these developments are buried structures that may extend into the project site. Any buried structures, including utilities or loosely backfilled excavations, encountered during construction should be properly removed and the resulting excavations backfilled with Engineered Fill. Excavations, depressions, or soft and pliant areas extending below planned finished subgrade levels should be cleaned to firm, undisturbed soil and backfilled with Engineered Fill. In general, any septic tanks, debris pits, cesspools, or similar structures should be entirely removed. Existing concrete footings should be removed to an equivalent depth of at least 3 feet below proposed footing elevations or as recommended by the Soils Engineer. Any other buried structures should be removed in accordance with the recommendations of the Soils Engineer. The resulting excavations should be backfilled with Engineered Fill.

Mitigation measures are recommended to reduce the potential of excessive soil settlement. It is recommended that following stripping, fill removal operations, and demolition activities, the upper 3 feet of native soil within the proposed building areas be excavated for recompaction. The resulting excavations should be backfilled with Engineered Fill compacted to a minimum of 90 percent of maximum density based on ASTM Test Method 1557. Over-excavation should extend to a minimum of 5 feet beyond proposed footing lines. The base width of the over-excavation should be established on the basis of a 60 degree upward projection from the bottom of the footings. In addition, it is recommended that proposed structural elements within the proposed building areas be supported by a minimum of 24 inches of Engineered Fill. Prior to backfilling, the exposed subgrade soils should be scarified to a depth of 6 inches, moisture-conditioned to at least 2 percent above optimum moisture content, and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

It is recommended that the upper 12 inches of soil within proposed slab-on-grade and exterior flatwork areas consist of non-expansive Engineered Fill. The intent is to support slab-on-grade and exterior flatwork areas with 12 inches of non-expansive fill. The fill placement serves two functions: 1) it provides

a uniform amount of soil, which will more evenly distribute the soil pressures and 2) it reduces moisture content fluctuation in the clayey material beneath the building area. The non-expansive fill material should be a well-graded silty sand or sandy silt soil. A clean sand or very sandy soil is not acceptable for this purpose. A sandy soil will allow the surface water to drain into the expansive clayey soil below, which may result in soil swelling. Imported Fill should be approved by the Soils Engineer prior to placement. The fill should be placed as specified as Engineered Fill. In addition, it is recommended slabs and footings be nominally reinforced to reduce cracking and vertical offsets.

The majority of the site is covered by existing vineyards. Removal operations should include roots greater than 1 inch in diameter. The resulting excavation should be backfilled with Engineered Fill, compacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

The upper soils, during wet winter months, become very moist due to the absorptive characteristics of the soil. Earthwork operations performed during winter months may encounter very moist unstable soils, which may require removal to grade a stable building foundation. Project site winterization consisting of placement of aggregate base and protecting exposed soils during the construction phase should be performed.

A representative of our firm should be present during all site clearing and grading operations to test and observe earthwork construction. This testing and observation is an integral part of our service as acceptance of earthwork construction is dependent upon compaction of the material and the stability of the material. The Soils Engineer may reject any material that does not meet compaction and stability requirements. Further recommendations of this report are predicated upon the assumption that earthwork construction will conform to recommendations set forth in this section and the Engineered Fill section.

Engineered Fill

The organic-free, on-site, upper native soils and fill material are predominately silty sands, sandy silts, or clayey sands. The silty sand and sandy silt soils that do not contain clay will be suitable for reuse as non-expansive Engineered Fill, provided they are cleansed of excessive organics, debris, and fragments larger than 4 inches in maximum dimension. The on-site clayey soils will not be suitable for reuse as non-expansive Engineered Fill. The clayey soils will be suitable for reuse for fill placement within the upper 12 inches of building and exterior flatwork areas, provided they are lime-treated. The preliminary application rate of lime should be 5 percent by dry weight. The lime material should be calcium oxide, commonly known as quick-lime. The clayey soils should be at or near optimum moisture-condition during mixing operations. Additional testing is recommended to determine the appropriate application rate of lime prior to placement. The clayey soils may be used for General Engineered Fill within non-structural areas, paved areas, and within slab-on-grade and exterior flatwork areas below 12 inches from finished pad grade provided they are cleansed of excessive organics, debris, and are moisture-conditioned to at least 2 percent above optimum moisture. During construction, it is recommended that additional tests be performed on these soils to verify their physical and index properties.

The preferred materials specified for Engineered Fill are suitable for most applications with the exception of exposure to erosion. Project site winterization and protection of exposed soils during the construction phase should be the sole responsibility of the Contractor, since he has complete control of the project site

at that time. As areas of the project become developed, the native and fill soils will be contained beneath hardscape, roadways, and structures, as well as within landscape areas. Therefore, the potential for erosion of topsoil and/or Engineered Fill as a result of the proposed development should be considered very low.

Imported Fill material should be predominately non-expansive granular material with a plasticity index less than 10 and an expansion index less than 15. Imported Fill should be free from rocks and clods greater than 4 inches in maximum dimension. All Imported Fill material should be submitted to the Soils Engineer for approval at least 48 hours prior to delivery at the site.

Fill soils should be placed in lifts approximately 6 inches thick, moisture-conditioned to at least 2 percent above optimum moisture content, and compacted to achieve at least 90 percent of maximum density based on ASTM Test Method D1557. Additional lifts should not be placed if the previous lift did not meet the required dry density or if soil conditions are not stable.

Drainage and Landscaping

The ground surface should slope away from building pad and pavement areas toward appropriate drop inlets or other surface drainage devices. In accordance with Section 1804 of the 2019 California Building Code, it is recommended that the ground surface adjacent to foundations be sloped a minimum of 5 percent for a minimum distance of 10 feet away from structures, or to an approved alternative means of drainage conveyance. Swales used for conveyance of drainage and located within 10 feet of foundations should be sloped a minimum of 2 percent. Impervious surfaces, such as pavement and exterior concrete flatwork, within 10 feet of building foundations should be sloped a minimum of 1 percent away from the structure. Drainage gradients should be maintained to carry all surface water to collection facilities and off-site. These grades should be maintained for the life of the project.

Utility Trench Backfill

Utility trenches should be excavated according to accepted engineering practices following OSHA (Occupational Safety and Health Administration) standards by a Contractor experienced in such work. The responsibility for the safety of open trenches should be borne by the Contractor. Traffic and vibration adjacent to trench walls should be reduced; cyclic wetting and drying of excavation side slopes should be avoided. Depending upon the location and depth of some utility trenches, groundwater flow into open excavations could be experienced, especially during or shortly following periods of precipitation.

The on-site, upper native soils and fill material are predominately silty sands, sandy silts, or clayey sands. These soil types are typical for the north Bakersfield area of Kern County and are not known to require mitigation measures such as cathodic protection for buried metal pipes. Furthermore, installation of PVC, ABS, and reinforced concrete utility pipes are common in the region as well, and the on-site soils are considered to be suitable for support of these typical infrastructure elements.

Sandy soil conditions were encountered at the site. These cohesionless soils have a tendency to cave in trench wall excavations. Shoring or sloping back trench sidewalls may be required within these sandy soils.

Utility trench backfill placed in or adjacent to buildings and exterior slabs should be compacted to at least 90 percent of maximum density based on ASTM Test Method D1557. The utility trench backfill placed in pavement areas should be compacted to at least 90 percent of maximum density based on ASTM Test Method D1557. Pipe bedding should be in accordance with pipe manufacturer's recommendations.

The Contractor is responsible for removing all water-sensitive soils from the trench regardless of the backfill location and compaction requirements. The Contractor should use appropriate equipment and methods to avoid damage to the utilities and/or structures during fill placement and compaction.

Foundations

After completion of the recommended site preparation and over-excavation, the site should be suitable for shallow footing support. The proposed structures may be supported on a shallow foundation system bearing on a minimum of 24 inches of Engineered Fill. Spread and continuous footings can be designed for the following maximum allowable soil bearing pressures:

Load	Allowable Loading
Dead Load Only	1,875 psf
Dead-Plus-Live Load	2,500 psf
Total Load, including wind or seismic loads	3,325 psf

The footing excavations should not be allowed to dry out at any time prior to pouring concrete. It is recommended that all footings be reinforced by at least one No. 4 reinforcing bar in both top and bottom.

The footings should have a minimum depth of 18 inches below pad subgrade (soil grade) or adjacent exterior grade, whichever is lower. Footings should have a minimum width of 12 inches, regardless of load.

The total movement is not expected to exceed 1 inch. Differential movement should be less than 1 inch. Most of the settlement is expected to occur during construction as the loads are applied. However, additional post-construction movement may occur if the foundation soils are flooded or saturated.

Resistance to lateral footing displacement can be computed using an allowable friction factor of 0.35 acting between the base of foundations and the supporting subgrade. Lateral resistance for footings can alternatively be developed using an allowable equivalent fluid passive pressure of 325 pounds per cubic foot acting against the appropriate vertical footing faces. The frictional and passive resistance of the soil may be combined without reduction in determining the total lateral resistance. A ⅓ increase in the above value may be used for short duration, wind, or seismic loads.

Floor Slabs and Exterior Flatwork

Concrete slab-on-grade floors should be underlain by a water vapor retarder. The water vapor retarder should be installed in accordance with accepted engineering practice. The water vapor retarder should

consist of a vapor retarder sheeting underlain by a minimum of 3 inches of compacted, clean, gravel of ¾-inch maximum size. To aid in concrete curing an optional 2 to 4 inches of granular fill may be placed on top of the vapor retarder. The granular fill should consist of damp clean sand with at least 10 to 30 percent of the sand passing the 100 sieve. The sand should be free of clay, silt, or organic material. Rock dust which is manufactured sand from rock crushing operations is typically suitable for the granular fill. This granular fill material should be compacted.

The floor slabs should be reinforced at a minimum with No. 3 reinforcement bars at 18 inches on-center each way within the middle one-third. Thicker floor slabs with increased concrete strength and reinforcement should be designed wherever large vehicular loads, heavy concentrated loads, heavy equipment, or machinery is anticipated.

The exterior floors should be poured separately in order to act independently of the walls and foundation system. All fills required to bring the building pads to grade should be Engineered Fills.

Moisture within the structure may be derived from water vapors, which were transformed from the moisture within the soils. This moisture vapor can travel through the vapor membrane and penetrate the slab-on-grade. This moisture vapor penetration can affect floor coverings and produce mold and mildew in the structure. To reduce moisture vapor intrusion, it is recommended that a vapor retarder be installed. It is recommended that the utility trenches within the structure be compacted, as specified in our report, to reduce the transmission of moisture through the utility trench backfill. Special attention to the immediate drainage and irrigation around the building is recommended. Positive drainage should be established away from the structure and should be maintained throughout the life of the structure. Ponding of water should not be allowed adjacent to the structure. Over-irrigation within landscaped areas adjacent to the structure should not be performed. In addition, ventilation of the structure (i.e. ventilation fans) is recommended to reduce the accumulation of interior moisture.

Lateral Earth Pressures and Retaining Walls

Walls retaining horizontal backfill and capable of deflecting a minimum of 0.1 percent of its height at the top may be designed using an equivalent fluid active pressure of 40 pounds per square foot per foot of depth. Walls that are incapable of this deflection or walls that are fully constrained against deflection may be designed for an equivalent fluid at-rest pressure of 60 pounds per square foot per foot per depth. Expansive soils should not be used for backfill against walls. The wedge of non-expansive backfill material should extend from the bottom of each retaining wall outward and upward at a slope of 2:1 (horizontal to vertical) or flatter. The stated lateral earth pressures do not include the effects of hydrostatic water pressures generated by infiltrating surface water that may accumulate behind the retaining walls; or loads imposed by construction equipment, foundations, or roadways.

During grading and backfilling operations adjacent to any walls, heavy equipment should not be allowed to operate within a lateral distance of 5 feet from the wall, or within a lateral distance equal to the wall height, whichever is greater, to avoid developing excessive lateral pressures. Within this zone, only hand-operated equipment ("whackers," vibratory plates, or pneumatic compactors) should be used to compact the backfill soils.

R-Value Test Results and Pavement Design

Six subgrade soil samples were obtained from the project site for R-value testing at the locations shown on the attached site plan. The samples were tested in accordance with the State of California Materials Manual Test Designation 301. Results of the tests are as follows:

Sample	Depth	Description	R-Value at Equilibrium
1	12-24"	Silty Sand (SM) w/ clay	24
2	12-24"	Silty Sand (SM) w/ clay	39
3	12-24"	Silty Sand (SM) w/ clay	25
4	12-24"	Silty Sand (SM) w/ clay	26
5	12-24"	Silty Sand (SM) w/ clay	28
6	12-24"	Silty Sand (SM) w/ clay	46

The test results are fair to good and indicate fair to good subgrade support characteristics under dynamic traffic loads. The following table shows the recommended pavement sections for various traffic indices based on a design R-value of 24.

Traffic Index	Asphaltic Concrete	Class II Aggregate Base*	Compacted Subgrade**
4.0	2.0"	6.0"	12.0"
4.5	2.5"	6.0"	12.0"
5.0	2.5"	7.5"	12.0"
5.5	3.0"	7.5"	12.0"
6.0	3.0"	9.5"	12.0"
6.5	3.5"	10.0"	12.0"
7.0	4.0"	11.0"	12.0"
7.5	4.0"	12.0"	12.0"

** 95% compaction based on ASTM Test Method D1557 or CAL 216*
*** 90% compaction based on ASTM Test Method D1557 or CAL 216*

The following table shows the recommended pavement sections for various traffic indices based on a design R-value of 39.

Traffic Index	Asphaltic Concrete	Class II Aggregate Base*	Compacted Subgrade**
4.0	2.0"	4.0"	12.0"
4.5	2.5"	4.0"	12.0"
5.0	2.5"	5.0"	12.0"
5.5	3.0"	5.0"	12.0"
6.0	3.0"	6.5"	12.0"

6.5	3.5"	6.5"	12.0"
7.0	4.0"	7.0"	12.0"
7.5	4.0"	8.0"	12.0"

** 95% compaction based on ASTM Test Method D1557 or CAL 216*
*** 90% compaction based on ASTM Test Method D1557 or CAL 216*

The following table shows the recommended pavement sections for various traffic indices based on a design R-value of 46.

Traffic Index	Asphaltic Concrete	Class II Aggregate Base*	Compacted Subgrade**
4.0	2.0"	4.0"	12.0"
4.5	2.5"	4.0"	12.0"
5.0	2.5"	4.0"	12.0"
5.5	3.0"	4.0"	12.0"
6.0	3.0"	5.0"	12.0"
6.5	3.5"	5.0"	12.0"
7.0	4.0"	5.5"	12.0"
7.5	4.0"	6.5"	12.0"

** 95% compaction based on ASTM Test Method D1557 or CAL 216*
*** 90% compaction based on ASTM Test Method D1557 or CAL 216*

If traffic indices are not available, an estimated (typical value) index of 4.5 may be used for light automobile traffic, and an index of 7.0 may be used for light truck traffic.

The following recommendations are for light-duty and heavy-duty Portland Cement Concrete Pavement Sections based on the design procedures developed by the Portland Cement Association.

PORTLAND CEMENT PAVEMENT
LIGHT DUTY

Traffic Index	Portland Cement Concrete***	Class II Aggregate Base*	Compacted Subgrade**
4.5	5.0"	6.0"	12.0"

HEAVY DUTY

Traffic Index	Portland Cement Concrete***	Class II Aggregate Base*	Compacted Subgrade**
7.0	6.5"	6.0"	12.0"

** 95% compaction based on ASTM Test Method D1557 or CAL 216*
*** 90% compaction based on ASTM Test Method D1557 or CAL 216*
****Minimum compressive strength of 3000 psi*

It is recommended that any uncertified fill material encountered within pavement areas be removed and/or recompacted. The fill materials should be moisture-conditioned to near optimum moisture, and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557. As an alternative, the Owner may elect not to recompact the existing fill within paved areas. However, the Owner should be aware that the paved areas may settle, which may require annual maintenance. At a

minimum, it is recommended that the upper 12 inches of subgrade soil be moisture-conditioned as necessary, and recompacted to a minimum of 90 percent of maximum density based on ASTM Test Method D1557.

Seismic Parameters – 2019 California Building Code

The Site Class per Section 1613 of the 2019 California Building Code (2019 CBC) and ASCE 7-16, Chapter 20 is based upon the site soil conditions. It is our opinion that a Site Class D is most consistent with the subject site soil conditions. For seismic design of the structures based on the seismic provisions of the 2019 CBC, we recommend the following parameters:

Seismic Item	Value	CBC Reference
Site Class	D	Section 1613.2.2
Site Coefficient F_a	1.159	Table 1613.2.3 (1)
S_s	0.853	Section 1613.2.1
S_{MS}	0.988	Section 1613.2.3
S_{DS}	0.659	Section 1613.2.4
Site Coefficient F_v	1.986	Table 1613.2.3 (2)
S_1	0.314	Section 1613.2.1
S_{M1}	0.624	Section 1613.2.3
S_{D1}	0.416	Section 1613.2.4
T_S	0.631	Section 1613.2

* Based on Equivalent Lateral Force (ELF) Design Procedure being used.

Soil Cement Reactivity

Excessive sulfate in either the soil or native water may result in an adverse reaction between the cement in concrete (or stucco) and the soil. HUD/FHA and CBC have developed criteria for evaluation of sulfate levels and how they relate to cement reactivity with soil and/or water.

Soil samples were obtained from the site and tested in accordance with State of California Materials Manual Test Designation 417. The sulfate concentrations detected from these soil samples ranged from 87 to 417 ppm. Some of these results are above the maximum allowable values established by HUD/FHA and CBC. Therefore, it is recommended a Type II cement be utilized to compensate for sulfate reactivity with the cement.

Compacted Material Acceptance

Compaction specifications are not the only criteria for acceptance of the site grading or other such activities. However, the compaction test is the most universally recognized test method for assessing the performance of the Grading Contractor. The numerical test results from the compaction test cannot be used to predict the engineering performance of the compacted material. Therefore, the acceptance of

compacted materials will also be dependent on the stability of that material. The Soils Engineer has the option of rejecting any compacted material regardless of the degree of compaction if that material is considered to be unstable or if future instability is suspected. A specific example of rejection of fill material passing the required percent compaction is a fill which has been compacted with an in situ moisture content significantly less than optimum moisture. This type of dry fill (brittle fill) is susceptible to future settlement if it becomes saturated or flooded.

Testing and Inspection

A representative of Krazan & Associates, Inc. should be present at the site during the earthwork activities to confirm that actual subsurface conditions are consistent with the exploratory fieldwork. This activity is an integral part of our service, as acceptance of earthwork construction is dependent upon compaction testing and stability of the material. This representative can also verify that the intent of these recommendations is incorporated into the project design and construction. Krazan & Associates, Inc. will not be responsible for grades or staking, since this is the responsibility of the Prime Contractor.

LIMITATIONS

Soils Engineering is one of the newest divisions of Civil Engineering. This branch of Civil Engineering is constantly improving as new technologies and understanding of earth sciences advance. Although your site was analyzed using the most appropriate and most current techniques and methods, undoubtedly there will be substantial future improvements in this branch of engineering. In addition to advancements in the field of Soils Engineering, physical changes in the site, either due to excavation or fill placement, new agency regulations, or possible changes in the proposed structure after the soils report is completed may require the soils report to be professionally reviewed. In light of this, the Owner should be aware that there is a practical limit to the usefulness of this report without critical review. Although the time limit for this review is strictly arbitrary, it is suggested that 2 years be considered a reasonable time for the usefulness of this report.

Foundation and earthwork construction is characterized by the presence of a calculated risk that soil and groundwater conditions have been fully revealed by the original foundation investigation. This risk is derived from the practical necessity of basing interpretations and design conclusions on limited sampling of the earth. The recommendations made in this report are based on the assumption that soil conditions do not vary significantly from those disclosed during our field investigation. If any variations or undesirable conditions are encountered during construction, the Soils Engineer should be notified so that supplemental recommendations may be made.

The conclusions of this report are based on the information provided regarding the proposed construction. If the proposed construction is relocated or redesigned, the conclusions in this report may not be valid. The Soils Engineer should be notified of any changes so the recommendations may be reviewed and re-evaluated.

This report is a Geotechnical Feasibility Study with the purpose of evaluating the soil conditions in terms of foundation desi''n. The scope of our services did not include any Environmental Site Assessment for the presence or absence of hazardous and/or toxic materials in the soil, groundwater, or atmosphere; or the

presence of wetlands. Any statements, or absence of statements, in this report or on any boring log regarding odors, unusual or suspicious items, or conditions observed, are strictly for descriptive purposes and are not intended to convey engineering judgment regarding potential hazardous and/or toxic assessment.

The geotechnical engineering information presented herein is based upon professional interpretation utilizing standard engineering practices and a degree of conservatism deemed proper for this project. It is not warranted that such information and interpretation cannot be superseded by future geotechnical engineering developments. We emphasize that this report is valid for the project outlined above and should not be used for any other sites.

If you have any questions or if we may be of further assistance, please do not hesitate to contact our office at (661) 837-9200.

Respectfully submitted,
KRAZAN & ASSOCIATES, INC.

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APPROXIMATE BORING LOCATION — APPROXIMATE PHASE 1 SITE BOUNDARY

APPROXIMATE R-VALUE LOCATION

SITE MAP	**Scale:** NTS	**Date:** May 2020
Malibu Vineyards Development (Phase 1) **NE of Highway 99 and Imperial Street** **Kern County, California**	**Drawn by:** HT	**Approved by:** DJ
	Project No. 022-20027	**Figure No.** 1.1

Krazan
GEOTECHNICAL ENGINEERING



APPROXIMATE PHASE 2 SITE BOUNDARY

APPROXIMATE BORING LOCATION

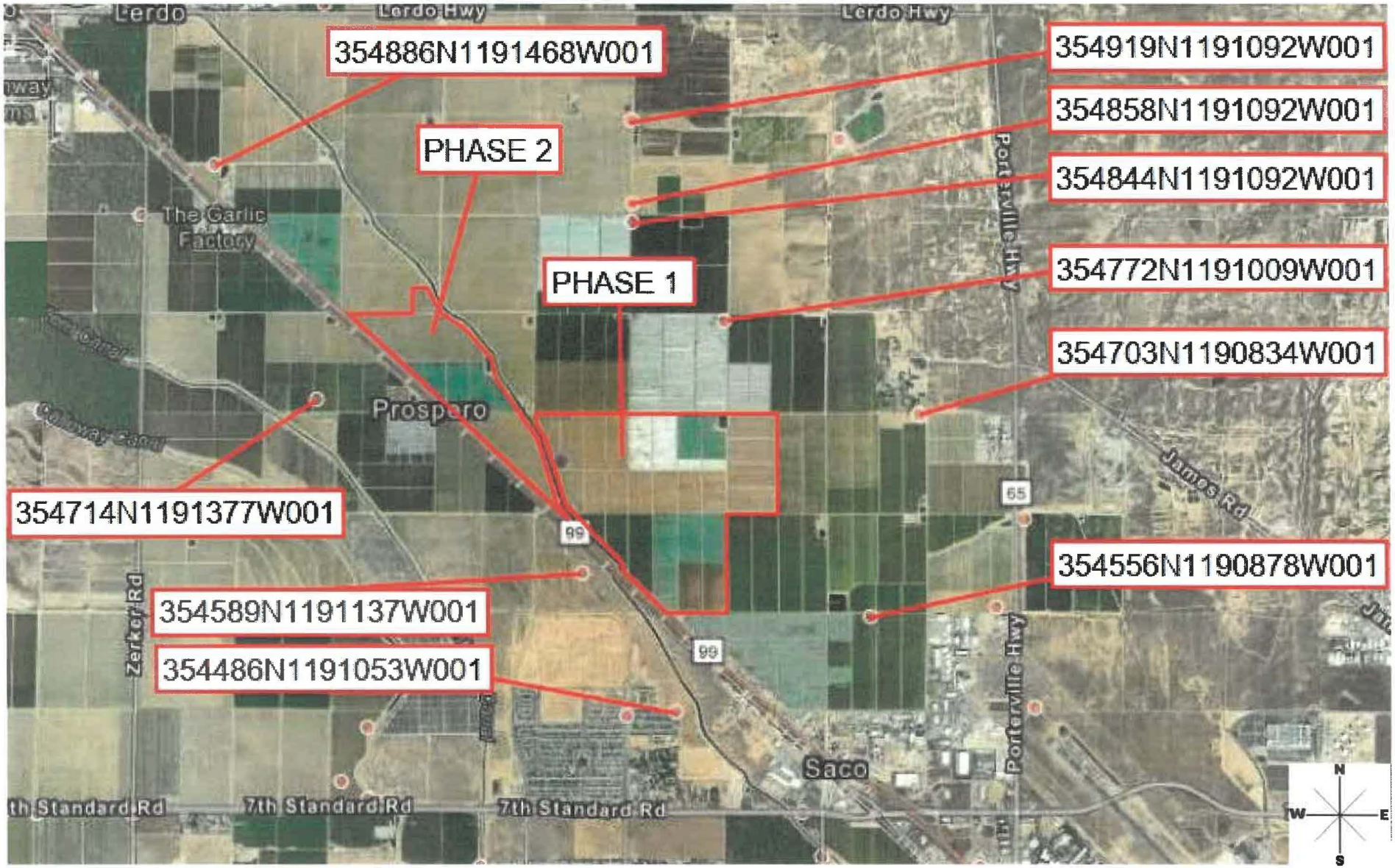
APPROXIMATE R-VALUE LOCATION

N

W E

S

SITE MAP	**Scale:** NTS	**Date:** May 2020	Krazan GEOTECHNICAL ENGINEERING
Malibu Vineyards Development (Phase 2) **NE of Highway 99 and Imperial Street** **Kern County, California**	**Drawn by:** HT	**Approved by:** DJ	
	Project No. 022-20027	**Figure No.** 1.2	



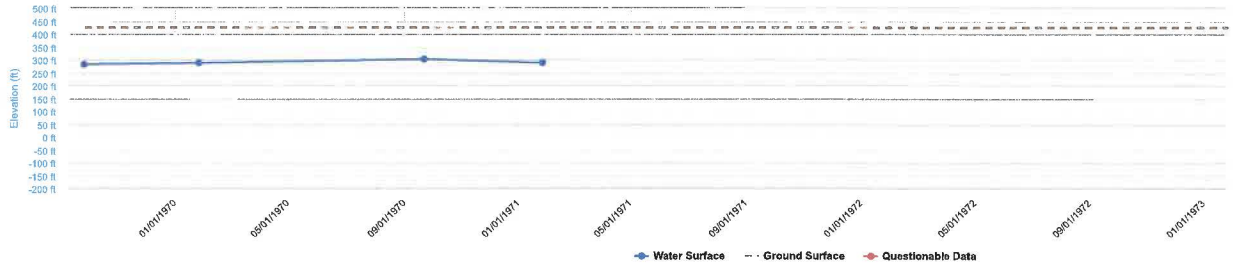
WATER WELL LOCATION MAP	**Scale:** NTS	**Date:** October 2021	Krazan GEOTECHNICAL ENGINEERING
Malibu Vineyards Development **NE of HWY 99 & Imperial Street** **Bakersfield, California**	**Drawn by:** RP	**Approved by:** RP	
	Project No. 022-20027	**Figure No.** 2	

Groundwater Level Report

Station 354486N1191053W001

Station Data | **Groundwater Level Data**

Groundwater Levels for Well 354486N1191053W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency	Water Level Measurement Comments
09/24/1969 00:00:00	426.440	424.940	143.4	283.04	141.9		Department of Water Resou...	
01/27/1970 00:00:00	426.440	424.940	137.6	288.84	136.1		Department of Water Resou...	
09/22/1970 00:00:00	426.440	424.940	123.4	303.04	121.9		Department of Water Resou...	
01/27/1971 00:00:00	426.440	424.940	138.2	288.24	136.7		Department of Water Resou...	
09/24/1971 00:00:00	426.440	424.940				NM:Pumping	Department of Water Resou...	
01/27/1972 00:00:00	426.440	424.940				NM:Pumping	Department of Water Resou...	
09/28/1972 00:00:00	426.440	424.940				NM:Pumping	Department of Water Resou...	
02/02/1973 00:00:00	426.440	424.940	560.8	-134.36	559.3		Department of Water Resou...	
09/24/1973 00:00:00	426.440	424.940	142	284.44	140.5		Department of Water Resou...	
01/30/1974 00:00:00	426.440	424.940				NM:Measurement Discontinued	Department of Water Resou...	

10 records

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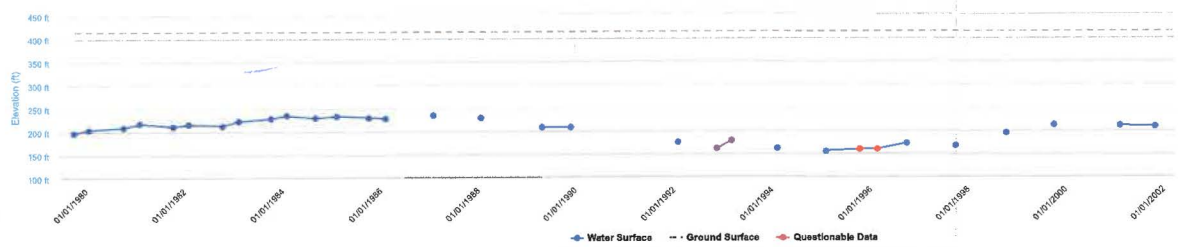
Groundwater Level Report

Station 354886N1191468W001

Station Data | **Groundwater Level Data**

Groundwater Levels for Well 354886N1191468W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency	Water Level Measurement Comments
10/02/1979 00:00:00	414.730	413.730	218	196.73	217		Department of Water Resou...	
01/24/1980 00:00:00	414.730	413.730	211	203.73	210		Department of Water Resou...	
10/07/1980 00:00:00	414.730	413.730	206	208.73	205		Department of Water Resou...	
02/03/1981 00:00:00	414.730	413.730	198	216.73	197		Department of Water Resou...	
10/05/1981 00:00:00	414.730	413.730	204	210.73	203		Department of Water Resou...	
02/02/1982 00:00:00	414.730	413.730	200	214.73	199		Department of Water Resou...	
10/05/1982 00:00:00	414.730	413.730	202	212.73	201		Department of Water Resou...	
02/03/1983 00:00:00	414.730	413.730	193	221.73	192		Department of Water Resou...	
10/04/1983 00:00:00	414.730	413.730	187	227.73	186		Department of Water Resou...	
02/02/1984 00:00:00	414.730	413.730	181	233.73	180		Department of Water Resou...	
09/04/1984 00:00:00	414.730	413.730	186	228.73	185		Department of Water Resou...	
02/04/1985 00:00:00	414.730	413.730	182	232.73	181		Department of Water Resou...	
10/01/1985 00:00:00	414.730	413.730	185	229.73	184		Department of Water Resou...	
02/05/1986 00:00:00	414.730	413.730	187	227.73	186		Department of Water Resou...	
02/02/1987 00:00:00	414.730	413.730	180	234.73	179		Department of Water Resou...	
08/30/1987 00:00:00	414.730	413.730				NM:Pumping	Department of Water Resou...	
01/22/1988 00:00:00	414.730	413.730	186	228.73	185		Department of Water Resou...	
10/03/1988 00:00:00	414.730	413.730				NM:Special/Other	Department of Water Resou...	
04/24/1989 00:00:00	414.730	413.730	206	208.73	205		Department of Water Resou...	
11/29/1989 00:00:00	414.730	413.730	206	208.73	205		Department of Water Resou...	
05/11/1990 00:00:00	414.730	413.730				NM:Special/Other	Department of Water Resou...	
11/30/1990 00:00:00	414.730	413.730				NM:Special/Other	Department of Water Resou...	
01/28/1991 00:00:00	414.730	413.730				NM:Pumping	Department of Water Resou...	
10/02/1991 00:00:00	414.730	413.730				NM:Special/Other	Department of Water Resou...	
02/03/1992 00:00:00	414.730	413.730	239	175.73	238		Department of Water Resou...	

1 to 25 of 43 records

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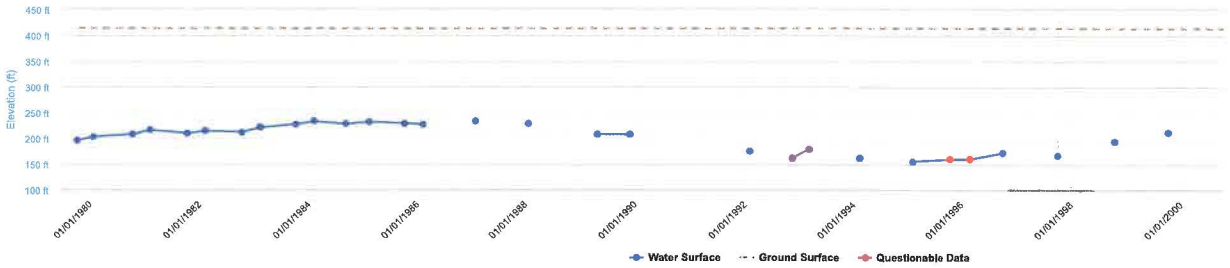
Groundwater Level Report

Station 354886N1191468W001

Station Data | **Groundwater Level Data**

Groundwater Levels for Well 354886N1191468W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency	Water Level Measurement Comments
11/16/1992 00:00:00	414.730	413.730	253	161.73	252		Department of Water Resou...	
03/04/1993 00:00:00	414.730	413.730	235	179.73	234	QM:Air or pressure gauge measurement	Department of Water Resou...	
12/01/1993 00:00:00	414.730	413.730				NM:Special/Other	Department of Water Resou...	
02/11/1994 00:00:00	414.730	413.730	252	162.73	251		Department of Water Resou...	
10/11/1994 00:00:00	414.730	413.730				NM:Special/Other	Department of Water Resou...	
01/31/1995 00:00:00	414.730	413.730	259	155.73	258		Department of Water Resou...	
10/12/1995 00:00:00	414.730	413.730	255	159.73	254	QM:Acoustical sounder	Department of Water Resou...	
02/19/1996 00:00:00	414.730	413.730	255	159.73	254	QM:Acoustical sounder	Department of Water Resou...	
09/30/1996 00:00:00	414.730	413.730	242	172.73	241		Department of Water Resou...	
02/06/1997 00:00:00	414.730	413.730				NM:Special/Other	Department of Water Resou...	
10/01/1997 00:00:00	414.730	413.730	248	166.73	247		Department of Water Resou...	
10/12/1998 00:00:00	414.730	413.730	220	194.73	219		Department of Water Resou...	
10/05/1999 00:00:00	414.730	413.730	202	212.73	201		Department of Water Resou...	
02/08/2001 00:00:00	414.730	413.730	205	209.73	204		Department of Water Resou...	
10/30/2001 00:00:00	414.730	413.730	206	208.73	205		Department of Water Resou...	
02/02/2005 00:00:00	414.730	413.730	237	177.73	236		Department of Water Resou...	
04/28/2006 00:00:00	414.730	413.730				NM:Special/Other	Department of Water Resou...	
02/12/2007 00:00:00	414.730	413.730				NM:Special/Other	Department of Water Resou...	

26 to 43 of 43 records

< 1 2 >

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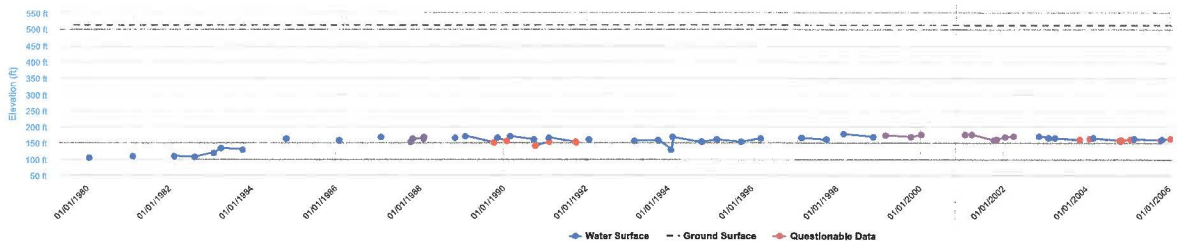
Groundwater Level Report

Station 354556N1190878W001

Station Data | Groundwater Level Data

Groundwater Levels for Well 354556N1190878W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency	Water Level Measurement Comments
08/21/1979 00:00:00	513.750	512.750				NM:Special/Other	Department of Water Resou...	
01/24/1980 00:00:00	513.750	512.750	409	104.75	408		Department of Water Resou...	
08/13/1980 00:00:00	513.750	512.750				NM:Pumping	Department of Water Resou...	
02/12/1981 00:00:00	513.750	512.750	405	108.75	404		Department of Water Resou...	
08/20/1981 00:00:00	513.750	512.750				NM:Pumping	Department of Water Resou...	
02/17/1982 00:00:00	513.750	512.750	404	109.75	403		Department of Water Resou...	
08/16/1982 00:00:00	513.750	512.750	406	107.75	405		Department of Water Resou...	
01/31/1983 00:00:00	513.750	512.750	394	119.75	393		Department of Water Resou...	
04/07/1983 00:00:00	513.750	512.750	379.8	133.95	378.8		Department of Water Resou...	
10/17/1983 00:00:00	513.750	512.750	383.8	129.95	382.8		Department of Water Resou...	
10/30/1983 00:00:00	513.750	512.750				NM:Special/Other	Department of Water Resou...	
02/15/1984 00:00:00	513.750	512.750				NM:Tape hung up	Department of Water Resou...	
03/08/1984 00:00:00	513.750	512.750				NM:Special/Other	Department of Water Resou...	
10/11/1984 00:00:00	513.750	512.750				NM:Special/Other	Department of Water Resou...	
11/01/1984 00:00:00	513.750	512.750	349.5	164.25	348.5		Department of Water Resou...	
02/14/1985 00:00:00	513.750	512.750				NM:Special/Other	Department of Water Resou...	
03/07/1985 00:00:00	513.750	512.750				NM:Pumping	Department of Water Resou...	
10/04/1985 00:00:00	513.750	512.750				NM:Can't get tape in casing	Department of Water Resou...	
11/11/1985 00:00:00	513.750	512.750				NM:Special/Other	Department of Water Resou...	
02/04/1986 00:00:00	513.750	512.750	356	157.75	355		Department of Water Resou...	
03/03/1986 00:00:00	513.750	512.750				NM:Special/Other	Department of Water Resou...	
10/03/1986 00:00:00	513.750	512.750				NM:Can't get tape in casing	Department of Water Resou...	
01/30/1987 00:00:00	513.750	512.750	346	167.75	345		Department of Water Resou...	
03/02/1987 00:00:00	513.750	512.750				NM:Can't get tape in casing	Department of Water Resou...	
10/09/1987 00:00:00	513.750	512.750	360	153.75	359	QM:Acoustical sounder	Department of Water Resou...	

1 to 25 of 108 records

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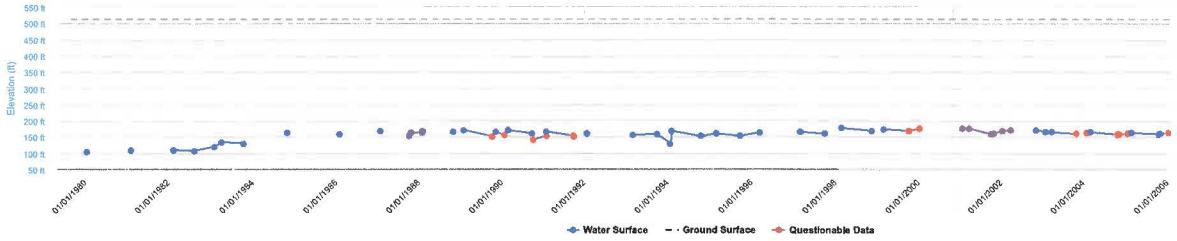
Groundwater Level Report

Station 354556N1190878W001

Station Data | **Groundwater Level Data**

Groundwater Levels for Well 354556N1190878W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency	Water Level Measurement Comments
11/01/1987 00:00:00	513.750	512.750	350	163.75	349		Department of Water Resou...	
01/28/1988 00:00:00	513.750	512.750	350	163.75	349	QM:Acoustical sounder	Department of Water Resou...	
02/02/1988 00:00:00	513.750	512.750	346	167.75	345		Department of Water Resou...	
10/07/1988 00:00:00	513.750	512.750				NM:Temporarily inaccessible	Department of Water Resou...	
11/02/1988 00:00:00	513.750	512.750	347.5	166.25	346.5		Department of Water Resou...	
01/26/1989 00:00:00	513.750	512.750				NM:Special/Other	Department of Water Resou...	
02/02/1989 00:00:00	513.750	512.750	342.5	171.25	341.5		Department of Water Resou...	
10/04/1989 00:00:00	513.750	512.750	362	151.75	361	QM:Acoustical sounder	Department of Water Resou...	
11/08/1989 00:00:00	513.750	512.750	347.5	166.25	346.5		Department of Water Resou...	
01/25/1990 00:00:00	513.750	512.750	359	154.75	358	QM:Acoustical sounder	Department of Water Resou...	
02/26/1990 00:00:00	513.750	512.750	343.5	170.25	342.5		Department of Water Resou...	
10/01/1990 00:00:00	513.750	512.750	353.5	160.25	352.5		Department of Water Resou...	
10/03/1990 00:00:00	513.750	512.750	373	140.75	372	QM:Acoustical sounder	Department of Water Resou...	
01/31/1991 00:00:00	513.750	512.750	361	152.75	360	QM:Acoustical sounder	Department of Water Resou...	
02/01/1991 00:00:00	513.750	512.750	347.5	166.25	346.5		Department of Water Resou...	
10/01/1991 00:00:00	513.750	512.750	360.5	153.25	359.5		Department of Water Resou...	
10/03/1991 00:00:00	513.750	512.750	362	151.75	361	QM:Acoustical sounder	Department of Water Resou...	
01/30/1992 00:00:00	513.750	512.750				NM:Can't get tape in casing	Department of Water Resou...	
02/01/1992 00:00:00	513.750	512.750	352.5	161.25	351.5		Department of Water Resou...	
10/09/1992 00:00:00	513.750	512.750				NM:Can't get tape in casing	Department of Water Resou...	
10/14/1992 00:00:00	513.750	512.750				NM:Pumping	Department of Water Resou...	
01/27/1993 00:00:00	513.750	512.750				NM:Can't get tape in casing	Department of Water Resou...	
03/03/1993 00:00:00	513.750	512.750	357.5	156.25	356.5		Department of Water Resou...	
10/06/1993 00:00:00	513.750	512.750	356	157.75	355		Department of Water Resou...	
01/27/1994 00:00:00	513.750	512.750	384	129	383		Department of Water Resou...	

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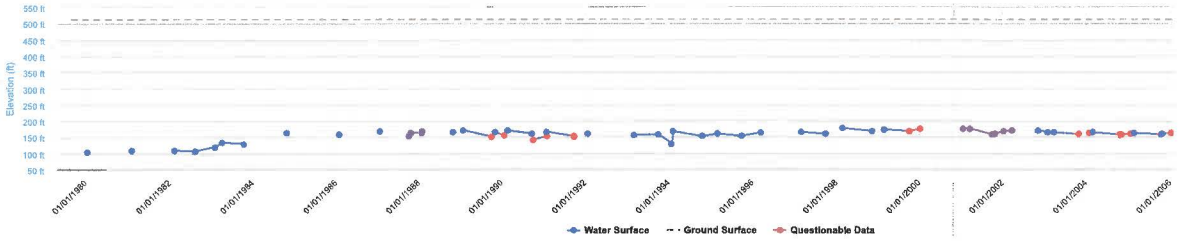
Groundwater Level Report

Station 354556N1190878W001

Station Data | **Groundwater Level Data**

Groundwater Levels for Well 354556N1190878W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency	Water Level Measurement Comments
02/10/1994 00:00:00	513.750	512.750	346	167.75	345		Department of Water Resou...	
10/17/1994 00:00:00	513.750	512.750	361.5	152.25	360.5		Department of Water Resou...	
03/02/1995 00:00:00	513.750	512.750	354	159.75	353		Department of Water Resou...	
10/01/1995 00:00:00	513.750	512.750	360.5	153.25	359.5		Department of Water Resou...	
03/18/1996 00:00:00	513.750	512.750	350	163.75	349		Department of Water Resou...	
10/01/1996 00:00:00	513.750	512.750				NM:Special/Other	Department of Water Resou...	
03/03/1997 00:00:00	513.750	512.750	348	165.75	347		Department of Water Resou...	
10/06/1997 00:00:00	513.750	512.750	354	159.75	353		Department of Water Resou...	
01/08/1998 00:00:00	513.750	512.750				NM:Special/Other	Department of Water Resou...	
03/02/1998 00:00:00	513.750	512.750	336	177.75	335		Department of Water Resou...	
11/20/1998 00:00:00	513.750	512.750	345	168.75	344		Department of Water Resou...	
01/07/1999 00:00:00	513.750	512.750				NM:Special/Other	Department of Water Resou...	
03/01/1999 00:00:00	513.750	512.750	340	173.75	339		Department of Water Resou...	
10/07/1999 00:00:00	513.750	512.750	345	168.75	344	QM:Acoustical sounder	Department of Water Resou...	
01/06/2000 00:00:00	513.750	512.750	339	174.75	338	QM:Acoustical sounder	Department of Water Resou...	
01/25/2001 00:00:00	513.750	512.750	337	176.75	336	QM:Acoustical sounder	Department of Water Resou...	
03/26/2001 00:00:00	513.750	512.750	337	176.75	336		Department of Water Resou...	
10/04/2001 00:00:00	513.750	512.750	355	158.75	354	QM:Acoustical sounder	Department of Water Resou...	
11/01/2001 00:00:00	513.750	512.750	353	160.75	352		Department of Water Resou...	
01/10/2002 00:00:00	513.750	512.750	345	168.75	344	QM:Acoustical sounder	Department of Water Resou...	4F32-1
03/27/2002 00:00:00	513.750	512.750	343	170.75	342		Department of Water Resou...	
11/08/2002 00:00:00	513.750	512.750				NM:Temporarily inaccessible	Department of Water Resou...	
11/11/2002 00:00:00	513.750	512.750	342	171.75	341		Department of Water Resou...	
01/31/2003 00:00:00	513.750	512.750	347	166.75	346		Department of Water Resou...	
04/03/2003 00:00:00	513.750	512.750	349	164.75	348		Department of Water Resou...	

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Groundwater Level Report

Station 354556N1190878W001

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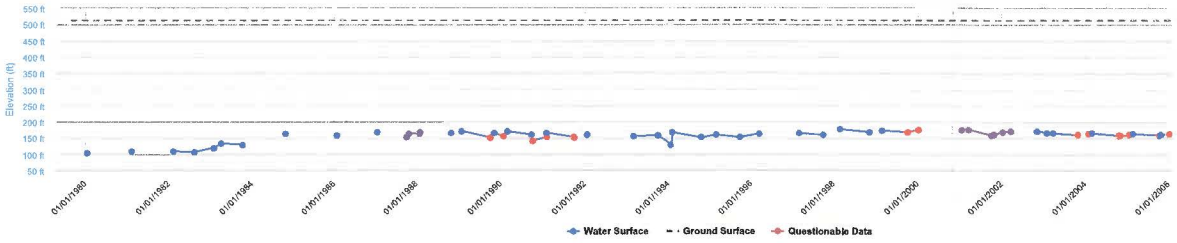
Groundwater Levels for Well 354556N1190878W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency	Water Level Measurement Comments
10/29/2003 00:00:00	513.750	512.750	354	159.75	353	QM:Acoustical sounder	Department of Water Resou...	
11/01/2003 00:00:00	513.750	512.750				NM:Special/Other	Department of Water Resou...	UNKNOWN MISSING MEASUREMENT. ASSIGNED NM-7 (ESenter, 3/24/2020)
01/28/2004 00:00:00	513.750	512.750	350	163.75	349	QM:Acoustical sounder	Department of Water Resou...	
03/01/2004 00:00:00	513.750	512.750	349	164.75	348		Department of Water Resou...	
10/26/2004 00:00:00	513.750	512.750	356	157.75	355	QM:Acoustical sounder	Department of Water Resou...	
11/01/2004 00:00:00	513.750	512.750	358	155.75	357		Department of Water Resou...	
11/04/2004 00:00:00	513.750	512.750	356	157.75	355	QM:Acoustical sounder	Department of Water Resou...	
01/26/2005 00:00:00	513.750	512.750	354	159.75	353	QM:Acoustical sounder	Department of Water Resou...	
03/01/2005 00:00:00	513.750	512.750	351	162.75	350		Department of Water Resou...	
10/20/2005 00:00:00	513.750	512.750	355	158.75	354	QM:Acoustical sounder	Department of Water Resou...	
11/01/2005 00:00:00	513.750	512.750	354	159.75	353		Department of Water Resou...	
01/12/2006 00:00:00	513.750	512.750	350	163.75	349	QM:Acoustical sounder	Department of Water Resou...	
03/01/2006 00:00:00	523.750	522.750	349	174.75	348		Department of Water Resou...	
10/20/2006 00:00:00	523.750	522.750	355	168.75	354	QM:Acoustical sounder	Department of Water Resou...	
11/01/2006 00:00:00	513.750	512.750	357	156.75	356		Department of Water Resou...	
01/11/2007 00:00:00	513.750	512.750	352	161.75	351	QM:Acoustical sounder	Department of Water Resou...	
03/01/2007 00:00:00	523.750	522.750	349	174.75	348		Department of Water Resou...	
10/19/2007 00:00:00	523.750	522.750	372	151.75	371	QM:Acoustical sounder	Department of Water Resou...	
01/31/2008 00:00:00	523.750	522.750	358	165.75	357	QM:Acoustical sounder	Department of Water Resou...	
03/03/2008 00:00:00	523.750	522.750				NM:Pumping	Department of Water Resou...	
10/10/2008 00:00:00	523.750	522.750	370	153.75	369	QM:Acoustical sounder	Department of Water Resou...	
11/03/2008 00:00:00	523.750	522.750				NM:Special/Other	Department of Water Resou...	
01/16/2009 00:00:00	523.750	522.750	347	176.75	346	QM:Acoustical sounder	Department of Water Resou...	
03/02/2009 00:00:00	523.750	522.750				NM:Temporarily inaccessible	Department of Water Resou...	
11/01/2009 00:00:00	523.750	522.750	380	143.75	379		Department of Water Resou...	

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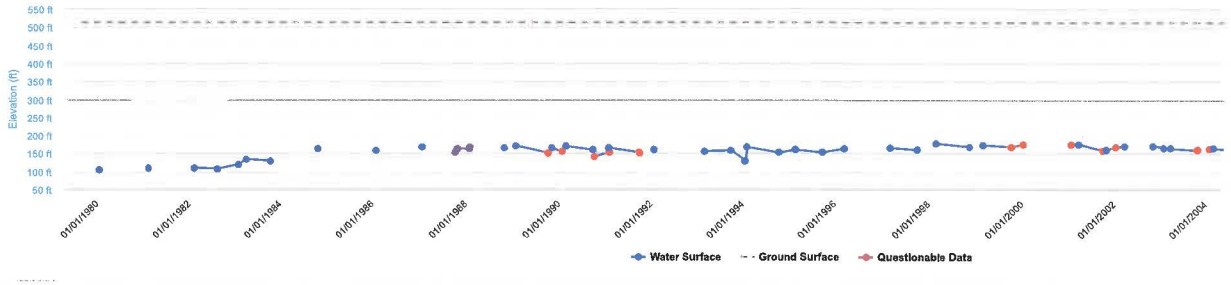
Groundwater Level Report

Station 354556N1190878W001

Station Data | **Groundwater Level Data**

Groundwater Levels for Well 354556N1190878W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency	Water Level Measurement Comments
11/05/2009 00:00:00	523.750	522.750	369	154.75	368	QM:Acoustical sounder	Department of Water Resou...	
01/13/2010 00:00:00	523.750	522.750				NM:Special/Other	Department of Water Resou...	
10/04/2010 00:00:00	523.750	522.750	371	152.75	370		Department of Water Resou...	
10/28/2010 00:00:00	523.750	522.750				NM:Special/Other	Department of Water Resou...	
01/20/2011 00:00:00	523.750	522.750				NM:Pump house locked	Department of Water Resou...	
03/01/2011 00:00:00	523.750	522.750	370	153.75	369		Department of Water Resou...	
10/18/2011 00:00:00	523.750	522.750	362	161.75	361	QM:Acoustical sounder	Department of Water Resou...	
11/11/2011 00:00:00	523.750	522.750	365	158.75	364		Department of Water Resou...	

101 to 108 of 108 records

‹ 1 2 3 4 5 ›

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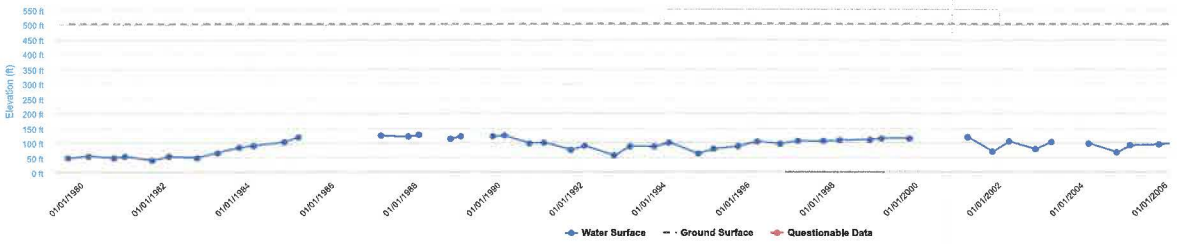
Groundwater Level Report

Station 354919N1191092W001

Station Data | Groundwater Level Data

Groundwater Levels for Well 354919N1191092W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency	Water Level Measurement Comments
09/01/1979 00:00:00	503.760	502.760	456	47.76	455		Department of Water Resou...	
03/01/1980 00:00:00	503.760	502.760	448.4	55.36	447.4		Department of Water Resou...	
10/13/1980 00:00:00	503.760	502.760	454.9	48.86	453.9		Department of Water Resou...	
01/21/1981 00:00:00	503.760	502.760	448.9	54.86	447.9		Department of Water Resou...	
09/18/1981 00:00:00	503.760	502.760	463.3	40.46	462.3		Department of Water Resou...	
02/09/1982 00:00:00	503.760	502.760	450.4	53.36	449.4		Department of Water Resou...	
10/13/1982 00:00:00	503.760	502.760	454.1	49.66	453.1		Department of Water Resou...	
04/07/1983 00:00:00	503.760	502.760	437.7	66.06	436.7		Department of Water Resou...	
10/14/1983 00:00:00	503.760	502.760	419.2	84.56	418.2		Department of Water Resou...	
02/15/1984 00:00:00	503.760	502.760	413	90.76	412		Department of Water Resou...	
11/08/1984 00:00:00	503.760	502.760	400	103.76	399		Department of Water Resou...	
03/07/1985 00:00:00	503.760	502.760	384	119.76	383		Department of Water Resou...	
11/11/1985 00:00:00	503.760	502.760				NM:Special/Other	Department of Water Resou...	
03/03/1986 00:00:00	503.760	502.760				NM:Special/Other	Department of Water Resou...	
03/02/1987 00:00:00	503.760	502.760	380	123.76	379		Department of Water Resou...	
11/01/1987 00:00:00	503.760	502.760	383	120.76	382		Department of Water Resou...	
02/02/1988 00:00:00	503.760	502.760	377	126.76	376		Department of Water Resou...	
11/02/1988 00:00:00	503.760	502.760	391	112.76	390		Department of Water Resou...	
02/02/1989 00:00:00	503.760	502.760	381	122.76	380		Department of Water Resou...	
11/08/1989 00:00:00	503.760	502.760	383	120.76	382		Department of Water Resou...	
02/26/1990 00:00:00	503.760	502.760	380	123.76	379		Department of Water Resou...	
10/01/1990 00:00:00	503.760	502.760	406	97.76	405		Department of Water Resou...	
02/01/1991 00:00:00	503.760	502.760	403	100.76	402		Department of Water Resou...	
10/01/1991 00:00:00	503.760	502.760	428	75.76	427		Department of Water Resou...	
02/01/1992 00:00:00	503.760	502.760	415	88.76	414		Department of Water Resou...	

1 to 25 of 61 records

< 1 2 3 >

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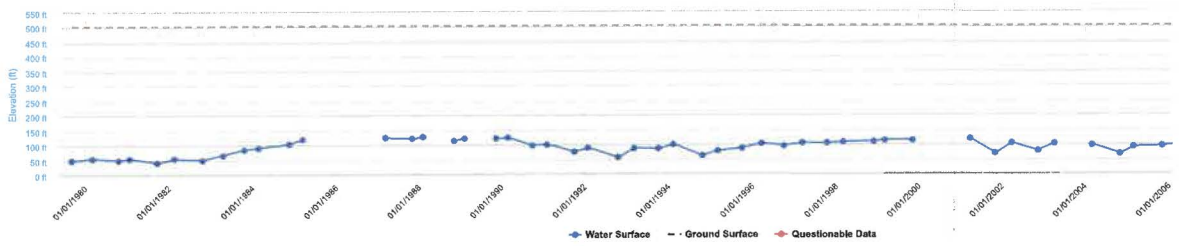
Groundwater Level Report

Station 354919N1191092W001

Station Data | **Groundwater Level Data**

Groundwater Levels for Well 354919N1191092W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency	Water Level Measurement Comments
10/14/1992 00:00:00	503.760	502.760	448	55.76	447		Department of Water Resou...	
03/03/1993 00:00:00	503.760	502.760	416	87.76	415		Department of Water Resou...	
10/06/1993 00:00:00	503.760	502.760	418	85.76	417		Department of Water Resou...	
02/10/1994 00:00:00	503.760	502.760	404	99.76	403		Department of Water Resou...	
10/18/1994 00:00:00	503.760	502.760	442	61.76	441		Department of Water Resou...	
03/02/1995 00:00:00	503.760	502.760	425	78.76	424		Department of Water Resou...	
10/01/1995 00:00:00	503.760	502.760	417	86.76	416		Department of Water Resou...	
03/18/1996 00:00:00	503.760	502.760	401	102.76	400		Department of Water Resou...	
10/01/1996 00:00:00	503.760	502.760	408	95.76	407		Department of Water Resou...	
03/03/1997 00:00:00	503.760	502.760	398	105.76	397		Department of Water Resou...	
10/06/1997 00:00:00	503.760	502.760	399	104.76	398		Department of Water Resou...	
03/02/1998 00:00:00	503.760	502.760	395	108.76	394		Department of Water Resou...	
11/20/1998 00:00:00	503.760	502.760	394	109.76	393		Department of Water Resou...	
03/01/1999 00:00:00	503.760	502.760	389	114.76	388		Department of Water Resou...	
11/01/1999 00:00:00	503.760	502.760	389	114.76	388		Department of Water Resou...	
03/26/2001 00:00:00	503.760	502.760	384	119.76	383		Department of Water Resou...	
11/01/2001 00:00:00	503.760	502.760	434	69.76	433		Department of Water Resou...	
03/27/2002 00:00:00	503.760	502.760	399	104.76	398		Department of Water Resou...	
11/11/2002 00:00:00	503.760	502.760	425	78.76	424		Department of Water Resou...	
04/03/2003 00:00:00	503.760	502.760	401	102.76	400		Department of Water Resou...	
11/01/2003 00:00:00	503.760	502.760				NM:Special/Other	Department of Water Resou...	UNKNOWN MISSING MEASUREMENT. ASSIGNED NM-7 (ESenter, 3/24/2020)
03/01/2004 00:00:00	503.760	502.760	406	97.76	405		Department of Water Resou...	
11/01/2004 00:00:00	503.760	502.760	436	67.76	435		Department of Water Resou...	
03/01/2005 00:00:00	503.760	502.760	412	91.76	411		Department of Water Resou...	
11/01/2005 00:00:00	503.760	502.760	409	94.76	408		Department of Water Resou...	

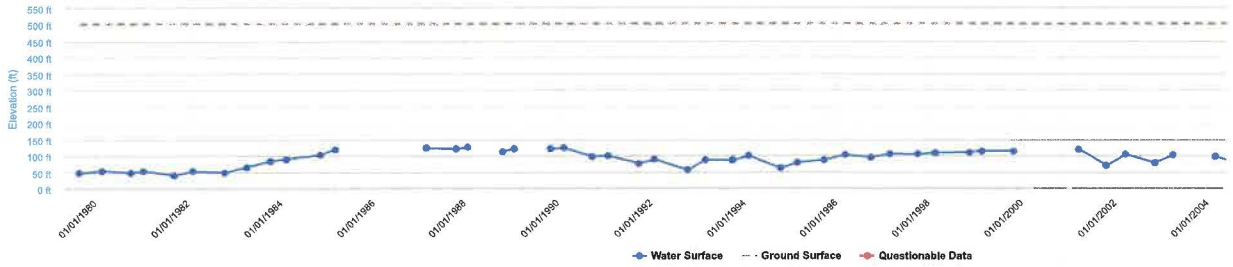
26 to 50 of 61 records

Groundwater Level Report

Station 354919N1191092W001

Station Data | **Groundwater Level Data**

Groundwater Levels for Well 354919N1191092W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency	Water Level Measurement Comments
03/01/2006 00:00:00	503.760	502.760	405	98.76	404		Department of Water Resou...	
11/01/2006 00:00:00	503.760	502.760	410	93.76	409		Department of Water Resou...	
03/01/2007 00:00:00	503.760	502.760	358	145.76	357		Department of Water Resou...	
03/03/2008 00:00:00	503.760	502.760				NM:Pumping	Department of Water Resou...	
11/03/2008 00:00:00	503.760	502.760	444	59.76	443		Department of Water Resou...	
03/02/2009 00:00:00	503.760	502.760	418	85.76	417		Department of Water Resou...	
11/01/2009 00:00:00	503.760	502.760	397	106.76	396		Department of Water Resou...	
03/15/2010 00:00:00	503.760	502.760	437	66.76	436		Department of Water Resou...	
10/04/2010 00:00:00	506.760	505.760	421	85.76	420		Department of Water Resou...	
03/01/2011 00:00:00	506.760	505.760	414	92.76	413		Department of Water Resou...	
11/11/2011 00:00:00	506.760	505.760	412	94.76	411		Department of Water Resou...	

51 to 61 of 61 records

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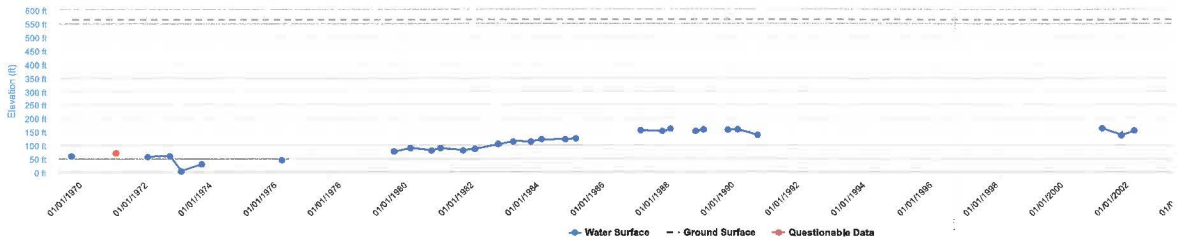
Groundwater Level Report

Station 354703N1190834W001

Station Data | **Groundwater Level Data**

Groundwater Levels for Well 354703N1190834W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency	Water Level Measurement Comments
09/23/1969 00:00:00	564.770	562.770	506	58.77	504		Department of Water Resou...	
01/27/1971 00:00:00	564.770	562.770	493.2	71.57	491.2	QM:Oil or foreign substance in casing	Department of Water Resou...	
09/24/1971 00:00:00	564.770	562.770				NM:Pumping	Department of Water Resou...	
01/27/1972 00:00:00	564.770	562.770	508	56.77	506		Department of Water Resou...	
09/28/1972 00:00:00	564.770	562.770	505	59.77	503		Department of Water Resou...	
02/02/1973 00:00:00	564.770	562.770	560.8	3.97	558.8		Department of Water Resou...	
09/24/1973 00:00:00	564.770	562.770	535	29.77	533		Department of Water Resou...	
01/31/1974 00:00:00	564.770	562.770				NM:Measurement Discontinued	Department of Water Resou...	
03/18/1976 00:00:00	564.770	562.770	519	45.77	517		Department of Water Resou...	
09/01/1979 00:00:00	564.770	562.770	489	75.77	487		Department of Water Resou...	
03/01/1980 00:00:00	564.770	562.770	476.2	88.57	474.2		Department of Water Resou...	
10/13/1980 00:00:00	564.770	562.770	483.6	81.17	481.6		Department of Water Resou...	
01/21/1981 00:00:00	564.770	562.770	477	87.77	475		Department of Water Resou...	
09/21/1981 00:00:00	564.770	562.770	484.1	80.67	482.1		Department of Water Resou...	
02/09/1982 00:00:00	564.770	562.770	479.3	85.47	477.3		Department of Water Resou...	
10/13/1982 00:00:00	564.770	562.770	462.3	102.47	460.3		Department of Water Resou...	
04/07/1983 00:00:00	564.770	562.770	451	113.77	449		Department of Water Resou...	
10/17/1983 00:00:00	564.770	562.770	451.7	113.07	449.7		Department of Water Resou...	
02/15/1984 00:00:00	564.770	562.770	444.8	119.97	442.8		Department of Water Resou...	
11/01/1984 00:00:00	564.770	562.770	443.3	121.47	441.3		Department of Water Resou...	
03/07/1985 00:00:00	564.770	562.770	440	124.77	438		Department of Water Resou...	
11/11/1985 00:00:00	564.770	562.770				NM:Special/Other	Department of Water Resou...	
03/03/1986 00:00:00	564.770	562.770				NM:Special/Other	Department of Water Resou...	
03/02/1987 00:00:00	564.770	562.770	411	153.77	409		Department of Water Resou...	
11/01/1987 00:00:00	564.770	562.770	415	149.77	413		Department of Water Resou...	

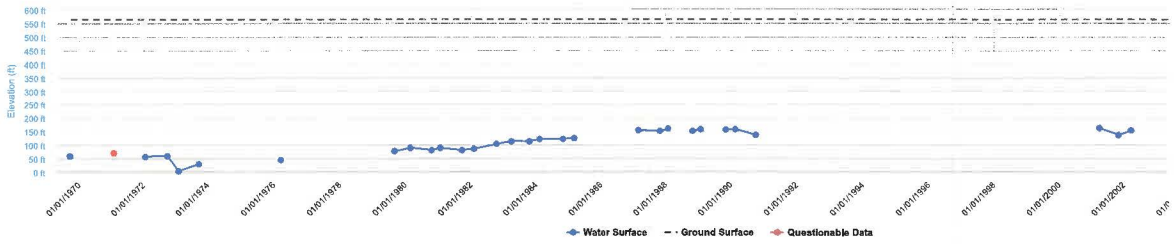
1 to 25 of 62 records

Groundwater Level Report

Station 354703N1190834W001

Station Data | **Groundwater Level Data**

Groundwater Levels for Well 354703N1190834W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency	Water Level Measurement Comments
02/02/1988 00:00:00	564.770	562.770	405	159.77	403		Department of Water Resou...	
11/02/1988 00:00:00	564.770	562.770	415	149.77	413		Department of Water Resou...	
02/02/1989 00:00:00	564.770	562.770	407	157.77	405		Department of Water Resou...	
11/08/1989 00:00:00	564.770	562.770	409	155.77	407		Department of Water Resou...	
02/26/1990 00:00:00	564.770	562.770	408	156.77	406		Department of Water Resou...	
10/01/1990 00:00:00	564.770	562.770	430	134.77	428		Department of Water Resou...	
02/01/1991 00:00:00	564.770	562.770				NM:Special/Other	Department of Water Resou...	
10/01/1991 00:00:00	564.770	562.770				NM:Special/Other	Department of Water Resou...	
02/01/1992 00:00:00	564.770	562.770				NM:Special/Other	Department of Water Resou...	
10/14/1992 00:00:00	564.770	562.770				NM:Special/Other	Department of Water Resou...	
03/03/1993 00:00:00	564.770	562.770				NM:Special/Other	Department of Water Resou...	
10/06/1993 00:00:00	564.770	562.770				NM:Special/Other	Department of Water Resou...	
02/10/1994 00:00:00	564.770	562.770				NM:Special/Other	Department of Water Resou...	
10/18/1994 00:00:00	564.770	562.770				NM:Can't get tape in casing	Department of Water Resou...	
03/02/1995 00:00:00	564.770	562.770				NM:Special/Other	Department of Water Resou...	
10/01/1995 00:00:00	564.770	562.770				NM:Measurement Discontinued	Department of Water Resou...	
03/18/1996 00:00:00	564.770	562.770				NM:Special/Other	Department of Water Resou...	
10/01/1996 00:00:00	564.770	562.770				NM:Special/Other	Department of Water Resou...	
03/03/1997 00:00:00	564.770	562.770				NM:Measurement Discontinued	Department of Water Resou...	
10/06/1997 00:00:00	564.770	562.770				NM:Temporarily inaccessible	Department of Water Resou...	
03/01/1999 00:00:00	564.770	562.770				NM:Temporarily inaccessible	Department of Water Resou...	
03/26/2001 00:00:00	564.770	562.770	403	161.77	401		Department of Water Resou...	
11/01/2001 00:00:00	564.770	562.770	429	135.77	427		Department of Water Resou...	
03/27/2002 00:00:00	564.770	562.770	412	152.77	410		Department of Water Resou...	
11/11/2002 00:00:00	564.770	562.770				NM:Unable to locate well	Department of Water Resou...	

26 to 50 of 62 records

< 1 2 3 >

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Groundwater Level Report

Station 354703N1190834W001

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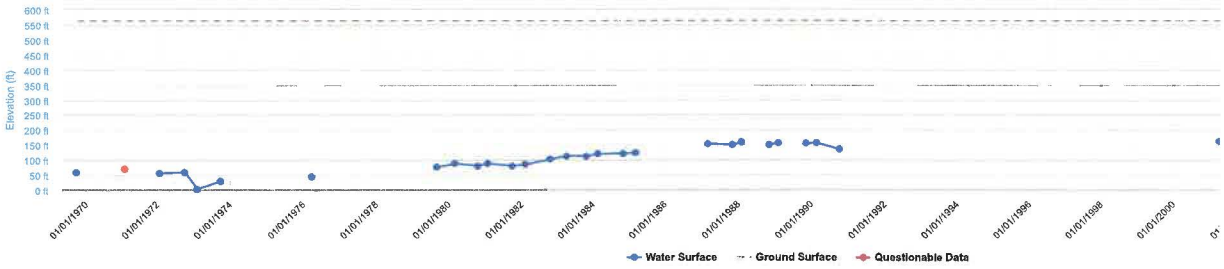
Groundwater Levels for Well 354703N1190834W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency	Water Level Measurement Comments
04/03/2003 00:00:00	564.770	562.770				NM:Measurement Discontinued	Department of Water Resou...	
11/01/2003 00:00:00	564.770	562.770				NM:Well has been destroyed	Department of Water Resou...	
03/01/2004 00:00:00	564.770	562.770				NM:Unable to locate well	Department of Water Resou...	
11/01/2004 00:00:00	564.770	562.770				NM:Unable to locate well	Department of Water Resou...	
03/01/2005 00:00:00	564.770	562.770				NM:Unable to locate well	Department of Water Resou...	
11/01/2005 00:00:00	564.770	562.770				NM:Special/Other	Department of Water Resou...	
03/01/2006 00:00:00	564.770	562.770				NM:Special/Other	Department of Water Resou...	
11/01/2006 00:00:00	564.770	562.770				NM:Special/Other	Department of Water Resou...	
03/01/2007 00:00:00	564.770	562.770				NM:Special/Other	Department of Water Resou...	
03/03/2008 00:00:00	564.770	562.770				NM:Special/Other	Department of Water Resou...	
11/03/2008 00:00:00	564.770	562.770				NM:Special/Other	Department of Water Resou...	
10/04/2010 00:00:00	564.770	562.770				NM:Special/Other	Department of Water Resou...	N/A

51 to 62 of 62 records

« 1 2 3 »

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Groundwater Level Report

Station 354589N1191137W001

Station Data | **Groundwater Level Data**

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency	Water Level Measurement Comments

No items to show...

0 records

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Groundwater Level Report

Station 354772N1191009W001

Station Data | **Groundwater Level Data**

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency	Water Level Measurement Comments
No items to show...								

0 records

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Groundwater Level Report

Station 354844N1191092W001

Station Data | **Groundwater Level Data**

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency	Water Level Measurement Comments

No items to show...

0 records

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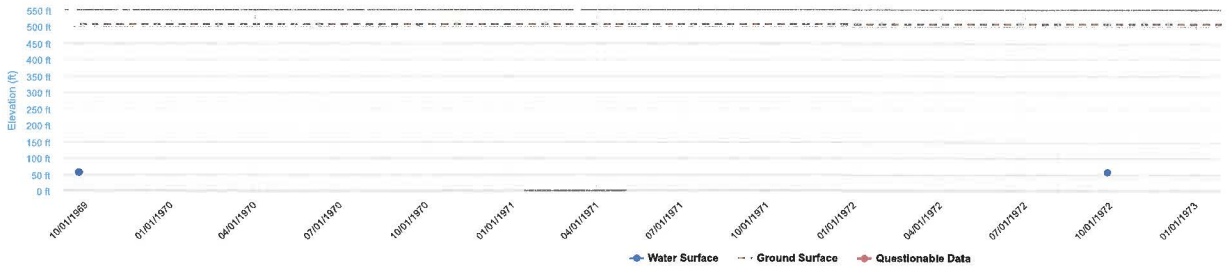
Groundwater Level Report

Station 354858N1191092W001

Station Data | **Groundwater Level Data**

Groundwater Levels for Well 354858N1191092W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency	Water Level Measurement Comments
09/23/1969 00:00:00	508.960	507.660	452.6	56.36	451.3		Department of Water Resou...	
09/24/1969 00:00:00	508.960	507.660	451.3	57.66	450		Department of Water Resou...	
09/24/1971 00:00:00	508.960	507.660				NM:Can't get tape in casing	Department of Water Resou...	
01/27/1972 00:00:00	508.960	507.660				NM:Measurement Discontinued	Department of Water Resou...	
09/28/1972 00:00:00	508.960	507.660	452.5	56.46	451.2		Department of Water Resou...	
01/31/1974 00:00:00	508.960	507.660				NM:Well has been destroyed	Department of Water Resou...	

6 records

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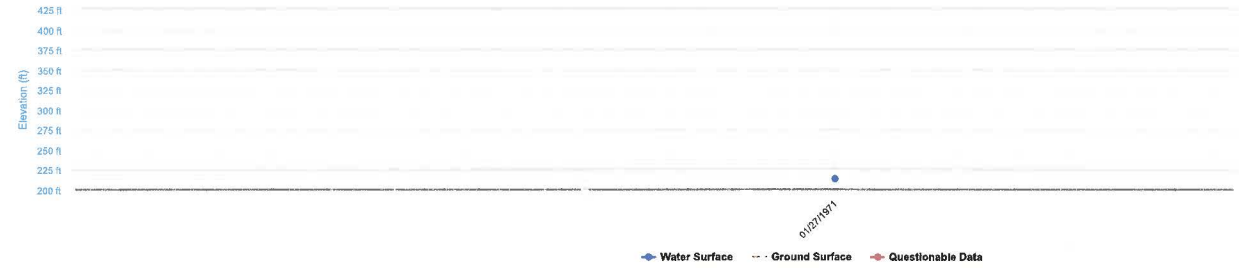
Groundwater Level Report

Station 354714N1191377W001

Station Data | **Groundwater Level Data**

Groundwater Levels for Well 354714N1191377W001



Download Data

Measurement Date (PST)	Reference Point Elevation	Ground Surface Elevation	Distance from RP to WS	Groundwater Elevation	Ground Surface to Water Surface	Measurement Issue	Collecting Agency	Water Level Measurement Comments
01/27/1971 00:00:00	395.730	395.330	182.7	213.03	182.3		Department of Water Resou...	

1 record

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APPENDIX A

FIELD AND LABORATORY INVESTIGATIONS

Field Investigation

The field investigation consisted of a surface reconnaissance and a subsurface exploratory program. Thirty-eight 4½-inch to 6½-inch diameter exploratory borings were advanced. The boring locations are shown on the site plans.

The soils encountered were logged in the field during the exploration and, with supplementary laboratory test data, are described in accordance with the Unified Soil Classification System.

Modified standard penetration tests and standard penetration tests were performed at selected depths. These tests represent the resistance to driving a 2½-inch and 1½-inch diameter split barrel sampler, respectively. The driving energy was provided by a hammer weighing 140 pounds falling 30 inches. Relatively undisturbed soil samples were obtained while performing this test. Bag samples of the disturbed soil were obtained from the auger cuttings. The modified standard penetration tests are identified in the sample type on the boring logs with a full shaded in block. The standard penetration tests are identified in the sample type on the boring logs with half of the block shaded. All samples were returned to our Clovis laboratory for evaluation.

Laboratory Investigation

The laboratory investigation was programmed to determine the physical and mechanical properties of the foundation soil underlying the site. Test results were used as criteria for determining the engineering suitability of the surface and subsurface materials encountered.

In-situ moisture content, dry density, consolidation, direct shear, and sieve analysis tests were completed for the undisturbed samples representative of the subsurface material. Atterberg limits, expansion index and R-value tests were completed for select bag samples obtained from the auger cuttings. These tests, supplemented by visual observation, comprised the basis for our evaluation of the site material.

The logs of the exploratory borings and laboratory determinations are presented in this Appendix.

UNIFIED SOIL CLASSIFICATION SYSTEM

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)			
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)	SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)			
SILTS AND CLAYS Liquid limit less than 50%		ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils

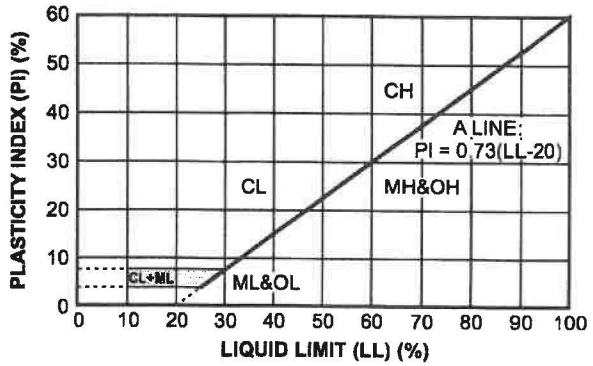
CONSISTENCY CLASSIFICATION

Description	Blows per Foot
Granular Soils	
Very Loose	< 5
Loose	5 – 15
Medium Dense	16 – 40
Dense	41 – 65
Very Dense	> 65
Cohesive Soils	
Very Soft	< 3
Soft	3 – 5
Firm	6 – 10
Stiff	11 – 20
Very Stiff	21 – 40
Hard	> 40

GRAIN SIZE CLASSIFICATION

Grain Type	*Standard Sieve Size*	*Grain Size in Millimeters*
Boulders	Above 12 inches	Above 305
Cobbles	12 to 13 inches	305 to 76.2
Gravel	3 inches to No. 4	76.2 to 4.76
Coarse-grained	3 to ¾ inches	76.2 to 19.1
Fine-grained	¾ inches to No. 4	19.1 to 4.76
Sand	No. 4 to No. 200	4.76 to 0.074
Coarse-grained	No. 4 to No. 10	4.76 to 2.00
Medium-grained	No. 10 to No. 40	2.00 to 0.042
Fine-grained	No. 40 to No. 200	0.042 to 0.074
Silt and Clay	Below No. 200	Below 0.074

PLASTICITY CHART



Log of Boring B1

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-1

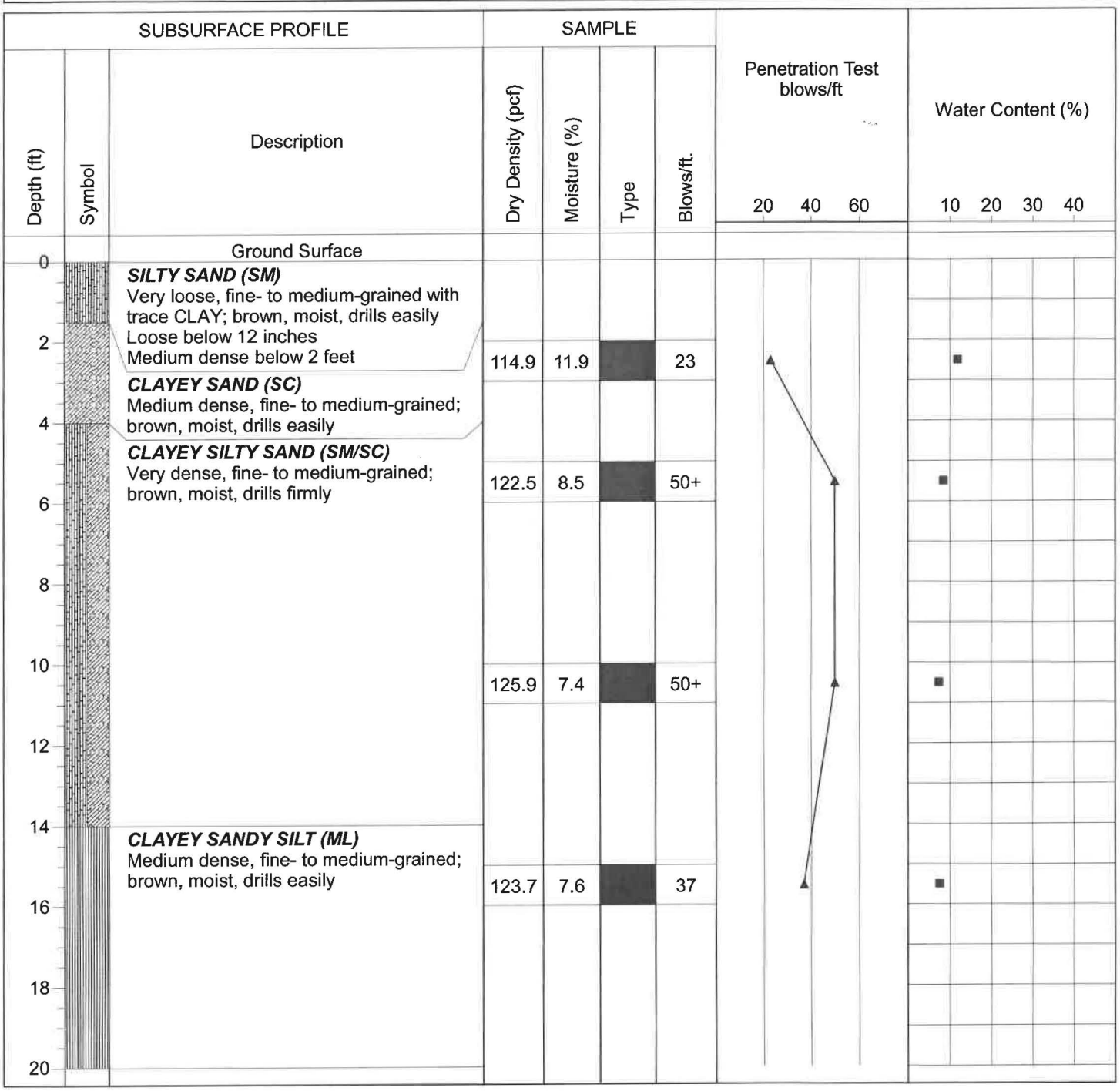
Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 3-10-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 20 Feet

Sheet: 1 of 1

Log of Boring B2

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-2

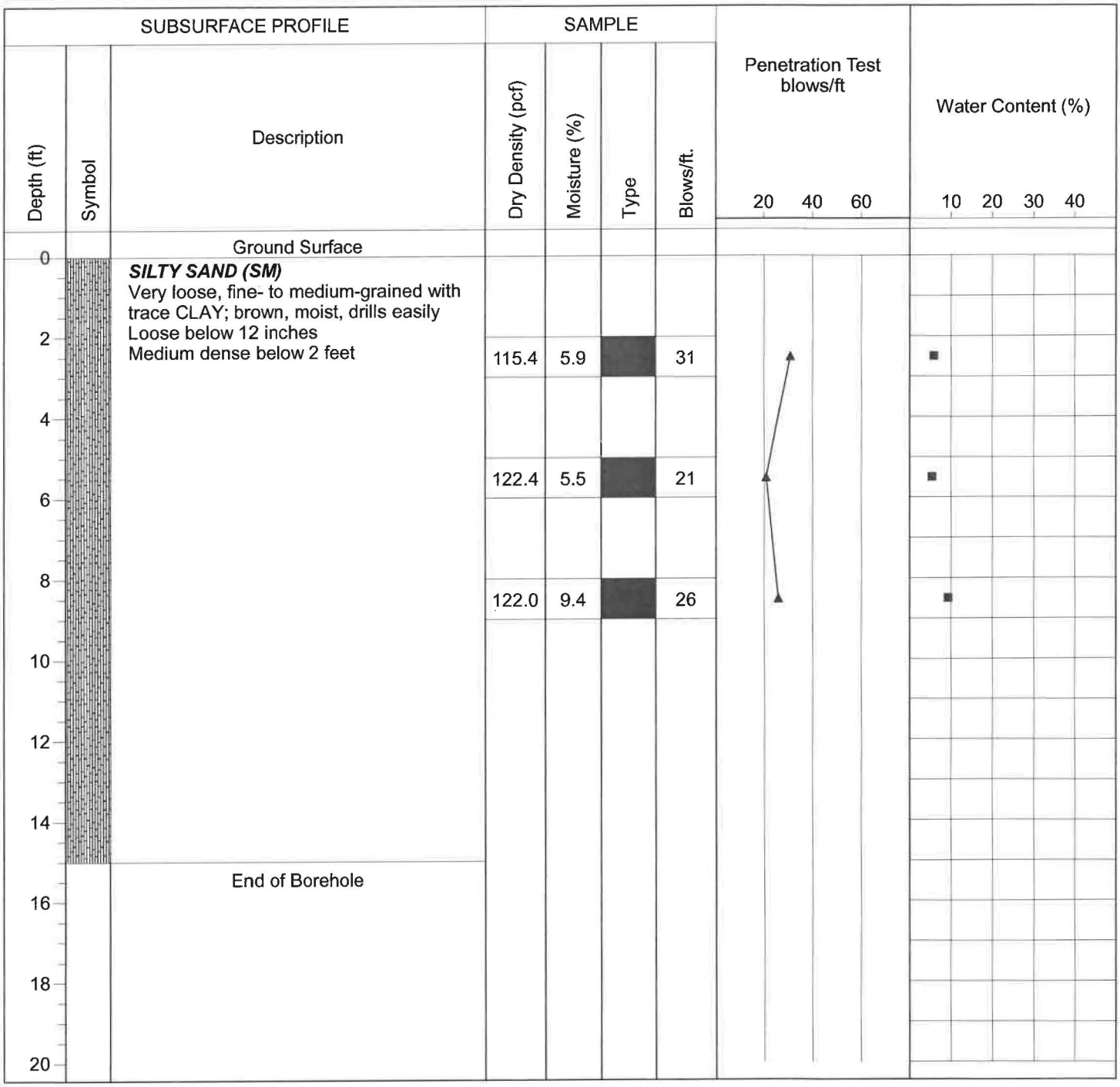
Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 3-10-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B3

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-3

Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water> **Initial:** None **At Completion:** None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
		Ground Surface				
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with trace CLAY; brown, moist, drills easily Loose below 12 inches Medium dense below 2 feet				
2			117.7	10.4		22
4		***CLAYEY SANDY SILT (ML)*** Medium dense, fine- to medium-grained; brown, moist, drills easily				
6			119.8	6.8		25
8						
10		End of Borehole				
12						
14						
16						
18						
20						

Penetration Test blows/ft: 20, 40, 60

Water Content (%): 10, 20, 30, 40

Drill Method: Solid Flight

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 3-10-20

Hole Size: 4½ Inches

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B4

Project: Malibu Vineyards Development | **Project No:** 022-20027

Client: Mr. Tom Murray | **Figure No.:** A-4

Location: NE of Highway 99 and Imperial Highway, Kern County, California | **Logged By:** Dave Adams

Depth to Water> | **Initial:** None | **At Completion:** None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
0		Ground Surface				
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with trace CLAY; brown, moist, drills easily Loose below 12 inches				
2		***CLAYEY SAND (SC)*** Medium dense, fine- to medium-grained; brown, moist, drills easily	117.0	7.8	■	26
4		***CLAYEY SILTY SAND (SM/SC)*** Medium dense, fine- to coarse-grained with trace GRAVEL; brown, moist, drills easily	125.6	7.3	■	32
10		Dense and damp below 10 feet	117.7	4.0	■	48
14		***SILTY SAND (SM)*** Dense, fine- to medium-grained with trace CLAY; brown, moist, drills firmly	128.8	7.4	■	54
20						

Penetration Test blows/ft: 20 40 60

Water Content (%): 10 20 30 40

Drill Method: Solid Flight | **Drill Date:** 3-10-20

Drill Rig: CME 45C-4 | **Hole Size:** 4½ Inches

Driller: Jim Watts | **Elevation:** 20 Feet

Krazan and Associates

Log of Boring B5

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-5

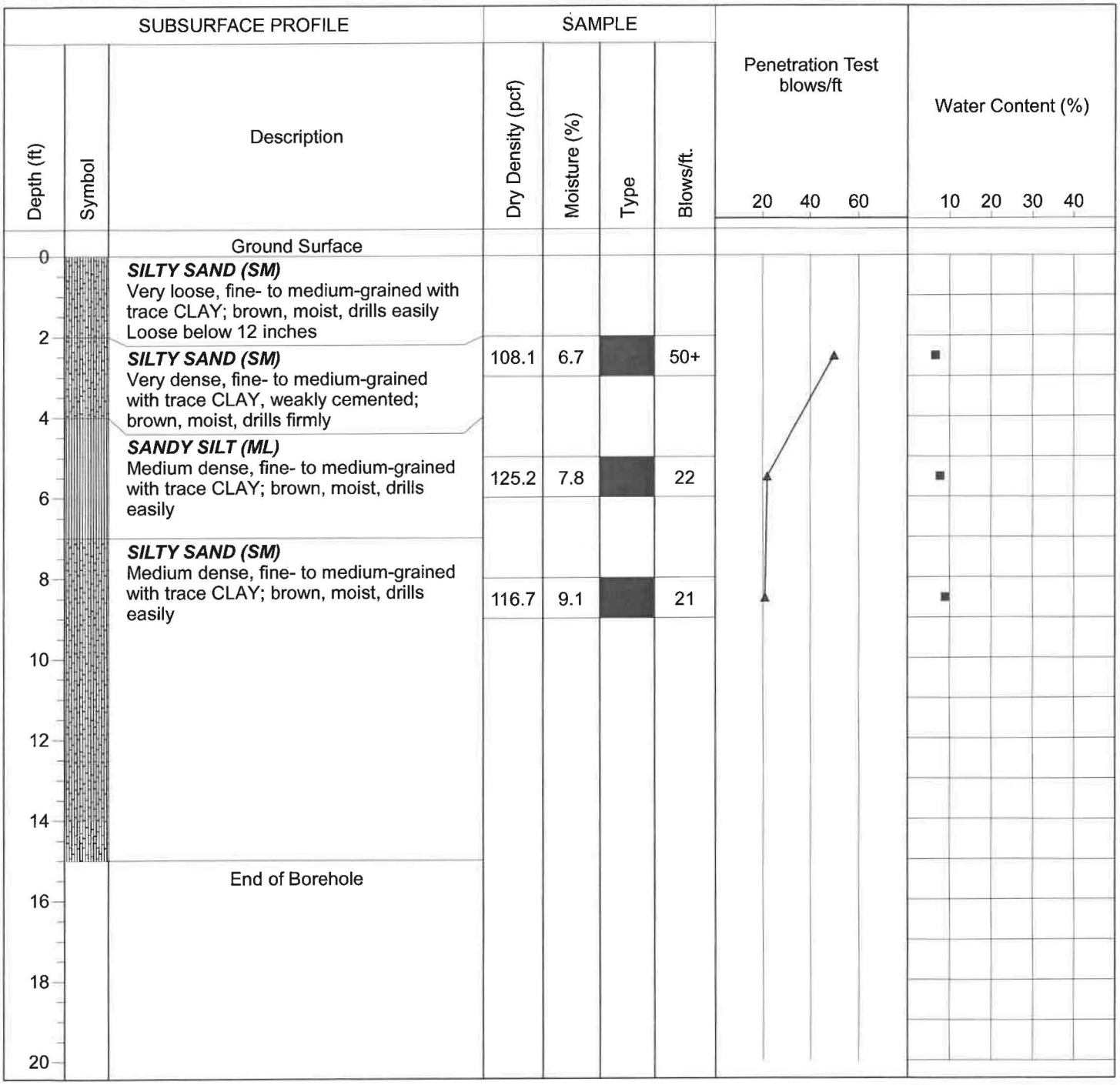
Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 3-10-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B6

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-6

Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		SILTY SAND (SM) Very loose, fine- to medium-grained with trace CLAY; brown, moist, drills easily Loose below 12 inches Medium dense below 2 feet	122.8	7.4		27		
4		***SILTY SAND/SAND (SM/SP)*** Medium dense, fine- to medium-grained with trace CLAY; brown, damp, drills easily	117.0	1.5		24		
10		End of Borehole						
20								

Drill Method: Solid Flight

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 3-10-20

Hole Size: 4½ Inches

Elevation: 10 Feet

Sheet: 1 of 1

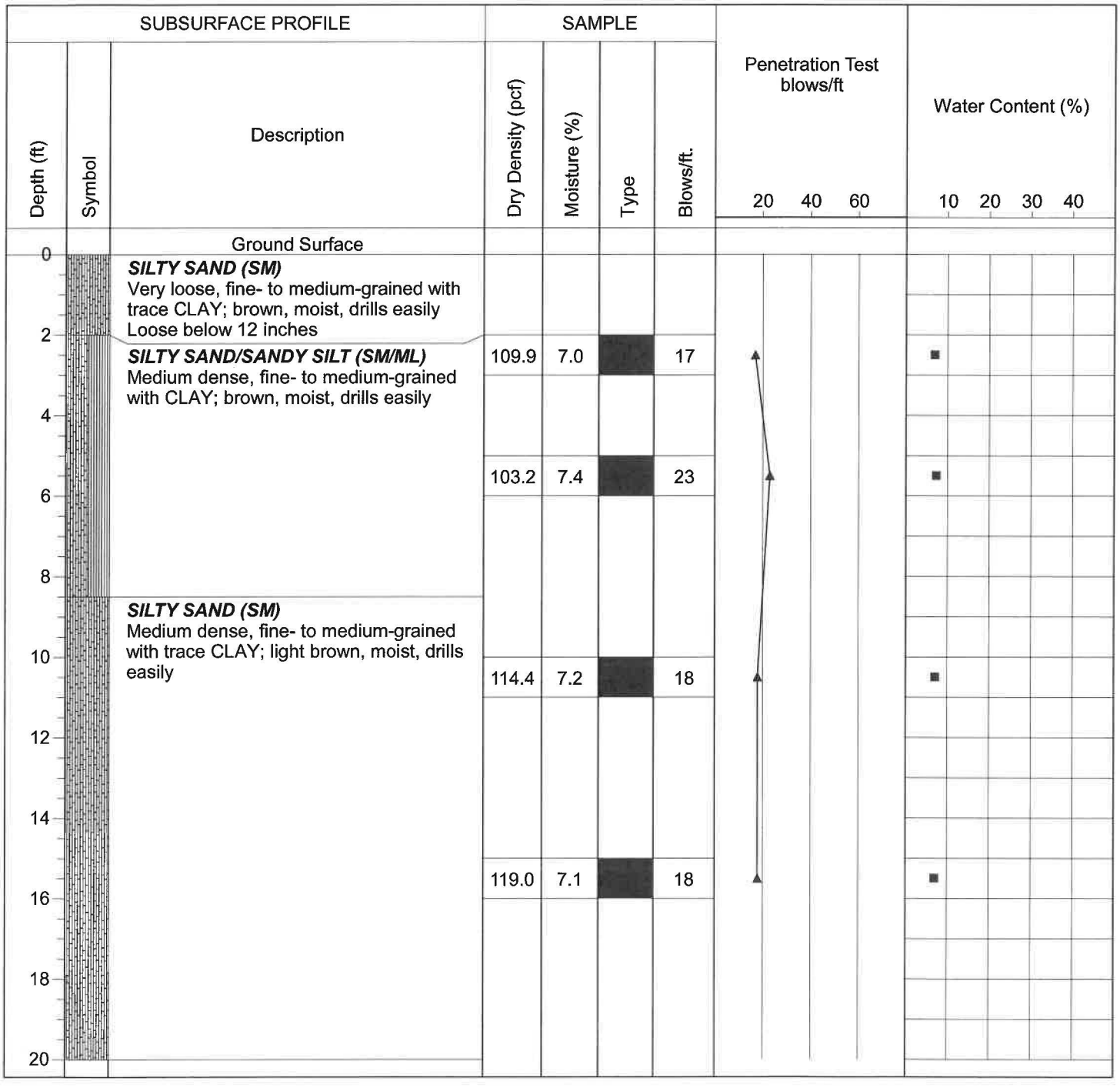
Log of Boring B7

Project: Malibu Vineyards Development | **Project No:** 022-20027

Client: Mr. Tom Murray | **Figure No.:** A-7

Location: NE of Highway 99 and Imperial Highway, Kern County, California | **Logged By:** Dave Adams

Depth to Water> | **Initial:** None | **At Completion:** None



Drill Method: Solid Flight | **Drill Date:** 3-11-20

Drill Rig: CME 45C-4 | **Krazan and Associates** | **Hole Size:** 4½ Inches

Driller: Jim Watts | **Elevation:** 20 Feet

Sheet: 1 of 1

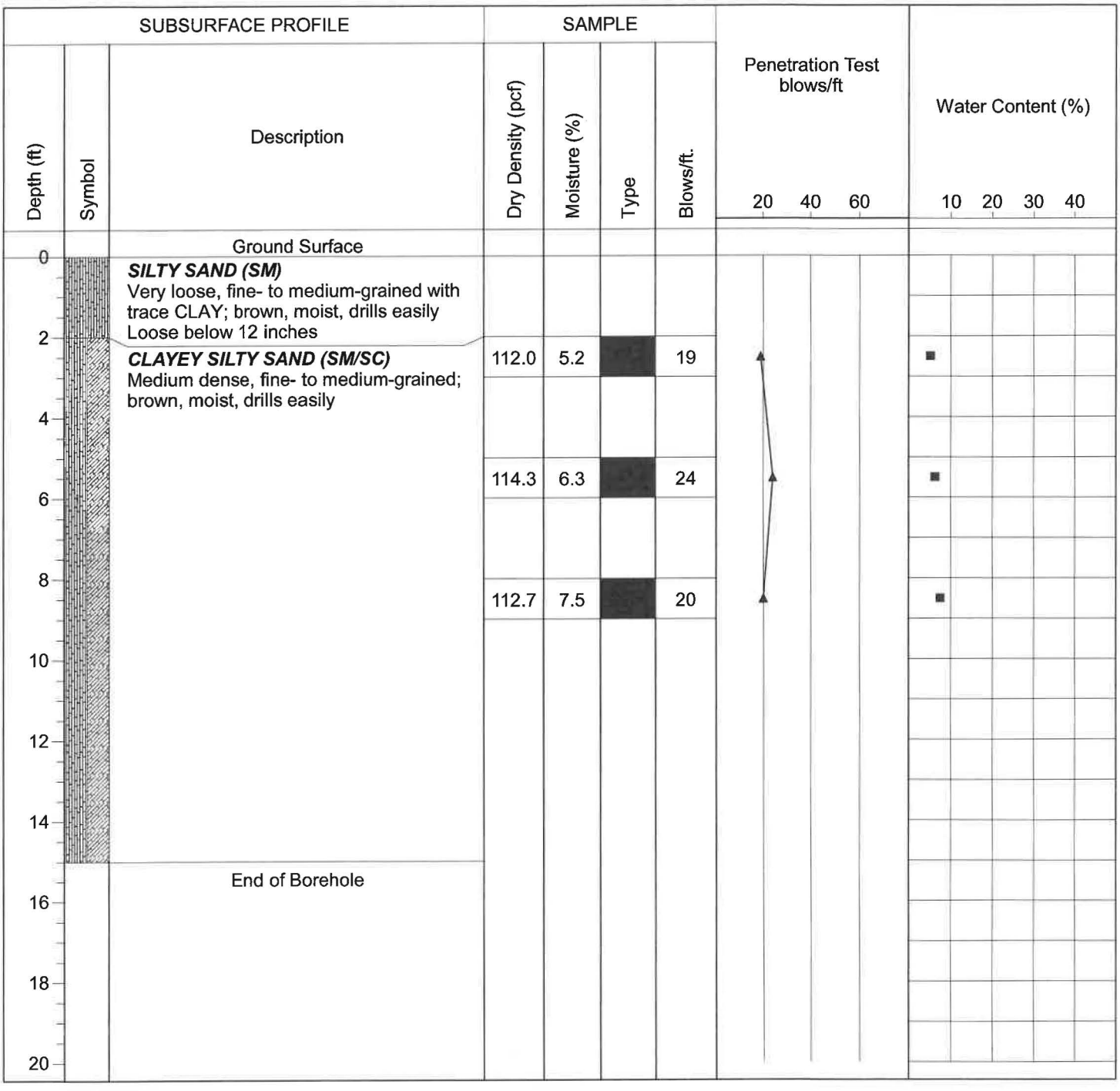
Log of Boring B8

Project: Malibu Vineyards Development | **Project No:** 022-20027

Client: Mr. Tom Murray | **Figure No.:** A-8

Location: NE of Highway 99 and Imperial Highway, Kern County, California | **Logged By:** Dave Adams

Depth to Water> | **Initial:** None | **At Completion:** None



Drill Method: Solid Flight | **Drill Date:** 3-11-20

Drill Rig: CME 45C-4 | **Hole Size:** 4½ Inches

Driller: Jim Watts | **Elevation:** 15 Feet

Krazan and Associates

Log of Boring B9

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-9

Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		CLAYEY SILTY SAND (SM/SC) Very loose, fine- to medium-grained; brown, moist, drills easily						
2		Loose below 12 inches Medium dense below 2 feet	115.6	5.4		23		■
4		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained with CLAY; brown, moist, drills easily						
6			113.7	7.0		28		■
8								
10		End of Borehole						
12								
14								
16								
18								
20								

Drill Method: Solid Flight

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 3-11-20

Hole Size: 4½ Inches

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B10

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-10

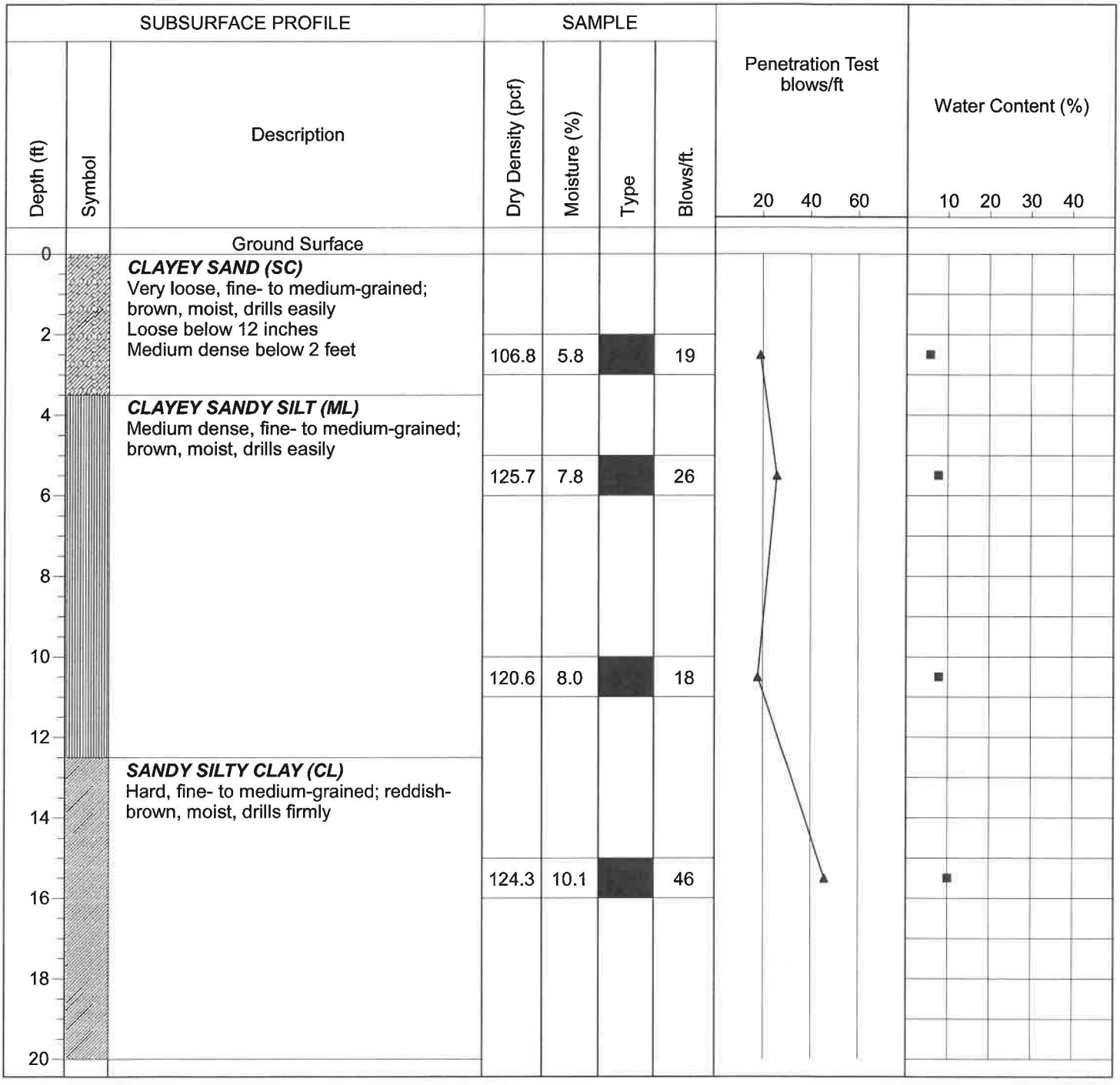
Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 3-11-20

Hole Size: 4½ Inches

Elevation: 20 Feet

Sheet: 1 of 1

Log of Boring B11

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-11

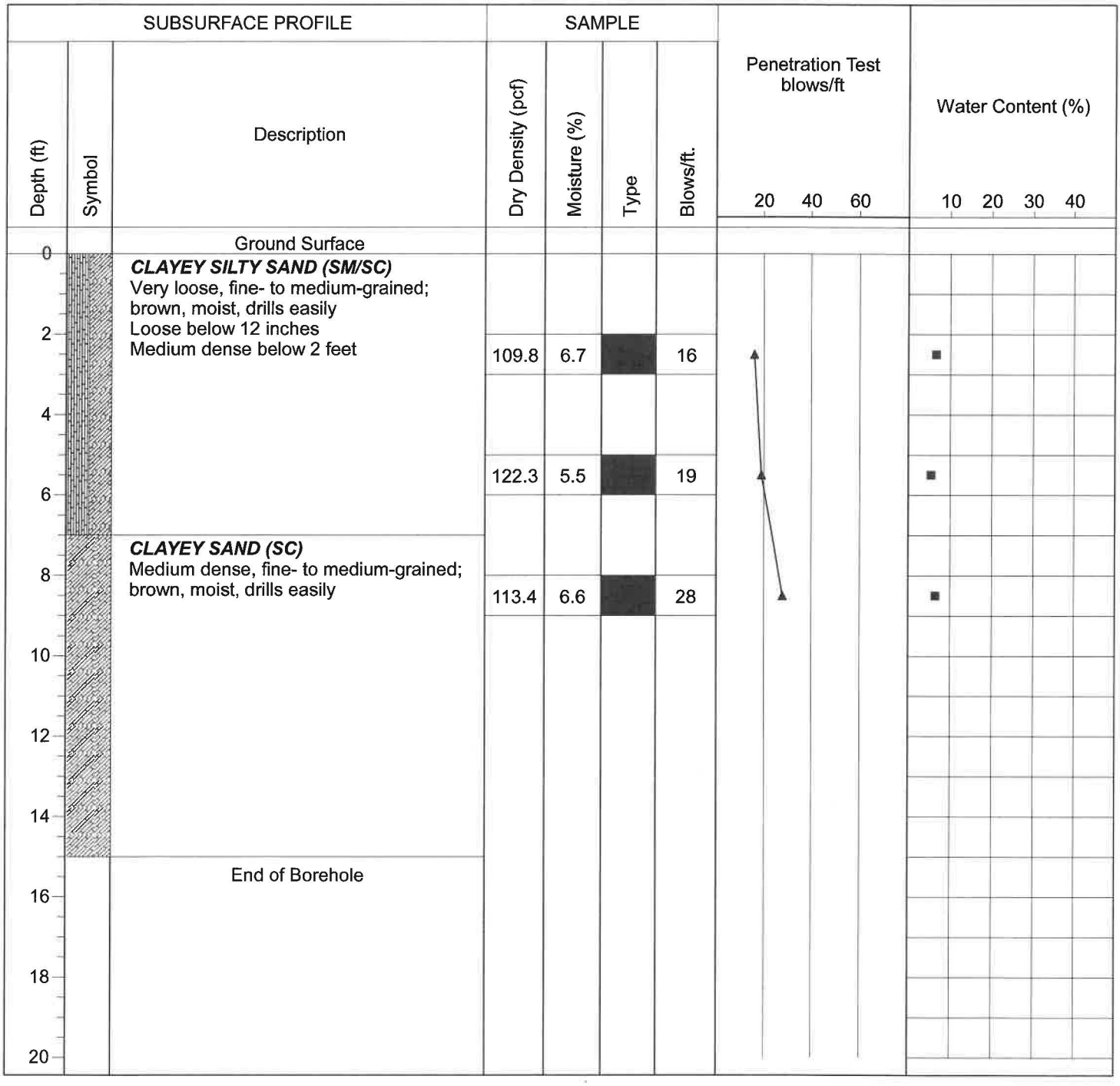
Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 3-11-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B12

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-12

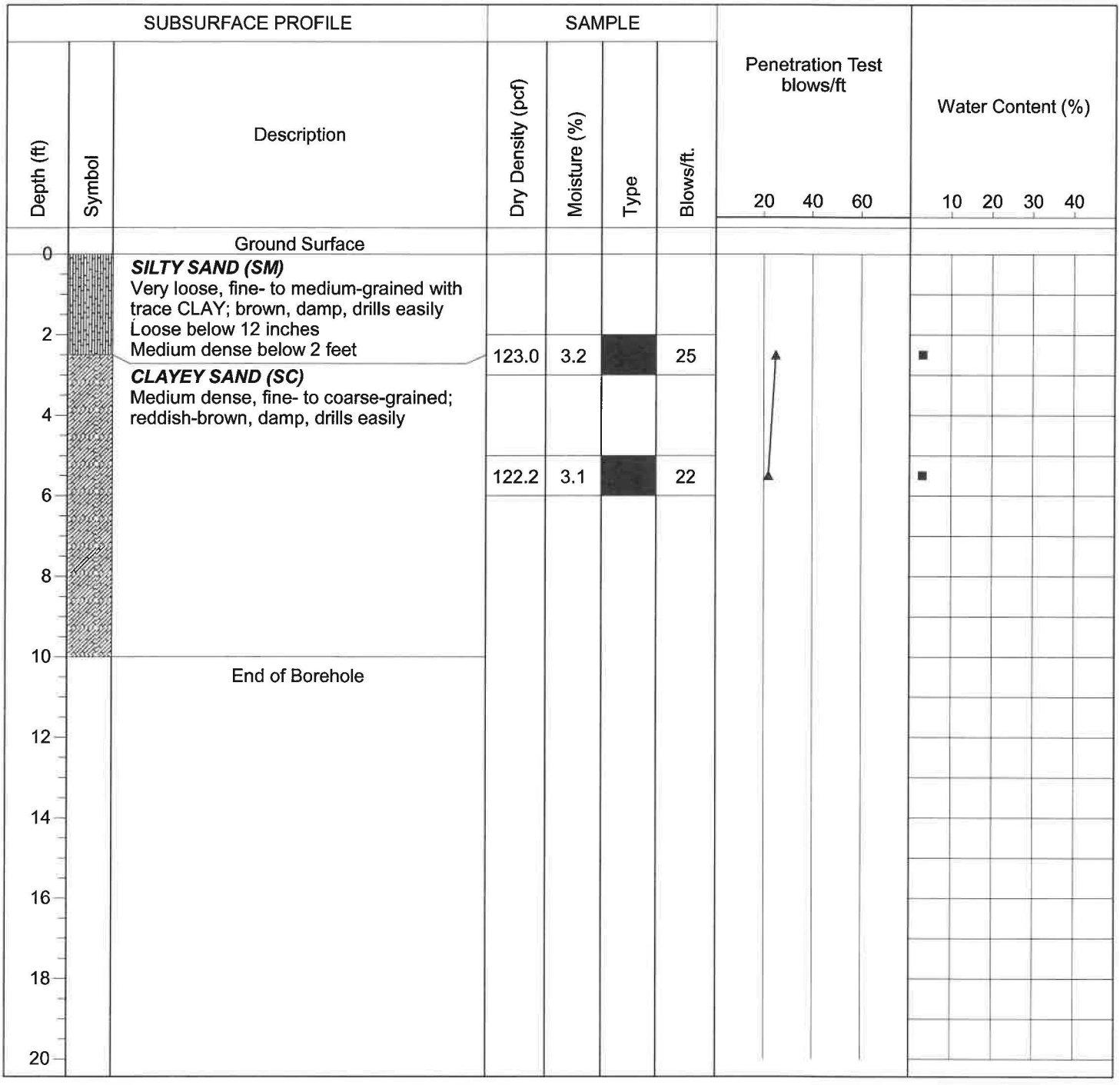
Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 3-11-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B13

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-13

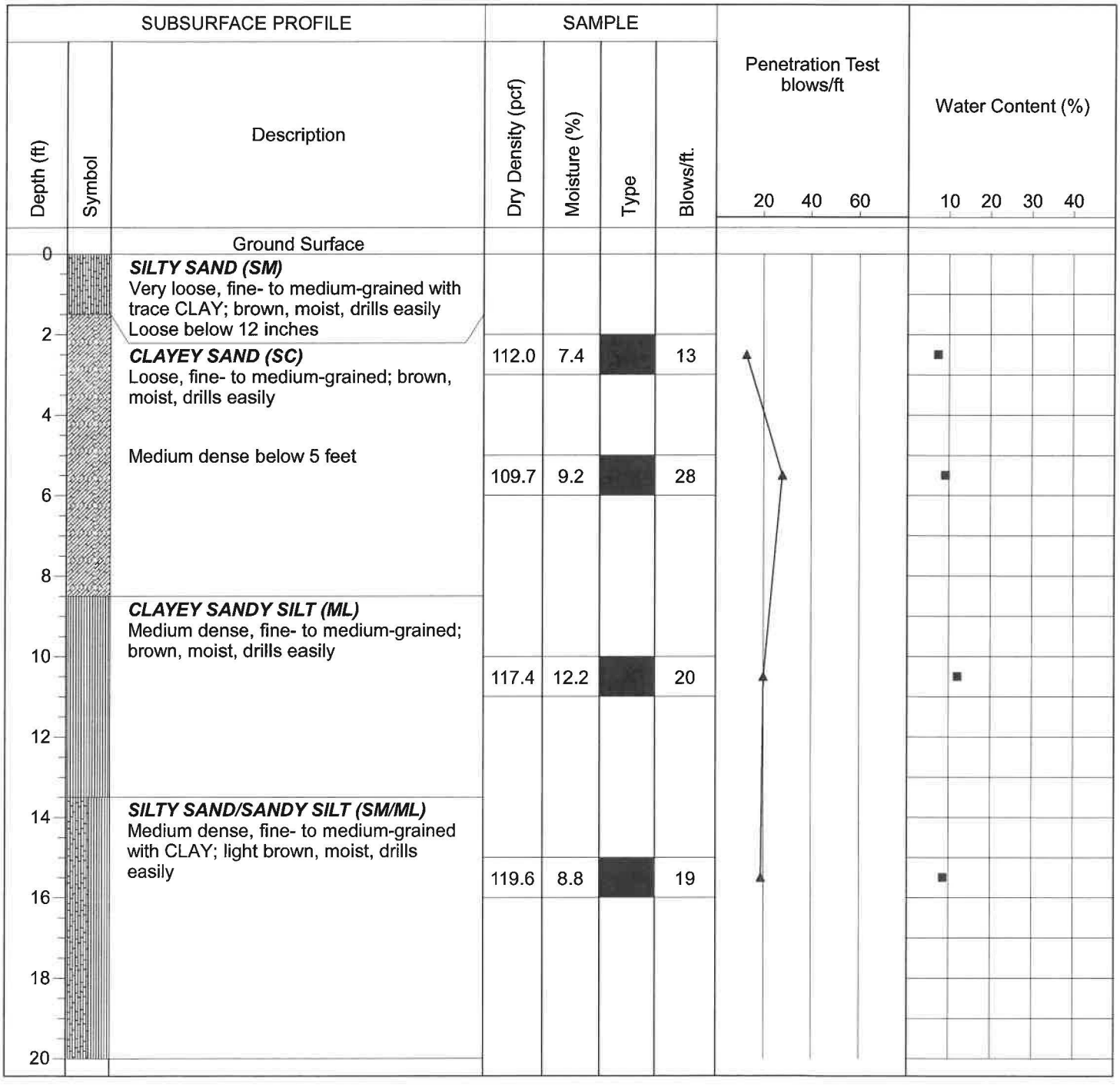
Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 3-11-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 20 Feet

Sheet: 1 of 1

Log of Boring B14

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-14

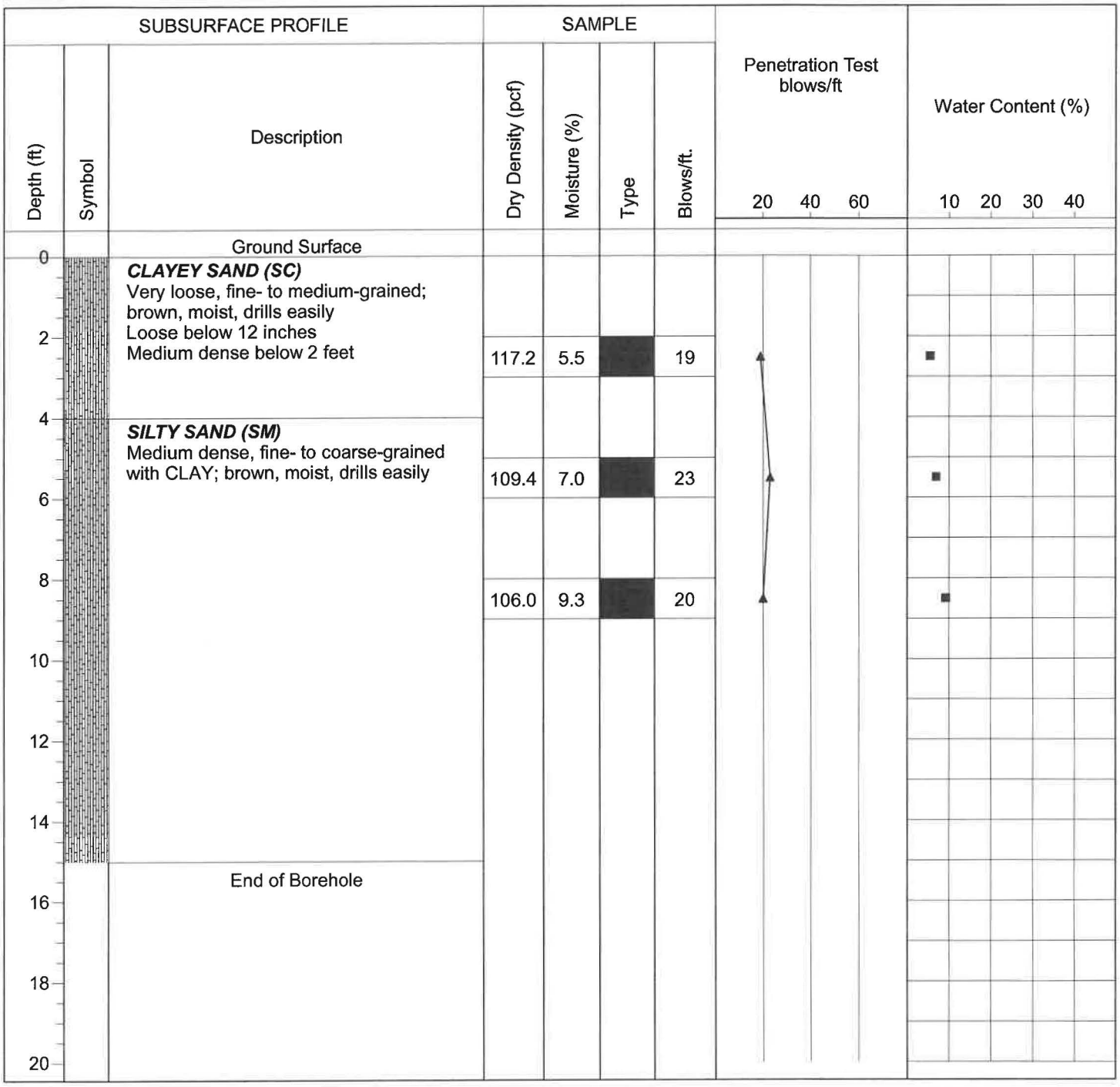
Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 3-11-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B15

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-15

Location: NE of Highway 99 and Imperial Highway, Kern County, California

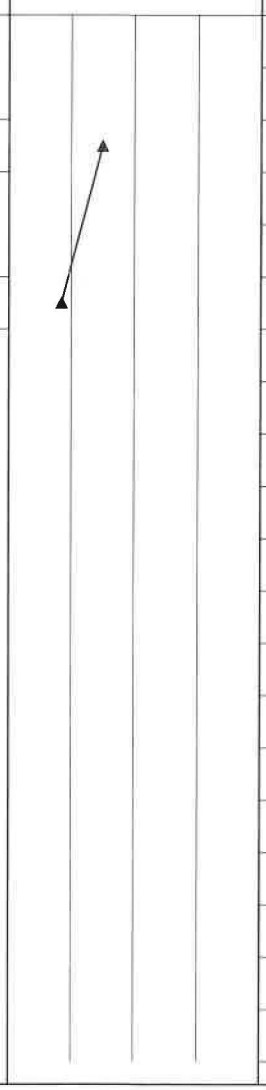
Logged By: Dave Adams

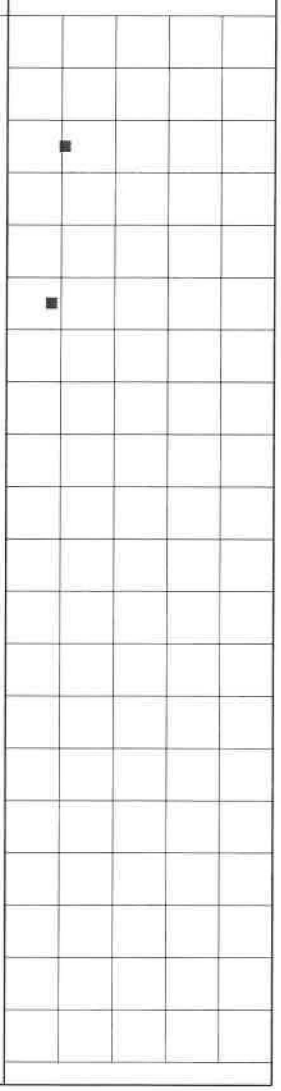
Depth to Water>

Initial: None

At Completion: None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
		Ground Surface				
0		***CLAYEY SAND (SC)*** Very loose, fine- to medium-grained; brown, moist, drills easily Loose below 12 inches Medium dense below 2 feet				
2			112.3	10.7		30
4						
6		***SILTY SAND/SANDY SILT (SM/ML)*** Medium dense, fine- to medium-grained; brown, moist, drills easily	116.0	8.3		17
8						
10		End of Borehole				
12						
14						
16						
18						
20						





Drill Method: Solid Flight

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 3-11-20

Hole Size: 4½ Inches

Elevation: 10 Feet

Log of Boring B16

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-16

Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
0		Ground Surface						
		CLAYEY SAND (SC) Very loose, fine- to medium-grained; brown, damp, drills easily Loose below 12 inches Medium dense below 2 feet						
2			115.3	4.8		17		
4								
		SILTY SAND (SM) Medium dense, fine- to medium-grained with CLAY; brown, moist, drills easily	115.2	4.5		17		
6								
8								
10			116.1	6.0		35		
12								
14								
16			127.5	7.4		36		
18								
20								

Drill Method: Solid Flight

Drill Date: 3-11-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 20 Feet

Sheet: 1 of 1

Log of Boring B17

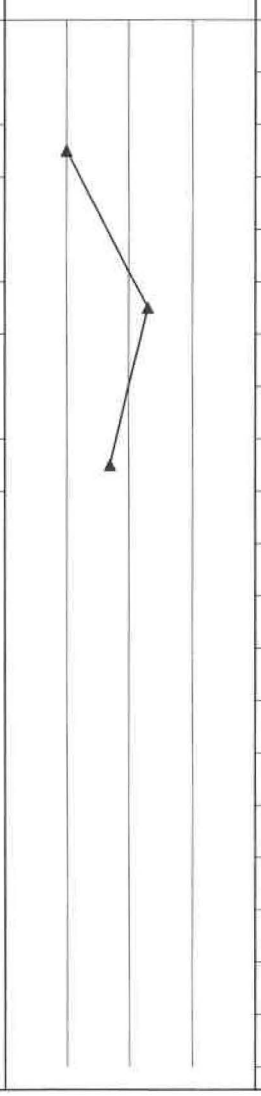
Project: Malibu Vineyards Development | **Project No:** 022-20027

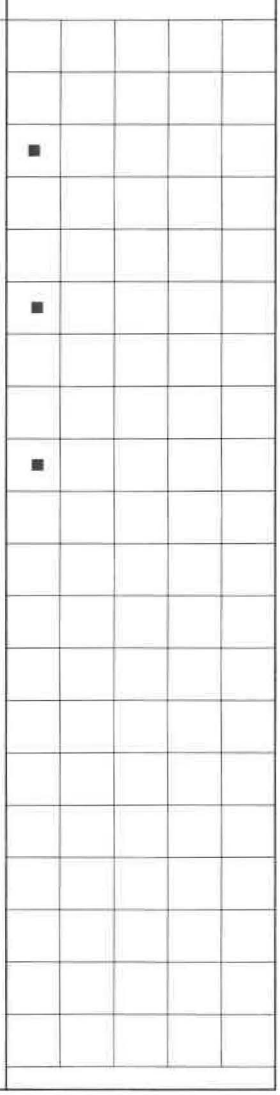
Client: Mr. Tom Murray | **Figure No.:** A-17

Location: NE of Highway 99 and Imperial Highway, Kern County, California | **Logged By:** Dave Adams

Depth to Water> | **Initial:** None | **At Completion:** None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
0		Ground Surface				
0		***CLAYEY SAND (SC)*** Very loose, fine- to medium-grained; brown, moist, drills easily				
2		Loose below 12 inches Medium dense below 2 feet	123.2	5.2		20
4		***SILTY SAND (SM)*** Dense, fine- to medium-grained with CLAY; brown, moist, drills easily	127.6	5.8		46
6		Medium dense and fine- to coarse-grained below 7 feet				
8			115.3	5.9		34
10						
12						
14						
16		End of Borehole				
18						
20						





Drill Method: Solid Flight | **Drill Date:** 3-11-20

Drill Rig: CME 45C-4 | **Hole Size:** 4½ Inches

Driller: Jim Watts | **Elevation:** 15 Feet

Krazan and Associates

Sheet: 1 of 1

Log of Boring B18

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-18

Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
0		Ground Surface				
0		***CLAYEY SAND (SC)*** Very loose, fine- to medium-grained; brown, moist, drills easily Loose below 12 inches Medium dense below 2 feet	119.2	5.5		17
6		***SILTY SAND (SM)*** Medium dense, fine- to medium-grained; brown, moist, drills easily	111.0	6.3		17
10		End of Borehole				

Penetration Test blows/ft: 20 40 60

Water Content (%): 10 20 30 40

Drill Method: Solid Flight

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 3-11-20

Hole Size: 4½ Inches

Elevation: 10 Feet

Log of Boring B19

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-19

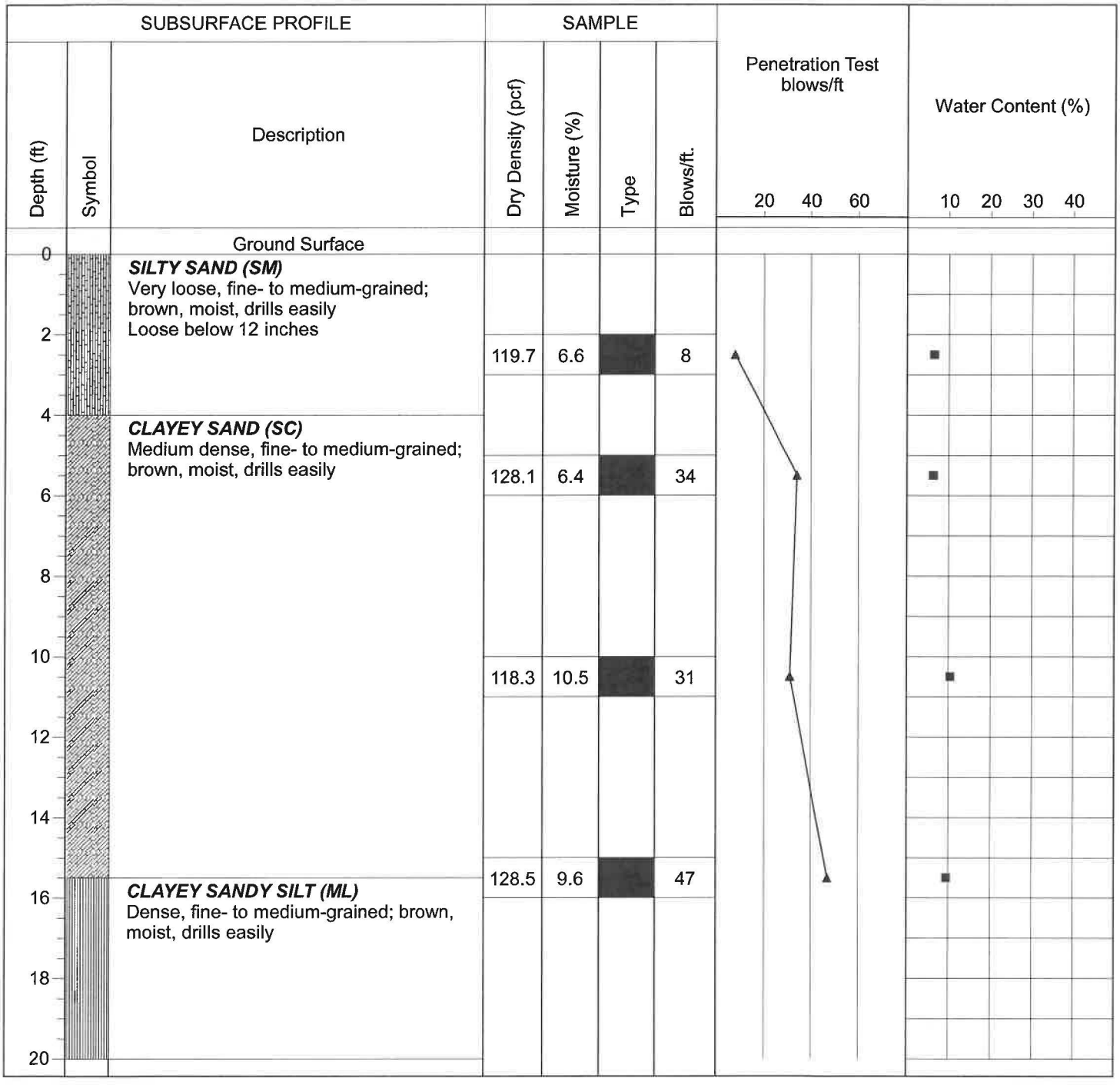
Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 3-13-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 20 Feet

Sheet: 1 of 1

Log of Boring B20

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-20

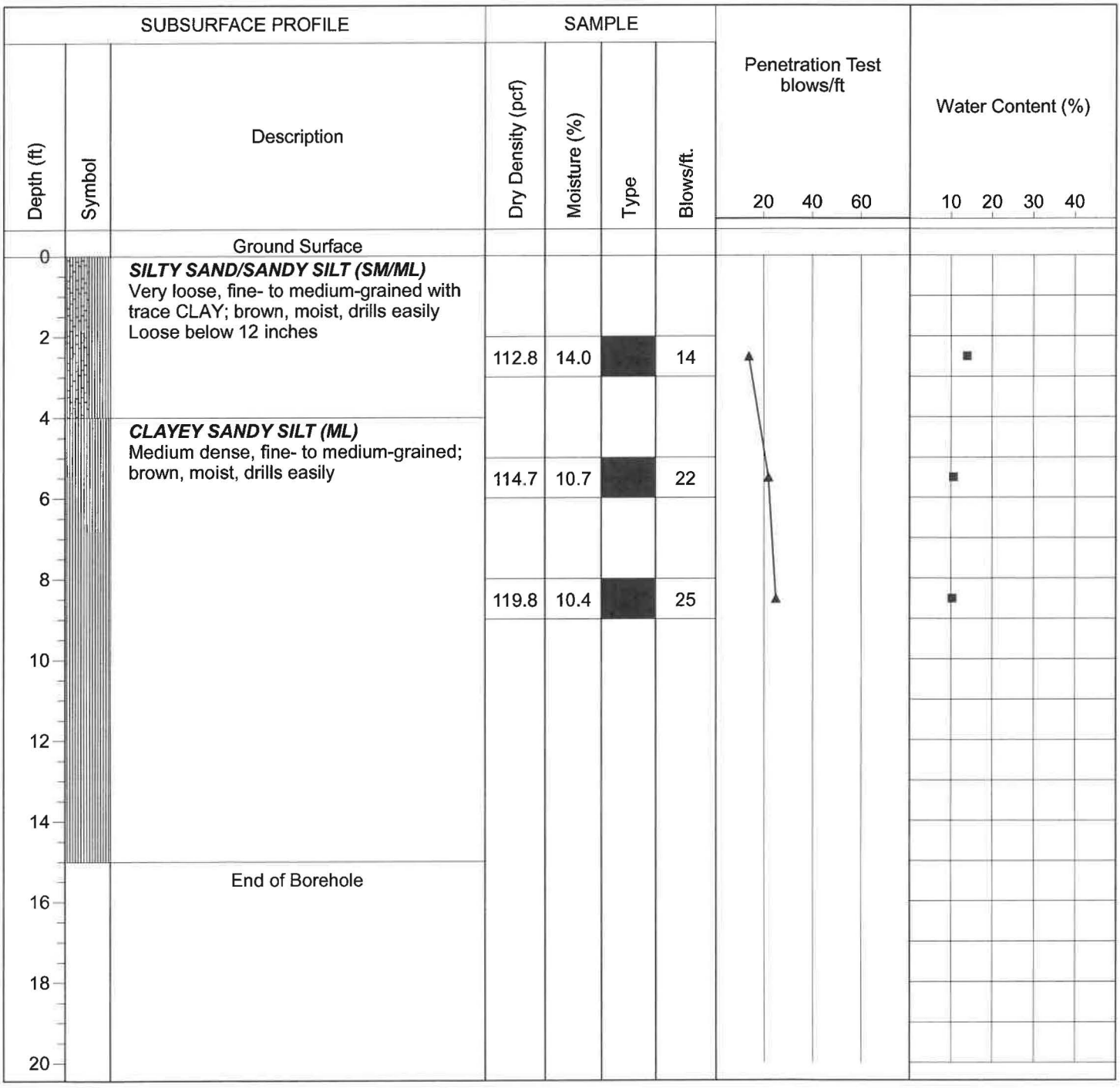
Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 3-13-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B21

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-21

Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
0		Ground Surface				
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with trace CLAY; brown, damp, drills easily Loose below 12 inches Medium dense below 2 feet				
2			123.7	2.9		18
4		***SILTY SAND/SANDY SILT (SM/ML)*** Medium dense, fine- to medium-grained with CLAY; brown, moist, drills easily				
6			118.6	16.3		21
10		End of Borehole				

Penetration Test blows/ft: 20, 40, 60

Water Content (%): 10, 20, 30, 40

Drill Method: Solid Flight

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 3-13-20

Hole Size: 4½ Inches

Elevation: 10 Feet

Sheet: 1 of 1

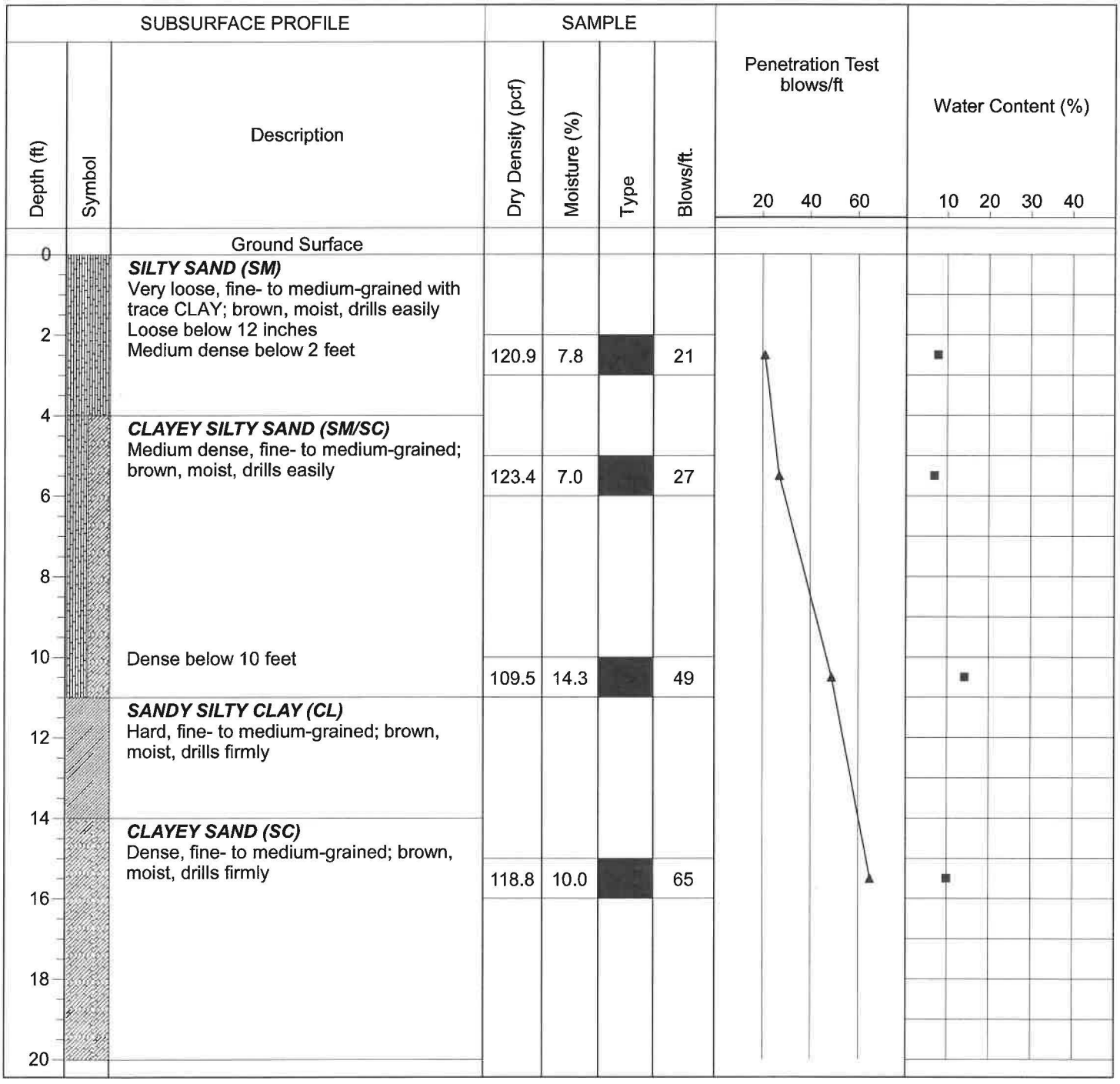
Log of Boring B22

Project: Malibu Vineyards Development | **Project No:** 022-20027

Client: Mr. Tom Murray | **Figure No.:** A-22

Location: NE of Highway 99 and Imperial Highway, Kern County, California | **Logged By:** Dave Adams

Depth to Water> | **Initial:** None | **At Completion:** None



Drill Method: Solid Flight | **Drill Date:** 3-13-20

Drill Rig: CME 45C-4 | **Krazan and Associates** | **Hole Size:** 4½ Inches

Driller: Jim Watts | **Elevation:** 20 Feet

Sheet: 1 of 1

Log of Boring B23

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-23

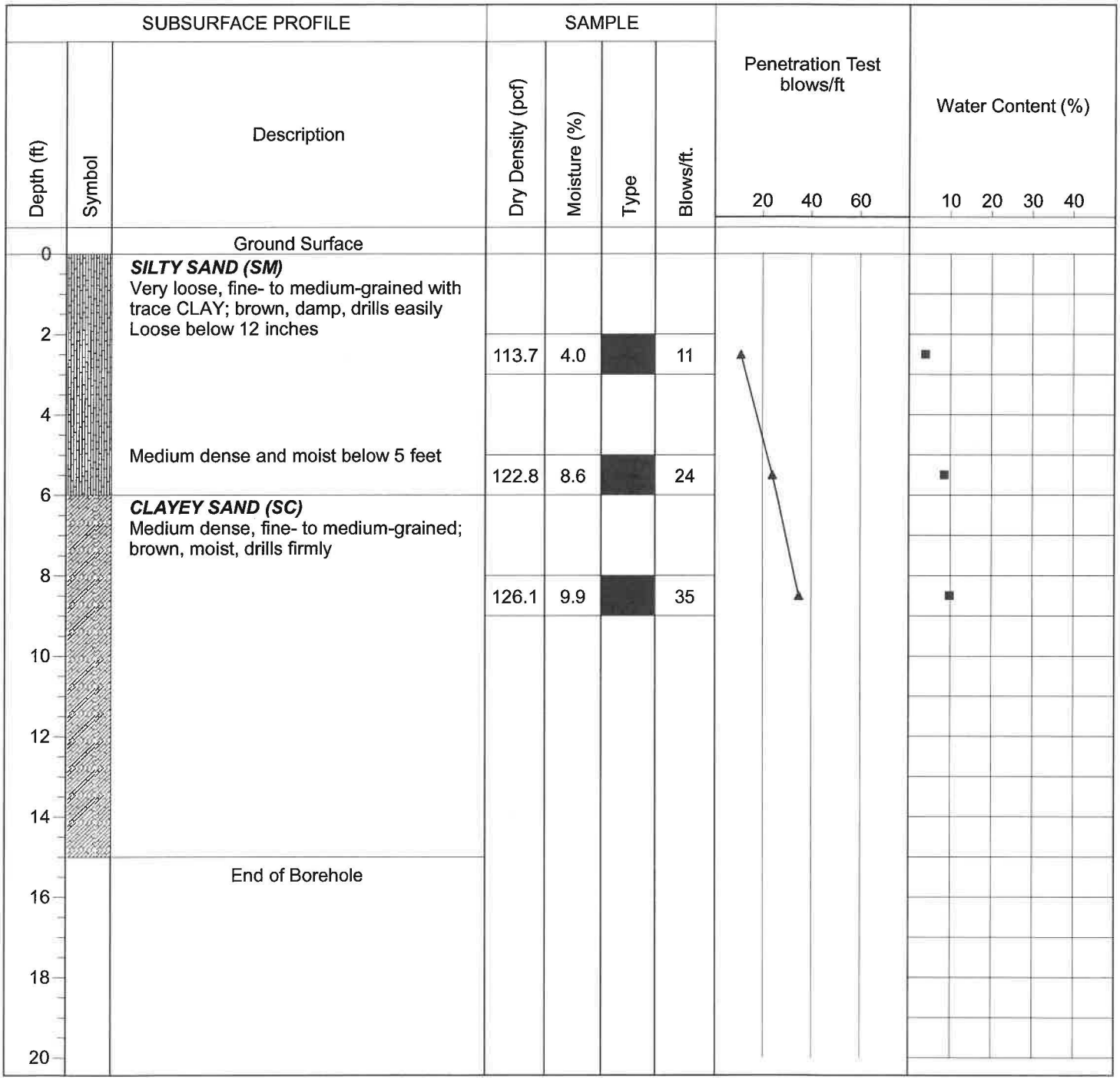
Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 3-13-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 15 Feet

Sheet: 1 of 1

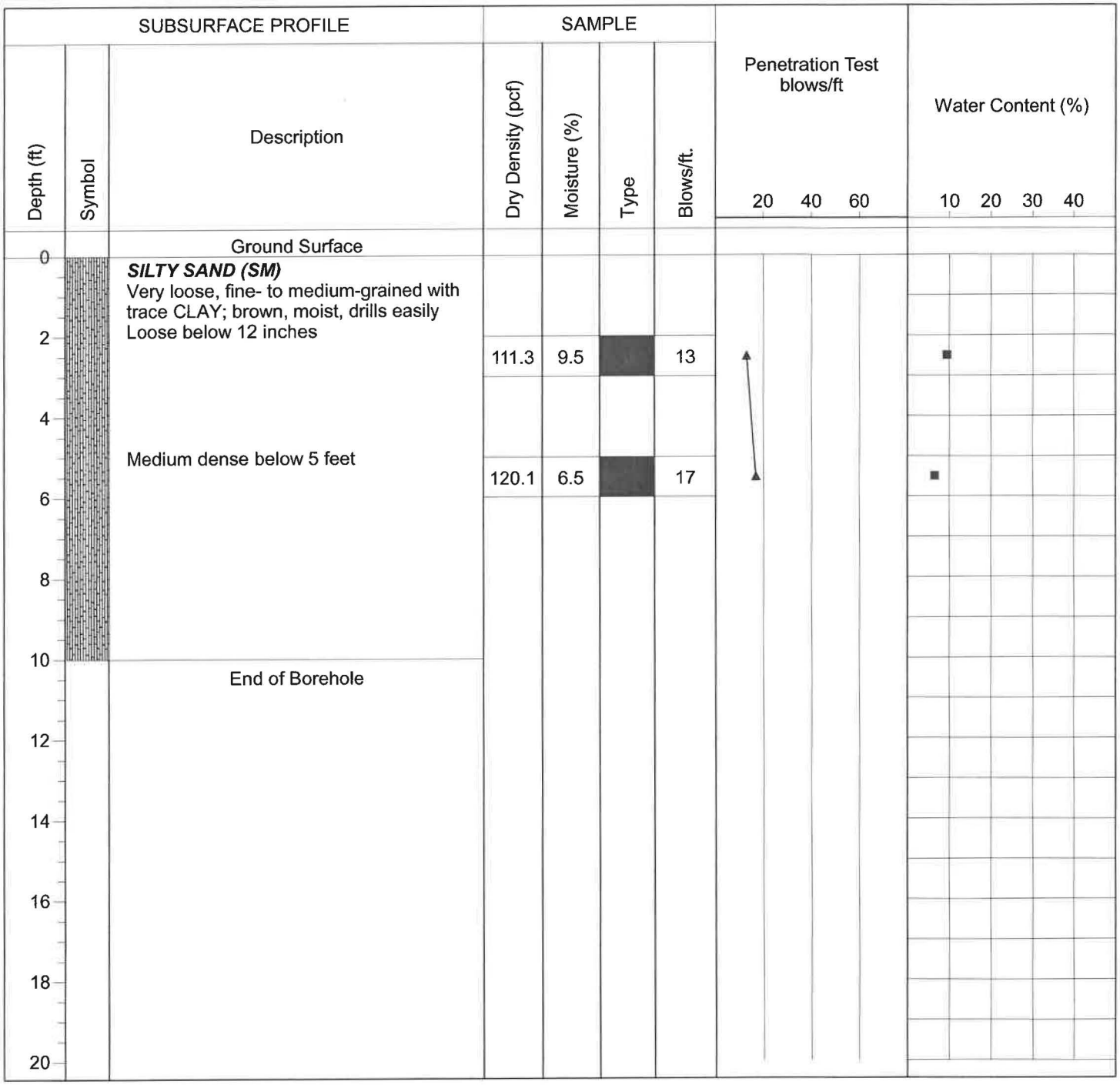
Log of Boring B24

Project: Malibu Vineyards Development
Project No: 022-20027

Client: Mr. Tom Murray
Figure No.: A-24

Location: NE of Highway 99 and Imperial Highway, Kern County, California
Logged By: Dave Adams

Depth to Water>
Initial: None
At Completion: None



Drill Method: Solid Flight
Drill Date: 3-13-20

Drill Rig: CME 45C-4
Hole Size: 4½ Inches

Driller: Jim Watts
Elevation: 10 Feet

Krazan and Associates

Log of Boring B25

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-25

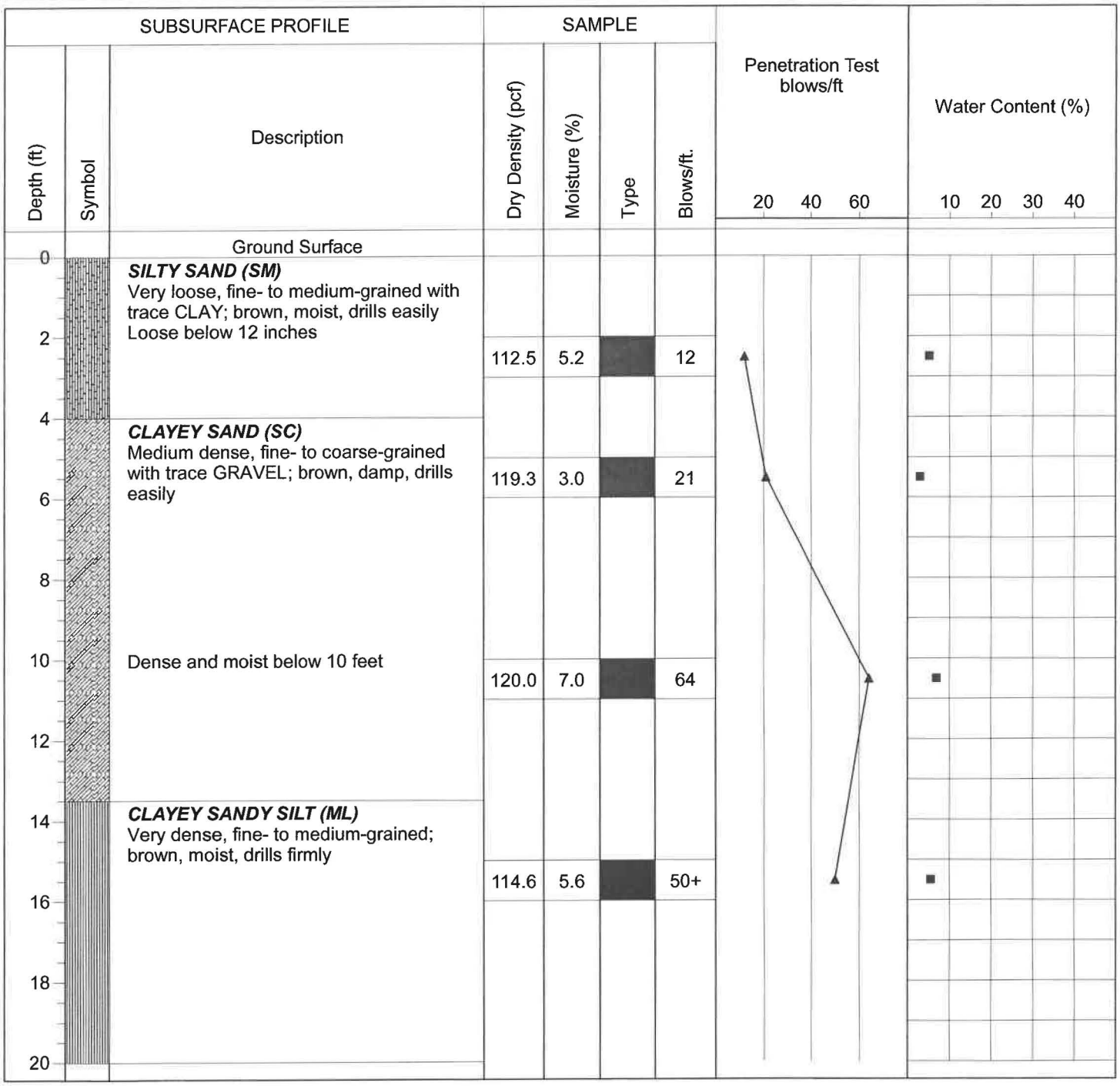
Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 3-13-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 20 Feet

Sheet: 1 of 1

Log of Boring B26

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-26

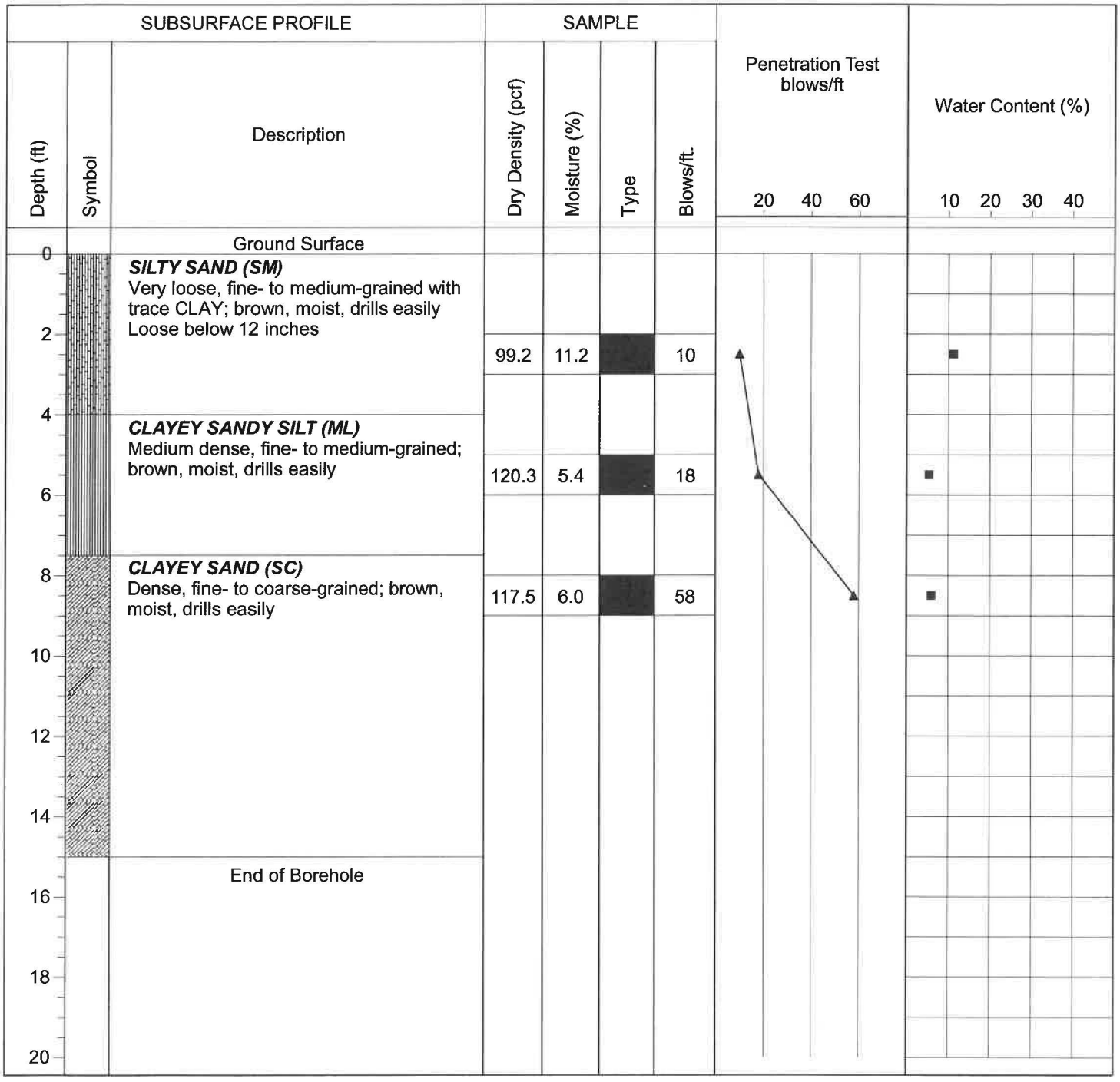
Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 3-13-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B27

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-27

Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
0		Ground Surface				
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with trace CLAY; brown, moist, drills easily				
2		Loose below 12 inches	100.8	5.7		18
4		Medium dense below 2 feet				
6			109.2	5.2		18
8						
10		End of Borehole				
12						
14						
16						
18						
20						

Penetration Test blows/ft: 20 40 60

Water Content (%): 10 20 30 40

Drill Method: Solid Flight

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 3-13-20

Hole Size: 4½ Inches

Elevation: 10 Feet

Log of Boring B28

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-28

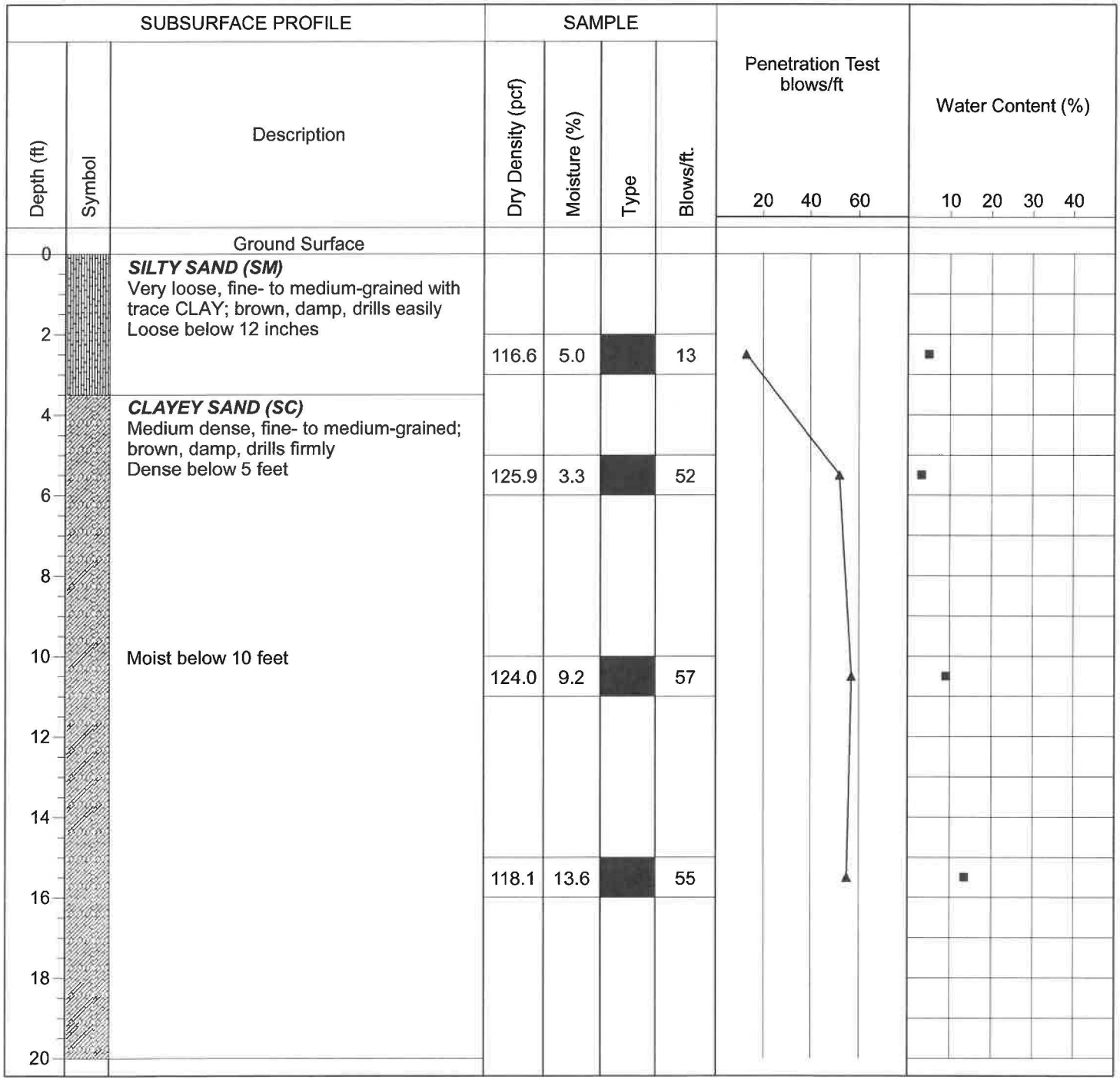
Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 3-13-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 20 Feet

Sheet: 1 of 1

Log of Boring B29

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-29

Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
0		Ground Surface				
		SILTY SAND (SM) Very loose, fine- to medium-grained with trace CLAY; brown, moist, drills easily Loose below 12 inches				
2		***CLAYEY SAND (SC)*** Medium dense, fine- to medium-grained; brown, moist, drills easily	118.5	5.3		25
4						
6			108.6	12.3		31
8			122.4	12.9		21
10						
12						
14						
16		End of Borehole				
18						
20						

SUBSURFACE PROFILE

SAMPLE

Penetration Test blows/ft

20 40 60

Water Content (%)

10 20 30 40

Drill Method: Solid Flight

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 3-13-20

Hole Size: 4½ Inches

Elevation: 15 Feet

Sheet: 1 of 1

Log of Boring B30

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-30

Location: NE of Highway 99 and Imperial Highway, Kern County, California

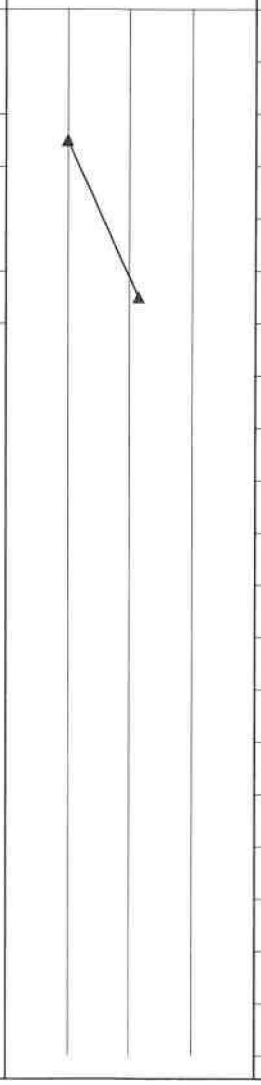
Logged By: Dave Adams

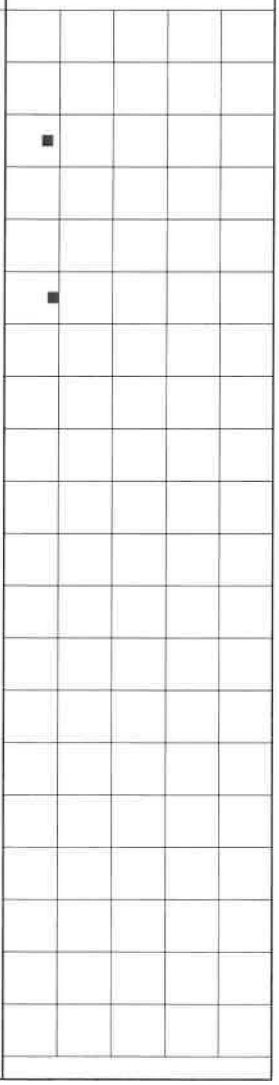
Depth to Water>

Initial: None

At Completion: None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
0		Ground Surface				
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with trace CLAY; brown, moist, drills easily Loose below 12 inches				
2		***CLAYEY SAND (SC)*** Medium dense, fine- to medium-grained; brown, moist, drills easily	100.4	7.9		20
4						
6		***CLAYEY SILTY SAND (SM/SC)*** Dense, fine- to medium-grained; brown, moist, drills easily	113.1	9.1		43
8						
10		End of Borehole				
12						
14						
16						
18						
20						





Drill Method: Solid Flight

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 3-13-20

Hole Size: 4½ Inches

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B31

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-31

Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
		Ground Surface				
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with trace CLAY; brown, moist, drills easily Loose below 12 inches Medium dense below 2 feet				
2			110.1	9.6		19
4						
6			112.3	9.2		17
8						
10			121.5	5.6		34
12		***CLAYEY SAND (SC)*** Medium dense, fine- to coarse-grained with trace GRAVEL; brown, moist, drills easily				
14		***SANDY CLAY (CL)*** Very stiff, fine- to medium-grained; brown, moist, drills easily				
16			109.6	12.5		21
18						
20						

Penetration Test blows/ft: 20 40 60

Water Content (%): 10 20 30 40

Drill Method: Hollow Stem

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 3-16-20

Hole Size: 6½ Inches

Elevation: 50 Feet

Log of Boring B31

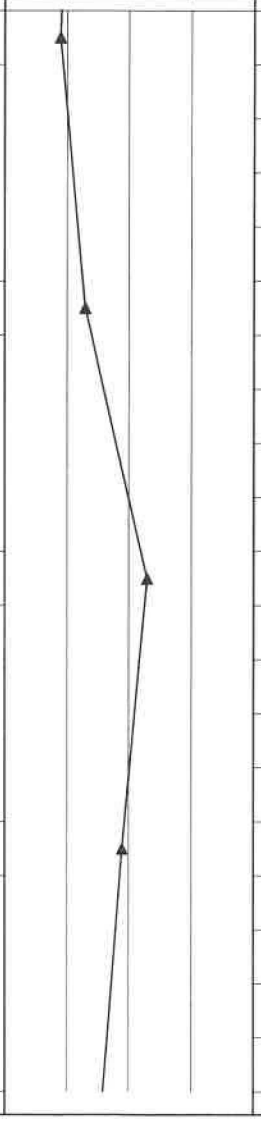
Project: Malibu Vineyards Development | **Project No:** 022-20027

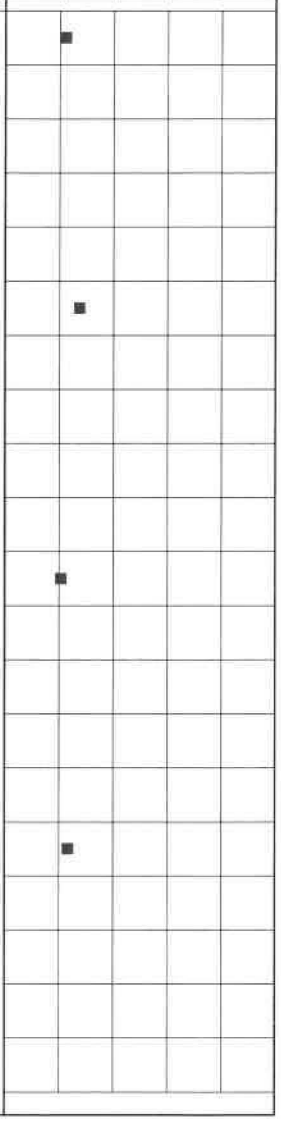
Client: Mr. Tom Murray | **Figure No.:** A-31

Location: NE of Highway 99 and Imperial Highway, Kern County, California | **Logged By:** Dave Adams

Depth to Water> | **Initial:** None | **At Completion:** None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
22		***SANDY SILT (ML)*** Medium dense, fine- to medium-grained with trace CLAY; brown, moist, drills easily	111.3	11.1		18
24						
26		***SANDY CLAY (CL)*** Very stiff, fine- to medium-grained; brown, moist, drills easily	112.9	13.8		26
28						
30		***CLAYEY SAND (SC)*** Very dense, fine- to medium-grained; dark brown, moist, drills firmly	120.7	10.4		46
32						
34						
36		***CLAYEY SAND-SANDY CLAY (SC-CL)*** Dense/Hard, fine- to medium-grained; dark brown, moist, drills firmly	122.8	11.7		38
38						
40						





Drill Method: Hollow Stem | **Drill Date:** 3-16-20

Drill Rig: CME 45C-4 | **Hole Size:** 6½ Inches

Driller: Jim Watts | **Elevation:** 50 Feet

Krazan and Associates

Log of Boring B31

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-31

Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None

SUBSURFACE PROFILE			SAMPLE				Penetration Test blows/ft	Water Content (%)
Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.	20 40 60	10 20 30 40
			105.5	12.0		31		
42		***SANDY CLAY (CH)*** Hard, fine- to medium-grained; reddish-brown, moist, drills firmly						
44								
			100.7	23.3		30		
46								
48								
50		End of Borehole						
52								
54								
56								
58								
60								

Drill Method: Hollow Stem

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 3-16-20

Hole Size: 6½ Inches

Elevation: 50 Feet

Log of Boring B32

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-32

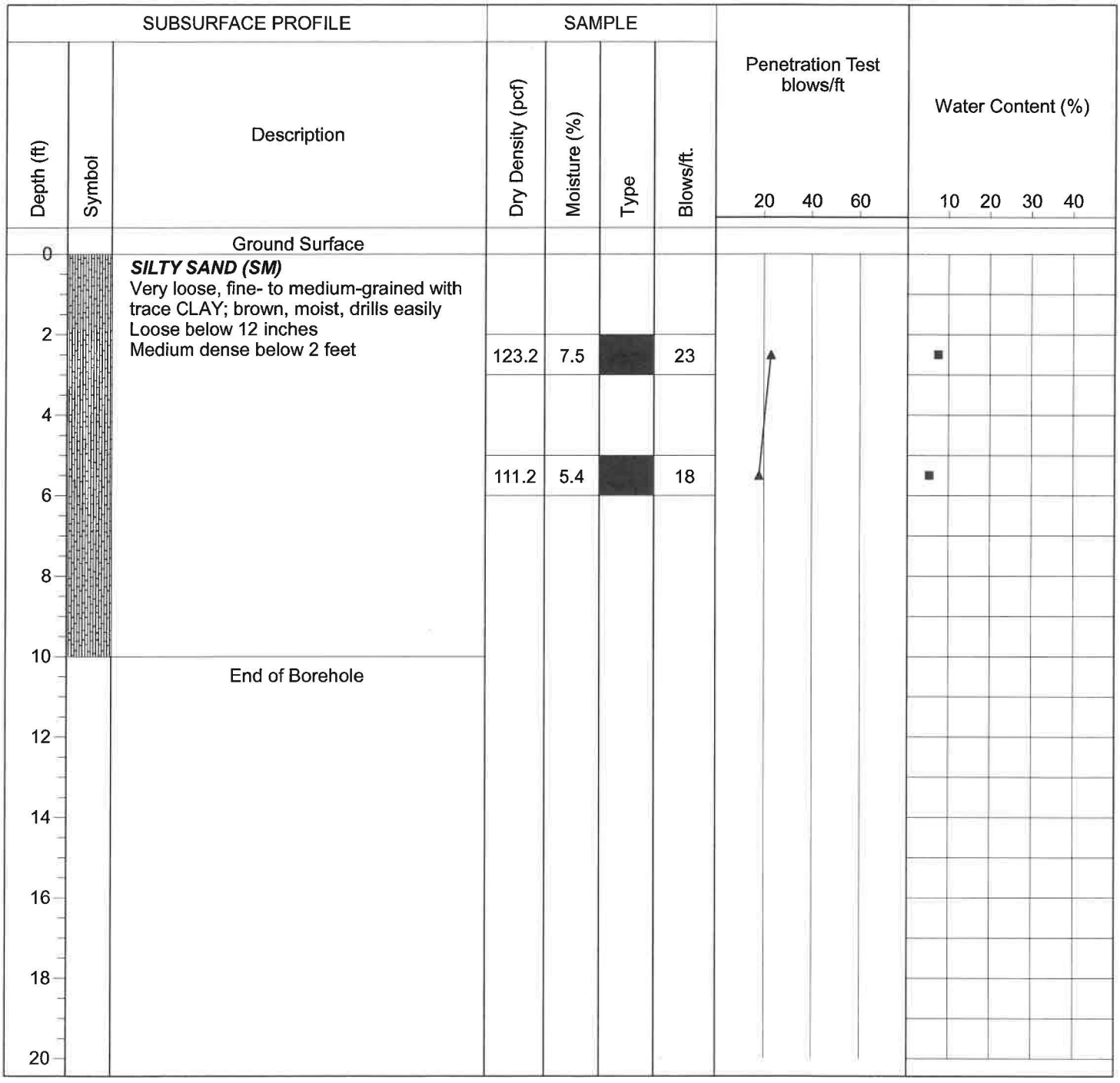
Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Rig: CME 45C-4

Driller: Jim Watts

Krazan and Associates

Drill Date: 3-16-20

Hole Size: 4½ Inches

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B33

Project: Malibu Vineyards Development
Project No: 022-20027

Client: Mr. Tom Murray
Figure No.: A-33

Location: NE of Highway 99 and Imperial Highway, Kern County, California
Logged By: Dave Adams

Depth to Water>
Initial: None
At Completion: None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
		Ground Surface				
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with trace CLAY; brown, damp, drills easily				
2		Loose below 12 inches	112.9	5.7		7
4						
		Medium dense and damp below 5 feet	119.7	4.4		17
6						
8						
10		End of Borehole				
12						
14						
16						
18						
20						

Penetration Test blows/ft: 20 40 60

Water Content (%): 10 20 30 40

Drill Method: Solid Flight
Drill Rig: CME 45C-4
Driller: Jim Watts

Krazan and Associates

Drill Date: 3-16-20
Hole Size: 4½ Inches
Elevation: 10 Feet
Sheet: 1 of 1

Log of Boring B34

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-34

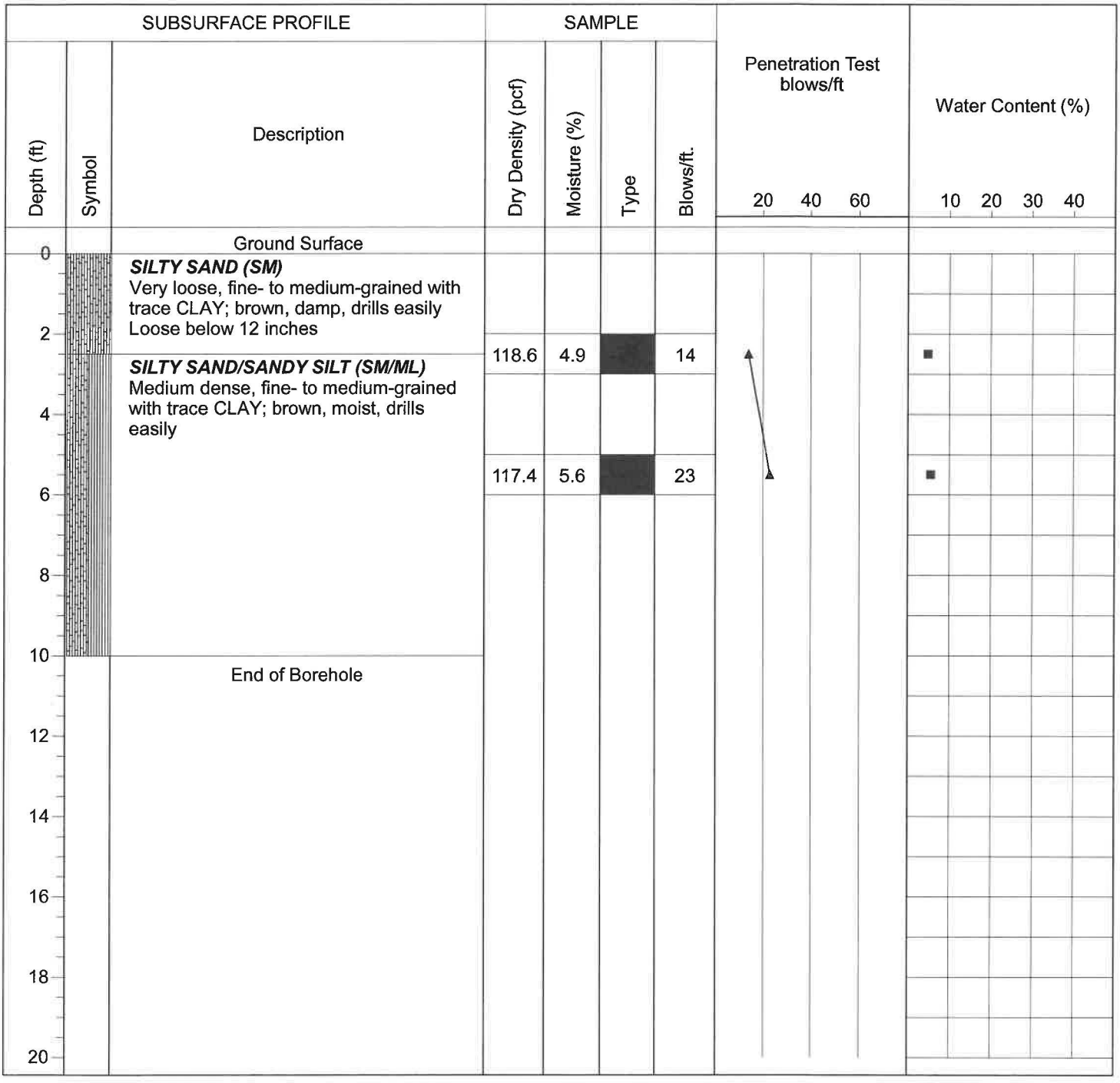
Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 3-16-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B35

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-35

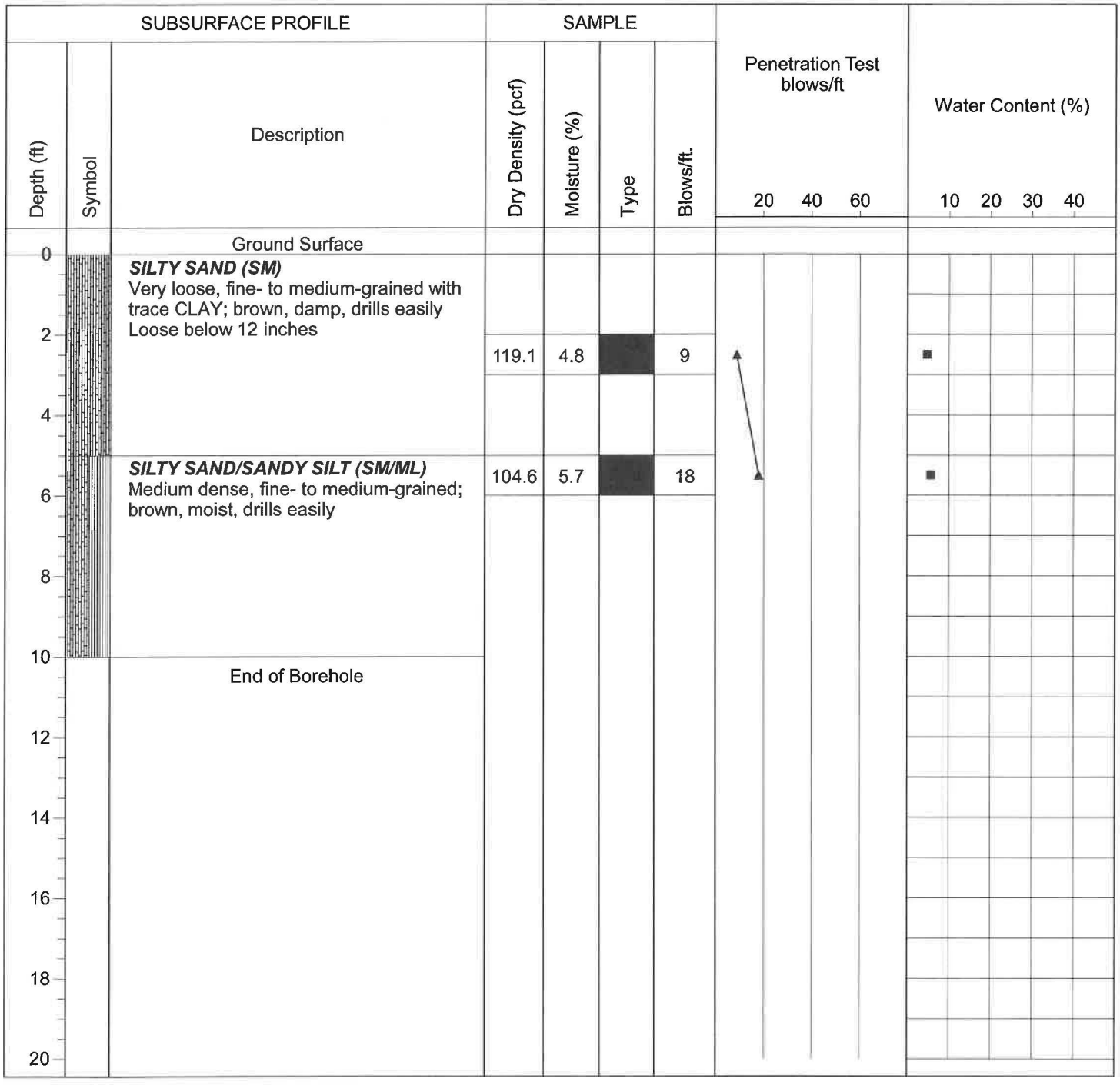
Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 3-16-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B36

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-36

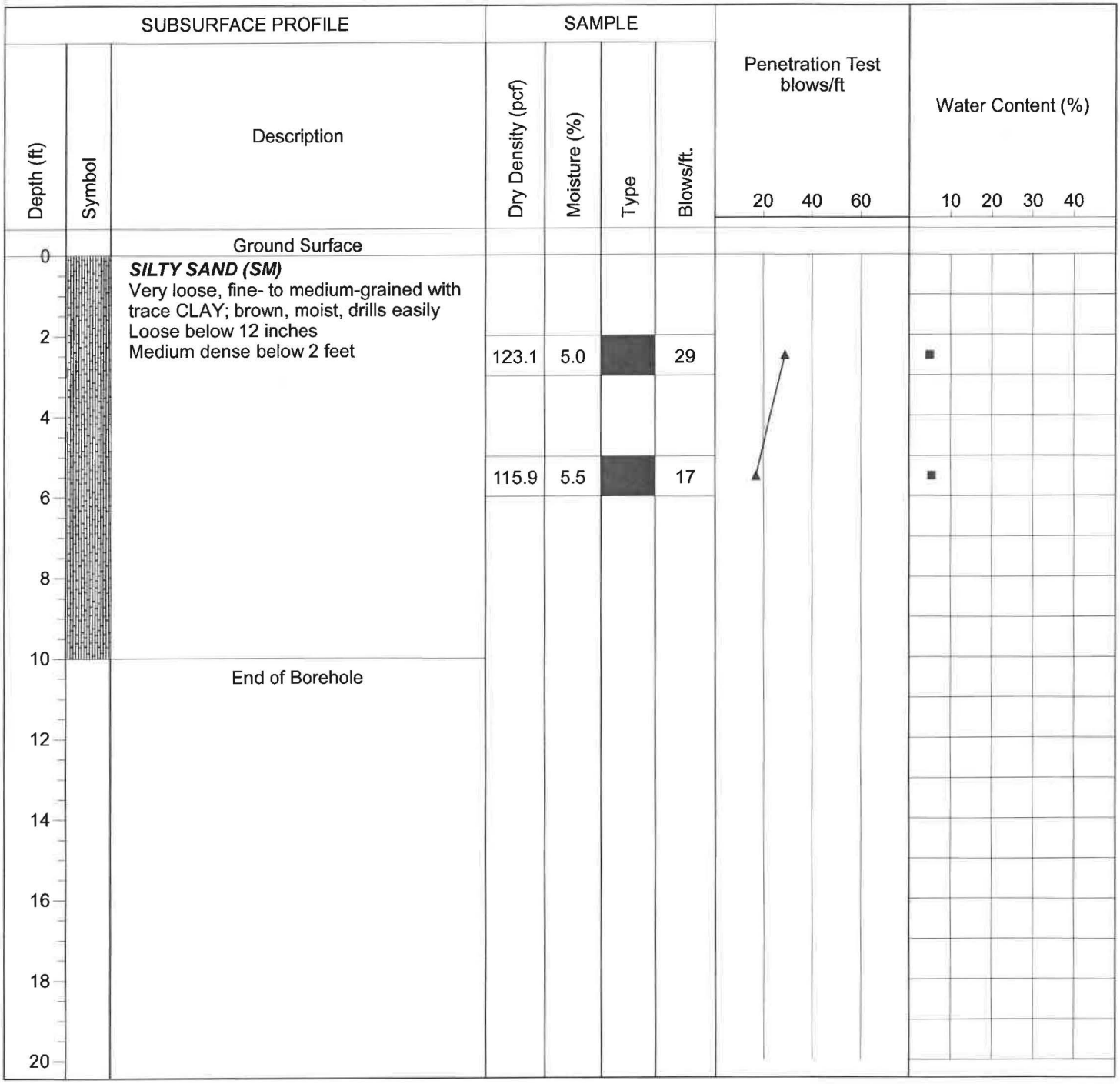
Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 3-16-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

Driller: Jim Watts

Elevation: 10 Feet

Sheet: 1 of 1

Log of Boring B37

Project: Malibu Vineyards Development | **Project No:** 022-20027

Client: Mr. Tom Murray | **Figure No.:** A-37

Location: NE of Highway 99 and Imperial Highway, Kern County, California | **Logged By:** Dave Adams

Depth to Water> | **Initial:** None | **At Completion:** None

Depth (ft)	Symbol	Description	Dry Density (pcf)	Moisture (%)	Type	Blows/ft.
0		Ground Surface				
0		***SILTY SAND (SM)*** Very loose, fine- to medium-grained with trace CLAY; brown, damp, drills easily Loose below 12 inches With trace GRAVEL below 2 feet	114.2	3.5		13
6		***SANDY SILT (ML)*** Very dense, fine- to medium-grained; brown, moist, drills hard	89.8	6.9		50+
10		End of Borehole				

Penetration Test blows/ft: 20, 40, 60

Water Content (%): 10, 20, 30, 40

Drill Method: Solid Flight | **Drill Date:** 3-16-20

Drill Rig: CME 45C-4 | **Hole Size:** 4½ Inches

Driller: Jim Watts | **Elevation:** 10 Feet

Krazan and Associates

Log of Boring B38

Project: Malibu Vineyards Development

Project No: 022-20027

Client: Mr. Tom Murray

Figure No.: A-38

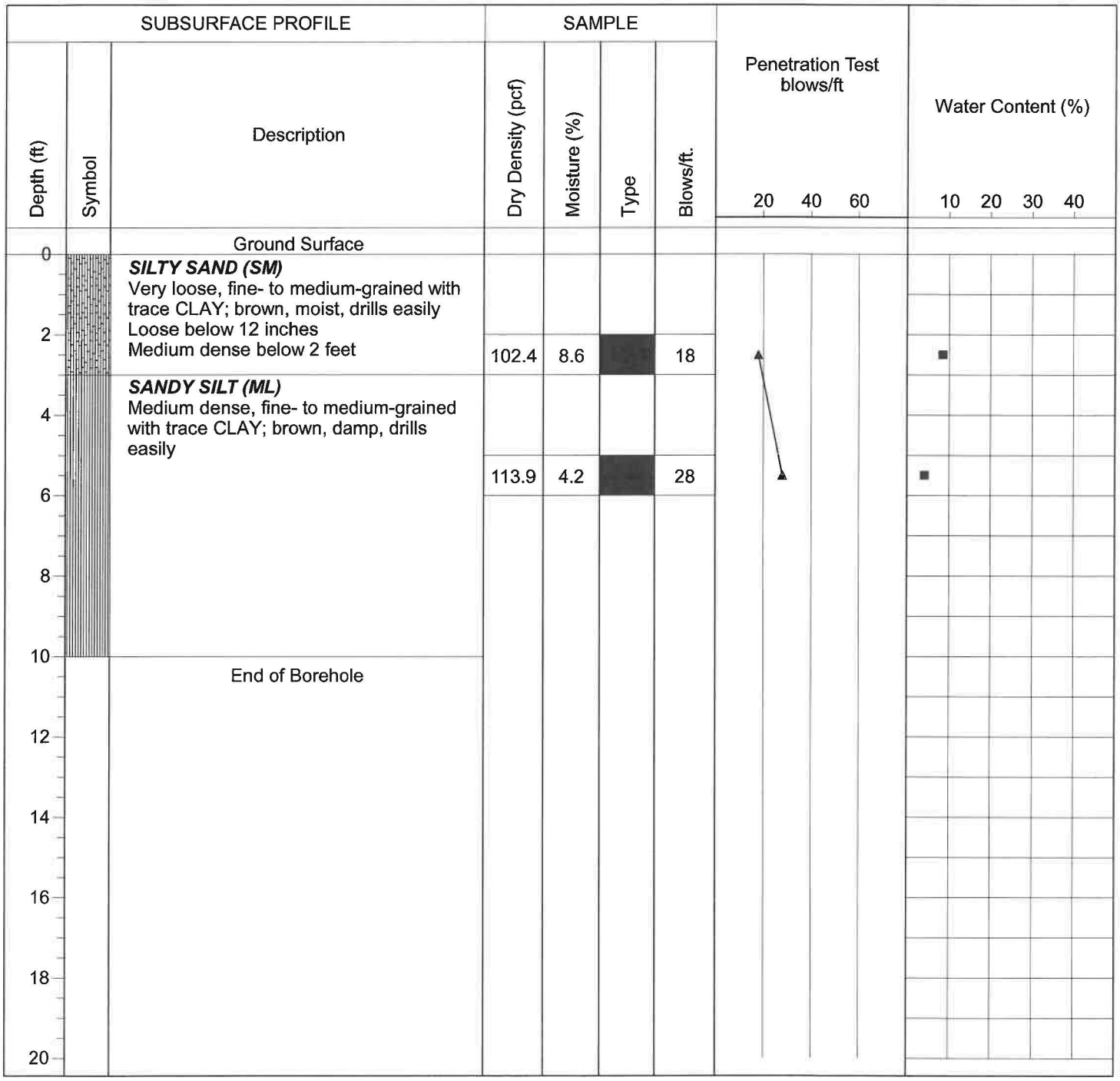
Location: NE of Highway 99 and Imperial Highway, Kern County, California

Logged By: Dave Adams

Depth to Water>

Initial: None

At Completion: None



Drill Method: Solid Flight

Drill Date: 3-16-20

Drill Rig: CME 45C-4

Krazan and Associates

Hole Size: 4½ Inches

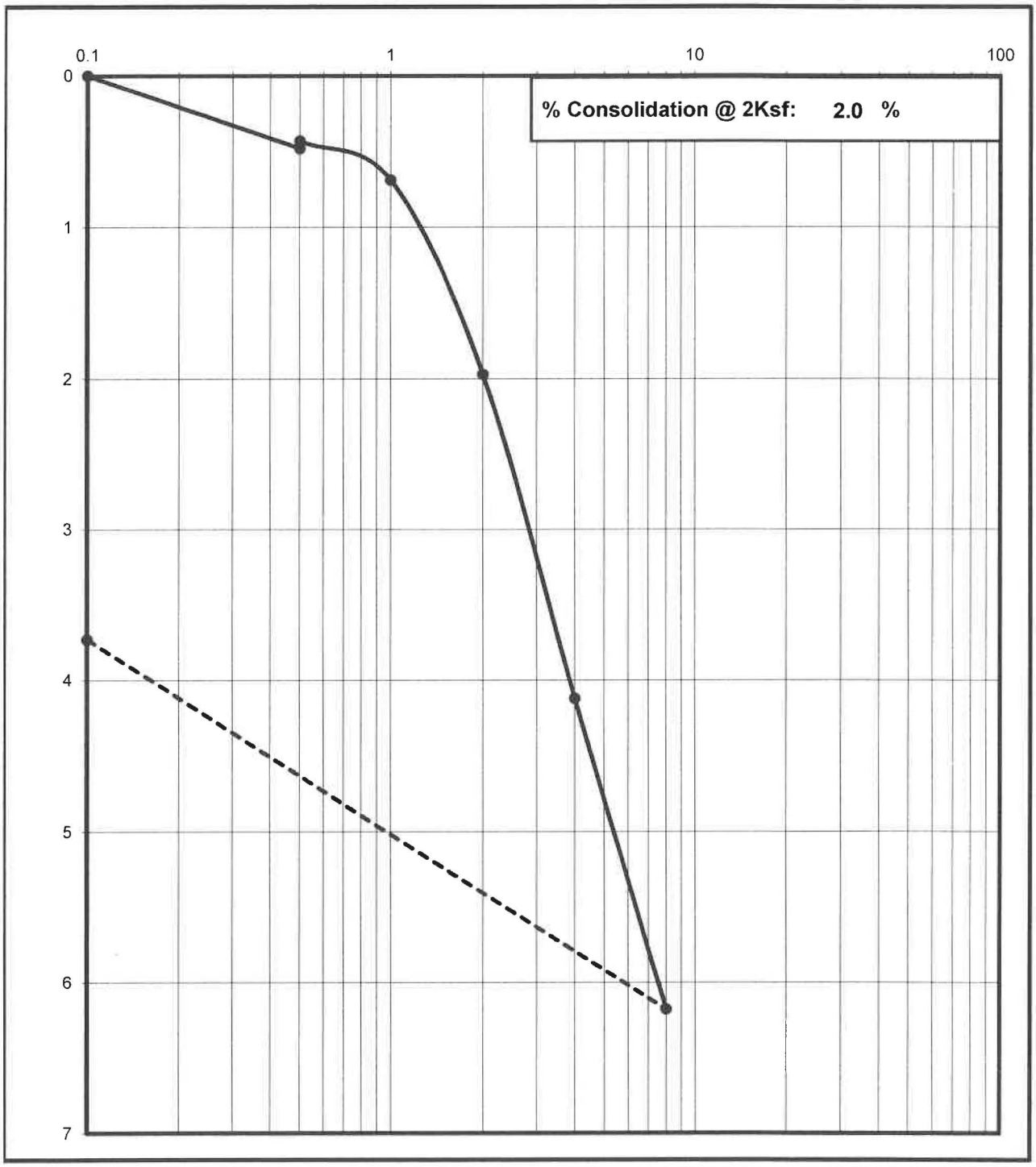
Driller: Jim Watts

Elevation: 10 Feet

Sheet: 1 of 1

Consolidation Test

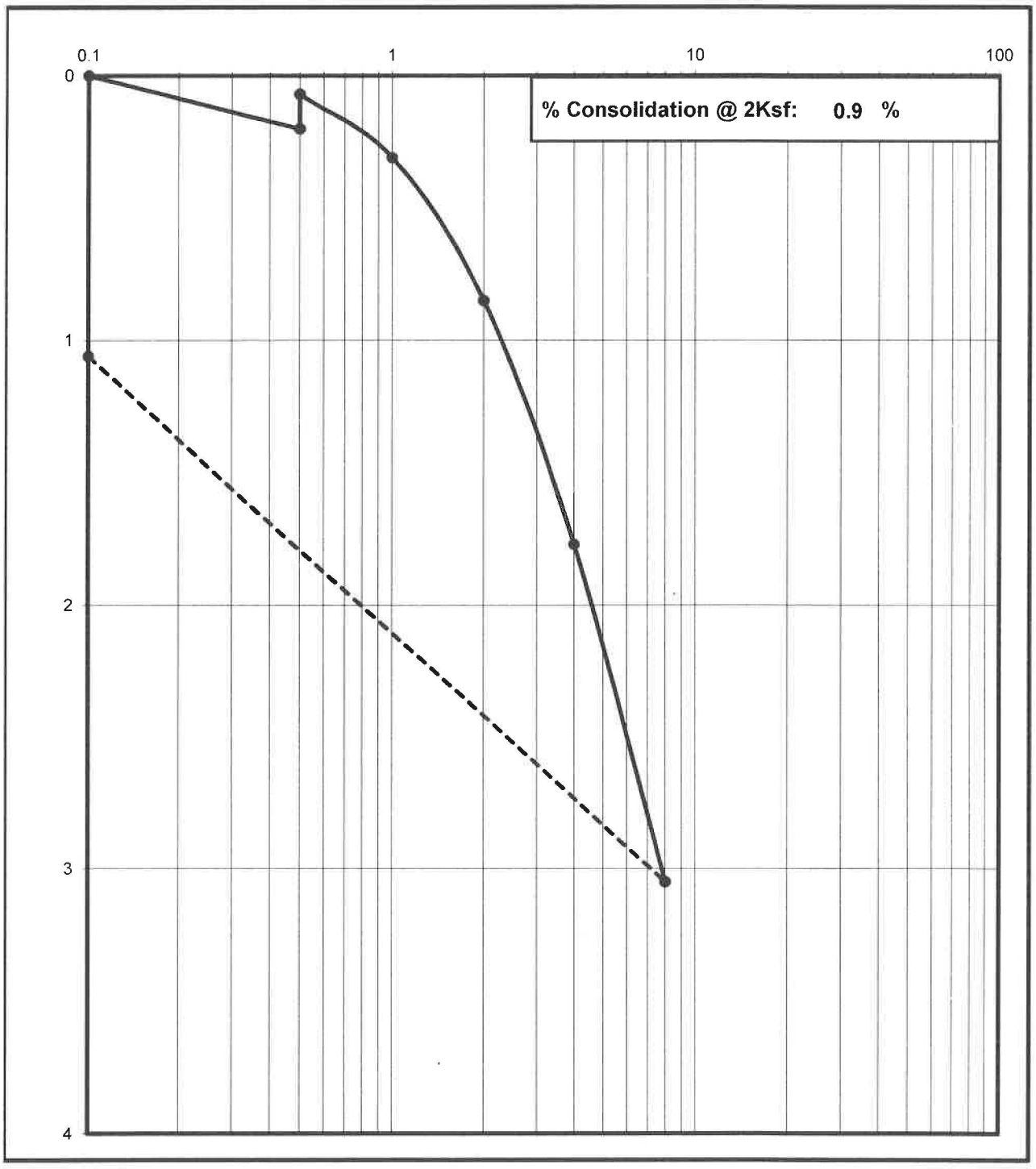
Project No	Boring No. & Depth	Date	Soil Classification
022-20027	B7 @ 2-3'	3/23/2020	SM-ML w/ clay



Krazan Testing Laboratory

Consolidation Test

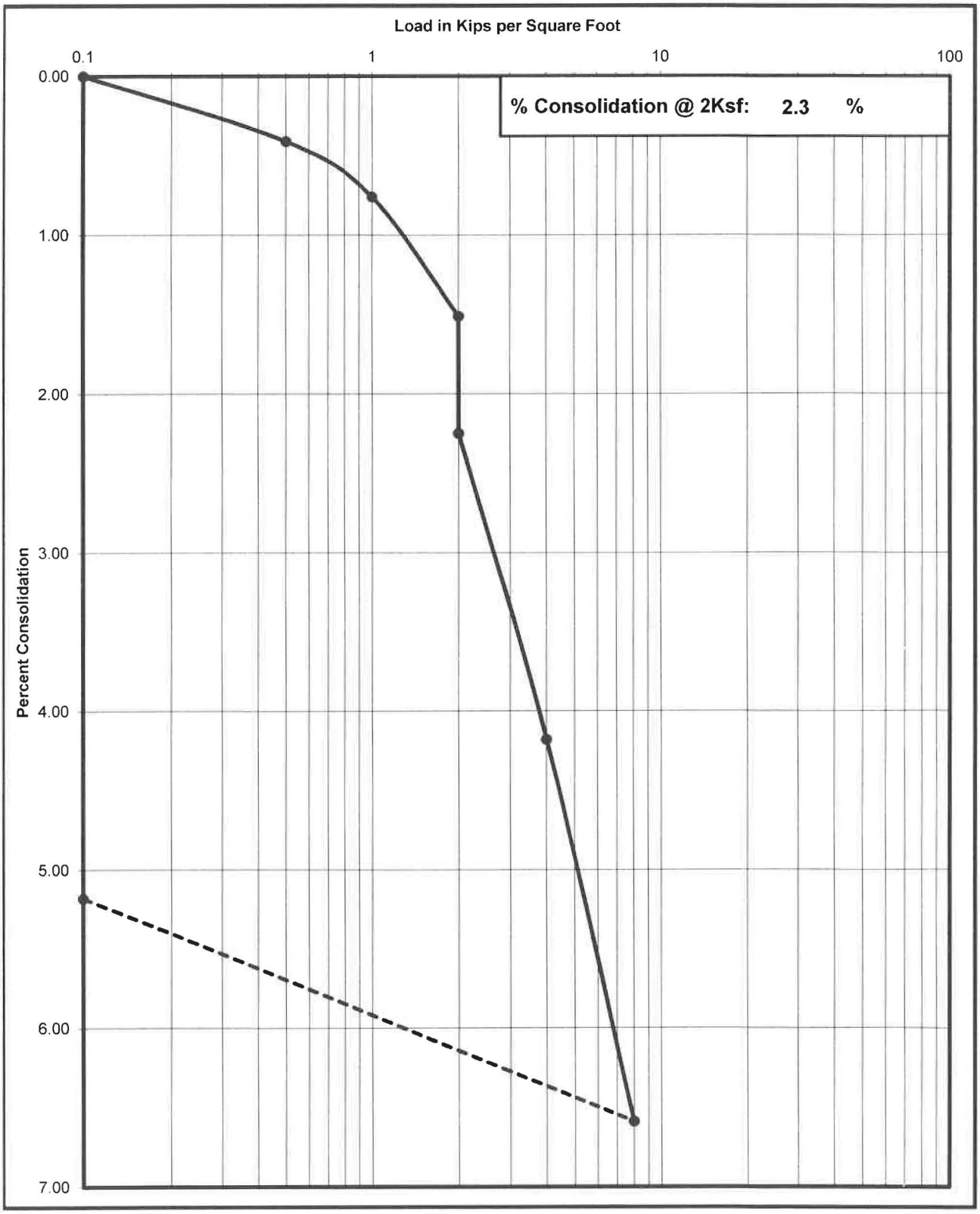
Project No	Boring No. & Depth	Date	Soil Classification
022-20027	B12 @ 2-3'	3/23/2020	SC



Krazan Testing Laboratory

Consolidation Test

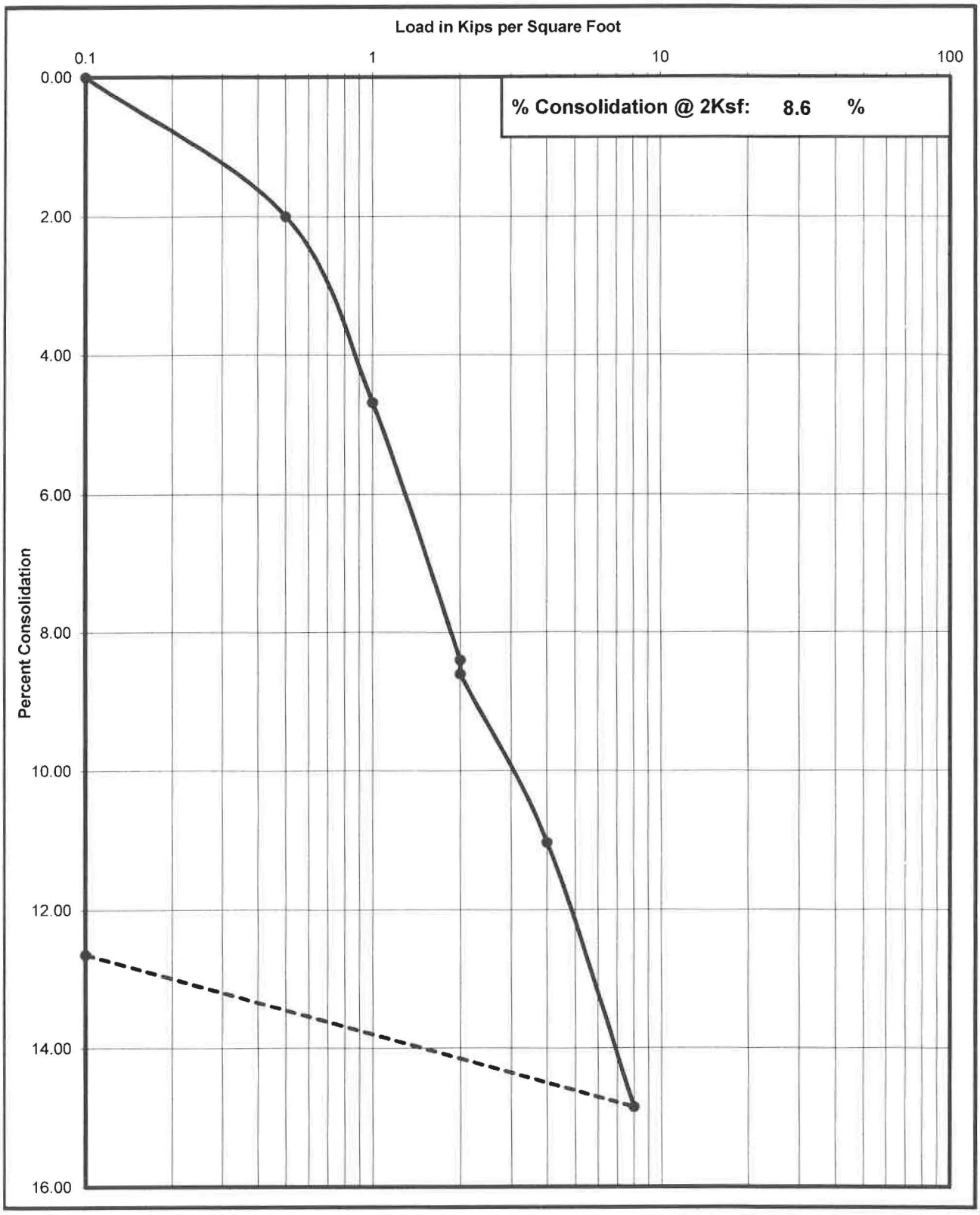
Project No	Boring No. & Depth	Date	Soil Classification
022-20027	B19 @ 2-3'	3/19/2020	SM



Krazan Testing Laboratory

Consolidation Test

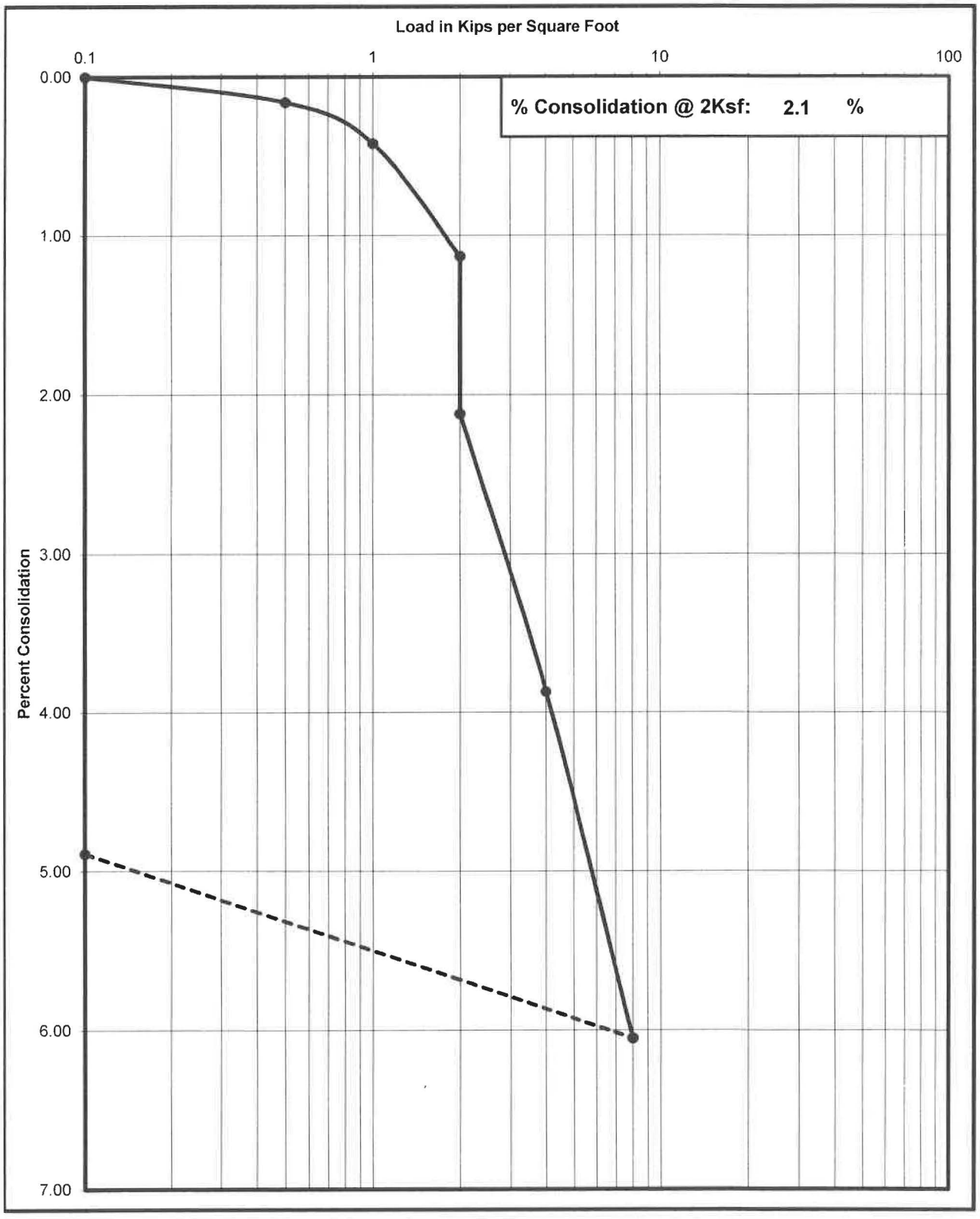
Project No	Boring No. & Depth	Date	Soil Classification
022-20027	B26 @ 2-3'	3/19/2020	SM w/ clay



Krazan Testing Laboratory

Consolidation Test

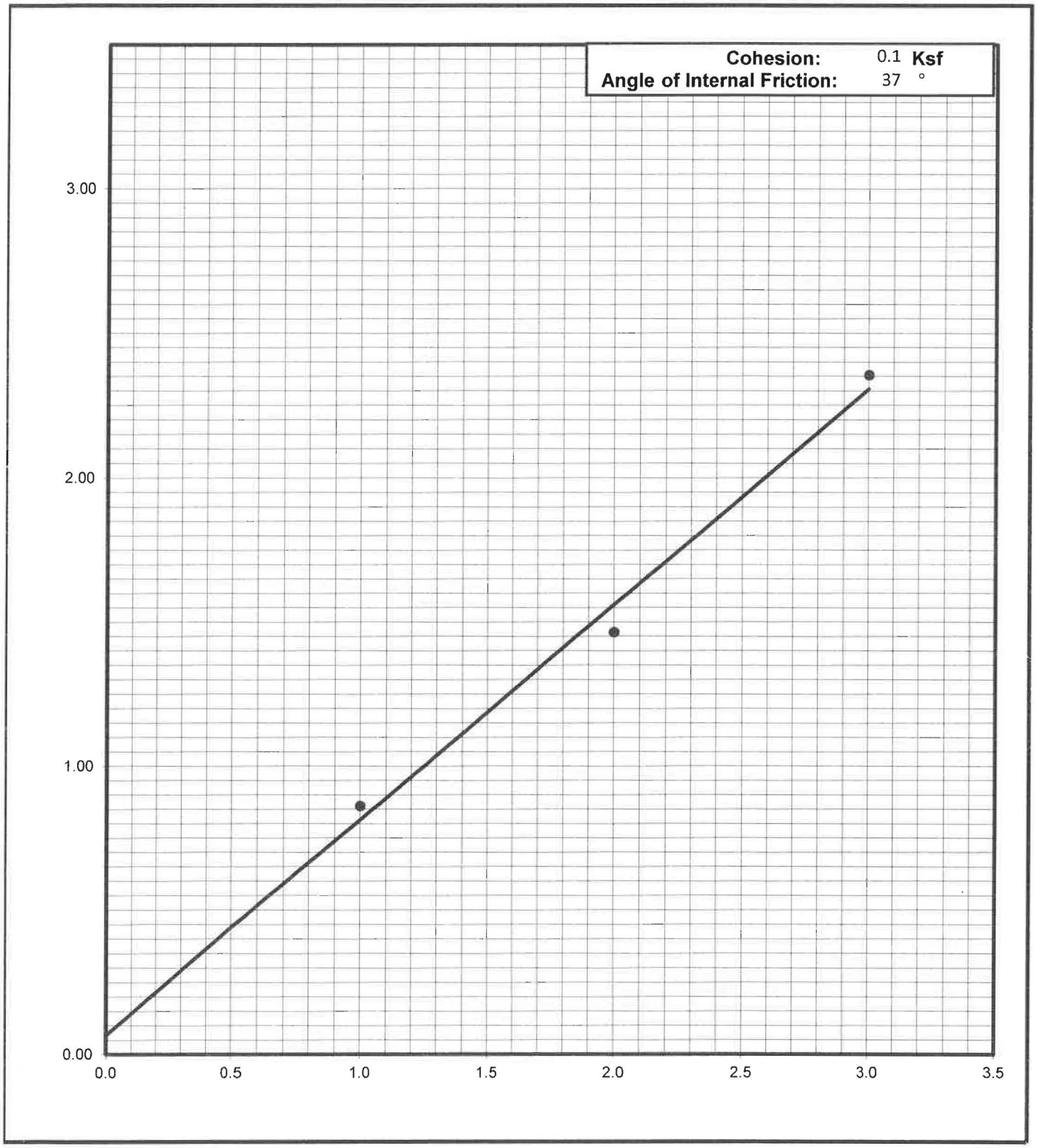
Project No	Boring No. & Depth	Date	Soil Classification
022-20027	B33 @ 2-3'	3/23/2020	SM



Krazan Testing Laboratory

Shear Strength Diagram (Direct Shear)
ASTM D - 3080 / AASHTO T - 236

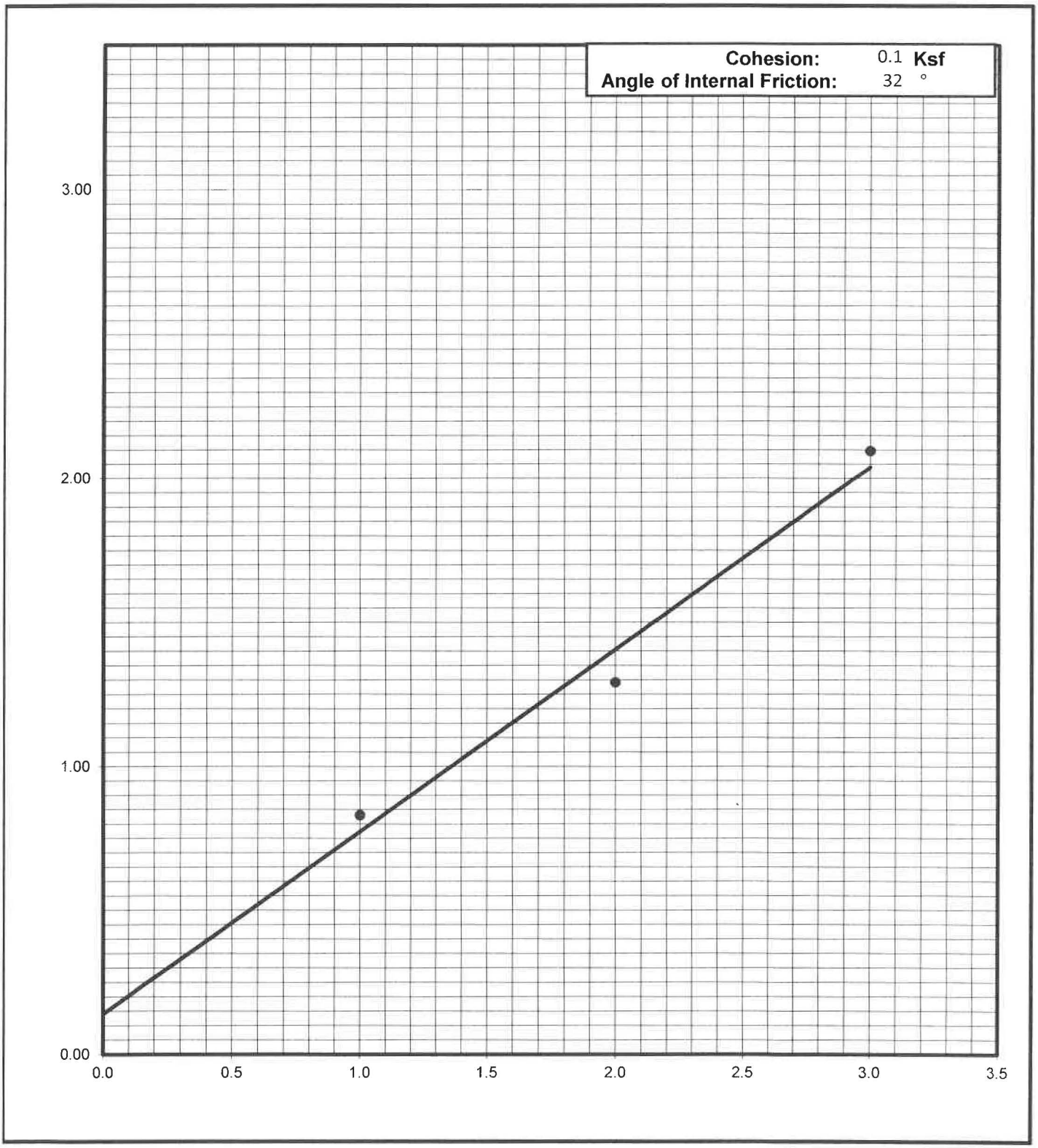
Project Number	Boring No. & Depth	Soil Type	Date
022-20027	B9 @ 2-3'	SM/SC	3/23/2020



Krazan Testing Laboratory

Shear Strength Diagram (Direct Shear)
ASTM D - 3080 / AASHTO T - 236

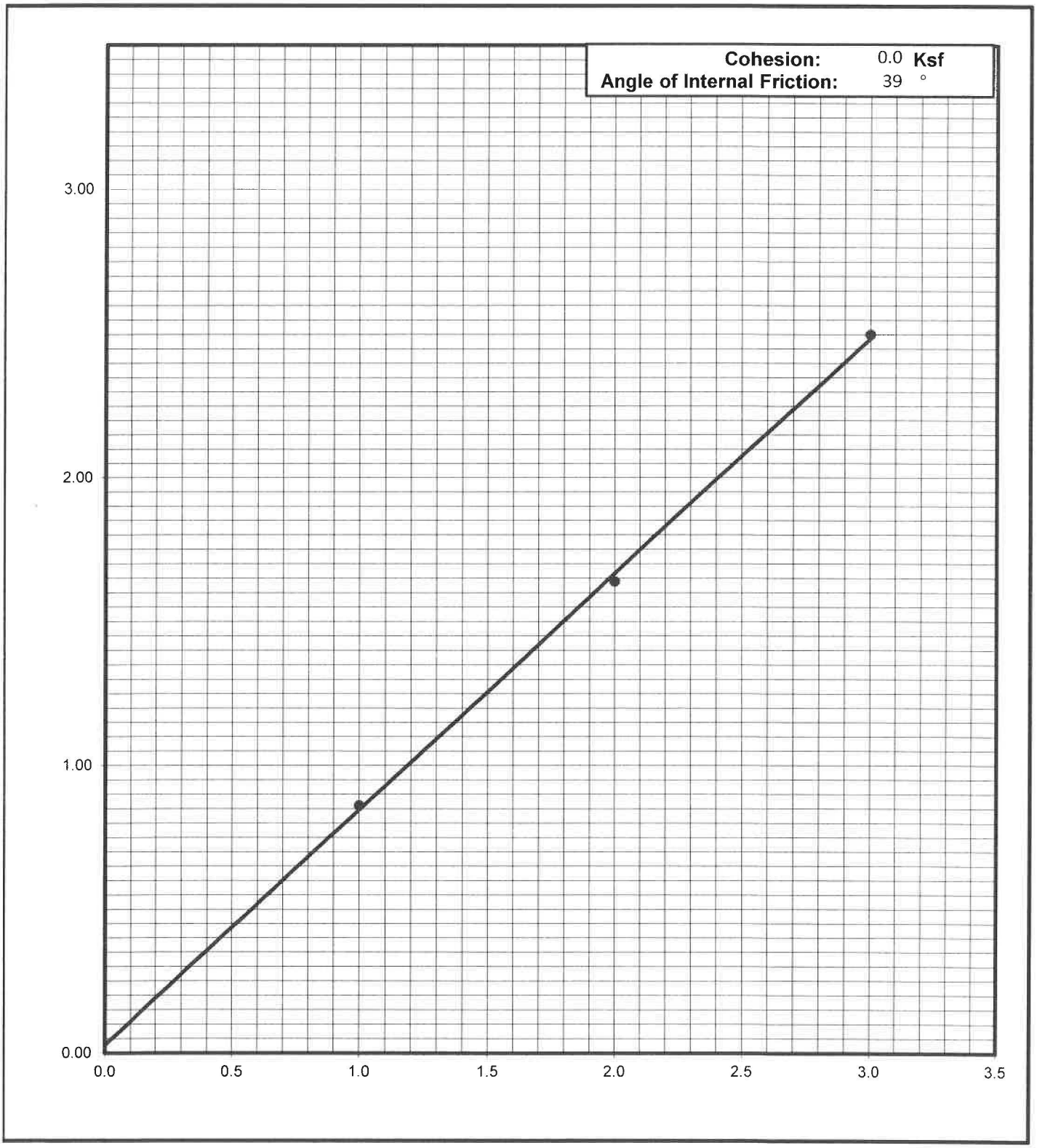
Project Number	Boring No. & Depth	Soil Type	Date
022-20027	B28 @ 2-3'	SM	3/19/2020



Krazan Testing Laboratory

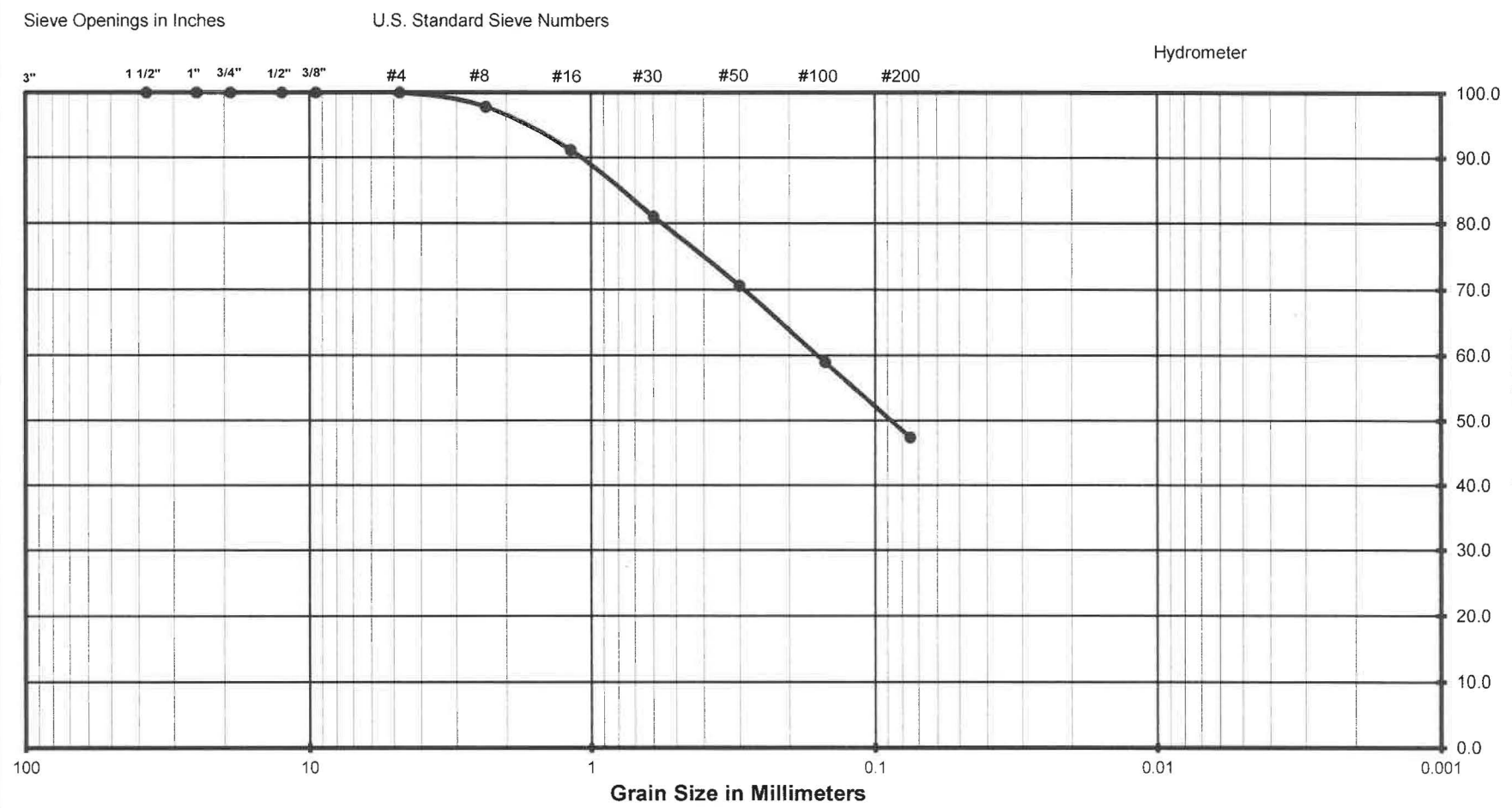
Shear Strength Diagram (Direct Shear)
ASTM D - 3080 / AASHTO T - 236

Project Number	Boring No. & Depth	Soil Type	Date
022-20027	B35 @ 2-3'	SM	3/23/2020



Krazan Testing Laboratory

Grain Size Analysis



(Unified Soils Classification)

Project Name	Malibu Vineyards Development
Project Number	022-20027
Soil Classification	SM-ML w/ clay
Sample Number	B7 @ 2-3'

Krazan Testing Laboratory

Grain Size Analysis



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Malibu Vineyards Development
Project Number	022-20027
Soil Classification	SC
Sample Number	B12 @ 2-3'

Krazan Testing Laboratory

Grain Size Analysis



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Malibu Vineyards Development
Project Number	022-20027
Soil Classification	SM
Sample Number	B19 @ 2-3'

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Grain Size Analysis



(Unified Soils Classification)

Project Name	Malibu Vineyards Development
Project Number	022-20027
Soil Classification	SM w/ clay
Sample Number	B26 @ 2-3'

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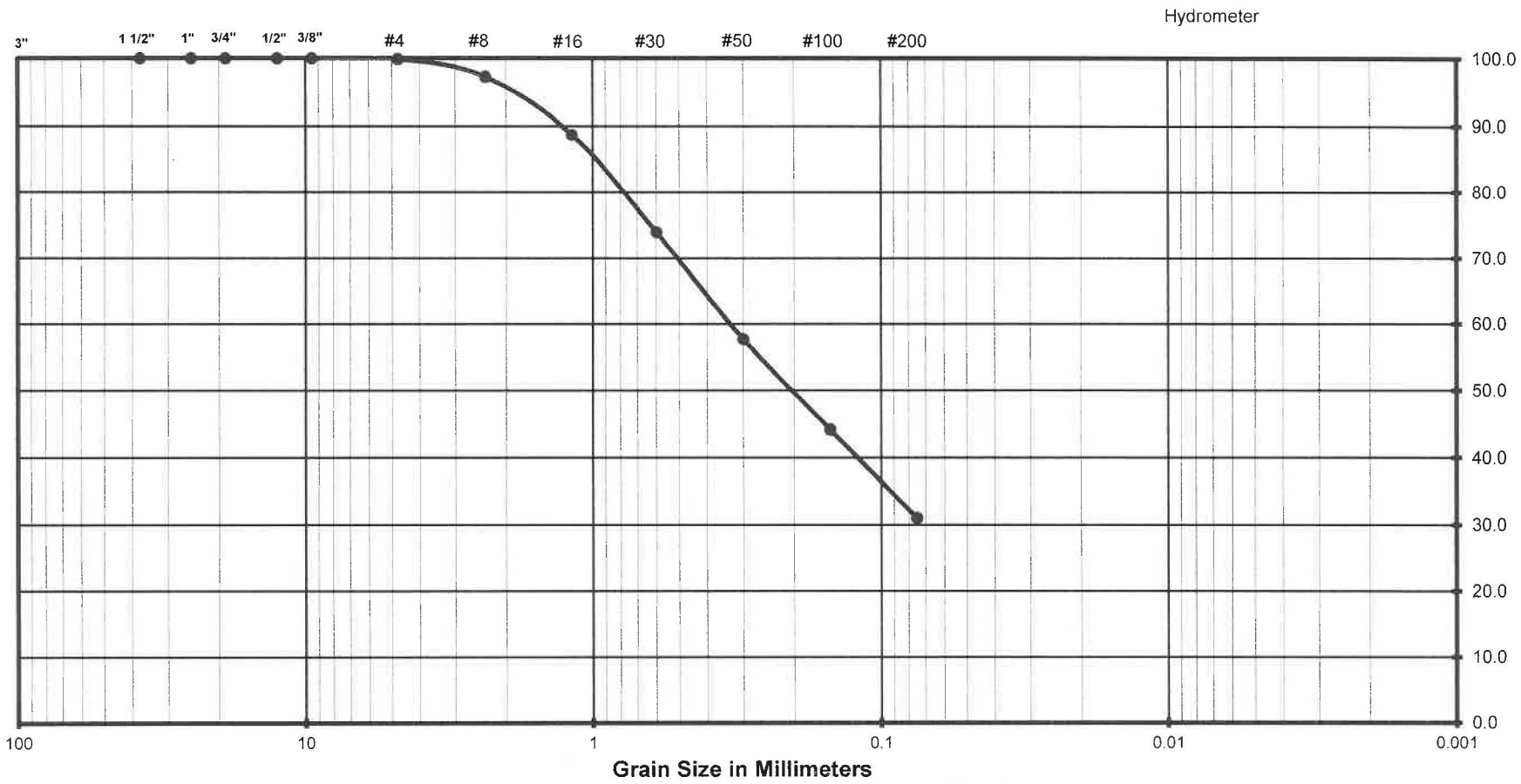
Grain Size Analysis



Gravel		Sand			Silt or Clay
Coarse	Fine	Coarse	Medium	Fine	

(Unified Soils Classification)

Project Name	Malibu Vineyards Development
Project Number	022-20027
Soil Classification	SM
Sample Number	B33 @ 2-3'

Krazan Testing Laboratory

Expansion Index Test

ASTM D - 4829

Project Number	: 022-20027
Project Name	: Malibu Vineyards Development
Date	: 3/20/2020
Sample location/ Depth	: B1 @ 1-2'
Sample Number	: X1
Soil Classification	: SC

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	753.7		
Weight of Mold, gms	367.4		
Weight of Soil, gms	386.3		
Wet Density, Lbs/cu.ft.	116.5		
Weight of Moisture Sample (Wet), gms	300.0		
Weight of Moisture Sample (Dry), gms	270.0		
Moisture Content, %	11.1		
Dry Density, Lbs/cu.ft.	104.9		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	49.4		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	0.0379

Expansion Index $_{measured}$ = 37.9

Expansion Index = **38**

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

Krazan Testing Laboratory

Expansion Index Test

ASTM D - 4829

Project Number	: 022-20027
Project Name	: Malibu Vineyards Development
Date	: 3/23/2020
Sample location/ Depth	: B4 @ 3-4'
Sample Number	: X2
Soil Classification	: SC

Trial #	**1**	**2**	**3**
Weight of Soil & Mold, gms	779.0		
Weight of Mold, gms	367.4		
Weight of Soil, gms	411.6		
Wet Density, Lbs/cu.ft.	124.1		
Weight of Moisture Sample (Wet), gms	300.0		
Weight of Moisture Sample (Dry), gms	275.5		
Moisture Content, %	8.9		
Dry Density, Lbs/cu.ft.	114.0		
Specific Gravity of Soil	2.7		
Degree of Saturation, %	50.2		

Time	Inital	30 min	1 hr	6hrs	12 hrs	24 hrs
Dial Reading	0	--	--	--	--	0.0194

Expansion Index $_{measured}$ = 19.4

Expansion Index = **19**

Expansion Potential Table	
Exp. Index	Potential Exp.
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

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Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

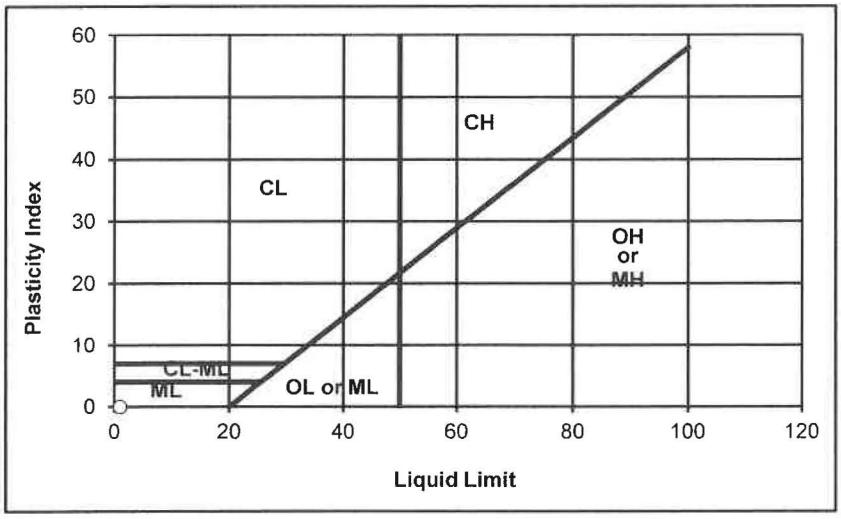
Project: **Malibu Vineyards Development**
Project Number: **022-20027**
Date Sampled: 3/16/2020
Sampled By: DA
Sample Number:
Sample Location: B31 @ 20-21'
Sample Description: ML

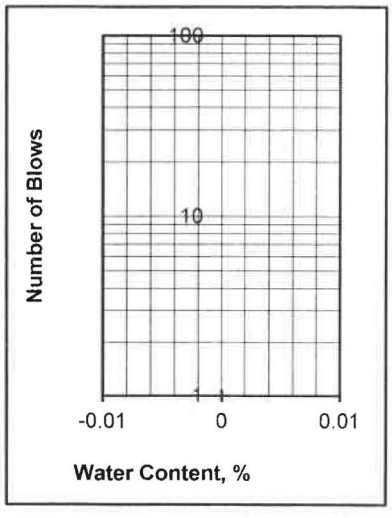
Date Tested: 3/20/2020
Tested By: J Mitchell
Verified By: J Gruszczynski

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)						
Weight of Dry Soil & Tare (g)						
Weight of Tare (g)						
Weight of water (g)						
Weight of Dry Soil (g)						
Water Content (% of dry wt.)						
Number of Blows						

Plastic Limit : N/D **Liquid Limit : N/D**

Plasticity Index : NON-PLASTIC
Unified Soil Classification : NON-PLASTIC **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

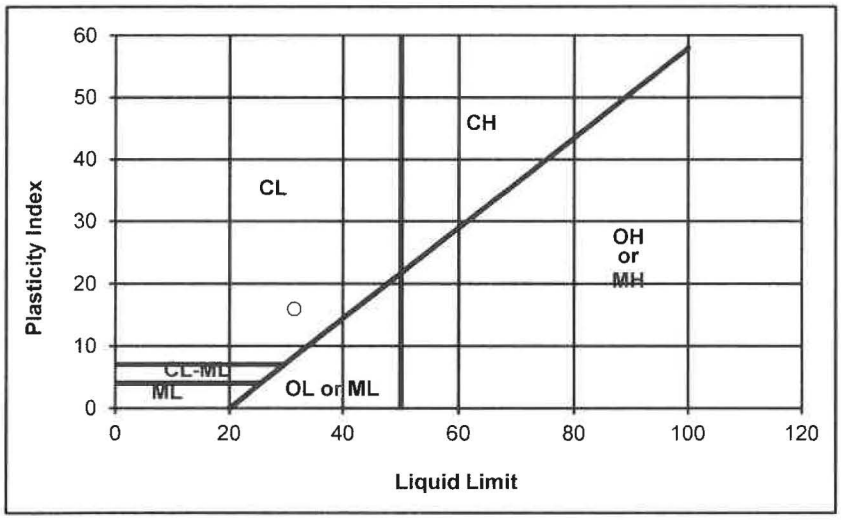
Project: **Malibu Vineyards Development**
Project Number: **022-20027**
Date Sampled: 3/16/2020
Sampled By: DA
Sample Number:
Sample Location: B31 @ 25-26'
Sample Description: CL

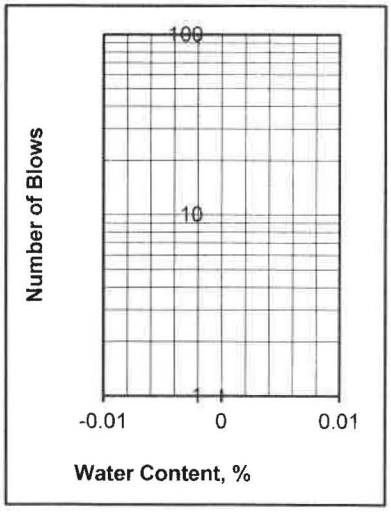
Date Tested: 3/20/2020
Tested By: J Mitchell
Verified By: J Gruszczynski

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	29.92	29.11		31.89	22.12	
Weight of Dry Soil & Tare (g)	28.25	27.07		28.35	20.05	
Weight of Tare (g)	17.12	13.70		17.01	13.52	
Weight of water (g)	1.67	2.04		3.54	2.07	
Weight of Dry Soil (g)	11.14	13.37		11.34	6.53	
Water Content (% of dry wt.)	15.0%	15.2%		31.2%	31.7%	
Number of Blows				26	24	

Plastic Limit : 15 **Liquid Limit : 31**

Plasticity Index : 16
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

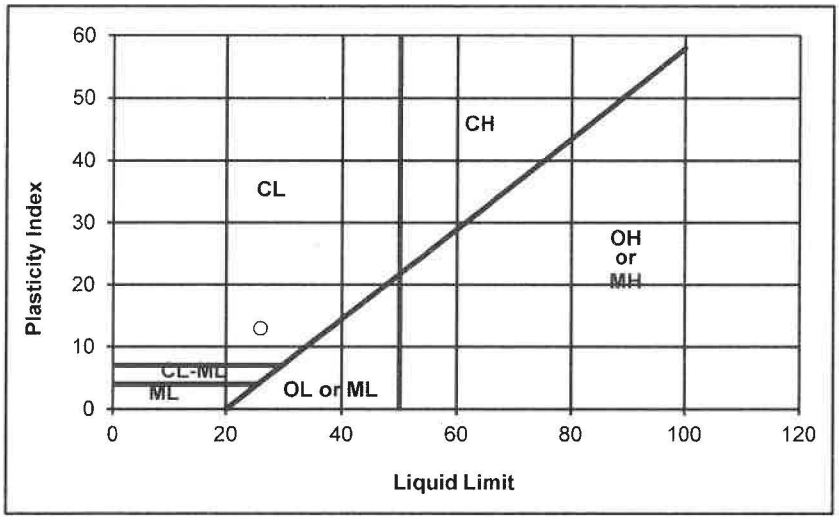
Project: **Malibu Vineyards Development**
Project Number: **022-20027**
Date Sampled: 3/16/2020
Sampled By: DA
Sample Number:
Sample Location: B31 @ 30-31'
Sample Description: SC

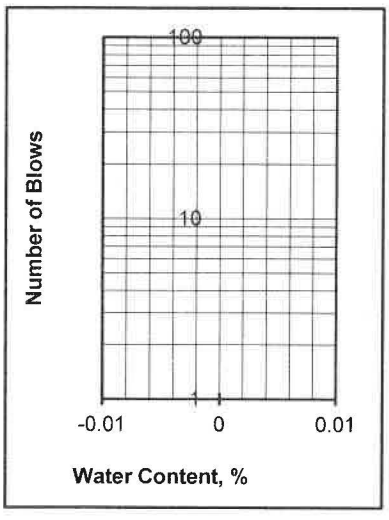
Date Tested: 3/20/2020
Tested By: J Mitchell
Verified By: J Gruszczynski

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	32.59	31.69		26.03	32.40	
Weight of Dry Soil & Tare (g)	30.85	29.87		23.43	29.21	
Weight of Tare (g)	16.96	15.54		13.40	16.99	
Weight of water (g)	1.74	1.82		2.60	3.19	
Weight of Dry Soil (g)	13.89	14.33		10.03	12.22	
Water Content (% of dry wt.)	12.5%	12.7%		25.9%	26.1%	
Number of Blows				25	25	

Plastic Limit : 13 **Liquid Limit : 26**

Plasticity Index : 13
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

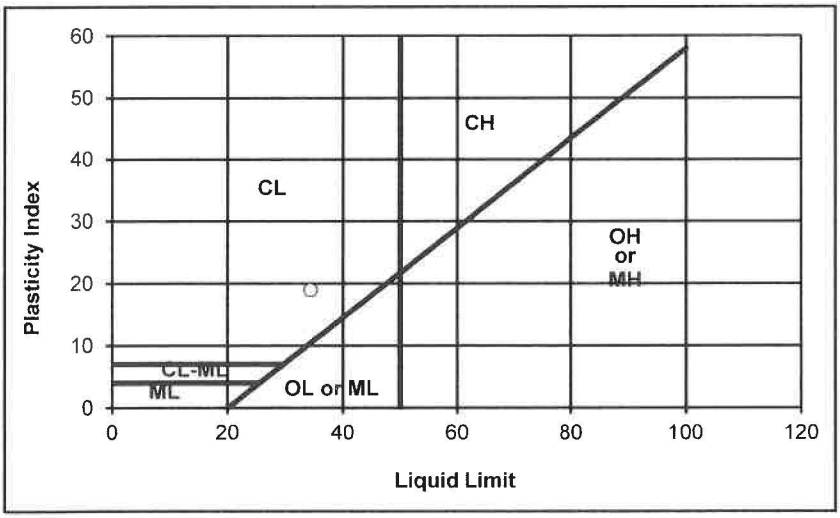
Project: **Malibu Vineyards Development**
Project Number: **022-20027**
Date Sampled: 3/16/2020
Sampled By: DA
Sample Number:
Sample Location: B31 @ 35-36'
Sample Description: SC-CL

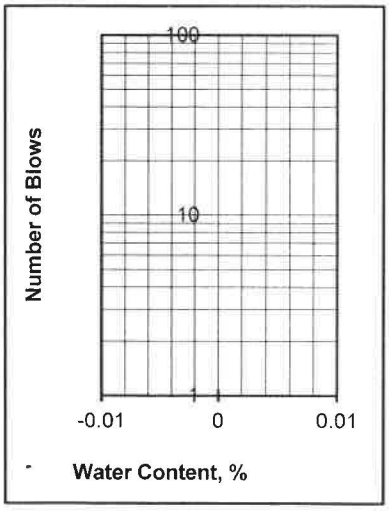
Date Tested: 3/20/2020
Tested By: J Mitchell
Verified By: J Gruszczynski

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	27.95	26.73		34.11	32.27	
Weight of Dry Soil & Tare (g)	26.10	24.96		29.79	28.38	
Weight of Tare (g)	13.71	13.03		17.26	17.05	
Weight of water (g)	1.85	1.78		4.32	3.89	
Weight of Dry Soil (g)	12.40	11.93		12.53	11.33	
Water Content (% of dry wt.)	14.9%	14.9%		34.5%	34.3%	
Number of Blows				25	25	

Plastic Limit : 15 **Liquid Limit : 34**

Plasticity Index : 19
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

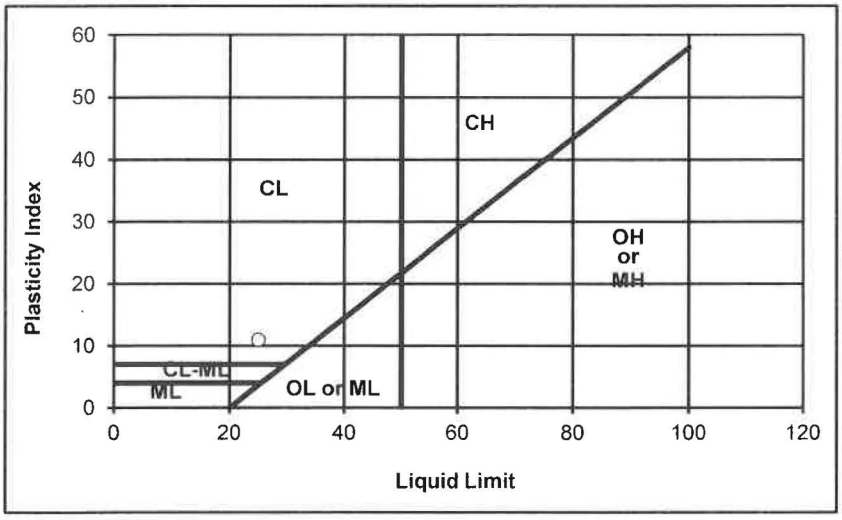
Project: **Malibu Vineyards Development**
Project Number: **022-20027**
Date Sampled: 3/16/2020
Sampled By: DA
Sample Number:
Sample Location: B31 @ 40-41'
Sample Description: SC-CL

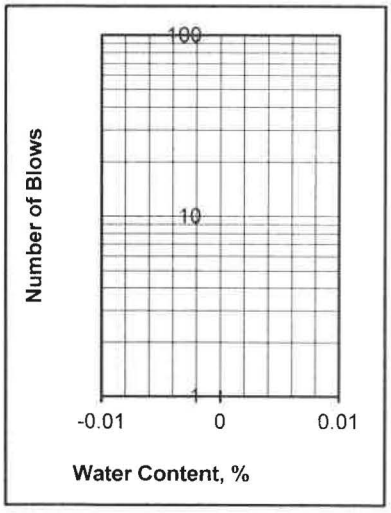
Date Tested: 3/20/2020
Tested By: J Mitchell
Verified By: J Gruszczynski

	Plastic Limit			Liquid Limit		
Trial Number	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	23.11	24.16		29.14		
Weight of Dry Soil & Tare (g)	22.03	23.05		26.06		
Weight of Tare (g)	14.17	14.95		13.76		
Weight of water (g)	1.08	1.11		3.08		
Weight of Dry Soil (g)	7.86	8.10		12.30		
Water Content (% of dry wt.)	13.8%	13.7%		25.1%		
Number of Blows				25		

Plastic Limit : 14 **Liquid Limit : 25**

Plasticity Index : 11
Unified Soil Classification : CL **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

Unusual Conditions, Other Notes:

Plasticity Index of Soils

ASTM D4318/AASHTO T89 T90/CT 204

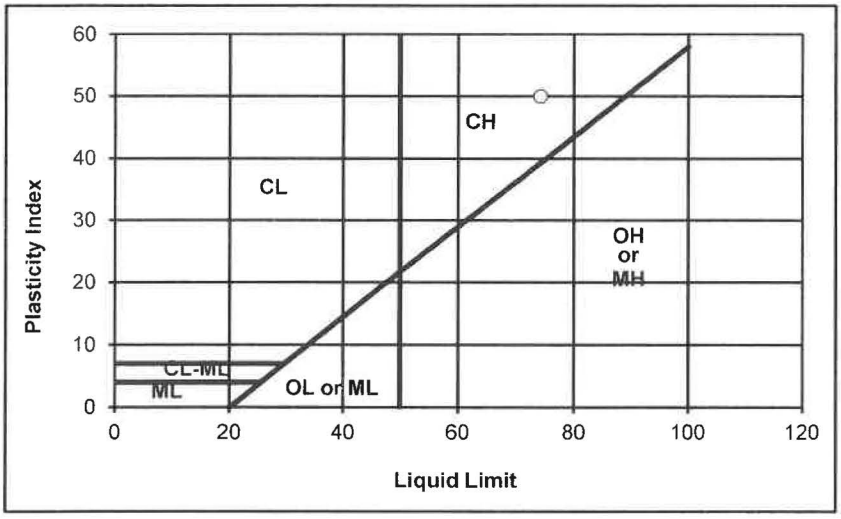
Project: **Malibu Vineyards Development**
Project Number: **022-20027**
Date Sampled: 3/16/2020
Sampled By: DA
Sample Number:
Sample Location: B31 @ 45-46'
Sample Description: CH

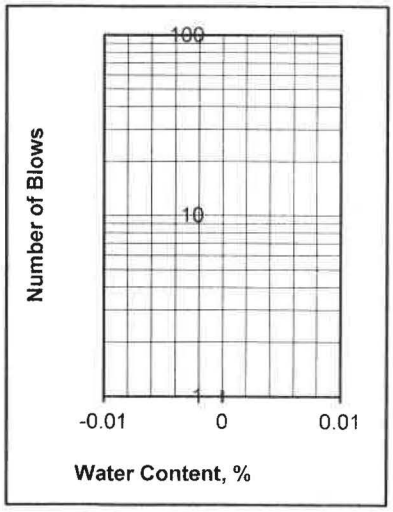
Date Tested: 3/20/2020
Tested By: J Mitchell
Verified By: J Gruszczynski

Trial Number	Plastic Limit			Liquid Limit		
	1	2	3	1	2	3
Weight of Wet Soil & Tare (g)	30.21	32.95		22.76	24.59	
Weight of Dry Soil & Tare (g)	27.75	29.06		18.77	19.69	
Weight of Tare (g)	17.05	13.48		13.40	13.15	
Weight of water (g)	2.46	3.89		3.98	4.90	
Weight of Dry Soil (g)	10.70	15.58		5.37	6.54	
Water Content (% of dry wt.)	22.9%	24.9%		74.1%	74.9%	
Number of Blows				25	23	

Plastic Limit : 24 **Liquid Limit : 74**

Plasticity Index : 50
Unified Soil Classification : CH **Requirement:**
Approx. % of Material Retained on # 40 Sieve:





Departures from Outlined Procedure:

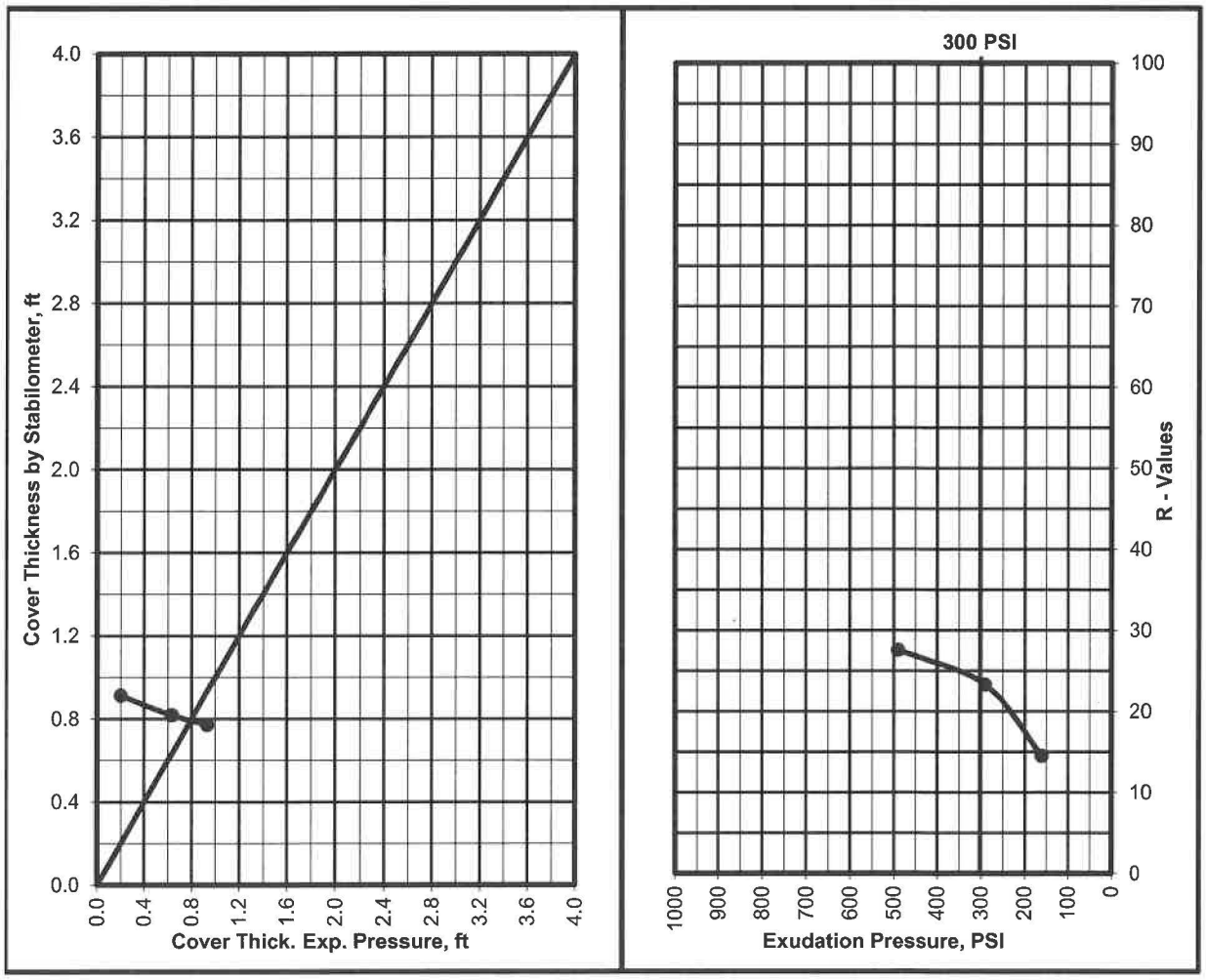
Unusual Conditions, Other Notes:

R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	022-20027
Project Name	:	Malibu Vineyards Development
Date	:	3/19/2020
Sample Location/Curve Number	:	RV#1
Soil Classification	:	SM w/ clay

TEST	A	B	C
Percent Moisture @ Compaction, %	9.6	10.2	10.5
Dry Density, lbm/cu.ft.	128.1	126.5	127.1
Exudation Pressure, psi	490	290	160
Expansion Pressure, (Dial Reading)	28	19	6
Expansion Pressure, psf	121	82	26
Resistance Value R	28	23	14

R Value at 300 PSI Exudation Pressure	**24**
R Value by Expansion Pressure (TI =): 5	**25**



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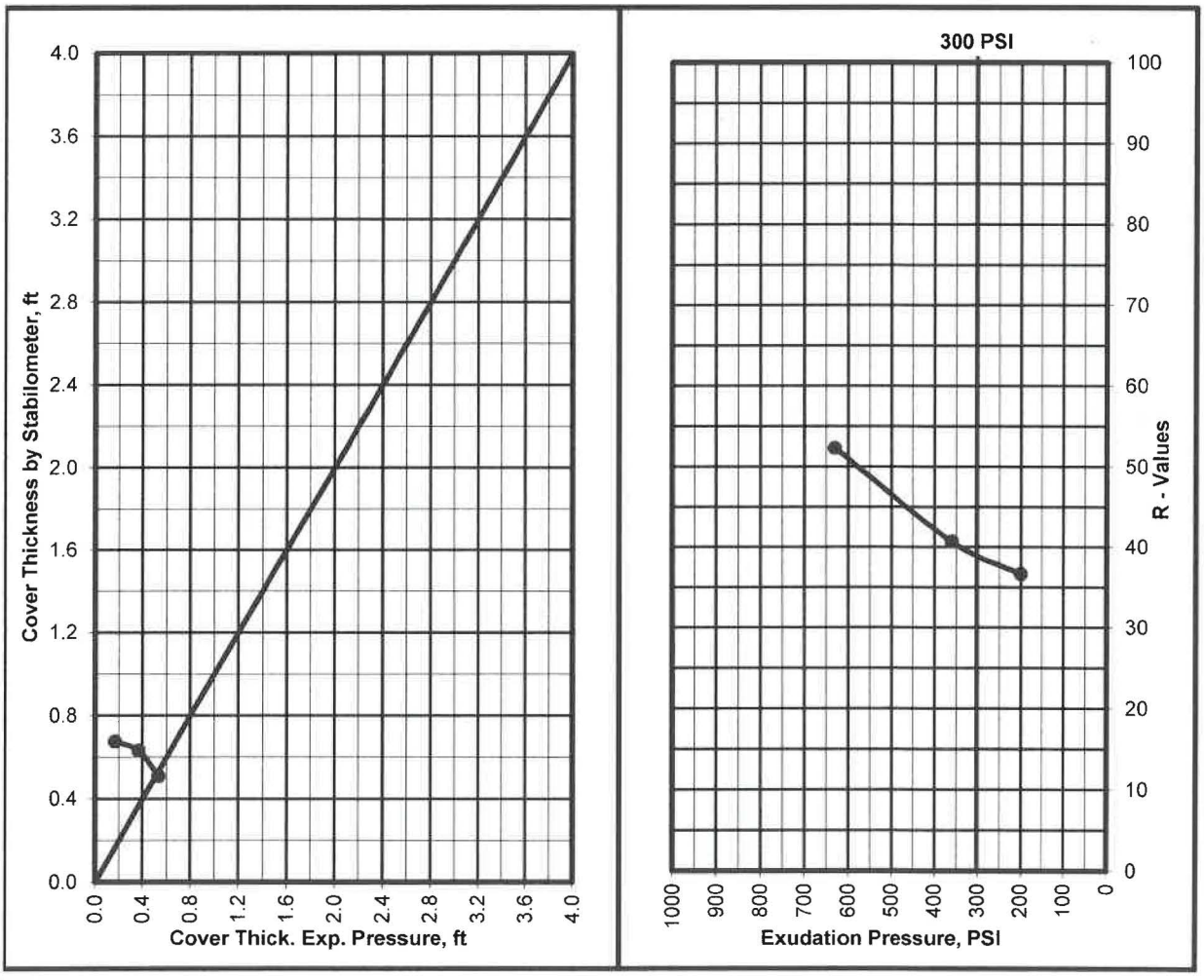
R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	022-20027
Project Name	:	Malibu Vineyards Development
Date	:	3/24/2020
Sample Location/Curve Number	:	RV#2
Soil Classification	:	SM w/ clay

TEST	A	B	C
Percent Moisture @ Compaction, %	9.4	10.4	9.9
Dry Density, lbm/cu.ft.	129.7	127.2	128.2
Exudation Pressure, psi	630	200	360
Expansion Pressure, (Dial Reading)	16	5	11
Expansion Pressure, psf	69	22	48
Resistance Value R	52	37	41

R Value at 300 PSI Exudation Pressure	**39**
R Value by Expansion Pressure (TI =): 5	**48**



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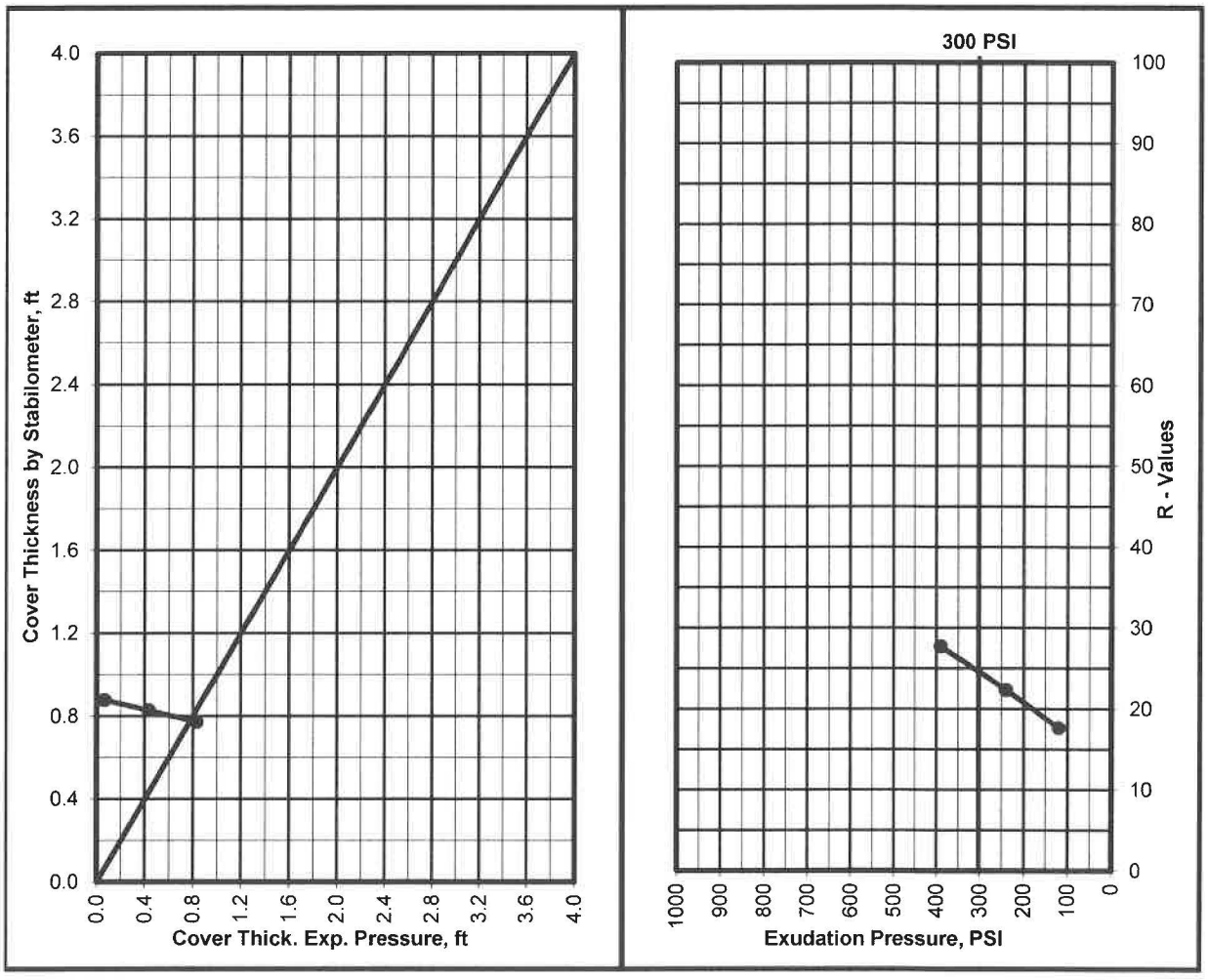
R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	022-20027
Project Name	:	Malibu Vineyards Development
Date	:	3/24/2020
Sample Location/Curve Number	:	RV#3
Soil Classification	:	SM w/ clay

TEST	A	B	C
Percent Moisture @ Compaction, %	10.2	11.1	11.6
Dry Density, lbm/cu.ft.	127.0	123.6	122.6
Exudation Pressure, psi	390	240	120
Expansion Pressure, (Dial Reading)	25	13	2
Expansion Pressure, psf	108	56	9
Resistance Value R	28	22	18

R Value at 300 PSI Exudation Pressure	**25**
R Value by Expansion Pressure (TI =): 5	**26**



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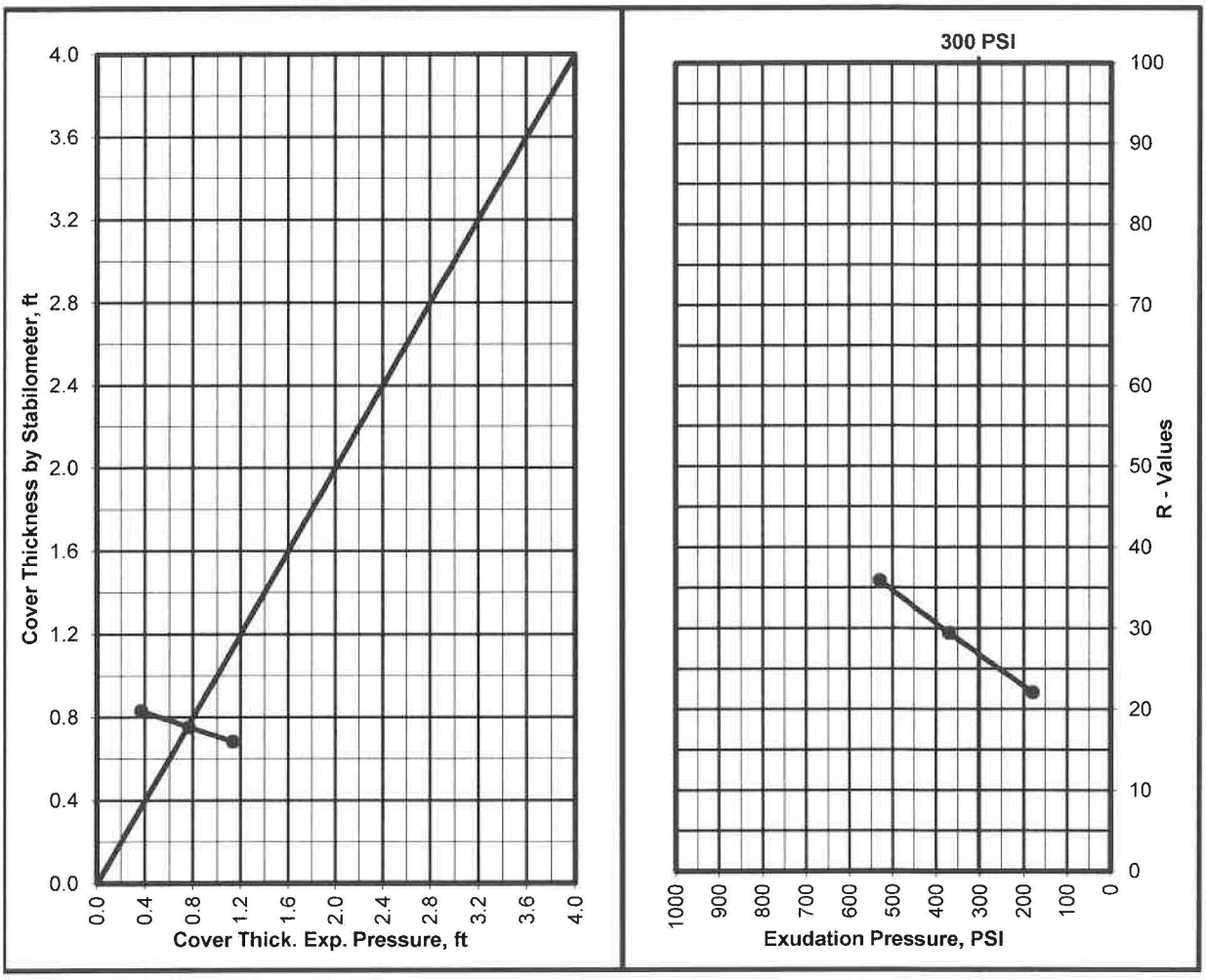
R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	022-20027
Project Name	:	Malibu Vineyards Development
Date	:	3/24/2020
Sample Location/Curve Number	:	RV#4
Soil Classification	:	SM w/ clay

TEST	A	B	C
Percent Moisture @ Compaction, %	11.3	10.8	10.3
Dry Density, lbm/cu.ft.	123.5	126.0	127.0
Exudation Pressure, psi	180	370	530
Expansion Pressure, (Dial Reading)	11	23	34
Expansion Pressure, psf	48	100	147
Resistance Value R	22	29	36

R Value at 300 PSI Exudation Pressure	**26**
R Value by Expansion Pressure (TI =): 5	**28**



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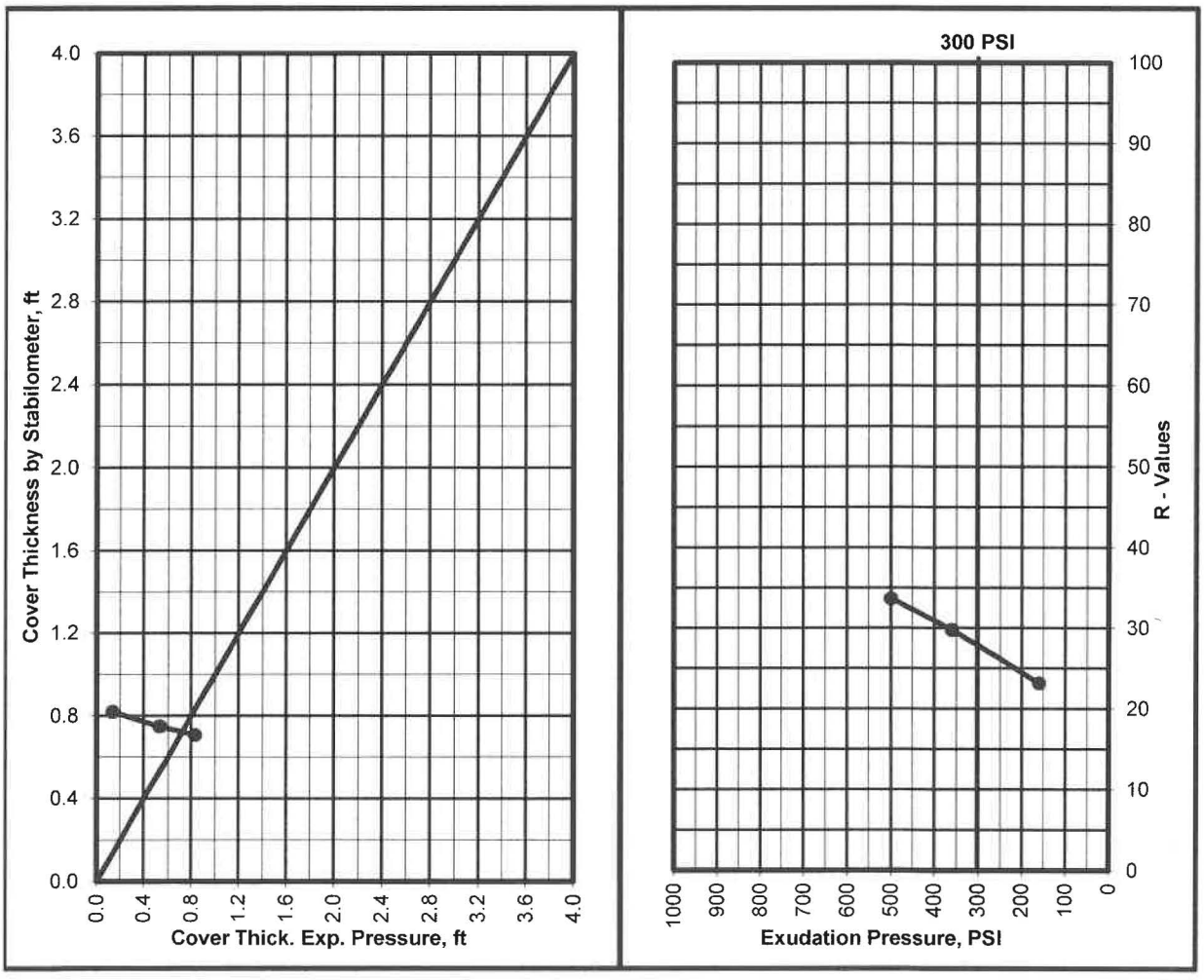
R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	022-20027
Project Name	:	Malibu Vineyards Development
Date	:	3/24/2020
Sample Location/Curve Number	:	RV#5
Soil Classification	:	SM w/ clay

TEST	A	B	C
Percent Moisture @ Compaction, %	11.3	12.3	10.8
Dry Density, lbm/cu.ft.	123.6	120.0	124.1
Exudation Pressure, psi	360	160	500
Expansion Pressure, (Dial Reading)	16	4	25
Expansion Pressure, psf	69	17	108
Resistance Value R	30	23	34

R Value by Expansion Pressure (TI =): 5	**28**
R Value at 300 PSI Exudation Pressure	**28**



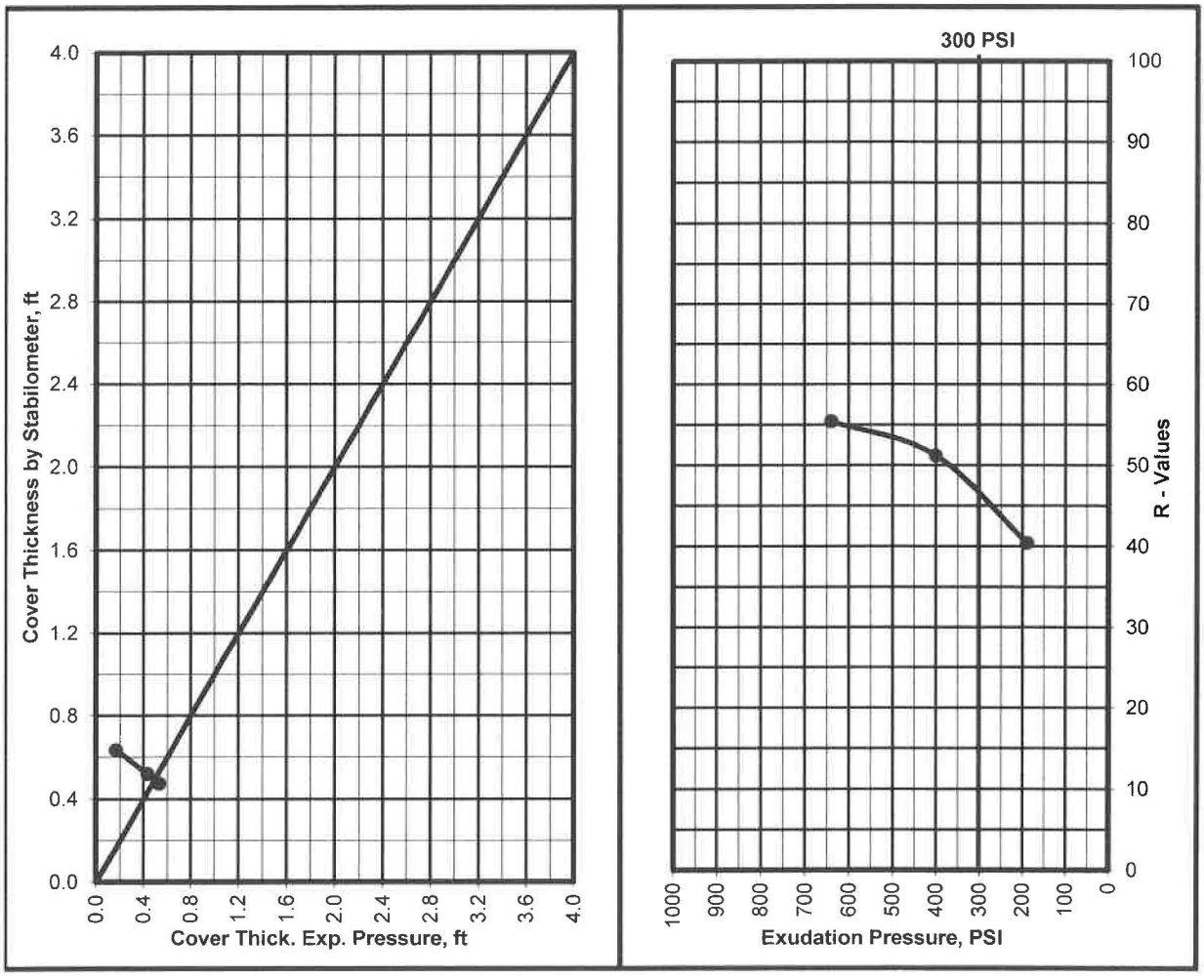
Krazan Testing Laboratory

R - VALUE TEST
ASTM D - 2844 / CAL 301

Project Number	:	022-20027
Project Name	:	Malibu Vineyards Development
Date	:	3/24/2020
Sample Location/Curve Number	:	RV#6
Soil Classification	:	SM w/ clay

TEST	A	B	C
Percent Moisture @ Compaction, %	9.2	10.2	8.7
Dry Density, lbm/cu.ft.	128.5	128.2	129.1
Exudation Pressure, psi	400	190	640
Expansion Pressure, (Dial Reading)	13	5	16
Expansion Pressure, psf	56	22	69
Resistance Value R	51	40	55

R Value at 300 PSI Exudation Pressure	**46**
R Value by Expansion Pressure (Ti =): 5	**53**



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APPENDIX B

EARTHWORK SPECIFICATIONS

GENERAL

When the text of the report conflicts with the general specifications in this appendix, the recommendations in the report have precedence.

SCOPE OF WORK: These specifications and applicable plans pertain to and include all earthwork associated with the site rough grading, including but not limited to the furnishing of all labor, tools, and equipment necessary for site clearing and grubbing, stripping, preparation of foundation materials for receiving fill, excavation, processing, placement and compaction of fill and backfill materials to the lines and grades shown on the project grading plans, and disposal of excess materials.

PERFORMANCE: The Contractor shall be responsible for the satisfactory completion of all earthwork in accordance with the project plans and specifications. This work shall be inspected and tested by a representative of Krazan and Associates, Inc., hereinafter known as the Soils Engineer and/or Testing Agency. Attainment of design grades when achieved shall be certified by the project Civil Engineer. Both the Soils Engineer and the Civil Engineer are the Owner's representatives. If the Contractor should fail to meet the technical or design requirements embodied in this document and on the applicable plans, he shall make the necessary readjustments until all work is deemed satisfactory as determined by both the Soils Engineer and the Civil Engineer. No deviation from these specifications shall be made except upon written approval of the Soils Engineer, Civil Engineer or project Architect.

No earthwork shall be performed without the physical presence or approval of the Soils Engineer. The Contractor shall notify the Soils Engineer at least 2 working days prior to the commencement of any aspect of the site earthwork.

The Contractor agrees that he shall assume sole and complete responsibility for job site conditions during the course of construction of this project, including safety of all persons and property; that this requirement shall apply continuously and not be limited to normal working hours; and that the Contractor shall defend, indemnify and hold the Owner and the Engineers harmless from any and all liability, real or alleged, in connection with the performance of work on this project, except for liability arising from the sole negligence of the Owner or the Engineers.

TECHNICAL REQUIREMENTS: All compacted materials shall be densified to a density not less than 90 percent relative compaction based on ASTM Test Method D1557 or CAL-216, as specified in the technical portion of the Soil Engineer's report. The location and frequency of field density tests shall be as determined by the Soils Engineer. The results of these tests and compliance with these specifications shall be the basis upon which satisfactory completion of work will be judged by the Soils Engineer.

SOILS AND FOUNDATION CONDITIONS: The Contractor is presumed to have visited the site and to have familiarized himself with existing site conditions and the contents of the data presented in the soil report.

The Contractor shall make his own interpretation of the data contained in said report, and the Contractor shall not be relieved of liability under the Contract documents for any loss sustained as a result of any variance between conditions indicated by or deduced from said report and the actual conditions encountered during the progress of the work.

DUST CONTROL: The work includes dust control as required for the alleviation or prevention of any dust nuisance on or about the site or the borrow area, or off-site if caused by the Contractor's operation either during the performance of the earthwork or resulting from the conditions in which the Contractor leaves the site. The Contractor shall assume all liability, including court costs of codefendants, for all claims related to dust or windblown materials attributable to his work.

SITE PREPARATION

Site preparation shall consist of site clearing and grubbing and the preparations of foundation materials for receiving fill.

CLEARING AND GRUBBING: The Contractor shall accept the site in this present condition and shall demolish and/or remove from the area of designated project earthwork all structures, both surface and subsurface, trees, brush, roots, debris, organic matter, and all other matter determined by the Soils Engineer to be deleterious or otherwise unsuitable. Such materials shall become the property of the Contractor and shall be removed from the site.

Tree root systems in proposed building areas should be removed to a minimum depth of 3 feet and to such an extent which would permit removal of all roots larger than 1 inch. Tree roots removed in parking areas may be limited to the upper 1½ feet of the ground surface. Backfill of tree root excavations should not be permitted until all exposed surfaces have been inspected and the Soils Engineer is present for the proper control of backfill placement and compaction. Burning in areas which are to receive fill materials shall not be permitted.

SUBGRADE PREPARATION: Surfaces to receive Engineered Fill, building or slab loads shall be prepared as outlined above, excavated/scarified to a depth of 12 inches, moisture-conditioned as necessary, and compacted to 90 percent relative compaction.

Loose soil areas, areas of uncertified fill, and/or areas of disturbed soils shall be moisture-conditioned as necessary and recompacted to 90 percent relative compaction. All ruts, hummocks, or other uneven surface features shall be removed by surface grading prior to placement of any fill materials. All areas which are to receive fill materials shall be approved by the Soils Engineer prior to the placement of any of the fill material.

EXCAVATION: All excavation shall be accomplished to the tolerance normally defined by the Civil Engineer as shown on the project grading plans. All over-excavation below the grades specified shall be backfilled at the Contractor's expense and shall be compacted in accordance with the applicable technical requirements.

FILL AND BACKFILL MATERIAL: No material shall be moved or compacted without the presence of the Soils Engineer. Material from the required site excavation may be utilized for construction site fills provided prior approval is given by the Soils Engineer. All materials utilized for constructing site fills shall be free from vegetation or other deleterious matter as determined by the Soils Engineer.

PLACEMENT, SPREADING AND COMPACTION: The placement and spreading of approved fill materials and the processing and compaction of approved fill and native materials shall be the responsibility of the Contractor. However, compaction of fill materials by flooding, ponding, or jetting shall not be permitted unless specifically approved by local code, as well as the Soils Engineer.

Both cut and fill areas shall be surface-compacted to the satisfaction of the Soils Engineer prior to final acceptance.

SEASONAL LIMITS: No fill material shall be placed, spread, or rolled while it is frozen or thawing or during unfavorable wet weather conditions. When the work is interrupted by heavy rains, fill operations shall not be resumed until the Soils Engineer indicates that the moisture content and density of previously placed fill are as specified.

APPENDIX C

PAVEMENT SPECIFICATIONS

1. DEFINITIONS - The term "pavement" shall include asphaltic concrete surfacing, untreated aggregate base, and aggregate subbase. The term "subgrade" is that portion of the area on which surfacing, base, or subbase is to be placed.

The term "Standard Specifications": hereinafter referred to is the 2018 Standard Specifications of the State of California, Department of Transportation, and the "Materials Manual" is the Materials Manual of Testing and Control Procedures, State of California, Department of Public Works, Division of Highways. The term "relative compaction" refers to the field density expressed as a percentage of the maximum laboratory density as defined in the applicable tests outlined in the Materials Manual.

2. SCOPE OF WORK - This portion of the work shall include all labor, materials, tools, and equipment necessary for, and reasonably incidental to the completion of the pavement shown on the plans and as herein specified, except work specifically noted as "Work Not Included."

3. PREPARATION OF THE SUBGRADE - The Contractor shall prepare the surface of the various subgrades receiving subsequent pavement courses to the lines, grades, and dimensions given on the plans. The upper 12 inches of the soil subgrade beneath the pavement section shall be compacted to a minimum relative compaction of 90 percent. The finished subgrades shall be tested and approved by the Soils Engineer prior to the placement of additional pavement courses.

4. UNTREATED AGGREGATE BASE - The aggregate base material shall be spread and compacted on the prepared subgrade in conformity with the lines, grades, and dimensions shown on the plans. The aggregate base material shall conform to the requirements of Section 26 of the Standard Specifications for Class 2 material, 1½ inches maximum size. The aggregate base material shall be spread and compacted in accordance with Section 26 of the Standard Specifications. The aggregate base material shall be spread in layers not exceeding 6 inches and each layer of aggregate material course shall be tested and approved by the Soils Engineer prior to the placement of successive layers. The aggregate base material shall be compacted to a minimum relative compaction of 95 percent.

5. AGGREGATE SUBBASE - The aggregate subbase shall be spread and compacted on the prepared subgrade in conformity with the lines, grades, and dimensions shown on the plans. The aggregate subbase material shall conform to the requirements of Section 25 of the Standard Specifications for Class 2 material. The aggregate subbase material shall be compacted to a minimum relative compaction of 95 percent, and it shall be spread and compacted in accordance with Section 25 of the Standard Specifications. Each layer of aggregate subbase shall be tested and approved by the Soils Engineer prior to the placement of successive layers.

6. ASPHALTIC CONCRETE SURFACING - Asphaltic concrete surfacing shall consist of a mixture of mineral aggregate and paving grade asphalt, mixed at a central mixing plant and spread and compacted on a prepared base in conformity with the lines, grades and dimensions shown on the plans. The viscosity grade of the asphalt shall be PG 64-10. The mineral aggregate shall be Type B, ½ inch maximum size, medium grading and shall conform to the requirements set forth in Section 39 of the Standard Specifications. The drying, proportioning and mixing of the materials shall conform to Section 39.

The prime coat, spreading and compacting equipment and spreading and compacting mixture shall conform to the applicable chapters of Section 39, with the exception that no surface course shall be placed when the atmospheric temperature is below 50° F. The surfacing shall be rolled with a combination of steel wheel and pneumatic rollers, as described in Section 39-6. The surface course shall be placed with an approved self-propelled mechanical spreading and finishing machine.

7. FOG SEAL COAT - The fog seal (mixing type asphaltic emulsion) shall conform to and be applied in accordance with the requirements of Section 37.

Appendix J

Hazardous Material Evaluation Report

Hazardous Materials Evaluation Report

For:

Malibu Vineyards Industrial Park
738.48 Acres
North of Imperial Road and East of Hwy 99
County of Kern, State of California

Portions of Sections 24 and 25, Township 28 South, Range 26 East, and Sections 29 and 30, Township 28 South, Range 27 East M. D. B. & M.

Prepared for:

Malibu Vineyards, LP

Prepared by:

McIntosh & Associates
McIntosh & Associates Engineering, Inc. © 2020

2001 Wheelan Court
Bakersfield, California 93309
(661) 834-4814

Project No. 04-157

August 2020 revised October 2021

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1.0 Introduction

McIntosh & Associates Engineering, Inc. has conducted a Hazardous Material Evaluation Report Final of the Malibu Vineyards Industrial Park proposed project which consists of 738.48 acres and is within portions of Sections 24 & 25, T28S/R26E, MDB&M; and portions of Sections 29 & 30, T28S/R27E, of the Mount Diablo Baseline and Meridian. *(Refer to Figure A-1 Proposed Project Location Maps)*

1.1 Purpose of Report

This Hazardous Materials Evaluation Report is prepared in support of the Project Level Environmental Impact Report (EIR) being prepared for the Malibu Vineyards Industrial Park proposed project. The objective of this report is to identify known, potential or historic environmental conditions to determine the potential of recognized environmental conditions (RECs) to be present, review historic activities and governmental agency environmental actions to determine historic REC's (HRECs) and controlled REC's (CREC's) which are defined as "a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority", analyze potential environmental impacts, and suggest feasible mitigation measures to reduce potentially significant effect to the proposed project.

The California State Legislature enacted the California Environmental Quality Act (CEQA) in 1970 requires public agencies to consider the environmental implication of the proposed projects and disclose these findings to the public. The California Environmental Quality Act (CEQA) mandates that projects with adverse effects on the environment must implement feasible mitigation. The County of Kern would have primary responsibility for implementing California Environmental Quality Act (CEQA) and ensuring that its mandates are followed for the proposed project.

1.2 Regulatory Setting

The management of hazardous materials and waste within the State of California falls within the jurisdiction of the California Environmental Protection Agency (CalEPA) and the Department of Toxic Substances Control (DTSC). The Department of Toxic Substances Control (DTSC) regulates hazardous waste, cleanups of existing contamination emergency planning, and seeks ways to reduce the hazardous waste produced in California.

The term "hazardous material" refers to both hazardous substances and hazardous waste. A material is defined as "hazardous" if it appears on a list of hazardous materials prepared by a Federal, State, or local regulatory agency, or if it possesses characteristics defined as 'hazardous" by such an agency. A "hazardous waste" is a solid or liquid waste with properties that make it potentially dangerous or harmful to human health or the environment and

possesses one or more of the following characteristics. *(Refer to Table 1-1 United States Environmental Protection Agency (EPA) - Classified Hazardous Materials)*

Table 1-1 United States Environmental Protection Agency (EPA)

Classified Hazardous Materials	
Characteristic	**Types of Materials**
Ignitability	Oxidizers, compressed gasses, flammable liquids/solids
Corrosivity	Strong Acids and Bases
Reactivity	Explosives or compounds that generate toxic fumes when exposed to air or water
Toxicity	Classified by Environmental Protection Agency as capable of inducing systematic damage to humans or animals

2.0 Proposed Project Setting

This section is information gathered from record reviews. It has been organized to provide the location and legal description of the proposed project, geographical characteristics, adjacent properties, and the current and past uses of the proposed project and adjacent properties.

2.1 Proposed Project Location and Legal Description

The proposed project is generally located north of Imperial Avenue and east of State Route 99 (SR-99) with existing site access from Saco Road and Imperial Avenue, further described as portions of Sections 24 & 25, T28S/ R26E, MDB&M; and portions of Sections 29 & 30, T28S/R27E, MDB&M, County of Kern, State of California. The project will be developed in two phases, bisected by the Lerdo Canal, owned by the North Kern Water Storage District (NKWSD). Phase 1 is east of the Lerdo Canal; and Phase 2 is west of the Lerdo Canal. The Phase 1 property is identified as Assessor's Parcel Number's: 482-010-01, 02, 03 and 11; 482-040-01, 02, 03, 04 and 05; the Phase 2 property is identified as 91-150-03, 91-160-01, 02, 03, 09, 13 & a portion of 91-160-16; 91-200-04, 07, 14 & a portion of 91-200-05 & 13; and 482-040-04 & 05. By January 28, 1954, all of the parcels included in the proposed project were owned by Reynold M. Mettler. On October 27, 1978, all parcels were purchased by Greenleaf Farms. Greenleaf Farms sold all parcels to Malibu Vineyards, a General Partnership, on June 19, 1987. On June 24, 1999, a change in title to Malibu Vineyards, L.P. was recorded. The proposed project is situated 1.0 miles north of the Bakersfield City Limits in the County of Kern, State of California. Additionally, the portion north of Imperial Avenue and east of Verdugo Lane is located in the Metropolitan Bakersfield Planning Boundary, but are not within Bakersfield's 2006 Sphere of Influence Boundary. The balance of the proposed project is located within the City of Shafter's Planning Area, but outside of the current Sphere of Influence. The northeast portion of Phase 1 is located within the B2 zone and the southeast portion of Phase 1 is located within the C zone of the Meadows Field Airport Land Use Plan. According to the U.S. Geological

Survey (USGS) Oildale and Rosedale 7.5-minute quadrangle maps along with visual inspection of the property, the site is relatively flat with elevations ranging from 499' at the northeast corner, 462' at the southeast corner, 440' at the southwest corner, and 410' at the northwest corner with 1% slopes from northeast to southwest and 0.2-0.4% slopes from southeast to northwest. The subject property is presently and has historically been used for agriculture. The property is mostly vacant with structures located in the eastern portion of Phase 1, with a site address of 34344 Imperial Road, with one additional structure located near the west boundary of the Lerdo Canal in Phase 2. The Phase 1 structures are currently used as an office, restroom, and maintenance and storage buildings and are associated with agricultural activities. Dry bulk chemicals are stored in silos and wet chemicals are stored in vertical poly tanks and poly intermediate bulk containers (IBCs). An irrigation pond and associated well(s) are located within each phase. *(Refer to Figure A-1 Proposed Project Location Map) (Refer to Figures A-2, B-23, B-24 & B-28 Aerial Photographs, Proposed Project Location, dated August 30, 2018) (Refer to Figure A-4 Meadows Field Airport Land Use Plan) (Refer to Figure F-1 USGS Quad Map-2018)*

2.2 Proposed Project Description

According to the Metropolitan Bakersfield General Plan, the current land use designation in Sections 29 & 30, including all of Phase 1 and all of APN's 482-040-04 & 05, 91-200-13 and a small portion of APN 91-200-05 in Phase 2 of the proposed project is R-IA (Resource-Intensive Agriculture). According to the Kern County General Plan, the current land use for the balance of Phase 2 is 8.1 (Intensive Agriculture). According to the City of Shafter General Plan, all of Phase 2 is currently Agriculture/Open Space. According to the Kern County Zoning Ordinance, the entire proposed project is currently Zoned A (Exclusive Agriculture). The property owner is proposing to amend the Kern County General Plan, the Metropolitan Bakersfield General Plan and the City of Shafter General Plan and to change the County land use zoning designations to M-2 PD (Medium Industrial District-Precise Development Combining) and the City of Shafter zoning designation to I (Industrial) for Phase 2. The zone changes would allow for conditioned and non-conditioned warehousing, distribution centers, light to medium manufacturing and similar enterprises. (*Refer to Figure A-5 Kern County/Metropolitan Bakersfield General Plan Map) (Refer to Fig A-6 for City of Shafter General Plan and Sphere of Influence) (Refer to Figures A-7 & A-8 for Kern County Zoning Maps 80 and 81)*

The proposed project consists of a total 738.48 acres for the development of Service Industrial. The Kern County Assessor's Parcel Numbers for this proposed project are listed in Section 2.1 and the changes in the development of the proposed project are listed in Table 2-1, Proposed Land Use and Zoning, and Table 2-2, City of Shafter Land Use and Zoning, below. *(Refer to Figure A-9 through A-13 Assessor's Parcel Maps No.: 91-15, 91-16, 91-20, 482-01 & 182-04) (Refer to Table 2-1 Proposed Land Use and Zoning) (Refer to Table 2-2 City of Shafter Land Use and Zoning)*

Table 2-1 Proposed Land Use and Zoning

Kern County General Plan			Kern County Zoning		
From	**To**	**Gross Acres**	**From**	**To**	**Gross Acres**
8.1 Intensive Agriculture	**SI** Service Industrial	193.33	**A** Exclusive Agriculture	**M-2 PD** Medium Industrial, Precise Development Combining	738.48
Metropolitan Bakersfield General Plan					
From	**To**	**Gross Acres**			
R-IA Resource-Intensive Agriculture	**SI** Service Industrial	545.15			
TOTAL ACREAGE		**738.48**	**TOTAL ACREAGE**		**738.48**

Table 2-2 City of Shafter Land Use and Zoning

City of Shafter					
General Plan			**Zoning**		
From	**To**	**Gross Acres**	**From**	**To**	**Gross Acres**
Agriculture/ Open Space	**I** Industrial	204.64	-	**I** Industrial	204.64
TOTAL ACREAGE		**204.64**	**TOTAL ACREAGE**		**204.64**

2.3 Current and Historical Uses

2.3.1 Present and Previous Uses of the Proposed Project

The proposed project has remained undeveloped and has historically been utilized for agriculture purposes. An irrigation pond and an associated well(s) are located within each phase. The Phase 1 property is mostly vacant with five structures and one water well within a fenced area located on the south side of Burbank Street in the northeast corner of Section 30 (APN 482-010-01). These structures are currently used as a small wood restroom building, vehicle and equipment maintenance building, and general storage and chemical storage buildings and are associated with agricultural activities. Other items enclosed in the fenced facility include field equipment, the irrigation pond and associated well, irrigation filters, pole mounted transformers (PMTs), dry bulk chemicals stored in silos and wet chemicals stored in vertical poly tanks and poly intermediate bulk containers (IBCs), an aboveground gasoline

storage tank with block wall containment, and a propane tank. The irrigation pond and a small structure (since removed) were constructed before 1942, a larger (+/-1200 sf) office or residential building was constructed prior to 1954 approximately 200' west of the pond, structure removed early 2009, a septic system remains. A +/-2,500 sf maintenance structure was constructed before 1952 near the southwest corner of the irrigation pond, the structure was removed early 2009, the floor slab remains and is currently used for outdoor storage. A smaller irrigation pond was installed at the N/4 corner of section 30 between 1942 and 1952, and was removed between 1973 and 1984. A second water well drilled June 2012 is located near the east quarter corner of Section 30, approximately one half mile south of the pond. Additionally, a third well is located approximately ¼ mile east of irrigation pond in the northeast corner of the proposed project in Section 29, (APN 482-010-11). An irrigation pipeline was installed at the north boundary of Phase 1 in February 2018. Two pumps, supplied by a turnout on the east bank of the Lerdo Canal are located in the Lerdo Canal property near the north line of Malibu parcel 482-010-03, discharge into an 18" steel pipeline that enters the Malibu property in the adjacent dirt road, and follows the south side of the mid-section line to the center of Section 29. A tailwater ditch that has existed since before 1942 is located adjacent to the west boundaries of APN's 482-040-01, 02 & 03 and discharged to a tailwater sump located in the extreme northeast corner of Section 25, which also has a NKWSD water well and an out of service well on it. 1,589 lineal feet of California Resources Production Corporation's (CRC) buried 24 inch non-potable produced water steel pipeline is located along the south boundary of APN's 482-010-02 and -03 in a Kern County franchise agreement and 1,677 lineal feet of buried 24 inch non-potable produced water steel pipeline is located along the west boundary of APN 482-010-03 in an easement northwest of Imperial Street. Pipeline markers identifying the location of the pipeline are visible. The 24 inch pipeline continues northwest in the Lerdo Canal right of way past the Cawelo Water District (CWD) Station B pump plant adjacent to the northwest corner of phase 1 and also continues east in the northern portion of the Imperial Street right of way past SR 65, also as part of the County franchise. The Phase 2 property is mostly vacant with two irrigation ponds, a water well installed in 2013, irrigation filters and pumps located within a fenced area adjacent to the west side of the Lerdo Canal located in the east 124 feet of APN 91-160-13 and the north 350 feet of APN 91-160-16. The original pond (later split between 1973 and 1984) and canal turnout (NKWSD 8-0-12) supplying the pond(s) have been in existence since approximately 1925 with the creation of the Lerdo Mutual Water Company Number One (LMWC1), since dissolved in 1945. The pond was expanded north into APN 91-160-13 to its current extent between 1952 and 1968. Although providing irrigation for most of Phase 2 and not owned by NKWSD, the property including the south half of the north pond, the south pond, the pumps, filters and water well are not included in the proposed project. A covered concrete loading area is located south of the ponds as well as a pole mounted transformer (PMT). A second canal turnout (NK 8-0-14) on the west side of the canal is located along the north project boundary, a buried NKWSD pipeline extending west from the turnout continues under SR 99. A small tailwater sump is located in the northwest corner of APN 091-200-04 adjacent to SR 99. A 24 inch NKWSD branch (EDR Site 13/ Map 8) of the above mentioned CRC pipeline crosses under the

Lerdo Canal at the extreme southeast corner of Phase 2, then under SR 99 and the UPRR, continuing to NKWSD's Rosedale Spreading Ponds in Sec. 27, T28S/R26E. *(Refer to Figures B-23, B-24 and B-28, Aerial Photograph Proposed Project, Phase 1 and 2, dated August 30, 2018) (Refer to Figure H-6, NKWSD Zones & Facilities Map, dated May 24, 2018) (Refer to Figures E-6, E-6A & E-6B, CRC and NKWSD 24" Water Pipeline Maps)*

Phase 1 of the proposed project has been utilized for agricultural purposes from the early 1940's (see Figure B-3) to the present, and a review of the historical aerial photographs supports the finding. Phase 1 is located in the boundary of the CWD, which was formed in 1965 to manage the groundwater within its borders. Currently there are approximately 511.8 acres of table grapes being grown within Phase 1 of the proposed project. Phase 2 of the proposed project has been utilized for agricultural purposes since before 1937, possibly as early as 1892 with the creation of the Lerdo Canal, (see Figure B-2) to present, and a review of the historical aerial photographs supports the pre-1937 finding. Phase 2 is located in the boundary of the NKWSD, which was formed in 1935 with the intent to "build-up and maintain the groundwater storage underlying the district." to support economic pumping lifts for landowners within the district through importation of surface water, principally the Kern River through acquisition of pre-1914 water rights which were obtained in perpetuity in 1952, and since 1950 to manage and replenish the groundwater basin through the use of dedicated recharge basins. Currently there are approximately 56.5 acres of table grapes being grown within the middle portion of Phase 2 of the proposed project, and the balance (139.8 acres) of Phase 2 of the proposed project is currently fallow. *(Refer to Figure C-1 Kern County 2020 Crop Map)*

According to the California Department of Conservation, Geologic Energy Management Division (CalGEM, formerly DOGGR) Well Finder website and maps 438 (11-30-2009) and W4-2, no exploratory wells have been drilled on any of the parcels that encompass the proposed project. The nearest productive limits of producing oilfields include the Northeast Area of the Rosedale Ranch field located 0.3 miles southwest of Phase 1 with the nearest completed but idle well located 0.48 miles southwest, and the Poso Creek field located 0.7 miles northeast of Phase 1, with the nearest completed but idle well located 0.86 miles northeast. *(Refer to Figure D-1 CalGEM Map) (Refer to Figure D-2 DOGGR Map, W4-2 Kern County East Side Wildcat Map, dated February 22, 2007) (Refer to Figure D-3 DOGGR Map 438 Poso Creek. Kern Front, Rosedale Ranch, dated November 9, 2009)*

There are no natural gas pipelines or facilities located on the proposed project. The nearest natural gas pipeline is a 24" high pressure transmission line operated by SoCal Gas in Petrol Road 0.5 miles south of Phase 1. A 4" gas line lies in the east portion of Quinn Road south of Lencioni Avenue. Distribution within the North Meadows Industrial Park and south of Petrol Road is unknown at this time. Chevron operates a 16" diameter gas pipeline located on the south side of Seventh Standard Road one mile south of Phase 1. *(Refer to Figure E-1A & E-1B Existing Natural Gas Pipelines Map)*

There are no crude oil or processed oil gas pipelines or facilities located on the proposed project. Kinder Morgan operates a 12" oil shipping pipeline 57 feet west of the Union Pacific Railroad tracks on the west side of SR 99 and the proposed project. *(Refer to Figure E-2 Existing Oil Pipelines Map)*

PG&E operates a 70 KV overhead transmission line along the east side of S.R. 99, which is also the west boundary of Phases 1 and 2, from the Saco Road intersection with Imperial Street 2.25 miles northwesterly to the north project boundary near the extension of Kyte Avenue. At the intersection with Burbank Street, a 70 KV overhead transmission line proceeds east 0.40 miles to a substation at Cawelo Water Storage District's (WSD) Station B pumping plant on the east side of the Lerdo Canal, at the northwest corner of the intersection of Burbank Street and Burbank Avenue, and the north boundary of Phase 1.

One mile east of the proposed project, PG&E operates a pair of 115 KV overhead transmission lines on the east side of Quinn Road from 7th Standard road to a point 0.10 miles north of Imperial Street, where they turn east and cross S.R. 65. PG&E also operates a 115 KV transmission line from four cogeneration plants in the Kern Front oilfield, which run south along the east side of S.R. 65, then turn west along the north side of Street, then turn south along the west side of Quinn Road, then turn west along the north side of Petrol Road, then head south along the west side of Endes Street crossing S.R. 99 and continuing to and south of Cal Water's North Garden Water Plant at Coffee Road and Norris Road. The nearest point of connection is 0.75 miles to the east portion of Phase 1. *(Refer to Figure E-3 Regional Electrical Transmission System Map)*

A 12 KV electrical distribution system exists within/near the proposed project. All of the structures for the 70 KV transmission system described above also support 12 KV facilities. An overhead line exists on the north side of Imperial Street from S.R 65 to the east project boundary, then turns north along the east side of Imperial Road where it enters the project boundary, where it continues east to an agricultural facility and storage pond, and also north to Burbank Street, where it services Malibu Vineyard's field maintenance office, water well(s) and storage pond. This distribution line also continues east 0.25 miles to serve a Malibu water well. Additional distribution is located on the north side of Burbank Street from Malibu's maintenance facility west 1 mile to Burbank Avenue at the Cawelo WD Station B pump plant, from where it turns north and also continues west to the west bank of the Lerdo Canal, then turns northerly to support some North Kern WSD wells. (per site inspection, PG&E maps and Google Earth) *(Refer to Figure E-4 Malibu Vineyards 12 KV Electrical Distribution Map)*

2.3.2 Present and Previous Uses of the Adjacent Properties

The proposed project is adjacent to other related agricultural land uses and a future residential area. Phase 1 is surrounded by grape vineyards on the south (Imperial Avenue), to the east, and to the north (Burbank Street) with the exception of the west ½ mile between Burbank Avenue and Industrial Farm Road which was recently removed from grape production and is currently fallow. The parcels east of the Section 29 project area have been fallow since

mid-2017, but are permitted for grapes in 2020. On the west side of Phase 1 is SR 99 and the Lerdo Canal. Further west of SR 99, the adjacent parcels were taken out of alfalfa and oats production in 2016, and have since been graded as water settling basins prior to development as residential tracts as a northerly expansion of Lennar's Gossamer Grove neighborhoods. A 37 acre portion of these parcels east of Verdugo Lane has recently been grubbed in preparation of development. (2020 Kern County Crop Map aerial). A small sliver of undeveloped land also owned by Lennar Homes exists between SR 99 and the Lerdo Canal to the southwest of the proposed project. Phase 2 lies between the Lerdo Canal on the east and SR 99 on the west, and is also surrounded by agricultural uses. On the east side of the Lerdo Canal are the grape vineyards of Phase 1, the Cawelo Water District's Station B pump plant, and pistachio orchards that also lie adjacent to the north side. Northwest of the project and east of SR 99 are grape vineyards. West of phase 2 is the SR 99, then almond orchards on the north and grape vineyards on the south, including a vineyard maintenance facility. To the south are the previously mentioned water recharge basins/uncultivated land. *(Refer to Figures A-2 and A-3 Aerial Photograph Proposed Project Location, dated August 30, 2018)*

2.4 Environmental and Physical Setting

The proposed project is located in the southern San Joaquin Valley where it is surrounded by three mountain ranges. The Temblor range (a segment of the Coastal Range) is to the west, the Tehachapi range is to the south, and the Sierra Nevada range is to the east. The Kern River flows southwesterly through the valley. The proposed project is in a portion of Sections 24 & 25 in Township 28 South, Range 26 East, and in a portion of Sections 29 & 30 in Township 28 South, Range 27 East of the Mount Diablo Baseline and Meridian (MDBM); the proposed project is relatively flat with elevations ranging from 499' at the northeast corner, 462' at the southeast corner, 440' at the southwest corner, 432' at the northwest corner of Phase 1, and 428' at the northeast corner and 410' at the northwest corner of Phase 2 with 1% slopes from northeast to southwest and 0.2-0.4% slopes from southeast to northwest. (*Refer to Figure F-1 United States Geological Survey Topographic Quadrangle Map)* (*Refer to Figure A-2 Aerial Photograph Proposed Project Location, dated August 30, 2018) (Refer to Figure A-3 Aerial Photograph – One Mile Radius, dated August 30, 2018)*

2.4.1 Demographics

Bakersfield, California has an area of 149.74 square miles and Kern County, California is 8,202 square miles in area. Bakersfield, California is one of the fastest growing, largest populated cities in the United States, and California's ninth largest city and third largest inland city after Fresno and Sacramento. According to the California Department of Finance, the estimated January 1, 2020 population for Bakersfield, California is 392,756, and for Kern County, California is 917,553.

The lowest point in Kern County, California is 206 feet and is approximately 12 miles west of Delano, California; the highest point is 8,755 feet at the summit of Sawmill Mountain and it is

approximately 12 miles west of Frazier Park, California; and the center of population for the state of California is approximately 7 miles northeast of Buttonwillow, California. Bakersfield, California Mean Elevation is 400 feet above Sea Level.

2.4.2 Climate, Wind and Air Quality

Bakersfield, California has a desert climate with long, hot, dry summers, and brief, cool, moist winters. In fact, more clear days than the majority of the United States (averaging 191 days a year), long lasting, mild autumns, and warm springs, giving the region a unique climate suitable for growing a wide variety of crops.

Rainfall averages only 6.5 inches annually, and mostly falling during winter and spring. Summers are very hot and there are extended stretches of hot weather with 108 days per year above 90 Degrees Fahrenheit, 33 days are above 100 Degrees Fahrenheit, and temperatures above 110 Degrees Fahrenheit can occur every few years. Winters are mild daytime temperatures, but frost can be occasionally seen, and often time dense Tule Fog and low visibility. Snow is very rare on the valley floor, but it does snow once every 20 to 30 years. Wind speed during the summer usually originates in the north end of the San Joaquin Valley and flows in a south-southeasterly direction in the valley, through the Tehachapi pass and into the southeast Desert Air Basin. Occasionally during the winter, winds would originate from the south end of the valley and flow in a north-northwesterly direction.

According to the American Lung Association for a 2016-2018 average, Bakersfield, along with Kern County, California is ranked the second most polluted metropolitan area in the United States in terms of short term particle pollution and the worst for year round particle pollution. It is ranked as the third most high ozone levels and polluted city in the United States due to agriculture in this region of the San Joaquin Valley. Located at the southern end of the San Joaquin Valley Air Pollution Control District (SJVAPCD), the Bakersfield and the valley portion of Kern County pollution measurements are negatively affected by the industrial and agricultural pollutants emitted in the central and northern portions of the valley. However, Bakersfield and the SJVAPCD as a whole continue to demonstrate continued improved air quality as the SJVAPCD recently issued that the 2019-2020 $PM_{2.5}$ season was the cleanest on record by not exceeding the Unhealthy AQI during the winter season, and for the third consecutive winter season did not exceed the federal 24 hour $PM_{2.5}$ standard.

2.4.3 Geology and Soils

According to the California Department of Conservation, California Geological Survey (CGS), 2010 Geological Map of California, the proposed project rests on older alluvium, lake, playa and terrace deposits (Qoa) of the Quaternary. According to the CGS Taft, California sheet of the 2012 Geologic Map of Quaternary Surficial Deposits in So. California, a majority of the proposed project rests on young alluvial fan deposits (Qyf) of Holocene (Recent) to Late Pleistocene age, having been deposited on this part of the valley floor during the last 11,700-

129,000 years. Qyf consists of unconsolidated to slightly consolidated, undissected to slightly dissected boulder, cobble, gravel, sand and silt deposits issued from a confined valley or canyon. The north and southeast portions of Phase 1 rest upon alluvial fan deposits (Qf) of Late Holocene (Recent) age, having been deposited on this part of the valley floor during the last 11,700 years. Qf consists of unconsolidated boulders, cobbles gravel, sand, and silt recently deposited where a river or stream issues from a confined valley or canyon; sediment typically deposited in a fan-shaped cone; gravelly sediment generally more dominant than sandy sediment. (*Refer to Figure F-2 CGS 2010 Geologic Units Map)* (*Refer to Figure F-3 CGS Quaternary Surficial Deposits, Taft Quadrangle, dated December 2011)*

The United States Department of Agriculture (USDA), Natural Resources Conservation Services (NCRS), Custom Soil Resources (Kern County, California, Northwestern Part CA666) shows the proposed project soil surveyed series to be (138) Delano sandy loam, (145) Driver coarse sandy loam, (146ne) Delano sandy loam, (174) Kimberlina fine sandy loam and (184) Lewkalb sandy loam. *(Refer to Figure F-4 NCRS – Malibu Vineyards Soils Survey Report, dated April 29, 2020) (Refer to Table 2-3 United States Department of Agriculture (USDA) - Soils Survey, data updated September 16, 2019)*

Table 2-3 Natural Resources Conservation Service (NCRS) – Soils Survey

Soils Survey of Kern County, California – Northwestern Part Proposed Project – Map Unit Legend			
Map Unit Symbol	**Map Unit Name**	**Description**	**Acres in Proposed Project**
(138)	**Delano sandy loam, 0 to 2 percent slopes**	This deep, well drained soil is found on alluvial plains and terraces. It is formed in alluvium derived from granitic rock. Runoff is slow, erosion is slight. Permeability is moderately slow.	**107.5**
(145)	**Driver coarse sandy loam, 0 to 2 percent slopes**	This deep, well drained soil is found on terraces, formed in alluvium derived dominantly from granitic rock. The average frost-free season is 250-300 days. Runoff is very slow, erosion is slight. Permeability is moderately slow.	**433.4**
(146ne)	**Delano sandy loam, 1 to 5 percent slopes**	This deep well drained soil is found on alluvial fan remnants. It is formed in alluvium derived from granitoid rock. Runoff is slow, erosion is slight. Permeability is moderately slow.	**12.1**

(174)	**Kimberlina fine sandy loam, 0 to 2 percent slopes MLRA 17**	This deep well drained soil is found on alluvial fans and plains. It is formed in alluvium derived from granitic and sedimentary rock. Runoff is slow, erosion is slight. Permeability is moderate.	**131.8**
(184)	**Lewkalb sandy loam, 0 to 2 percent slopes**	This deep, well drained soil is on low terraces, formed in alluvium derived dominantly from granitic rock. Runoff is very slow, erosion is slight. Permeability is moderately rapid in the surface layer and slow in the underlying cemented layer.	**53.4**
(257)	**Water**	Irrigation ponds	**0.2**
		Total Acreage	**738.5**

2.4.4 Earthquake Fault Zones

The California Department of Conservation, Alquist-Priolo Geologic Hazards Zones Act was signed into California law on December 22, 1972 and went into effect March 7, 1973 to mitigate the hazard of surface faulting to structures for human occupancy. Effective May 4, 1975 the act was renamed the Alquist-Priolo State Special Studies Zone Act, then on January 1, 1994, the act was renamed the Alquist-Priolo Earthquake Fault Zoning Act. This state law was a direct result of the 1971 San Fernando Earthquake, which was associated with extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures. In general, the fault zone boundaries are set about 500 feet from a major fault and about 200-300 feet from well-defined minor faults.

Earthquake Fault Zones (previously called Special Studies Zones) are areas where site investigations are required to determine the need for mitigation of potential liquefaction and/or earthquake induced landslide ground displacements.

For the proposed project, the Oildale quadrangle Earthquake Fault Zone/Special Studies Zones Map (revised 1985) was reviewed. There are no mapped areas that have Fault Zones on the proposed project. No known surface or subsurface faults have been mapped transecting any of the parcels comprising the proposed project. The closest fault zone is the Premier Fault Zone, and is located 6,770 feet east of the northeast corner or the proposed project (on James Road 150 feet east of SR 65, FER 143; 1983). The largest significant fault in the area, the Kern Front fault, is located 19,700 feet (3.7 miles) east of the east boundary of the proposed project with a maximum estimated earthquake magnitude of 6.3 (Mw). *(Refer to Figure G-1, based on California Geological Survey, Oildale Special Studies Zones Map, 1985).*

The proposed project and surrounding areas are essentially flat and the potential hazard due to landslides from adjacent properties is not applicable.

2.4.5 Groundwater

As indicated in Section 2.3.1, the proposed project lies within the boundaries of the CWD and the NKWSD, separated by the Lerdo Canal. Both districts have an independent Management Area Plan for its Management Area (including white spaces beyond their own boundaries) and are members of the Kern Groundwater Authority (KGA), which was created to prepare and manage the Groundwater Sustainability Plan (GSP) for its members and to coordinate with four other Kern County Groundwater Sustainability Agencies (GSA) administering their own GSP's for compliance with the 2014 Sustainable Groundwater Management Act (SGMA) for the 2,834 square mile Kern County Subbasin. None of the Level Monitoring Network wells are with the proposed project. Groundwater levels within the Kern County Subbasin are dependent on Kern River runoff and releases from the Lake Isabella Dam and the importation of surface water from Northern California, which annual supplies are dependent on California's variable weather patterns and the environmental concerns of the Delta. Groundwater levels vary significantly from the spring to fall monitoring and reporting periods due to groundwater pumping. The spring levels are considered more reliable. Greater drawdown rates are experienced during increased groundwater pumping during low surface water import years. The Corcoran Clay layer does not influence the project site as it is locate approximately 7 miles west of the proposed project.

The December 16, 2019 CWD GSA GSP submitted to the California Department of Water Resources (DWR) as a part of the Kern County Subbasin GSP indicates that the goundwater level elevations within the proposed project varied from 160' in the southeast area of Phase 1 to 135' in the northeast area of Phase 2 in Spring 1998, from 95' in the Southeast area to 50' in the north central boundary of Phase 1 and Phase 2 to vary between 80' to 65' in 2013, and in 2017, from 115' in the southeast area to 38' in the northwest area of Phase 1 and 55' to 30' in Phase 2. The lower values of 2013 are indicative of the beginning years of the recent drought. *(Refer to Figures H-1 through H-4 Cawelo GSA GSP Groundwater Elevation Contour Maps, dated November 2019)*

The property owner currently provides irrigation water with 3 wells in Phase 1 and 1 well in Phase 2 solely for agricultural purposes on the proposed project, and it does not service the property with domestic water. All of the owner's agricultural wells and the Districts' production wells on the proposed project have electric motors. Water quality of the existing agricultural supply wells have not been tested. (*Refer to Figure H-7 for Malibu Vineyards Irrigation Water Wells, prepared by McIntosh & Associates Engineering, Inc., dated May 2020)*

The State of California, Department of Water Resources, and California Statewide Groundwater Elevation Monitoring (CASGEM) was developed to help local agencies to participate in the California Statewide Groundwater Elevation Monitoring (CASGEM) program

and comply with provisions of the California Water Code Section 10927. The DWR maintains the "Water Data Library" which provides the public access to groundwater elevation and groundwater quality data collected by the DWR and other agencies throughout the state. The DWR utilizes water elevation data from the "Water Data Library" into the California Statewide Groundwater Elevation Monitoring (CASGEM) online system, including historical data, when available, that extends back several decades. The proposed project does not have any California Statewide Groundwater Elevation Monitoring (CASGEM) Water Wells or Voluntary Water Wells on the property. The following was reviewed for CASGEM Water Wells (red) and Voluntary Water Wells (green) adjacent to the proposed project. During the CASGEM reporting periods for each well, water levels for Well 45459 have varied from 5' to 60.5' asl, and water levels for Well 51359 have ranged from 16' to 28' asl (Historically this well has been as high as 123' asl in March 2001). *(Refer to Figure H-5 California State Groundwater Elevation Monitoring (CASGEM) Water Wells Map) (Refer to Tables 2-4 California Statewide Groundwater Elevation Monitoring (CASGEM)*

Additionally, as part of SGMA, each participating GSA has nominated wells within its management area as Representative Monitoring Wells (RMW). CWD has nominated 8 wells as shown on Figure A-15, RPW's in the Cawelo GSA Area, which also shows the 9 wells nominated by the NKWSD, and nominated wells in the Kern River GSA to the south. The closest CWD well is RMW-169 (T28R27-28L) located 1.25 miles west of the SE corner of the Sec. 29 parcel and west of SR 65. The closest NWWSD well is Well 99-00-003 (RMW-149) locate 1.75 mile southwest of the southern portion of Phase 1.

Table 2-4 California Statewide Groundwater Elevation Monitoring (CASGEM)

Water Well		
CASGEM Well ID: 49459	**Local Well NBR:** 88-1-13 **SWN:** 28S26E25P001M **CASGEM Well ID:** 49459 **CASGEM Station ID:**354563N1191283W001 **ME ID:** 5033 **ME NAME:** North Kern Water Storage District **GW Basin Name:** Kern County **GW Basin Code:** 5-22.14 **Hydrologic Region:** Tulare Lake **DWR Region Office:** South Central	**County:** Kern **Well Use:** Irrigation **Total Well Depth:** 1000 **Has Well Construction Data:** Y **Completion RPT NBR:** EO 136787 **Coop Agency:** **Status:** Active **Submit Date:** 06/08/2016 **Latitude(Y):** 35.456276 **Longitude(X):** -119.128337

CASGEM Well ID: 51325	**Local Well NBR:** 28S/27E-17K **SWN:** 28S27E17K001M **CASGEM Well ID:** 51325 **CASGEM Station ID:**354905N1190904W001 **ME ID:** 5038 **ME NAME:** Cawelo Water District **GW Basin Name:** Kern County **GW Basin Code:** 5-22.14 **Hydrologic Region:** Tulare Lake **DWR Region Office:** South Central	**County:** Kern **Well Use:** Irrigation **Total Well Depth:** 1326 **Has Well Construction Data:** Y **Completion RPT NBR:** Not Available **Coop Agency:** **Status:** Active **Submit Date:** 11/07/2017 **Latitude(Y):** 35.49048 **Longitude(X):** -119.09044

2.4.6 Natural Gas Transmission and Oil Pipelines

As noted in Section 2.3.1 above, there are no existing natural gas or hazardous liquid petroleum pipelines located on the proposed project.

2.4.7 CRC/NKWSD Non-Potable Water Pipelines

As noted in Section 2.3.1 above, a buried CRC 24 inch non-potable water pipeline exists within the southwest portion of Phase 1 and NKWSD's branch exists within the extreme southeast portion of Phase 2 of the proposed project. This pipeline and branch transfer a portion of CRC's excess treated produced water from the Kern Front oilfield to the Lerdo Canal as allowed per Waste Discharge Requirements (WDR's) Order No. R5-2015-0127 as revised and amended, issued by the Central Valley Regional Water Quality Control Board (CVRWQCB). During Lerdo Canal maintenance operations or periods of low flow, the non-potable water is diverted via the branch to NKWSD's Rosedale Spreading Ponds approximately 2.5 miles west of the Lerdo Canal. (EDR Site 13/ Map 8)

In 2015, numerous environmental and food safety activist groups challenged the usage of treated oilfield water in the irrigation of agricultural crops. The CVRWQCB set up a Food Safety Panel of health and safety experts (including anti-oil environmental groups) to evaluate whether crops absorbed chemicals retained in the recycled produced water. The Panel obtained a listing of all chemicals used by the oil industry producers, including CRC, that dispose of produced water with WDR's, and tested the various crops subject to irrigation with diluted recycled produced water. On April 16, 2020, the Food Safety Panel determined that crops irrigated with Kern's east side oilfields produced water are "perfectly safe" to consume. (Bakersfield Californian, May 7, 2020) The CVRWQCB is currently preparing a white paper summarizing the Food Safety Panel's finding and recommendations which will continue to allow the disposal of treated produced water to irrigation districts, which also assists in the supply of beneficial water for compliance with SGMA.

2.4.8 Meadows Field Airport Land Use Plan

Airport Land Use Compatibility Plans (ALUCPs) are plans that guide property owners and local jurisdictions in determining what types of proposed new land uses are appropriate around airports. Airport safety zones are established for all public airports as part of the ALUCP, and land use restrictions within safety zones are established to protect people and property on the ground and in the air. Main areas of concern related to airport hazards included over-flight safety, airspace protection, flight patterns, and land-use compatibility. Hazards associated with airports can have serious human safety and quality of life impacts. Aviation facilities provide a variety of aviation services to local residents, including civil aviation, government use, business flights, charter flights, flight schools, and helicopter operations.

The proposed Project is located between the William Thomas (Meadows Field) Airport and Minter Field in Shafter. As noted in Section 2.1, and represented in Figure A-4, a portion of the proposed project is located with portions of the Meadows Field (William Thomas) Airport Land Use Plan, as included in the 2012 Kern County Airport Land Use Compatibility Plan, but is not within the boundaries of the Minter Field airspaces. As per the Meadows Field plan, future parcels within the Compatibility Zone B-2 may need to dedicate an avigation easement to the easement, possibly including height restrictions. The parcel including the southeast corner of Phase 1 which includes Compatibility Zone C, may also require an avigation easement with a 35' object height restriction. *(Refer to Figure A-4 Meadows Field Airport Land Use Plan)*

3.0 Records Review

Review of regulatory agency records was conducted for the proposed project and the surrounding one mile radius. An Environmental Data Resources, Inc. (EDR) Corridor Report dated February 12, 2020 was obtained for the proposed project with a search radius of 1-mile beyond the project perimeter. *(Refer to Appendix I for the EDR Corridor Report)* The 1-mile radius search is greater than the "approximate minimum search distance" required for certain "Standard Environmental Record Sources" searches as required by Section 8.2.1 of ASTM E1527-13 for Phase 1 ESA's. In addition to the EDR report, the following governmental agency databases were reviewed: United States Environmental Protection Agency's Toxic Release Inventory (TRI) records and EJSCREEN Mapping Tool; California Department of Toxic Substances Control (DTSC) EnviroStor database online website records; California Environmental Protection Agency Air Resources Board (CARB Pollution Mapping Tool) records; California Environmental Protection Agency Environmental Reporting System (CERS) online website records, i.e. Hazardous Materials Business Plans (HMBP); California Environmental Protection Agency (CalEPA) Regulated Site Portal online website records; State of California, Department of Conservation, Geologic Energy Management Division (CalGEM); Inland District online website records; Kern County Department of Agriculture and Measurement Standards (Agricultural Commissioner) online website records; Kern County Environmental Health Services Department (KCEHSD). The KCEHSD is the local Certified Unified Program Agency (CUPA) responsible for the routine hazardous materials compliance inspections, violation

reporting and corrections into CERS. Inspection programs include the Hazardous Materials Release Response Plans (HMRRP)/Hazardous Materials Business Plan (HMBP), Hazardous Waste Generator (HWG) and the Aboveground Petroleum Storage Act (APSA). The Kern County Fire Department performs inspection for facilities regulated by the Office of the State Fire Marshall.

3.1 Malibu Vineyards Industrial Park – Proposed Project

Malibu Vineyards, a General Partnership, purchased the property to be included in the proposed project June 19, 1987. On June 24, 1999, a change in title to Malibu Vineyards, LP was recorded. The Malibu Vineyards Ranch 20 is located at 34344 Imperial Road, Bakersfield, California, is located at the west side of the irrigation pond at the northeast corner of Section 30 in the proposed project. *(Refer to Figure A-2 Aerial Photograph)*

This report is similar to and includes the required data for a Phase I Environmental Site Assessment Report. The EDR Report, agency records review, and site inspection provide adequate information to determine the current status of the proposed project.

3.1.1 Malibu Vineyards – EDR Report

The February 12, 2020 EDR Corridor Report indicates Malibu Vineyards (aka Malibu Vineyards Ranch 20) is registered (CERS ID 10233580) to be a small quantify hazardous waste generator (SQG, CERES Haz Waste) and stores chemicals onsite (CERES HMRRP), and has an aboveground storage tank (CERES Tanks, APSA) located at 34344 Imperial Road (Site B, Map 5 (B/5) and Site A, Map 6 (A/6); farm operations and maintenance facility located at the northeast corner of Section 30). Additionally, EDR and other databases as described below, indicate Malibu Vineyards reported a leaking underground storage tank (LUST) in 1989 at Imperial & Saco (Site C, Map 8). This incident actually occurred at the 34344 Imperial Road site (A/6).

3.1.1.1 Malibu Vineyards – LUST Cleanup Site

As required per a California mandated underground petroleum storage tank integrity regulation, a 1,000 gal gasoline tank was tested on August 18, 1989 at Malibu Vineyards O&M facility (EDR B4, B5/5 & C6, C7, C8, C10, C11/8, all should be A/6) and, and the tank system failed because of a crack in the fill pipe. On November 8, 1989, Malibu Vineyards (Lucich Farms was the farm manager and coordinated most of the remediation actions) received KCEHS Permit A1074-89 to remove the underground storage tank (UST). The existing 1,000 gallon aboveground storage tank with block wall containment was installed approx. 50’ SSE (EDR A2/6) of the LUST. The LUST was determined to have corroded on the north end. The LUST and contents were removed December 4, 1989 by Calpi, Inc., the tank was transported to A.M.R. of Ontario, California to be destroyed on December 11, 1989, and the tank contents (1,600 gallons gasoline, water and sludge) were transported to Gibson Oil & Refining Co. of Bakersfield to recycle on December 5, 1989. Soil samples below the UST were obtained and tested, and gasoline was determined to have been released into the soil below the tank, and

the KCEHSD (Case 390044) and SWRQB (ID 5T15000257) were notified (also CERES ID: T0602900256). Soil sampling at the tank indicated 3,600-9,600 ppm Total Petroleum Hydrocarbons (TPH) and 1,317-3,175 ppm Benzene, Toluene and Xylene (BTX&E) at 2'-6' below the north end of the tank. Numerous investigations, groundwater monitoring and assessments of the leak were performed until the case was closed by KCEHS with approval of the CVRWQCB on November 27, 1996. 1990 assessments using three test holes in the vicinity of the tank determined that a gasoline plume 46 feet in diameter by 110' deep existed below the tank, the base of the plume was at the top of a perched water table at 110'-122' created by leakage of the adjacent irrigation pond. The primary groundwater aquifer depth was estimated at 323' for spring 1989. The pond was drained and lined in first quarter 1991 to verify the pond was the source of the perched water with further groundwater monitoring-verified. By June 12, 1996, TPH was significantly reduced below the tank and BTEX were close to non-detect, indicating natural occurring microbial action was assumed to be accelerating the decline of groundwater hydrocarbons in the area. Table 3-1 below describes the activities from the time the leak was determined until the case was closed.

Table 3-1 Malibu Vineyards-Leaking Underground Storage Tank Cleanup & Closure History

LUST 1989 - 1996		
Activity Date	**Agency/Author**	**Activity (Report, Study, Letter, etc.)**
August 18, 1989 *	Liquid Construction, Inc.	UST Test Report; tank failure
November 8, 1989 *	KCEHS	Permit A1074-39 issued to Malibu Vineyards to close a Hazardous Substances Storage Facility
December 5, 1989 *	Calpi	UST removed, soil sampled, 7 feet clean backfill placed into tank excavation
December 11, 1989	Calpi to KCEHS	Soil sampling test results received by KCEHS
January 9, 1990 *	KCEHS	UST Unauthorized Release (Leak)/Contamination Site Report; Case 390044 opened
January 18, 1990 * February 16, 1990	KCEHS to Malibu Vineyards	Malibu Vineyards informed it is the responsible party for all studies, remediation and closure
April 13, 1990	D. Smith & Associates	Site Characterization Work Plan submitted to KCEHS
April 23, 1990	KCEHS	Site Characterization Work Plan approved
May 31, 1990	Calpi, Smith & Assoc.	Test holes commence
August 16, 1990 *	D. Smith & Associates	Site Characterization Study, Phase 1 submitted, plume defined, soils resampled in test holes
September 4, 1990 *	KCEHS to Lucich Farms	Groundwater Investigation Work Plan requested
October 16, 1990	Groundwater Resources Inc. (RESNA)	Site Assessment (Groundwater Investigation) Work Plan submitted to KCEHS

February 8, 1991 *	RESNA	Site Assessment Report submitted; 3 monitoring wells installed, groundwater sampled/tested. Bottom lining of pond recommended.
April 1, 1991	KCEHS	Requested Lucich continue GW monitoring
October 4, 1991 March 24, 1992 July 29, 1992 March 3, 1993 *	RESNA	Groundwater Monitoring Status Reports submitted
April 23, 1993	KCEHS	Semi-annual GW monitoring approved as perched WL is slowly decreasing (1 ft/year).
August 10, 1993	RESNA	Remedial Investigation/Feasibility Study for vadose plume extraction submitted
September 27, 1993	KCEHS	Closure denial letter until aquifer characteristics provided
December 8, 1993 *	KCEHS	Office memo re closure denial
April 29, 1994 *	RESNA	Aquifer Test and Site Closure Report; Feb. 17, 1994 3,182 gal pump test performed, no domestic wells within 1 mile radius, 0.77 ft/100ft gradient to north, TDS & Sulfates high in perched water. Not a threat to public health.
June 16, 1994 *	KCEHS	Office memo re conditional closure approval
July 19, 1994	KCEHS to CVRWQCB	Request for Closure concurrence.
June 30, 1995 *	KCEHS to CVRWQCB	Second request for Closure concurrence.
September 21, 1995 *	CVRWQCB to KCEHS	Denial of Closure concurrence, contamination extent not defined.
October 6, 1995	KCEHS to Lucich	Board denial repeated, additional monitoring to north and soil remediation required.
December 20, 1995	Smith Envir. Tech. Corp.	Vapor Extraction Feasibility Study Work Plan submitted
January 19, 1996 April 16, 1996	KCEHS to Lucich	Vapor Extraction Work Plan approved
May 8, 1996	Smith E.T.C. to KCEHS	Fate/Transport Risk Assessment Work Plan proposed
May 31, 1996	KCEHS to Lucich	Approval to proceed with Risk Assessment Work Plan
July 8, 1996 *	Smith Envir. Tech. Corp.	2nd Qtr GW Monitoring Report submitted, 0.042 ft/100ft gradient to west, 58 ppb TPH
September 26, 1996	KCEHS to CVRWQCB	Case Closure Summary forwarded
October 23, 1996 *	KCEHS to Lucich	CVRWQCB concurred with site closure
November 14, 1996	Smith E.T.C. to KCEHS	3 monitoring wells destroyed 11/8/96
November 27, 1996 *	KCEHS	Remedial Action Completion Certification issued

December 3, 1996 *	KCEHS	UST Unauthorized Release (Leak)/Contamination Site Report issued; Case Closed 11/27/1996

* Reports included in Appendix K
KCEHS – Kern County Environmental Health Services Department
CVRWQCB – Central Valley Regional Water Quality Control Board; Fresno

The case was closed November 27, 1996 with the approval of the CVRWQCB, and is classified as a CREC. The LUST is recorded on the Historic Cortese list. As noted in the November 27, 1996 Remedial Action Completion Certification, if a change in land use is proposed, the owner must promptly notify the KCEHS. The Oildale Mutual Water District will be the local water purveyor for the proposed project, so any concern regarding groundwater contamination for potable water supply is negligible.

3.1.1.2 Malibu Vineyards – AST's

In 1989, a 1,000 gallon aboveground gasoline storage tank with a 3 course block wall containment was installed to replace a UST (see section 3.1.1.1). This tank on the CERES Tanks list (CERES ID: 10233580, EDR A2). A Spill Prevention, Control, and Countermeasures (SPCC) plan dated September 2009 was prepared and filed per regulations at that time. Per the Water Resources Reform and Development Act (WDDRA) of 2014, a SPCC plan is not required for farms if the aggregated capacity of oil tanks (petroleum, mineral, etc.) is between 2,500 and 6,000 gallons and with no reportable discharge history for the past 3 years. Oil containers less than 55 gallons do not need to be included. With California Senate Bill 612 of 2015, the Aboveground Petroleum Storage Act (APSA) was amended such that a farm is conditionally exempt to prepare an SPCC plan if no tank is larger than 20,000 gallons, the aggregate facility capacity is less than 100,000 gallons, daily inspections of each tank are performed, allows periodic CUPA inspections, and install secondary containment if required. Other requirements for APSA remain. As such, Malibu Vineyards is not required to prepare or update an existing SPCC plan, but must continue to prepare an annual tank facility statement (or a hazardous materials business plan (HMBP)) and report quantities into the statewide information management system (CERES). CUPA inspection of 3/11/15 (EDR A1) indicated a violation because daily inspections were not performed as an exempt facility, and the inspection report of 4/16/16 indicated eight AST's were on site and referred to the KCFD for compliance follow-up, but not considered a violation. Tanks included: a 1,000 gallon diesel, 500 gallon diesel, 3,000 gallon empty, 200 gallon waste oil, 100 gallon pump oil, 100 gallon hydraulic oil, 100 gallon motor oil, and 1,000 gallon gasoline tank. As shown in Section 3.1.1.3, these tanks and quantities are reported. No violations were reported during the 3/05/2018 & 4/15/2019 inspections.

3.1.1.3 Malibu Vineyards – Hazardous Materials Business Plan

Malibu Vineyards has been in substantial compliance with the Hazardous Materials Release Response Plans (HMRRP)/Hazardous Materials Business Plan (HMBP) requirements with the

following violations pursuant to routine KCEHS/CUPA site inspections as shown in Table 3-2. The following inspection reports were provided by KCEHS, supplemented by CERS review. All noted violations were mitigated within the allowed compliance period.

Table 3-2 Malibu Vineyards-Hazardous Materials Release Response Program (HMRRP)/Hazardous Materials Business Plan (HMBP) Inspections

Malibu Vineyards Ranch 20 (CERS Site ID: 397028) Hazardous Material Business Plan Inspections		
Inspection Date	**Violation Type**	**Corrective Action Required**
2009-03-30	BP01 / Class II	Update inventory for drained used oil filters, used antifreeze, sulphur electric dust, line sulfated dust. Update materials already in the inventory
	ER01 / Minor	Complete and maintain a copy of consolidated contingency plan on site
2012-03-05	No Violation	
2013-02-27	No Violation	
2015-03-11	H342 / Class II	Obs.: The hazardous materials inventory on the CERS is inaccurate. Corr. Action: Update hazardous materials inventory on CERS. More specifically: a) change the Max. Daily amount for 2 chemicals, and b) Please add 16 chemicals and "Max. Daily Amount" to inventory. Returned to compliance on 04/07/2015.
	H344 / Minor	Obs.: The Business Activities Page on the CERS is inaccurate for this facility. Corr. Action: Change the "Yes" to "No" under "consolidate hazardous waste generated at a remote site" on the business Activities Page for this facility on CERS. Returned to compliance on 04/07/2015.
	H346 / Class II	Obs.: There is no site map submitted into CERS. Corr. Action: Upload a site map with the location of all hazardous materials into CERS. Returned to compliance on 03/11/2015.
2016-04-04	H342 / Minor	Obs.: 1) The motor oil, hydraulic oil, and pump oil are stored in aboveground storage tanks, not steel drums as listed on the hazardous materials inventory. Corr. Action: 1) Update the hazardous materials inventory in the CERS to that the oils are stored in aboveground tanks. Obs.: 2) The following materials were on-site during the inspection during the business plan inspection but not listed in the hazardous materials inventory: sulfate of potash, Tech Gro and Cal oCHO. Corr. Action: Add sulfate of potash, Tech Gro and Cal oCHO to the hazardous materials inventory in CERS. Returned to compliance on 04/18/2016.
2018-03-05	H342 / Class II	Obs.: Some of the hazardous materials observed on site are not properly reported and/or incorrectly reported to CERS. Corr. Action: Properly and correctly report most of

		the hazardous materials on site to CERS. Returned to compliance on 03/27/2018.
2019-04-15	H342 / Class II	Obs.: Some of the hazardous materials/hazardous waste observed on site are not properly reported and/or incorrectly reported to CERS. Corr. Action: Please make the following corrections to the Hazardous Materials Inventory: 1) YARA MILA 15-15-15 - missing "Type" and " Chemical Location"; 2) VENOM INSECTICIDE - missing "Days on Site"; 3) ROUNDUP - GLYPHOSATE - update "Maximum Daily Amount" = 250 gallons, "Average Daily Amount" = 150 gallons, "Largest Container Size" = 250 gallons, and "Storage Container" = Tote; 4) OXONIUM - missing "Type" and "Days on Site"; 5) Tech-Flo Canopy & Crop Sizing Blend - missing "Days on Site"; 6) SURROUND WP CROP PROTECTANT - missing "Days on Site; 7) TRELLIS HERBICIDE - missing "Days on Site"; 8) PHT TRI-ALTUM - missing "Storage Pressure" and "Storage Temperature"; 9) GOEMAR BM86 (5-0-0) W/ MICRONITRIENTS0 - missing "Days on Site"; 10) AGRI-TEC (ACADIAN SEAWEED EXTRACT)- update "Maximum Daily Amount. Returned to compliance on 05/24/2019.

An updated Hazardous Materials Business Inventory (California Environmental Reporting System ID 397028) was provided to KCEHS via CERES on March 14, 2019 for permitted inventory on the property as shown in Table 3-3 below.

Table 3-3 Malibu Vineyards-Hazardous Materials Business Inventory

Malibu Vineyards Ranch 20 (CERS Site ID: 397028) Hazardous Materials Business Plan Inventory – 3/14/2019				
Chemical Name	**Max Daily Amount / Unit**	**Avg Daily Amount / Unit**	**Days Onsite**	**Physical State(s)**
15-15-15	1000-4999 Pounds	500-999 Pounds	365	Solid, Pure
3-5-7 FOLIAR FERTILIZER	600-1199 Gallons	60-119 Gallons	120	Liquid, Mix
ABACUS INSECTICIDE MITICIDE	12-59 Gallons	0-11 Gallons	365	Liquid, Mix
ACETYLENE GAS	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
AGRIDEX	60-119 Gallons	0-11 Gallons	365	Liquid, Mix
ALGAECIDE / BACTERICIDE	120-599 Gallons	120-599 Gallons	350	Liquid, Mix
AMMONIUM PHOSPHATE / THIOSULFATE SOLUTION	12-59 Gallons	12-59 Gallons	350	Liquid, Mix
AMMONIUM PHOSPHATE / THIOSULFATE SOLUTION	3000-5999 Gallons	1200-2999 Gallons	300	Liquid, Mix
AMMONIUM SULFATE	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Pure
ASCOPHYLLUM NODOSUM	12-59 Gallons	12-59 Gallons	365	Liquid, Pure
BAYTHROID XL (CYANO)	0-11 Gallons	0-11 Gallons	365	Liquid, Mix
BENOPHENONE	12-59 Gallons	12-59 Gallons	365	Liquid, Mix
BIFENAZATE (ACRAMITE 50WS)	0-99 Pounds	0-99 Pounds	365	Solid, Mix
BORIC ACID	120-599 Gallons	60-119 Gallons	365	Liquid, Mix
Buprofezin	100-499 Pounds	0-99 Pounds	365	Solid, Mix

CALCIUM (II) SULFATE DIHYDRATE(Ca(SO4).2H2O)	Tons	Tons	365	Solid, Pure
Calcium Hydroxide Liquid Formulation	12-59 Gallons	12-59 Gallons	0	Liquid, Mix
Calcium magnesium hydroxide	600-1199 Gallons	120-599 Gallons	365	Liquid, Pure
CALCIUM NITRATE	120-599 Gallons	60-119 Gallons	350	Liquid, Mix
Calcium Sulfate	120-599 Gallons	120-599 Gallons	365	Liquid, Mix
Calcium sulfide (Ca(Sx))	1200-2999 Gallons	1200-2999 Gallons	365	Liquid, Mix
Calcium sulfide (Ca(Sx))	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Mix
CALCIUM-MAGNESIUM CARBONATE	1000-4999 Pounds	1000-4999 Pounds	180	Liquid, Mix
CHATEAU HERBICIDE (VALOR HERBICIDE)	100-499 Pounds	0-99 Pounds	365	Solid, Mix
CHEVRON DELO 400 PLUS MOTOR OIL SAE	120-599 Gallons	120-599 Gallons	365	Liquid, Pure
CHEVRON HYDRAULIC AW PUMP OIL (ISO 32)	120-599 Gallons	60-119 Gallons	365	Liquid, Mix
CHEVRON TRACTOR HYD FLUID	120-599 Gallons	12-59 Gallons	365	Liquid, Pure
COPPER HYDRATE, CUPRIC ACID	0-11 Gallons	0-11 Gallons	365	Liquid, Mix
COPPER SULFATE PENTAHYDRATE	100-499 Pounds	100-499 Pounds	365	Solid, Pure
COPPER SULPHATE DUST	10000-24999 Pounds	1000-4999 Pounds	365	Solid, Pure
CYPRODINIL (SWITCH)	100-499 Pounds	0-99 Pounds	180	Solid, Mix
CYTOKIN 0-0-5	12-59 Gallons	0-11 Gallons	365	Liquid, Mix
DANITOL 2.4 EL INSECTICIDE	12-59 Gallons	0-11 Gallons	365	Liquid, Mix
Diesel Fuel*	1200-2999 Gallons	600-1199 Gallons	365	Liquid, Pure
DIKAP	0-99 Pounds	0-99 Pounds	180	Solid, Mix
DINOTEFURAN 70 SG	0-99 Pounds	0-99 Pounds	0	Solid, Mix
DISODIUM MAGNESATE	100-499 Pounds	100-499 Pounds	365	Solid, Pure
Drained Used Oil Filters	100-499 Pounds	100-499 Pounds	365	Solid
DRY-OUT DUST HYDRATED LIME / SULFUR MIXTURE	1000-4999 Pounds	0-99 Pounds	365	Solid, Mix
ELEVATE 50WDG FUNGICIDE	100-499 Pounds	0-99 Pounds	365	Solid, Mix
ELITE 45WP	100-499 Pounds	0-99 Pounds	180	Solid, Mix
ETYHEPHON (ETHREL)	12-59 Gallons	0-11 Gallons	180	Liquid, Mix
FLINT FUNGICIDE	0-11 Gallons	0-11 Gallons	365	Liquid, Mix
Gasoline*	600-1199 Gallons	600-1199 Gallons	365	Liquid, Pure
GEAR OIL LUBRICANT	0-11 Gallons	0-11 Gallons	365	Liquid, Mix
GIBBRELLIC ACID 4% GA3 4%	12-59 Gallons	0-11 Gallons	120	Liquid, Mix
Glyphosate	120-599 Gallons	12-59 Gallons	360	Liquid, Mix
GOAL 2XL HERBICIDE	60-119 Gallons	12-59 Gallons	180	Liquid, Mix
GOEMAR BM86 (5-0-0 W/ MICRONITRIENTS0	12-59 Gallons	12-59 Gallons	0	Liquid, Mix
GRAMOXONE	120-599 Gallons	0-11 Gallons	365	Liquid, Mix
H-85	1000-4999 Pounds	0-99 Pounds	90	Solid, Mix
HYDRONIUM	600-1199 Gallons	60-119 Gallons	0	Liquid
IMIDACLOPRID (ADMIRE PRO)	60-119 Gallons	0-11 Gallons	180	Liquid, Mix
Inorganic phosphates and sulfates	120-599 Gallons	120-599 Gallons	0	Liquid, Mix
INTREPID	12-59 Gallons	0-11 Gallons	365	Liquid, Mix
IPRODIONEIDICARBOXIMIDE	12-59 Gallons	12-59 Gallons	365	Liquid, Mix
KALIGREEN	1000-4999 Pounds	0-99 Pounds	365	Solid, Mix
KIMZALL	0-11 Gallons	0-11 Gallons	365	Liquid, Mix
KINETIC	120-599 Gallons	12-59 Gallons	365	Liquid, Mix
KOCIDE 3000	1000-4999 Pounds	100-499 Pounds	365	Solid, Mix
LATRON B 1956	0-11 Gallons	0-11 Gallons	180	Liquid, Mix

LIQUID FERTILIZER CAN 17%	3000-5999 Gallons	120-599 Gallons	365	Liquid, Mix
LORSBAN	120-599 Gallons	12-59 Gallons	365	Liquid, Mix
Magnesium Oxychloride	120-599 Gallons	120-599 Gallons	365	Liquid, Mix
MOVENTO	12-59 Gallons	12-59 Gallons	365	Liquid, Mix
NITROGEN, PHOSPHOROUS, POTASSIUM, SULFUR MIXED FERTILIZER SOLUTION	3000-5999 Gallons	600-1199 Gallons	180	Liquid, Mix
Non-RCRA Hazardous Waste Liquid (waste Oil)*	120-599 Gallons	12-59 Gallons	365	Liquid
NUTRA ASYST 0-0-3	0-11 Gallons	0-11 Gallons	365	Liquid, Mix
OXYCOM AG	120-599 Gallons	12-59 Gallons	365	Liquid, Mix
OXYCOM INOLCULANT	60-119 Gallons	0-11 Gallons	180	Liquid, Mix
OXYCOM PREP PLUS	120-599 Gallons	12-59 Gallons	365	Liquid, Mix
OXYCOM REPSOND	0-11 Gallons	0-11 Gallons	365	Liquid, Mix
OXYCOM RESPOND PLUS	0-11 Gallons	0-11 Gallons	365	Liquid, Mix
OXYGEN GAS	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
PENDIMETHALIN (PROWL 3.3)	0-11 Gallons	0-11 Gallons	365	Liquid, Mix
PHOSPHORIC ACID 0-55-0	120-599 Gallons	12-59 Gallons	365	Liquid, Mix
PHOSPHOROIC ACID 75%	120-599 Gallons	60-119 Gallons	365	Liquid, Mix
PHT TRI-ALTUM	120-599 Gallons	120-599 Gallons	365	Liquid, Mix
POTASSIUM MAGNESIUM SULFATE	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Pure
Potassium Sulfate	25000-49999 Pounds	10000-24999 Pounds	365	Solid, Pure
PRINCEP CALIBER 90	100-499 Pounds	0-99 Pounds	180	Solid, Mix
PRISTINE	1000-4999 Pounds	100-499 Pounds	365	Solid, Mix
PROPANE	120-599 Gallons	120-599 Gallons	365	Liquid, Pure
PROPYLENE GLYCOL MONOMETHYL ETHER	60-119 Gallons	60-119 Gallons	365	Liquid, Mix
RALLY 40WSP	1000-4999 Pounds	100-499 Pounds	365	Solid, Mix
RELY 280	120-599 Gallons	12-59 Gallons	365	Liquid, Mix
RIMSULFORIN	12-59 Gallons	0-11 Gallons	365	Liquid, Mix
SCALA FUNGICIDE	12-59 Gallons	0-11 Gallons	365	Liquid, Mix
SERENADE ASO (FUNGICIDE)	12-59 Gallons	0-11 Gallons	365	Liquid, Mix
SODIUM FEREDETATE	100-499 Pounds	100-499 Pounds	365	Solid, Pure
SOVRAN FUNGICIDE	100-499 Pounds	0-99 Pounds	365	Solid, Mix
SPRAY SULFUR	5000-9999 Pounds	100-499 Pounds	180	Solid, Mix
SUCCESS INSECT CONTROL	0-11 Gallons	0-11 Gallons	365	Solid, Mix
SULFUR/COPPER SULFATE (COCS)	10000-24999 Pounds	1000-4999 Pounds	365	Solid, Mix
Sulfuric Acid	6000-8999 Gallons	3000-5999 Gallons	350	Liquid, Pure
Sulfuric acid magnesium salt (1:1)	50000-74999 Pounds	10000-24999 Pounds	365	Solid, Pure
SURFLAN HERBICIDE	0-11 Gallons	0-11 Gallons	365	Liquid, Mix
SURROUND WP CROP PROTECTANT	0-99 Pounds	0-99 Pounds	0	Solid, Mix
TEBUZOL 45DF	100-499 Pounds	0-99 Pounds	180	Solid, Mix
TECH SPRAY HI-K	12-59 Gallons	12-59 Gallons	365	Liquid, Mix
TRANSMISSION FLUID	0-11 Gallons	0-11 Gallons	365	Liquid, Mix
TRELLIS HERBICIDE	0-99 Pounds	0-99 Pounds	0	Solid, Mix
TRIBUTYL TETRADECYL PHOSPHOIUM CHLORIDE	0-11 Gallons	0-11 Gallons	365	Liquid, Mix
USED ANTIFREEZE	12-59 Gallons	12-59 Gallons	365	Liquid
VANGARD WG (CYPRODINIL)	1000-4999 Pounds	100-499 Pounds	365	Solid, Mix
VITICURE FUNGICIDE	12-59 Gallons	12-59 Gallons	365	Liquid, Mix
YARA MILA 15-15-15	5000-9999 Pounds	5000-9999 Pounds	365	Solid

**Aboveground Storage Tank (AST)*

3.1.1.4 Malibu Vineyards – Hazardous Waste Generator (Small Quantity)

As a user of petroleum & lubrication products in the agricultural business, hazardous materials are generated during oil and filter changes and storage of empty containers. During various routine Kern County Environmental Health Services Department/CUPA inspections the following violations shown in Table 3-4 have been observed, recorded and mitigated.

Table 3-4 Malibu Vineyards-Hazardous Materials Generator Inspections

Malibu Vineyards Ranch 20 (CERS Site ID: 397028) Hazardous Waste Generator Inspections		
Inspection Date	**Violation Type**	**Corrective Action Required**
2009-03-30	GL01 / Minor	Obs.: The facility shall clearly mark all containers with the following: 1) the words "Hazardous Waste", 2) composition and physical state, 3) hazard property, 4) name and address of the generator, and 5) accumulation start date. Corr. Action: Mark accumulation start date on containers of waste oil, drained used oil filters an used antifreeze
2012-03-05	GC02 / Class II	Obs.: The facility shall immediately close/seal containers and ensure that containers remain closed except when adding or removing hazardous waste. Corr. Action: Please always cover drained used oil filter drum and waste oil tank with their lids, except when adding or removing wastes
2013-02-27	No Violations	
2015-03-11	H260 / Class II	Obs.: The steel drums containing "WASTE OIL" and "DRAINED USED OIL FILTERS" were not properly labeled at the time of inspection. The starting accumulation date has faded on both labels. Corr. Action: Contact an authorized hazardous waste hauler to pick up the "WASTE OIL" and "DRAINED USED OIL FILTERS." Take photos of the properly labeled hazardous waste containers with a starting accumulation date. Email the photos and manifest from your authorized hazardous waste hauler to: yimr@co.kern.ca.us. Returned to compliance on 04/08/2015.
2016-04-04	No Violations	
2018-03-05	No Violations	
2019-04-15	No Violations	

No Hazardous Waste Generator violations have occurred in the past five years.

3.1.1.5 Malibu Vineyards – Kern County Department of Agriculture and Measurement Standards (Agricultural Commissioner)

The Kern County Department of Agriculture and Measurement Standards (Agricultural Commissioner) has been tracking annually permitted crop boundaries since the year 1994. The proposed project has been utilized for agricultural purposes from the late 1930's to the present, and a review of the historical aerial photographs helps to support the findings. *(Refer to Figures B-1 thru B-20 Aerial Photographs)* Information was obtained from the Kern County Agricultural Department online website for the permit numbers and the grower on the proposed project. Malibu Vineyards, Permit Number 1500419 was the grower (Lucich Farms was the manager) from years 1994 – 2010; Lucich Farms, Permit Number 1504245 was the grower in 2011 through mid- April; Grape Man Farms, LP, Permit Number 1505134 has been the grower for the years mid-April 2011 – 2020. The proposed project has historically been cultivated as grapes. *(Refer to Farmland Conversion Study, prepared by McIntosh & Associates, dated August 2020 for additional information)*

The use of pesticides, herbicides, fertilizers, and general soil amendments has been licensed for application to the proposed project from the years 1994 – 2020. Information was obtained from Kern County Agricultural and Measurement Standards Department (Agricultural Commissioner) online website indicated that the following pesticides, herbicides, fertilizers, and general soil amendment have been licensed for application to the proposed project from 2011 – 2020 (2020 through 3-30-2020). Materials that have been renamed, but with the same product EPA Reg. No., are shown as Name 1 / Name 2. *(Refer to Table 3-5 Restricted Materials Permitted for Usage on Proposed Project)*

Table 3-5 Restricted Materials Permitted Usage on Proposed Project

Restricted Materials Permitted	
Product Name	**Years Permitted**
ABACUS AGRICULTURAL MITICIDE/INSECTICIDE / ABACUS	2014, 2016, 2019
ABBA ULTRA MITICIDE/INSECTICIDE (ABBA ULTRA)	2015, 2017 - 2018
ACRAMITE 50WS	2011
ADMIRE PRO SYSTEMIC PROTECTANT (ADMIRE PRO SYSTEMIC)	2011 – 2018
AGRI-DEX	2011 - 2020
APPLAUD 70 DF INSECT GROWTH REGULATOR	2011 - 2013, 2015 - 2017
APPLAUD INSECT GROWTH REGULATOR / APPLAUD INSECT GROWT	2013 - 2014, 2017 - 2018
BADGE X2 FUNGICIDE/B	2019
BAYTHROID XL	2011, 2014 - 2015, 2017
BELAY INSECTICIDE / BELAY(R) INSECTICIDE	2014, 2016 - 2019
BFR ZERO-FOAM	2011 - 2012
BRANDT TRIPLELINE DEFOAMER / BRANDT TRIPLELINE DE	2017 - 2020

BRITZ COPPER SULFUR 15-25 DUST	2011
BRITZ DRYOUT DUST	2011
BRITZ MAGIC SULFUR DUST	2011
BSP LIME SULFUR SOLUTION	2012 - 2014
BSP SULFORIX	2012 - 2014
BUDPRO	2011 - 2012, 2020
CHAMP FORMULA 2 FLOWABLE	2011 - 2018
CHAMP FORMULA 2 FLOW	2019
CHATEAU HERBICIDE SW / CHATEAU(R) HERBICIDE	2012 - 2018
CHECKMATE VMB-F / CHECKMATE VMB-F FLOW	2016 - 2019
CHECKMATE VMB-XL	2011, 2016
CHEMSTAR HIGH CALCIUM HYDRATED LIME	2013
COPPER SULFUR DUST	2017
COSAVET DF	2012 - 2014
CSC COPPER SULFUR DUST	2015 - 2016, 2019
CSC DUSTING SULFUR	2015
DANITOL 2.4 EC SPRAY (DANITOL(R) 2.4 EC SP)	2014 - 2017
DELEGATE WG	2011, 2015, 2018 - 2019
DIPEL DF BIOLOGICAL INSECTICIDE DRY FLOWABLE	2019
DITHANE 75DF RAINSHIELD	2011, 2014 - 2015
DUPONT KOCIDE 3000 FUNGICIDE/BACTERICIDE	2011 - 2016
DUPONT LANNATE SP INSECTICIDE	2015
DUPONT MATRIX SG HERBICIDE / DUPONT MATRIX SG HER	2012 - 2020
ELEVATE 50 WDG FUNGICIDE / ELEVATE 50WDG	2011 - 2012, 2015 - 2019
ELIMINO	2017 - 2018
ELITE 45 WP FOLIAR FUNGICIDE IN WATER SOLUBLE PACKETS	2011
EPI-MEK 0.15 EC MITICIDE/INSECTICIDE	2011
ETHEPHON 2	2013, 2016 - 2017
ETHEPHON 2SL	2011 - 2015
ETHREL PLANT REGULATOR	2011
FALGRO 2X LV	2014 - 2018
FALGRO 4L	2014
FLINT FUNGICIDE	2013, 2019
FORFEIT 280	2017
FUSILADE DX HERBICIDE / FUSILADE DX	2013 - 2015, 2017
GIBBMAX	2012 - 2014
GIBGRO 20% POWDER	2014
GIBGRO 4LS	2011
GLY STAR ORIGINAL	2018 - 2020
GOAL 2XL	2011, 2013 - 2019

GRAMOXONE INTEON	2011 - 2012
GRAMOXONE SL	2012
GRAMOXONE SL 2.0 / GRAMOXONE SL 2.0 (CA / GRAMOXONE SL 2.0 (HI	2012 - 2019
HELENA AGRI-DEX	2011, 2014 - 2015
HERBIMAX	2013
HINGE	2018 - 2019
INTEGRO MAGIC SULFUR DUST	2013 - 2014
INTREPID 2F	2011 - 2013, 2019
KALIGREEN	2011, 2013, 2015 - 2018
KIMZALL PLANT GROWTH REGULATOR / KIMZALL	2011 - 2012, 2014 - 2019
KINETIC / KINETIC A NONIONIC W	2011 - 2019
KOCIDE 3000	2017 - 2019
KROP-MAX	2011, 2013 - 2019
LIFELINE HERBICIDE / LIFELINE	2015 - 2019
LIME SULFUR SOLUTION	2015
LORSBAN ADVANCED	2011 - 2018
MANZATE PRO-STICK FUNGICIDE / MANZATE PRO-STICK	2013, 2015, 2017 - 2019
MILSTOP BROAD SPECTRUM FOLIAR FUNGICIDE	2016
MOTIVATE	2018 - 2019
MOVENTO / MOVENTO (CA & NY)	2011 - 2019
OSO 5%SC	2018 - 2019
PENNCOZEB 75DF DRY FLOWABLE FUNGICIDE	2012
PH-D FUNGICIDE	2019
PHT COPPER SULFUR 15-25 DUST	2013
PHT DRYOUT DUST	2018 - 2019
PHT ELIMINO	2017
PHT FASTSTRIKE (CA)	2018 - 2019
PHT LATRON B-1956	2013
PRINCEP CALIBER 90 HERBICIDE	2011
PRISTINE FUNGICIDE / PRISTINE(R) FUNGICID	2011 - 2019
PRO-GIBB 4% PLANT GROWTH REGULATOR SOLUTION	2012
PROGIBB 40% PLANT GROWTH REGULATOR WATER SOLUBLE GRANULE	2014
PROGIBB(R) LV PLUS	2018 - 2019
PROKIL CRYOLITE 96	2011 - 2018
PROWL H2O HERBICIDE / PROWL(R) H2O HERBICI	2011 - 2012, 2014, 2017 - 2020
PURESPRAY GREEN	2012
QUINTEC	2015 - 2016, 2018 - 2019
RALLY 40 WSP	2011 - 2019
REAPER 0.15 EC	2012 - 2013
RECKON 280SL HERBICIDE	2014

RED-TOP DUSTING SULFUR 48-AA	2015 - 2017
RED-TOP DUSTING SULFUR / DUSTING SULFUR 48-ZA	2017 - 2019
RELY 280 / RELY 280 HERBICIDE	2011 - 2017
REX LIME SULFUR SOLU	2018
ROUNDUP POWERMAX HERBICIDE	2013, 2016 - 2018
ROUNDUP WEATHERMAX HERBICIDE	2011 - 2017
ROVRAL	2016
ROVRAL 4 FLOWABLE	2015
ROVRAL BRAND 4 FLOWABLE FUNGICIDE	2012 - 2017
SCALA BRAND SC FUNGICIDE	2011 - 2012, 2014 - 2019
SERENADE ASO	2011, 2016 - 2019
SMOKE	2017 - 2020
SOVRAN FUNGICIDE / SOVRAN(R) FUNGICIDE	2011 - 2018
SUCCESS	2011 - 2019
SULFORIX / MILLER SULFORIX	2017, 2019 - 2020
SURFLAN A.S. AGRICULTURAL HERBICIDE / SURFLAN AS AG	2011, 2013, 2019
SURMISE	2016
SWITCH 62.5WG	2011 - 2013, 2015 - 2019
TEBUSTAR 45 WSP	2013 - 2014
TEBUZOL 45 DF FUNGICIDE	2011 - 2012, 2014
TOLEDO 45WP AGRICULTURAL FUNGICIDE	2015 -, 2016
TORINO	2013 - 2014, 2016 - 2019
TOTAL TNV / TOTAL TNV HERBICIDE	2019
TRELLIS	2012, 2014
TRIPLELINE FOAM-AWAY	2012 - 2016
TRI-TEK	2013
VANGARD WG / VANGARD WG (CA)	2011 - 2012, 2014 -2019
VENOM INSECTICIDE	2015
VENUE / VENUE HERBICIDE	2019
VINTAGE SC FUNGICIDE	2012
VINTRE	2015 - 2018
VITICURE 518-ZA	2013
VITICURE (003/061209) 518-ZD	2017 - 2019
VIVANDO FUNGICIDE / VIVANDO(R) FUNGICIDE	2016 - 2018, 2020
WILBUR-ELLIS DUSTING SULFUR (RED-TOP 2016-2018)	2011, 2013 - 2015, 2019
WILBUR-ELLIS SPRAY SULFUR / SPRAY SULFUR	2012 - 2013, 2016 - 2019
WIL-DRY	2012, 2013, 2014, 2017, 2018
WILLOWOOD GLUFOSINATE 280SL	2014
WILLOWOOD TEB 45DF / TEB 45DF	2015, 2017 - 2019
YELLOW JACKET WETTABLE DUSTING SULFUR II	2014

YELLOW JACKET WETTABLE SULFUR II	2015 - 2016, 2020

Organochlorine pesticides are defined as *persistent* because they are stable in the environment and resist decay with time. The ability of organochlorine pesticides to persist in the environment made them highly effective and therefore widely used in agricultural insect control efforts during the years 1940's to 1970's. The organochlorine pesticide Dichloro Diphenyl Trichloroethane (DDT) also was used to control typhus and malaria. It is unfortunate that the properties that made these chemicals such effective insecticides also made them environmental biohazards. Most organochlorine pesticides were banned for use in the United States by the mid-years 1980's; those that remain in legal use are the active, low concentration ingredients of some home and garden products and some agricultural and environmental pest control products. There are four broad groups of organochlorine pesticides, none of which include the pesticides and herbicides permitted since the year 1994 for application to the crops grown on the proposed project.

- Hexachlorocyclohexane (Lindane)
- Dichloro Diphenyl Trichloroethane (DDT) and related compounds Dichlorodiphenyldichloroethylene (DDE) and Dichlorodiphenyldichloroethane (DDD)
- Cyclodienes (Aldrin, Heptachlor, and others)
- Mirex and Chlordecone

Agricultural fertilizers and chemicals in use today are sold in concentrated volumes but are mixed and applied in dilute concentrations. When used properly, they are soon utilized or metabolized by crops, and they degrade relatively quickly. However, some environmentally-persistent, organochlorine pesticides can linger in the soil for many years. It is not known if environmentally persistent pesticides and herbicides were ever applied to the proposed project. The potential for elevated concentrations of environmentally persistent pesticides to exist in the near-surface soils, which would require regulatory action, is low.

3.2 United States Environmental Protection Agency - Toxics Release Inventory

The proposed project was not identified in the year 2018 United States Environmental Protection Agency Toxics Release Inventory (TRI) Facilities for Explorer Chemical Releases Report for Bakersfield, California area facilities, and no other properties were identified within a one mile radius of the proposed project. This data was released by the United States Environmental Protection Agency data source and updated November 12, 2019 for 2018 amounts. The nearest TRI facilities include a cluster of four in the Pegasus Industrial Park 2.5 miles and greater southeast of the proposed project. The total chemical releases for these four facilities in 2018 is 38,783 lbs including 37,416 lbs of on-site releases and 1,366 lbs disposed off-site at a regulated facility. Individual facility releases are shown in Table 3-1

below. *(Refer to Figure J-1 US EPA – Toxics Release Inventory Map) (Refer to Table 3-6 US EPA – 2018 Toxics Release Inventory (3-mile study Limit))*

Table 3-6 US EPA – 2018 Toxics Release Inventory (3-mile search limit)

US EPA – Toxics Release Inventory				
Company/Address	**On-Site Air (lbs)**	**On-Site Land (lbs)**	**Off-Site (lbs)**	**Total (lbs)**
Containment Solutions, Inc., 2600 Pegasus	33,659	310	-	33,969
KW Plastics of California, 1861 Sunnyside	-	-	848	848
Nusil Technology LLC, 2343 Pegasus	3,068	-	-	3068
Suez Water Technology & Solutions, Inc., 3050 Pegasus	379	-	518	897
Total Releases	37,106	310	1,366	38,783

3.3 United States Environmental Protection Agency - EJSCREEN

EJSCREEN is a mapping and screening tool the US EPA released in 2015 to combine 11 environmental and 6 demographic indicators in maps and reports. The environmental indicators typically are direct or proxy estimates of risk, pollution levels or potential exposure (e.g., due to nearby facilities). EPA environmental databases are from 2014-2019 periods. Demographic indicators are often used as proxies for a community's health status and potential susceptibility to pollution. Demographic information is obtained from the U.S. Census Bureau's American Community Survey (ACS), the current 2019 version of EJSCREEN includes 2013-2017 ACS 5-year summary file data, based on the 2017 Census boundaries. These indicators are combined to create an Environmental Justice (EJ) index.

As shown on Figure J-4, the proposed project is identified as a RCRA Small Quantity Hazardous Waste Generator, which has been described above in Section 3.1.1.1. Additional identified sites within one mile of the project are included in Table 3-7.

Table 3-7 US EPA – EJSCREEN (1-mile search limit)

ID	EDR Report		Company	Comments
	Site	Map	Address	
1	A1	6	Malibu Vineyards 34344 Imperial St (should be Rd)	HW SQG, proposed Project, described in section 3.1.1.3
2A 2B	29 29	8 9	Bakersfield Ag Co Inc Rt 11, Box 858, APN 482-070-20	Former fertilizer manufacturer with last TRI land releases in 1987 and air

			between coffee Rd Ext & UPRR, actual EDR location is Map 9	releases in 1988. SQG. Also LUST, contaminated soils. Classified as Inactive-need evaluation. Non-NPL and on SEM-Inactive list. See sections 3.5 and 3.7.1 for details
3	75	2	Vincent B Zaninovich & Sons 33905 Lerdo Hwy	HW SQG, auto repair located 1,100 north of the 1 mile buffer (N/A)
4	N	9	JTS Truck Repair 4300 Saco Rd	HW Generator, truck repair & towing EDR N77-N79
5	T	9	Coastline Equipment 4252 Saco Rd	HW SQG, UST, John Deere dealer EDR T108-113
6	L M80	9	West Coast Construction 3143 Petrol Rd	Used oil HW Generator, truck logistics, EDR L62-L72
7	Q M76	9	Smith & Sons Ranch CMS Custum Spreading 19400 Columbo St	HW Generator, APSA, Chem Storage-HMMRP, EDR Q88-Q93 & M76
8	O	9	Core & Main, LP 177 (8/1/2017), previously HD Supply Waterworks, Ltd (Home Depot) 19421 Columbo St	Chem Storage (propane)-HMRRP, no violations, EDR O94-O98
9	U	9	Baker Hughes, Inc. (BJ Chemical Services/ BJ Hughes/Bakersfield Upstream Chemicals) 19433 Columbo St	Chemical wholesaler; Chem Storage-HMRRP, APSA, HW SQG. No violations. 2/8/1999, 2 gals Techni-Clean 485W released EDR U114-117, 119-122, 124, 125, 127-130
10	U	9	Baker Petrolite 19433 Columbo St	Chem Storage-HMRRP, APSA, HW SQG, WDID 5F151025523-Industrial Facility SW NPDES per WQO2014_ 0057_DWQ). As of 11/7/2019, HW LQG removed with visual inspection. No violations. EDR U118, 123 & 126
11	O	9	NOV Process & Flow Technologies (Process Flow Technology, 19417 Colombo St	WDID 5F151025523-Industrial Facility SW NPDES per 97-03-DWQ (now WQO2014_0057_DWQ), no violations EDR O81-O84
12	-	9	Halliburton Services 34598 & 34722 7th Standard Rd	Gasoline LUST; discovered 1986/6/08, Case closed 2002/10/16 Chem Storage-HMRRP, APSA, HW SQG, SPCC, RCRA LQ HWG & Shipper, Explosives (oilwell downhole casing perf charges). See section 3.7.2 for details

3.4 California Environmental Protection Agency, Air Resources Board (CARB) Pollution Mapping Tool

Toxic air pollutants are chemicals that have the potential to cause adverse health effects, such as cancer, birth defects, and organ damage. The online California Environmental Protection Agency Air Resources Board (CARB Pollution Mapping Tool, CHAPIS is unavailable) records were reviewed May 2020, and are listed from the year 2017 database for emissions by facilities and reflect the most current data available. The proposed project was not identified with any emission inventory, and the one mile radius area of the proposed project was not identified with any emission inventory and/or any facilities were identified.

The closest identified facility is the E & B Natural Resources headquarters office located at 3000 James Road, emissions for E & B are actually produced at four Kern County oil and gas fields including Antelope Hills in western Kern County, Tejon Hills near the southern valley foothills, and two facilities in the Poso Creek field, the closest being the Section 5 Lease 3.5 miles northeast of the proposed project near SR 65 and Dove Road. The nearest emission facilities are two natural gas fired cogeneration facilities northeast of the proposed project, one at 3.5 miles is the Double C Limited at 10245 Oilfield Road emitting 13.0 metric tons of total GHG's in 2017, and at 3.85 miles is the Badger Creek Limited at 535 Fano Road emitting 8.2 metric tons of total GHG's in 2017. California Resources Corporation's (CRC) Kern Front Section 23 production facility located 3.2 miles east of the proposed project is part of CRC's Heavy Oil Central reporting facility (Facility ID 1326) which has 2017 reported emissions of 162.75 metric tons. *(Refer to Figure J-2 Cal EPA CARB – Pollution Monitoring Mapping Tool)*

3.5 State of California, Department of Toxic Substances Control (DTSC) EnviroStor

The California Department of Toxic Substances Control (DTSC) maintains the EnviroStor database as an online data management system for the tracking the Department's cleanup, permitting, enforcement, and investigation efforts at hazardous waste facilities and sites with known or suspected contamination issues. Site history and related documents are available for review and download. EnviroStor is also tied into the California State Water Resources Control Board (SWRCB) Geo-Tracker and the California Office of Environmental Health Hazard Assessment (OEHHA), CalEnviroScreen 3.0 online website records focusing on water quality and census tract level data on air quality, pesticide exposure and other potential hazards to populations, respectively. As with any online database, accuracy of locations is only as good as the data entered, older data can be misplaced substantially.

As shown on Figure J-3, no facilities within the recommended 1-mile search limit are indicated in the Cleanup Sites or Permitted Sites sections of EnviroStor. Upon review of the nearby facilities, Bakersfield Ag-Chem (location 2A), EnviroStor ID 15280064, shown at the northeast intersection of Golden State Highway and Seventh Standard Road is actually a 7.4 acre site

located between 2,160 feet to 4,175 feet northwest of the indicated location between Coffee Road Extension and the UPRR tracks (Location 2B) northeast of the Halliburton complex on the west side of SR 99 (EDR 29/8). Details for various violations, inspections & mitigation for Bakersfield Ag-Chem are described below in Section 3.7.1. Currently, Heart of Nature, a soil amendments manufacturer, operates as a supplier of products certified for use on organic crops.

As shown on Figure J-3, only one location (1A) is reported within the recommended 1-mile search limit, an underground storage tank owned by Malibu Vineyards that leaked gasoline into the soil on December 4, 1989. The location is shown as Imperial & Saco Road, but actually the location should be at Malibu's maintenance yard, identified as 1B (EDR A/6). The Kern County Environmental Health Department was duly notified, site assessments occurred from December 1989 through August 1990, remediation commenced October 1991, and the case was closed November 27, 1996. An above ground diesel tank with concrete block containment walls was installed in 1989. Additional details are provided in Section 3.1.1.1.

Other identified nearby sites are not within the 1-mile search area.

3.6 State of California, Department of Conservation, Geologic Energy Management Division (CalGEM)

Petroleum and associated natural gas are the primary mineral resources historically and currently under development in the vicinity of the proposed project. McIntosh & Associates Engineering, Inc. reviewed State of California, Department of Conservation, Geologic Energy Management Division (CalGEM, formerly DOGGR) online website tools "Well Finder" and "WellSTAR" and reviewed the records for exploratory and production wells near the proposed project and determined that no wells have been drilled on the proposed project.

According to the California Department of Conservation, Geologic Energy Management Division (CalGEM, formerly DOGGR) Well Finder website and maps 438 and W4-2, no exploratory wells have been drilled on any of the parcels that encompass the proposed project. The nearest primacy productive limits of producing oilfields include the Northeast Area of the Rosedale Ranch field located 0.3 miles southwest of Phase 1 with the nearest completed, but idle, well located 0.48 miles southwest, and the Poso Creek field located 0.7 miles northeast of Phase 1, with the nearest completed, but idle, well located 0.86 miles northeast. The nearest active well is located 0.92 miles northeast of Phase 1 in the Poso Creek field. Within the one-mile study boundary of the proposed project, 61 wells have been drilled, of which 2 are currently active operated by E & B Natural Resources Management Corp., (E & B), 9 are idle (4 operated by Freedom Oil Company, LLC waiting on water disposal approval from the State Water Board, and 5 operated by E & B), and 48 have been plugged and abandoned. Further exploration of the proposed project is not expected by the oil & gas industry. *(Refer to Figure D-1 California Geologic Energy Management Division (CalGEM) Map)*

3.7 EDR Report – Non Malibu Vineyards

The following sections describe other than Malibu Vineyards environmental sites identified in the EDR report dated February 12, 2020.

3.7.1 Bakersfield Ag-Chem Co.

As identified in Sections 3.3 (EJSCREEN Figure J-4, ID 2A & 2B) and 3.5 (EnviroStor Figure J-3, location 2A & 2B) Bakersfield Ag Co, Inc. (BAC), aka Bakersfield Ag-Chem Co, an agricultural chemical manufacturing facility on land leased from Southern Pacific Transport Company (SPTC), now UPRR, is a site located as EDR ID 29, Map 8, but should be shown on Map 9, as represented in Appendix I. BAC is located 0.55 to 0.90 miles SSE of Phase 1 between Coffee Road Extension and the UPRR tracks at 34710 7th Standard Road, north of the Halliburton Services complex.

On June 1, 1988, the SWRCB reported that the following UST's were located at BAC: Tank F-1, 1,000 gallons gasoline installed 1968, Tank F-2, 10,000 gallons diesel installed 1978 and taken out of service in 1982, Tank F-3, 10,300 gallons diesel installed 1980, Tank W-1, 400 gallons waste oil installed 1979, and Tank W-2, 1,800 gallons waste oil installed 1980.

On May 26, 1987 during inventory control of 2-10,000 gallon diesel UST's, BAC discovered the tank piping was leaking, and stopped the leak the same day. The LUST was reported May 28, 1987. A site assessment was opened October 6, 1987. The two diesel UST's were removed in 1988. The LUST case was closed January 27, 2010. *(Refer to Appendix L, Exhibit L-1)*

Operations of BAC have occurred since at least 1965. Raw materials were made into fertilizers, pesticides, herbicides, defoliants, fungicides and other chemicals using a mixing process, some under licenses issued by the Department of Food and Agriculture. At least 11 surface impoundments, some receiving surface runoff from the chemical formulation pads, are known to have existed within BAC and adjacent properties, primarily SPTC. The CVRWQCD issued WDR's to BAC in 1981 to regulate a pesticide rinse water pond and two yard drainage ponds for subsequent closure. The first site inspection by California Department of Health Services (DHS) was performed April 1, 1981, leading to the certified cleanup of one impoundment in March 1984 as coordinated by DHS & CVRWQB. DHS and CVRWQCB still had concerns of contamination of soils on and off site and groundwater contamination. Three investigations, including sampling, by DHS and Kern agencies resulted in the issuance of a Notice of Violation on November 13, 1986 for illegal waste disposal practices. The surface and core samples indicated the existence of DDE, DDT, DDD, 2,4,5-T ester and acid, Dinoseb (banned by the US EPA in 1986), toxaphene and pentachloronitrobenzene (PCNB). Additional sampling indicated Endosulfan I and II, Malathion and Methyl Parathion were also in the soils. On July 3, 1987, DHS performed an onsite screening (see Appendix L, Exhibit L-2) of the Bakersfield Ag-Chem facility and determined it to be in severe violation of illegal storage and disposal of wastes, poor or no containment of wastes on site and soil contamination by said practices, and

recommended that a Preliminary Assessment be prepared by BAC, including sampling to determine if the aquifer, at approximately 215 feet bgs in 1987, was contaminated as the regional soils allow rapid percolation. DHS issued a Preliminary Assessment September 22, 1987 *(Refer to Appendix L, Exhibit L-3)* which recommended a site inspection be performed as a CERCLA site.

DHS/DTSC issued a CERCLA Site Inspection Report (see Appendix L, Exhibit L-4) on March 6, 1989. Remedial actions at the facility occurred between 1980 to at least 1988, including removal of Dinoseb contaminated soils subsequently disposed at a DHS approved pesticide disposal facility northeast of Fresno. Additional cleanup and closure activities continued at least through 1988 including removal of soils with DDT & DDE which were disposed at the Kettleman Hills Disposal facility operated by Chemical Waste Management. The Site Inspection report indicated that additional soils with Dinoseb and/or Toxaphene continued to be removed as of June 28, 1989. Additional soil and groundwater samples were obtained August 15-19, 1988. Herbicides, organophosphorus pesticides, and dinitro-compounds were detected in the soil samples, however, no contaminants were detected in the groundwater samples. The report indicated there is no analytical evidence of a release of contaminants to groundwater, surface water or air, and the potential to do so is low. The US EPA recommended that no further action under CERCLA was required as the site was not likely to score for inclusion on the NPL. BAC is included on the US EPA Superfund Program-Archived Site Status list. Cal DHS TSCP recommended the site be ranked for inclusion of the State bond Expenditure Plan due to the large quantity of water generated and processes, toxicity and persistence of wastes found, history of releases to soil, lack of confirming samples for BOC's remedial activities, and the anticipated expansion of development and population in the area. Currently, the site is classified as "Inactive – Needs Evaluation" as of May 9, 2005. *(Refer to Appendix L, Exhibit L-5)*

Heart of Nature, an organic soil amendment manufacturer, currently operates in the north portion of the site.

3.7.2 Halliburton Services – Bakersfield / Halliburton Energy Service

Halliburton Services is a large oilfield services supplier with three facilities located north of Seventh (7th) Standard Road on both sides of Coffee Road. The original facility located east of Coffee Road at 34722 7th Standard includes seven buildings constructed between 1962 and 1991, including offices, indoor and outdoor chemical storage, and contained above ground fuel storage tanks. The west facility located west of Coffee Road at 34598 7th Standard Road includes 8 building constructed between 2009 and 2011, including offices, shops, RA and battery storage, truck wash and a cementing facility. The north facility located northwest of the west facility at 34718 7th Standard Road includes 7 buildings constructed 2007 and 2008, including an office, perf gun loading and storage, pump, truck wash and parking, and radioactive storage structures. The east facility is outside of the 1-mile EDR Report search area,

but CUPA reporting and inspections include all 3 facilities as one aggregate facility. (See EDR Report, Maps 8 & 9 for location)

On May 28, 1986, an underground gasoline storage tank was discovered to be leaking and reported August 6, 1986. Site assessments were performed May 28, June 8, and August 8, 1986, and July 11, 1989. Soil was determined to be contaminated. Remediation was reported January 25, 1990, with verification monitoring reported February 13, 1992. The leaking tank and a diesel tank were removed and replaced by aboveground tanks with surrounding containment. The LUST case was closed October 16, 2002.

Kern County Environmental Health Services Department performed a routine Hazardous Material Business Plan Inventory Inspection, Aboveground Petroleum Storage, Hazardous Waste Generator and RCRA Large Quantity Hazardous Waste Generator Inspections on February 21, 2019 for Haliburton Services-Bakersfield. During the routine Compliance Evaluation Inspection of the property the facility had no violations that were observed.

A Hazardous Materials Business Inventory (CERS ID 10231987) was provided to Kern County Environmental Health Services Department on February 5, 2019 for permitted inventory on the property as follows.

Table 3-8 Halliburton Services-Hazardous Materials Business Inventory

Halliburton Services-Bakersfield (CERS Site ID: 10231987) Hazardous Materials Business Plan Inventory – 2/05/2019				
Chemical Name	**Max Daily Amount / Unit**	**Avg Daily Amount / Unit**	**Days Onsite**	**Physical State(s)**
2,4,6 Tridimethylaminomethyl phenol	120-599 Gallons	60-119 Gallons	365	Liquid, Pure
Acetic acid	600-1199 Gallons	120-599 Gallons	365	Liquid, Mix
ACETIC ACID	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Pure
ACETIC ACID/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
Acetylene	2600-12999 Cubic Feet	2600-12999 Cubic Feet	365	Gas, Pure
Acetylene	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
ACID WASTE	60-119 Gallons	12-59 Gallons	365	Liquid
ACRYLIC RESIN/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Pure
ACRYLIC RESIN/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
ALKENES/	120-599 Gallons	60-119 Gallons	365	Liquid, Mix
Aluminum	0-99 Pounds	0-99 Pounds	365	Solid, Mix
ALUMINUM CHLORIDE	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Pure
ALUMINUM/	1000-4999 Pounds	500-999 Pounds	365	Solid, Pure
ALUMINUM/	500-999 Pounds	100-499 Pounds	365	Solid, Mix
AMERICIUM 241 BE	0-99 Pounds	0-99 Pounds	365	Solid, Pure
AMMONIUM BIFLUORIDE/	25000-49999 Pounds	10000-24999 Pounds	365	Solid, Pure
Ammonium bisulfite	120-599 Gallons	60-119 Gallons	365	Liquid, Mix
Ammonium chloride	25000-49999 Pounds	10000-24999 Pounds	365	Solid, Pure
Ammonium chloride	9000-11999 Gallons	3000-5999 Gallons	365	Liquid, Pure

Ammonium chloride/	25000-49999 Pounds	10000-24999 Pounds	365	Solid, Pure
AMMONIUM CHLORIDE/	25000-49999 Pounds	10000-24999 Pounds	365	Solid, Pure
AMMONIUM FLUORIDE	600-1199 Gallons	120-599 Gallons	184	Liquid, Pure
AMMONIUM FLUORIDE	12000-59999 Gallons	9000-11999 Gallons	365	Liquid, Pure
Ammonium persulfate/	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Pure
AMMONIUM PERSULFATE/	1000-4999 Pounds	500-999 Pounds	365	Solid, Mix
AMMONIUM PERSULFATE/	1000-4999 Pounds	500-999 Pounds	365	Solid, Pure
Ammonium Salt of Ethoxylated	1200-2999 Gallons	600-1199 Gallons	365	Liquid, Mix
ANIONIC ACRYLAMIDE COPOLYMER/	60-119 Gallons	12-59 Gallons	365	Liquid, Pure
ANIONIC POLYMER/	600-1199 Gallons	120-599 Gallons	365	Liquid, Mix
ANTIFREEZE-Recycled	600-1199 Gallons	120-599 Gallons	365	Liquid, Mix
AQUA BALANCE	60-119 Gallons	12-59 Gallons	365	Liquid, Mix
ARGON	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
ARGON/CARBONDIOXIDE	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Mix
Automatic transmission fluid	12-59 Gallons	12-59 Gallons	365	Liquid, Mix
BARIUM SULFATE/	10000-24999 Pounds	5000-9999 Pounds	365	Solid, Pure
Barium sulfate/	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Solid, Mix
BARIUM SULFATE/	500-999 Pounds	100-499 Pounds	365	Solid, Pure
BENTONITE	10000-24999 Pounds	10000-24999 Pounds	365	Solid, Mix
BENTONITE	500000-999999 Pounds	1000-4999 Pounds	365	Solid, Pure
BENTONITE/	25000-49999 Pounds	10000-24999 Pounds	365	Solid, Pure
Bisphenol A / Epichlorohydrin resin	600-1199 Gallons	120-599 Gallons	365	Liquid, Mix
BSTR,GRN CAP DC,151G,GCBDC1 AUSTIN PDR	0-99 Pounds	0-99 Pounds	365	Solid
Calcium aluminate	10000-24999 Pounds	5000-9999 Pounds	365	Solid, Mix
CALCIUM CHLORIDE	500-999 Pounds	100-499 Pounds	365	Solid, Pure
CALCIUM SULFATE HEMIHYDRATE/	1000-4999 Pounds	500-999 Pounds	365	Solid, Pure
CALCIUM SULFATE HEMIHYDRATE/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Pure
Carbazole	0-99 Pounds	0-99 Pounds	365	Solid, Mix
CELLOPHANE/	10000-24999 Pounds	1000-4999 Pounds	365	Solid, Pure
CELLOPHANE/	10000-24999 Pounds	5000-9999 Pounds	365	Solid, Pure
CELLULOSE DERIVATIVE/	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Mix
Cellulose derivative/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Pure
CELLULOSE DERIVATIVE/	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Pure
CESIUM 137	0-99 Pounds	0-99 Pounds	365	Solid, Pure
CHEVRON AUTO.TRANS.FLUID DEXRON VI	120-599 Gallons	120-599 Gallons	365	Liquid, Mix
CHEVRON AUTOM. TRANS.FLUID DEXTRON VI	60-119 Gallons	12-59 Gallons	365	Liquid, Mix
CHEVRON DELO 400 ENGINE OIL	120-599 Gallons	60-119 Gallons	365	Liquid, Mix
CHEVRON DELO 400 ENGINE OIL SAE 15-40	600-1199 Gallons	600-1199 Gallons	365	Liquid, Mix
CHEVRON RANDO HD HYD. OIL	120-599 Gallons	120-599 Gallons	365	Liquid, Mix
CHG,3.375 IN,PROSPECTOR HMX,SDP,21GR	500-999 Pounds	100-499 Pounds	365	Solid, Mix
CITRIC ACID	10000-24999 Pounds	1000-4999 Pounds	365	Solid, Pure
CITRIC ACID	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Pure
Citric acid/	600-1199 Gallons	120-599 Gallons	365	Liquid, Pure
Citric acid/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Pure
CITRIC ACID/	10000-24999 Pounds	1000-4999 Pounds	365	Solid, Pure
COAL/	10000-24999 Pounds	10000-24999 Pounds	365	Solid, Pure

COAL/	75000-99999 Pounds	25000-49999 Pounds	365	Solid, Pure
Cobalt acetate	600-1199 Gallons	120-599 Gallons	365	Liquid, Mix
COMMON WHITE-SAND/	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Pure
COPPER CHELATE/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix
Crystalline silica, quartz	10000-24999 Pounds	10000-24999 Pounds	365	Solid, Pure
Crystalline silica, quartz	10000-24999 Pounds	10000-24999 Pounds	365	Solid, Mix
Crystalline silica, quartz	10000-24999 Pounds	5000-9999 Pounds	365	Solid, Mix
Crystalline silica, quartz	10000-24999 Pounds	5000-9999 Pounds	365	Solid, Mix
Crystalline silica, quartz	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Pure
Crystalline silica, quartz	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Pure
CRYSTALLINE SILICA, QUARTZ/	10000-24999 Pounds	1000-4999 Pounds	365	Solid, Mix
Cyclohexanedimethanol diglydicyl ether	120-599 Gallons	60-119 Gallons	365	Liquid, Pure
Cyclopropanedicarboxylic Acid (1,1-)/Propane	600-1199 Gallons	120-599 Gallons	365	Liquid, Pure
Cyclotetramethylene tetranitramine	0-99 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	0-99 Pounds	0-99 Pounds	365	Solid, Pure
Cyclotetramethylene tetranitramine (HMX)	0-99 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	100-499 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	100-499 Pounds	100-499 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	0-99 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	100-499 Pounds	100-499 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	100-499 Pounds	100-499 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	500-999 Pounds	100-499 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	0-99 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	100-499 Pounds	100-499 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	0-99 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	0-99 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	0-99 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	0-99 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	1000-4999 Pounds	500-999 Pounds	365	Solid, Mix

Cyclotetramethylene tetranitramine (HMX)	100-499 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	1000-4999 Pounds	500-999 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	500-999 Pounds	100-499 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	1000-4999 Pounds	500-999 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	0-99 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	0-99 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	100-499 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	0-99 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	0-99 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	0-99 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	0-99 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotetramethylene tetranitramine (HMX)	100-499 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotrimethylenetrinitramine (RDX)	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
Cyclotrimethylenetrinitramine (RDX)	1000-4999 Pounds	500-999 Pounds	365	Solid, Mix
Cyclotrimethylenetrinitramine (RDX)	100-499 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotrimethylenetrinitramine (RDX)	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
Cyclotrimethylenetrinitramine (RDX)	100-499 Pounds	100-499 Pounds	365	Solid, Mix
Cyclotrimethylenetrinitramine (RDX)	100-499 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotrimethylenetrinitramine (RDX)	1000-4999 Pounds	500-999 Pounds	365	Solid, Mix
Cyclotrimethylenetrinitramine (RDX)	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Mix
Cyclotrimethylenetrinitramine (RDX)	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
Cyclotrimethylenetrinitramine (RDX)	100-499 Pounds	0-99 Pounds	365	Solid, Mix
Cyclotrimethylenetrinitramine (RDX)	1000-4999 Pounds	500-999 Pounds	365	Solid, Mix
Cyclotrimethylenetrinitramine (RDX)	100-499 Pounds	100-499 Pounds	365	Solid, Mix
Cyclotrimethylenetrinitramine (RDX)	100-499 Pounds	100-499 Pounds	365	Solid, Mix

Cyclotrimethylenetrinitramine (RDX)	0-99 Pounds	0-99 Pounds	365	Solid, Mix
DCA-21003	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Pure
DCA-30005	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Pure
DEGREASER	12-59 Gallons	12-59 Gallons	365	Liquid, Mix
DEGREASER	12-59 Gallons	12-59 Gallons	365	Liquid, Pure
Diesel Fuel *	12000-59999 Gallons	12000-59999 Gallons	365	Liquid, Pure
Diethanolamine	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Pure
Diethylenetriamine pentamethylene phosphonic	600-1199 Gallons	120-599 Gallons	365	Liquid, Mix
DIETHYLENETRIAMINE/	120-599 Gallons	60-119 Gallons	365	Liquid, Mix
Diethyltoluenediamine	600-1199 Gallons	120-599 Gallons	365	Liquid, Pure
Disodium octaborate tetrahydrate	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Pure
DISODIUM OCTABORATE TETRAHYDRATE/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Pure
Dodecylbenzene sulfonic acid	6000-8999 Gallons	3000-5999 Gallons	365	Liquid, Mix
Dodecylbenzene sulfonic acid	120-599 Gallons	120-599 Gallons	365	Liquid, Mix
DODECYLBENZENE SULFONIC ACID	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix
DODECYLBENZENE SULFONIC ACID/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix
Ethanol, 2-Butoxy-	60-119 Gallons	12-59 Gallons	365	Liquid, Mix
Ethoxylated alcohol	1200-2999 Gallons	600-1199 Gallons	365	Liquid, Mix
Ethoxylated fatty acids	600-1199 Gallons	120-599 Gallons	365	Liquid, Mix
Ethoxylated nonylphenol/	10000-24999 Pounds	10000-24999 Pounds	365	Solid, Pure
Ethylene glycol monobutyl ether/	1200-2999 Gallons	1200-2999 Gallons	365	Liquid, Mix
Ethylene glycol monobutyl ether/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix
ETHYLENE GLYCOL MONOBUTYL ETHER/	600-1199 Gallons	120-599 Gallons	365	Liquid, Pure
ETHYLENE GLYCOL MONOBUTYL ETHER/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix
FDP-C984-10	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Mix
FERRIC CHLORIDE/	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Mix
Final Charge Global 50/50 Prediluted Antifreeze & Coolant	120-599 Gallons	120-599 Gallons	365	Liquid, Mix
FLY ASH/	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Mix
FLY ASH/	10000-24999 Pounds	5000-9999 Pounds	365	Solid, Pure
FLY ASH/	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Solid, Pure
FLY ASH/	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Pure
Formic acid	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Pure
FORMIC ACID	600-1199 Gallons	120-599 Gallons	365	Liquid, Pure
FORMIC ACID/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Pure
FROMIC ACID	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Pure
GLASS/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Pure
GLASSY CALCIUM MAGNESIUM/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Pure
Glutaraldehyde	1200-2999 Gallons	1200-2999 Gallons	365	Liquid, Mix
GREASE/	120-599 Gallons	120-599 Gallons	365	Liquid, Mix
GYPSUM	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Mix
GYPSUM/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Pure
HEAVY AROMATIC PERTOLEUM/	120-599 Gallons	60-119 Gallons	365	Liquid, Mix
Helium	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
Highly refined mineral oil (C15 - C50)	100-499 Pounds	0-99 Pounds	365	Solid, Mix
Highly refined mineral oil (C15 - C50)	12-59 Gallons	12-59 Gallons	365	Liquid, Mix

Highly refined mineral oil (C15 - C50)	60-119 Gallons	12-59 Gallons	365	Liquid, Mix
Highly refined mineral oil (C15 - C50)	100-499 Pounds	0-99 Pounds	365	Solid, Mix
HMX	0-99 Pounds	0-99 Pounds	365	Solid, Mix
HMX	0-99 Pounds	0-99 Pounds	365	Solid, Mix
HMX	100-499 Pounds	0-99 Pounds	365	Solid, Mix
HMX	0-99 Pounds	0-99 Pounds	365	Solid, Pure
HNS	0-99 Pounds	0-99 Pounds	365	Solid, Mix
HNS	0-99 Pounds	0-99 Pounds	365	Solid, Mix
HNS	0-99 Pounds	0-99 Pounds	365	Solid, Mix
Hydraulic oil	12-59 Gallons	12-59 Gallons	365	Liquid, Mix
HYDRAULIC OIL AW 68	12-59 Gallons	12-59 Gallons	365	Liquid, Mix
Hydrocarbons, C13-C16, n-alkanes, isoalkanes,	60-119 Gallons	12-59 Gallons	365	Liquid, Mix
HYDROCHLORIC ACID	100000-499999 Pounds	100000-499999 Pounds	365	Liquid, Pure
Hydrotreated light petroleum distillate	1200-2999 Gallons	600-1199 Gallons	365	Liquid, Mix
Hydrotreated light petroleum distillate/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix
HYDROTREATED LIGHT PETROLEUM/	60-119 Gallons	12-59 Gallons	365	Liquid, Pure
HYDROTREATED LIGHT PETROLEUM/	120-599 Gallons	12-59 Gallons	365	Liquid, Pure
Hydroxyacetic acid	1200-2999 Gallons	600-1199 Gallons	365	Liquid, Pure
HYDROXYACETIC ACID/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Pure
Hydroxylamine hydrochloride	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Mix
HYDROXYLAMINE HYDROCHLORIDE/	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Mix
INITR,PERCUSSION,HI TEMP,TITAN	0-99 Pounds	0-99 Pounds	365	Solid, Mix
INORGANIC COAGULANT/	60-119 Gallons	12-59 Gallons	365	Liquid, Mix
INORGANIC SALT	10000-24999 Pounds	5000-9999 Pounds	365	Solid, Pure
INORGANIC SALT	10000-24999 Pounds	5000-9999 Pounds	365	Solid, Pure
INTENSIFIER/	500-999 Pounds	100-499 Pounds	365	Solid, Mix
Iron oxide/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
ISOPROPANOL/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix
ISOPROPYL ALCOHOL 99%	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Pure
Latex polymer	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Pure
Lauryl dimethyl/	12000-59999 Gallons	6000-8999 Gallons	365	Liquid, Mix
Lauryl hydroxysultaine/	6000-8999 Gallons	3000-5999 Gallons	365	Liquid, Mix
LEAD ACID BATTERIES	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
Lead acid batteries	1000-4999 Pounds	100-499 Pounds	365	Liquid, Mix
Lead Azide, Pb (N3)2,	100-499 Pounds	0-99 Pounds	365	Solid, Mix
Light aromatic solvent/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix
LIGHT AROMATIN SOLVENT/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix
LIMESTONE/	25000-49999 Pounds	0-99 Pounds	365	Solid, Pure
LITHIUM THIONYL CHLORIDE BATTERIES	100-499 Pounds	100-499 Pounds	365	Solid, Mix
Manganese Dioxide/ Alkaline Battery	500-999 Pounds	100-499 Pounds	365	Solid
Methanol/	1200-2999 Gallons	1200-2999 Gallons	365	Liquid, Mix
Methanol/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix

METHANOL/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix
Methyl glycine diacetic acid	1200-2999 Gallons	1200-2999 Gallons	365	Liquid, Pure
MINERAL OIL	60-119 Gallons	12-59 Gallons	365	Liquid, Pure
MODIFED LIGNOSULFONATE	1000-4999 Pounds	500-999 Pounds	365	Solid, Pure
MODIFED LIGNOSULFONATE	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Pure
MODIFED LIGNOSULFONATE/	120-599 Gallons	120-599 Gallons	365	Liquid, Pure
MODIFIED ACRYLAMIDE COPOLYMER/	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Pure
MODIFIED LIGNOSULFONATE/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Pure
MONOETHANOLAMINE BORATE/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix
NITRILOPROPIONAMIDE/	1000-4999 Pounds	500-999 Pounds	365	Solid, Mix
Nitrocellulose	0-99 Pounds	0-99 Pounds	365	Solid, Mix
NITROGEN	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
Nitrogen	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
Nitrogen	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
Nitrogen Oxides	12000-59999 Gallons	6000-8999 Gallons	365	Gas, Pure
Nitrous Oxide	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
n-Methylpyrrolidone/	120-599 Gallons	120-599 Gallons	365	Liquid, Pure
Nonflammable compressed gas mixture (75% Argon / 25% Carbon Dioxide)	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Mix
Non-RCRA Hazardous Waste Liquid (waste Oil)	60-119 Gallons	12-59 Gallons	365	Liquid
Non-RCRA Hazardous Waste, Liquid (Used Oil)	600-1199 Gallons	120-599 Gallons	365	Liquid
Non-RCRA Hazardous Waste, Solids (Oily Debris/Absorbents)	500-999 Pounds	100-499 Pounds	365	Solid
OXILINK	12-59 Gallons	12-59 Gallons	365	Liquid, Mix
Oxygen	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
Oxygen	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
Oxygen Difluoride	2600-12999 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
Paraffinic solvent/	600-1199 Gallons	120-599 Gallons	365	Liquid, Mix
Pentaerythritol tetranitrate (PETN)	0-99 Pounds	0-99 Pounds	365	Solid, Mix
perhydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0-99 Pounds	0-99 Pounds	365	Solid, Mix
Phenol, 4,4'-methylenebis[2,6-bis(1,1-dimethylethyl)-	120-599 Gallons	120-599 Gallons	365	Liquid, Pure
PM 100 gear oil	12-59 Gallons	12-59 Gallons	365	Liquid, Mix
Polydimethyl diallyl ammonium/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix
Polylactide resin/	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Pure
POLYMER/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
POLYPROPYLENE/	1000-4999 Pounds	500-999 Pounds	365	Solid, Pure
POLYSACCHARIDE/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
Polysaccharide/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
PORTLAND CEMENT	10000-24999 Pounds	5000-9999 Pounds	365	Solid, Mix
PORTLAND CEMENT/	10000-24999 Pounds	10000-24999 Pounds	365	Solid, Mix
PORTLAND CEMENT/	2600-12999 Cubic Feet	0-2599 Cubic Feet	365	Solid, Pure
PORTLAND CEMENT/	2600-12999 Cubic Feet	0-2599 Cubic Feet	365	Solid, Pure
PORTLAND CEMENT/	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Mix
PORTLAND CEMENT/	100-499 Pounds	100-499 Pounds	365	Solid, Mix

POTASSIUM CHLORIDE	100000-499999 Pounds	1000-4999 Pounds	365	Solid, Pure
POTASSIUM CHLORIDE/	10000-24999 Pounds	1000-4999 Pounds	365	Solid, Pure
POTASSIUM CHLORIDE/	10000-24999 Pounds	5000-9999 Pounds	365	Solid, Pure
POTASSIUM IODIDE/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Pure
Potassium metaborate	1200-2999 Gallons	600-1199 Gallons	365	Liquid, Mix
Potassium Nitrate	0-99 Pounds	0-99 Pounds	365	Solid, Mix
Potassium oxide	25000-49999 Pounds	10000-24999 Pounds	365	Solid, Mix
Propane	60-119 Gallons	12-59 Gallons	365	Liquid, Pure
Proprietary/	25000-49999 Pounds	10000-24999 Pounds	365	Solid, Mix
PULSSCO WIRELINE GREASE SEAL	120-599 Gallons	60-119 Gallons	365	Solid, Mix
Quartz	13000-25999 Cubic Feet	2600-12999 Cubic Feet	365	Solid, Pure
RDX	100-499 Pounds	0-99 Pounds	365	Solid, Pure
RDX	100-499 Pounds	0-99 Pounds	365	Solid, Pure
RDX	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
RDX	0-99 Pounds	0-99 Pounds	365	Solid, Mix
RDX	100-499 Pounds	0-99 Pounds	365	Solid, Mix
RDX	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
RDX	1000-4999 Pounds	500-999 Pounds	365	Solid, Mix
RDX	0-99 Pounds	0-99 Pounds	365	Solid, Pure
SALT	75000-99999 Pounds	10000-24999 Pounds	365	Solid, Mix
SAND	2600-12999 Cubic Feet	2600-12999 Cubic Feet	365	Solid, Pure
SAND	2600-12999 Cubic Feet	2600-12999 Cubic Feet	365	Solid, Pure
SAND	2600-12999 Cubic Feet	2600-12999 Cubic Feet	365	Solid, Pure
SHELL TELLUS OIL 46	120-599 Gallons	120-599 Gallons	365	Liquid, Pure
SILICA FLOUR/	2600-12999 Cubic Feet	0-2599 Cubic Feet	365	Solid, Pure
SILICA, AMORPHOUS/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
SILICA/	25000-49999 Pounds	10000-24999 Pounds	365	Solid, Mix
SLICA, AMORPHOUS/	75000-99999 Pounds	25000-49999 Pounds	365	Solid, Mix
SODIUM ALIMINATE/	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Pure
SODIUM ALUMINATE/	10000-24999 Pounds	5000-9999 Pounds	365	Solid, Pure
Sodium bicarbonate/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Pure
SODIUM BICARBONATE/	10000-24999 Pounds	1000-4999 Pounds	365	Solid, Pure
Sodium bisulfite/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Pure
SODIUM CARBONATE/	60-119 Gallons	12-59 Gallons	365	Liquid, Pure
Sodium carbonate/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Pure
SODIUM CARBONATE/	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Pure
Sodium chloride/	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Pure
SODIUM CHLORIDE/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix
SODIUM CHLORIDE/	50000-74999 Pounds	25000-49999 Pounds	365	Solid, Mix
SODIUM CHLORIDE/	25000-49999 Pounds	10000-24999 Pounds	365	Solid, Pure
SODIUM CHLORIDE/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix
SODIUM HYDROXIDE/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix
Sodium hydroxide/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix
SODIUM HYDROXIDE/	60-119 Gallons	12-59 Gallons	365	Liquid, Mix
SODIUM METASILICATE/	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Pure
SODIUM METASILICATE/	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Pure
Sodium methyl oleoyl taurate/	600-1199 Gallons	120-599 Gallons	365	Liquid, Mix

Sodium methyl oleoyl taurate/	600-1199 Gallons	120-599 Gallons	365	Liquid, Pure
Sodium Nitrate	0-99 Pounds	0-99 Pounds	365	Solid, Mix
SODIUM NITRATE	0-99 Pounds	0-99 Pounds	365	Solid, Mix
SODIUM NITRATE	0-99 Pounds	0-99 Pounds	365	Solid, Mix
SODIUM PERBORATE TETRAHYDRATE/	1000-4999 Pounds	500-999 Pounds	365	Solid, Pure
Sodium persulfate/	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Pure
SODIUM PERSULFATE/	5000-9999 Pounds	1000-4999 Pounds	365	Solid, Pure
Sodium polyacrylate/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix
Sodium silicate	1200-2999 Gallons	600-1199 Gallons	365	Liquid, Mix
SODIUM SILICATE/	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix
Stainless Steel	100-499 Pounds	0-99 Pounds	365	Solid, Mix
STIMGUN, STIMGUN SLEEVE, STIM TUBE POTASSIUM PERCHLORATE/	100-499 Pounds	100-499 Pounds	365	Solid, Mix
STIMGUN, STIMGUN SLEEVE, STIM TUBE,POTASSIUM PERCHLORATE/	5000-9999 Pounds	5000-9999 Pounds	365	Solid, Mix
STIMGUN, STIMGUN SLEEVE, STIM TUBEPOTASSIUM PERCHLORATE/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Mix
Strontium nitrate	0-99 Pounds	0-99 Pounds	365	Solid, Mix
Strontium nitrate	0-99 Pounds	0-99 Pounds	365	Solid, Mix
SULFONATED ORGANIC SALT	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Pure
SULFONIC ACID SALT/	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Pure
SULFONIC ACID SALT/	10000-24999 Pounds	5000-9999 Pounds	365	Solid, Pure
SULFONIC ACID SALT/	120-599 Gallons	120-599 Gallons	365	Liquid, Mix
SYNTHETIC GREASE	500-999 Pounds	100-499 Pounds	365	Liquid, Mix
TARTARIC ACID	1000-4999 Pounds	1000-4999 Pounds	365	Solid, Pure
Tartaric acid/	120-599 Gallons	60-119 Gallons	365	Liquid, Pure
Terpenes and Terpenoids, sweet orange-oil	1200-2999 Gallons	600-1199 Gallons	365	Liquid, Mix
Titanium, [Ti] metal powder	0-99 Pounds	0-99 Pounds	365	Solid, Mix
Ulexite	600-1199 Gallons	120-599 Gallons	365	Liquid, Mix
Urea, Water	120-599 Gallons	120-599 Gallons	365	Liquid, Mix
Used Aerosol	12-59 Gallons	12-59 Gallons	365	Liquid
USED AEROSOL CANS	120-599 Gallons	120-599 Gallons	365	Liquid
USED AEROSOL CANS	120-599 Gallons	120-599 Gallons	365	Solid, Mix
Used antifreeze	12-59 Gallons	12-59 Gallons	365	Liquid
Used Lead Acid Batteries	500-999 Pounds	100-499 Pounds	365	Solid, Mix
USED LITHIUM BATTERIES	1000-4999 Pounds	100-499 Pounds	365	Solid
USED OIL	120-599 Gallons	120-599 Gallons	365	Liquid
USED OIL FILTERS	1000-4999 Pounds	1000-4999 Pounds	365	Solid
Vinyl polymer	25000-49999 Pounds	10000-24999 Pounds	365	Solid, Pure
WASTE OIL	600-1199 Gallons	600-1199 Gallons	365	Liquid
WASTE OIL PADS	600-1199 Gallons	120-599 Gallons	365	Solid
WASTE PAINT	12-59 Gallons	12-59 Gallons	365	Liquid
WellLife™ 684	10000-24999 Pounds	5000-9999 Pounds	365	Solid, Pure
Wet brake transaxle oil	12-59 Gallons	12-59 Gallons	365	Liquid, Mix
ZINC	0-99 Pounds	0-99 Pounds	365	Solid, Mix
ZINC	0-99 Pounds	0-99 Pounds	365	Solid, Mix
zinc	0-99 Pounds	0-99 Pounds	365	Solid, Mix

**Aboveground Storage Tank (AST)*

3.7.3 EDR Map 1

The **North Kern Water Storage District (NKWSD)** headquarters office located at 33380 Cawelo Avenue, EDR ID cluster K, is approximately 4,400 feet northwest of Phase 2 on the east side of SR 99. Other misreported locations for NKWSD site include R132 & R134, Map 9.

On June 1, 1988, the SWRCB reported there were three UST's located on site; Tank 1, 6,000 gallons gasoline installed 1979, Tank 2, 6,000 gallons gasoline installed 1980, and Tank 3, 5,000 gallons for steam cleaning runoff (waste) installed 1982 (EDR ID R132). These tanks are not included on any LUST listing.

Currently, two AST's with a combined capacity of 3,340 gallons are located approximately 185 feet from the Cawelo Avenue ROW within curbed containment. It is unknown when the diesel and/or gasoline UST's were removed. The AST facility has a submitted SPCC plan as of November 18, 2016.

On March 9, 2015, the Kern County Fire Department responded to a 15 gallon spillage of diesel onto surface gravel during tank filling, leak caused by truck pump gasket failure. The release was immediately contained and cleaned up.

According to SJVAPCD, the latest air emissions reporting indicated 0.016934 tons of Total Organic Hydrocarbon Gases and 0.016934 tons of Reactive Organic Gases were released in 2017.

Kern County Environmental Health Services Department performed a routine Hazardous Material Business Plan Inventory Inspection, Aboveground Petroleum Storage, Hazardous Waste Generator and California Accidental Release Prevention (CalARP) Inspections on December 17, 2018 for NKWSD (CERS ID 10231633). During the routine Compliance Evaluation Inspection of the property the following violation(s) were observed. All noted violations were mitigated within the allowed compliance period.

North Kern Water Storage District (CERS Site ID: 10231633) Hazardous Materials Release Response Program (HMRRP) Inspection Violations	
Inspection Date	**Violation / Corrective Action Required**
2018-12-17	Failure to complete and electronically submit a site map with all required content. The current site map does not contain the required elements such as the following - access and exits - evacuation and staging areas please update site map to contain these elements. Returned to compliance on 12/19/2018.
	Failure to establish and electronically submit an adequate emergency response plan and procedures for a release or threatened release of a hazardous material. The submitted contingency plan is incomplete. The following link provides a template that can be utilized to meet the requirement of this violation: https://kernpublichealth.com/wp-

	content/uploads/2015/01/2contingencyplan.pdf. Returned to compliance on 12/19/2018.

No violations for APSA, HWG or Cal ARP were observed.

An updated Hazardous Materials Business Plan Inventory (CERS ID 10231633) was provided to Kern County Environmental Health Services Department on December 19, 2018 via CERS for permitted inventory on the property as follows.

North Kern Water Storage District (CERS Site ID: 10231633) Hazardous Materials Business Plan Inventory – 12/19/2018				
Chemical Name	**Max Daily Amount / Unit**	**Avg Daily Amount / Unit**	**Days Onsite**	**Physical State(s)**
7-Oxabicyclo[2.2.1]heptane-2,3-dicarboxylic acid, potassium salt (1:2)	120-599 Gallons	120-599 Gallons	0	Liquid, Mix
Acetylene	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
Argon, Liquid	0-2599 Cubic Feet	0-2599 Cubic Feet	0	Gas, Mix
Copper Ethylenediamine Complex	600-1199 Gallons	120-599 Gallons	365	Liquid, Mix
Cupric Sulfate Pentahydrate	500-999 Pounds	100-499 Pounds	0	Solid, Pure
Cyclopropanedicarboxylic Acid (1,1-)	120-599 Gallons	120-599 Gallons	0	Liquid, Pure
Cyclopropanedicarboxylic Acid (1,1-)	600-1199 Gallons	600-1199 Gallons	365	Liquid, Pure
Diesel Fuel *	1200-2999 Gallons	600-1199 Gallons	365	Liquid, Pure
DIPHACINONE TREATED GRAIN RODENT BAIT	500-999 Pounds	0-99 Pounds	365	Solid, Pure
Drained Used Oil Filters	12-59 Gallons	12-59 Gallons	0	Liquid
DRIPPING OIL	120-599 Gallons	120-599 Gallons	365	Liquid, Pure
Electrolyte/sulfuric Acid	60-119 Gallons	60-119 Gallons	0	Liquid, Mix
GASOLINE – UNLEADED *	1200-2999 Gallons	600-1199 Gallons	365	Liquid, Pure
GLYPHOSATE	120-599 Gallons	60-119 Gallons	365	Liquid, Mix
Glyphosate Isopropylamine Salt	1200-2999 Gallons	120-599 Gallons	0	Liquid, Mix
Hydraulic Fluid	120-599 Gallons	60-119 Gallons	0	Liquid
Motor Oil	120-599 Gallons	60-119 Gallons	365	Liquid, Pure
Nitrogen, Liquid	0-2599 Cubic Feet	0-2599 Cubic Feet	0	Gas, Pure
Non-RCRA Hazardous Waste Liquid (waste Oil)	120-599 Gallons	0-11 Gallons	365	Liquid
Nonyl Phenol Ethoxylate	60-119 Gallons	12-59 Gallons	0	Liquid, Mix
Oxygen Difluoride	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
PRO-SPREADER	120-599 Gallons	12-59 Gallons	365	Liquid, Mix

**Aboveground Storage Tank (AST)*

The **T-Mobile West, LLC SV00258A** cell tower facility located at 33320 Cawelo Avenue, EDR ID 74, is approximately 165 feet east of NKWSD office building.

Kern County Environmental Health Services Department has not performed routine inspections of this facility. An updated Hazardous Materials Business Plan Inventory (CERS ID 10730035) was provided to Kern County Environmental Health Services Department on March 7, 2019 via CERS for permitted inventory on the property as follows.

T-Mobile West, LLC SV00258A (CERS Site ID: 10231633) Hazardous Materials Business Plan Inventory – 3/7/2019				
Chemical Name	**Max Daily Amount / Unit**	**Avg Daily Amount / Unit**	**Days Onsite**	**Physical State(s)**
Electrolyte/sulfuric Acid (Batteries))	600-119 Gallons	60-119 Gallons	0	Liquid, Mix

3.7.4 EDR Map 2

As shown in Table 3.7, the facility identified as **Vincent B Zaninovich & Sons** was an auto repair business located at 33905 Lerdo Highway, EDR ID 75, is approximately 1,100 feet north of the 1-mile search boundary. The facility was permitted as a SQ HWG. The location is currently owned by Wonderful Nut Ranches I, LLC, and used as an agricultural equipment storage yard. Not applicable to this project review.

3.7.5 EDR Map 3

According to the CalEPA Regulated Site Portal and Geo-Tracker, the **Bakersfield Vortec EHF** facility, EDR ID 131, is located at Minter Field, therefore at least 3 miles from the proposed project. In a June 1, 1988 SWRCB report, BFL-Vortac was reported to have a 550 gallon aviation gas UST installed in 1962. This facility had a gasoline LUST, leak was discovered April 29, 1988, cleanup was coordinated by the CVRWQB, case was closed March 22, 1994 and the Federal Aviation Administration was the responsible party. Not applicable to this project review.

3.7.6 EDR Maps 4 & 5

EDR Map 4 indicates no sites of concern.

Malibu Vineyards, EDR ID B4 & B5, a gasoline LUST is discussed in Section 3.1.1.1.
EDR Map 5 indicates one site, EDR ID 12, reported as **Sill Properties Field 36** located in the NE NE NE 30 28 25 Burbank Ave. This property is located 10.75 miles west of the proposed project at the southwest corner of Burbank Ave and Scaroni Ave in Sec. 30, T28S/R28E, 3 miles west of Enos Lane. Not applicable to this project review.

3.7.7 EDR Map 6

Malibu Vineyards Ranch 20, EDR ID A1 & A2, are discussed in Section 3.1.1.2 – 3.1.1.4.

EDR Item 14, **Western Oilfield Supply Co.**, 17400 Zerker Road is a pipe and portable tank supplier owned by Rain for Rent of Bakersfield, and is located 1.3 miles north of Lerdo Highway on the east side of Zerker Road and 2.95 miles northwest of the proposed project. Not applicable to this project review.

EDR Item 33, **Kern Front Oilfield**, is reported by EDR to be 0.69 miles east of the project but is actually located east of Highway 65 and north of James Road. The nearest primacy field limit is 1.5 miles east of Phase1. Per EPA, the site was assessed, and the location is no longer judged to be a potential National Priorities List (NPL) candidate and doesn't need superfund attention. The Kern Front Oilfield is listed on the US EPA Superfund Program, 2016 Archived Site Status Report, page 288, as EPA ID CAD980694822. Not applicable to this project review.

EDR Item 40, **Davis residence**, is single family residence being constructed at 18212 Gina Elizabeth Ct approximately 0.7 miles northeast of Phase 1. The project obtained an NPDES construction storm water permit (Erosivity Waiver) WDID 5F15W004297 as per General Order 2009-0009-DWQ from the State Water Board via Storm Water Multiple Application and Report Tracking System (SMARTS), with construction allowed September 1 through December 1, 2019. Review of February 2020 aerial imagery indicates surface grading was not performed.

EDR Item 73, **Kramer Pit**, is a past producing sand and gravel pit located south of Burbank Avenue, west of Hwy 65 and east of Quinn Road in the NW/4, NW/4 Sec. 28, T28S/R27E MDB&M, approximately 0.75 miles east of Phase 1. Kramer Pit is the westernmost of a series of gravel pits paralleling James Road to Granite Road. This pit is not currently visible as are others along James Road and Highway 65. The land surface is currently fairly level, sloping westward, and cultivated with table grapes.

3.7.8 EDR Maps 7 & 8

EDR Map 7 indicates no sites of concern.

EDR cluster C, map 8, except C9, includes the **Malibu Vineyards** sites described in Section 3.7.1.1.

EDR ID C9; On November 9, 2005, the Kern County Fire Department responded to a UPRR incident located west of Highway 99 (tracks are 226 feet west of west project property line) when the front trucks of the lead locomotive of a work train left the tracks. No release was reported.

EDR C13, C26, C27 & C143 are for storm water construction permits issued by the State Water Board per General Order 2009-0009-DWQ via SMARTS as follows:

Storm Water Construction Permits per G.O. 2009-0009-DWQ				
EDR ID	**Permittee / Project Description**	**WDID**	**Notice of Intent Notice of Termination Estimated Completion**	**Status**
13	NKWSD RSP Pipeline, 2.9 miles from SE corner Ph 2 west to NKWSD RSP's	5F15C373932 (LUP)	September 4, 2015 February 19, 2016	Completed

26	Lennar Fresno, Inc. Gossamer Grove Tract 7332, (194.93 acres, centered 0.5 mil SW of Ph 1))	5F15C384441	August 29, 2018 - February 12, 2024	Active
27	Lennar Fresno, Inc. Gossamer Grove Tracts 7314 & 7319 (71.85 acres, centered 0.5 mil S of Ph 1)	5F15C382546	February 21, 2018 - November 10, 2021	Active
143	Lennar Fresno, Inc. Gossamer Grove Tract 7315 (11.48 acres, centered 0.9 mil SW of Ph 1)	5F15C378438	December 5, 2016 November 20, 2019	Completed

EDR Item 24, **Tower Exploration, LLC Well Lerdo 2**, (ownership was transferred to Freedom Oil Company, LLC July 27, 2015) is a water disposal well monitored by CalGem with its Underground Injection Control (UIC) program for the disposal of excess produced fluids from oil production operations of three adjacent oil producing wells and small tank farm located within a drilling island at the west boundary of Lennar Tract 7319 (EDR item 27). Refer to Figures D-1 & D-3 for CalGem location mapping. On October 30, 2015, the State Water Board requested injection zone aquifer quality data from Freedom as the Rosedale Ranch field may not have been an exempt exemption pursuant to the Safe Drinking Water Act. Freedom's consultant prepared a work plan to demonstrate the water quality and obtained a water sample indicating the TDS was at 21,800 ppm, much greater than the 10,000 ppm maximum allowed to be considered as possible drinking water. DOGGR (CalGem) confirmed to the SWB the determination of the aquifer, and the SWB approved continuing injection of excess produced water. As recently as June 27, 2019, Freedom performed the required Mechanical Integrity Tests to verify that injection fluid is confined to the approved Chanac Zone, top of perforated zone at 3766' bgs, and CalGEM approved the results July 2, 2019. This operation will not have a negative effect upon the proposed project

EDR Item 28, **Caulay Pit**, is a past producing sand and gravel pit located approximately 0.5 miles north of Seventh Standard Road, east of Calloway Drive in at the center of Sec. 31, T28S/R27E MDB&M, approximately 0.5 miles southwest of Phase 1. The Cauley Pit is not visible as the Caulay Pit was located where Lennar is developing its Gossamer Grove community in the vicinity of Tracts 7314 & 7319 (EDR ID 27) and near the site of the Tower Exploration, LLC production and injection/disposal facility (EDR 24).

3.7.9 EDR Map 9

EDR Map 9 includes numerous sites within an existing industrial park located primarily southeast of Phase 1, generally northeast of Saco Road, west of Columbo Street, north of Lencioni Avenue and west of Quinn Road. The following descriptions will be presented for each cluster if more than one site is located at one location.

EDR **cluster D**, D15-D17 & D18-D23 include **Downs Equipment Rentals, Inc., and** D18 for **Russ Allen, Agricultural Equipment**, are located at 4800 Saco Road, whereas D25 for **Gray Lift, Inc.**

reported as located at 4806 Saco Road, but actually located at 4608 Saco Road will be included in cluster F.

D25, **Russ Allen, Agricultural Equipment** is noted as having an active UST at the address. Neither the California Regulated Site Portal nor the Geo-Tracker UST databases indicate a UST is currently or was previously located at this site.

Downs Equipment Rentals, Inc., a construction equipment rental company, located at 4800 Saco Road, is located approximately 2,100 feet south of Imperial Street with 3,300 feet of frontage on Saco Road.

According to SJVAPCD, the latest air emissions reporting indicated 0.5853 tons of Total Organic Hydrocarbon Gases, 0.5666 tons of Reactive Organic Gases and 0.4993 tons of Particulate Matter of which 0.4557 tons were PM_{10} were released in 2017.

The facility has no RCRA violations since 2017 (EPA ID: CAL000170111). Facility is considered as RCRA-Non Generator and is no longer regulated as an EPA hazardous waste generator.

Currently, AST's with a combined capacity of 3,400 gallons are located on the facility. The AST facility has a submitted and approved SPCC plan as of June 2, 2016.

During a routine CUPA inspection of March 16, 2016, the facility was determined to be a large quantity Hazardous Waste Generator. Downs Equipment Rental prepared a contingency plan with emergency procedures to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water. The plan was submitted and subsequently approved June 2, 2016. The facility was also required to have a hazardous waste tank system assessment prepared by a professional engineer, the assessment was submitted and subsequently approved July 15, 2016.

Downs Equipment Rental, Inc. is also a regulated Hazardous Waste Transporter, with eleven manifested wastes, including 3,140 pounds and 55 gallons, transferred in 2017 to the Bakersfield Transfer, Inc./Coles Environmental facility (non-RCRA Hazardous Waste facility for hazardous waste storage, treatment and transfer) located at 1620 East Brundage Lane.

Kern County Environmental Health Services Department performed a routine Hazardous Material Business Plan Inventory Inspection, Aboveground Petroleum Storage, and Large Quantity Hazardous Waste Generator on May 1, 2019 for Downs Equipment Rental (CERS ID 10234726). During the routine Compliance Evaluation Inspection of the property the following violation(s) were observed. All noted violations were mitigated within the allowed compliance period.

Downs Equipment Rentals, Inc. (CERS Site ID: 10234726) Hazardous Materials Release Response Program (HMRRP) Inspection Violations	
Inspection Date	**Violation / Corrective Action Required**
2019-05-01	Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities. Obs.: Some of the hazardous materials/hazardous waste observed on site are not properly reported and/or incorrectly reported to California Environmental Reporting System (CERS). Please make the following corrections to the Hazardous Materials Inventory: 1) LEAD ACID BATTERIES - missing "Largest Container Size"; 2) MOTOR OIL - update "Maximum Daily Amount" = 860 gallons; and, 3) All inventory items will need to be updated by unchecking all Obsolete Federal Hazard Categories and checking the appropriate new Federal Hazard Categories. Information is in Section 2 of the updated Safety Data Sheets (SDS). Corr. Action: Properly and correctly update these hazardous materials/waste mentioned above in California Environmental Reporting System (CERS). Resubmit with all other elements once all corrections have been made within 30 days. Returned to compliance on 05/14/2019.
	Failure to annually review and electronically certify that the business plan is complete and accurate on or before the annual due date. Observation: Review of California Environmental Reporting System (CERS) indicates that the last submittal of the Hazardous Materials Inventory was done on June 2, 2016. The facility failed to annually review and electronically certify that the Hazardous Materials Business Plan (HMBP) was complete and accurate on or before June 1, 2017. Corrective Action: Immediately review the CERS and electronically certify that the Hazardous Materials Business Plan (HMBP) is complete and accurate. Returned to compliance on 05/14/2019.
Hazardous Waste Generator (HW) Inspection Violations	
Inspection Date	**Violation / Corrective Action Required**
2019-05-01	Failure to manage empty containers greater than 5 gallons in capacity that previously held a hazardous material/waste in accordance with 22 CCR 11 66261.7 including but not limited to the following: (e)(2)By reclaiming its scrap value onsite or shipping the container or inner liner to a person who reclaims its scrap value; or (3) By reconditioning or re manufacturing the container or inner liner onsite for subsequent reuse, or shipping the container or inner liner to a person who reconditions or re-manufactures the container or inner liner; or (4) By shipping the container or inner liner to a supplier or to another intermediate collection location for accumulation prior to managing the container or inner liner pursuant to subsections (e)(2) or (e)(3) of 22 CCR 11 66261.7; or (i) By shipping the container or inner liner back to the supplier for the purpose of being refilled. (f) A container or an inner liner removed from a container larger than five gallons in capacity which is managed pursuant to subsection (e) of 22 CCR 11

	66261.7 shall be marked with the date it has been emptied and shall be managed within one year of being emptied. Obs.: Empty containers/tanks greater than 5 gallons were observed in different locations of the property. These containers/tanks were not marked with the word 'EMPTY' or 'OUT OF SERVICE' with date emptied. Corr. Action: Mark all empty containers/tanks identified at the time of inspection with the word, 'EMPTY' or 'OUT OF SERVICE' with date emptied. Properly manage all empty containers within one year from the date emptied. Send pictures to me as evidence that all empty containers have been marked 'EMPTY' or 'OUT OF SERVICE' with date emptied. Returned to compliance on 05/14/2019.

No violations for APSA were observed.

An updated Hazardous Materials Business Plan Inventory (CERS ID 10234726) was provided to Kern County Environmental Health Services Department on June 2, 2016 via CERS for permitted inventory on the property as follows.

Downs Equipment Rentals, Inc. (CERS Site ID: 10234726)
Hazardous Materials Business Plan Inventory – 6/2/2016

Chemical Name	Max Daily Amount / Unit	Avg Daily Amount / Unit	Days Onsite	Physical State(s)
ACETONE	60-119 Gallons	60-119 Gallons	365	Liquid, Pure
Acetylene	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
ANTIFREEZE RED	60-119 Gallons	12-59 Gallons	365	Liquid, Mix
Argon, Carbon Dioxide	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Mix
Argon, Liquid	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
AW46 HYDRAULIC OIL *	600-1199 Gallons	120-599 Gallons	365	Liquid, Mix
Cyclopropanedicarboxylic Acid (1,1-)	120-599 Gallons	120-599 Gallons	365	Liquid, Pure
Diesel Fuel *	600-1199 Gallons	120-599 Gallons	365	Liquid, Pure
Drained Used Oil Filters	1000-4999 Pounds	500-999 Pounds	365	Solid
Ethylene Glycol	60-119 Gallons	12-59 Gallons	365	Liquid, Pure
Ethylene Glycol	12-59 Gallons	0-11 Gallons	365	Liquid
GEAR OIL *	120-599 Gallons	120-599 Gallons	365	Liquid, Mix
LEAD ACID BATTERIES	12-59 Gallons	12-59 Gallons	365	Liquid, Mix
MOTOR OIL 15-40 WT	120-599 Gallons	120-599 Gallons	365	Liquid, Mix
Nitrogen Oxides	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
Non-RCRA Hazardous Waste Liquid (Waste Oil) *	600-1199 Gallons	120-599 Gallons	365	Liquid
Oxygen Difluoride	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
Propylene	0-99 Pounds	0-99 Pounds	365	Gas, Pure
SOAP WHEEL CLEAN	12-59 Gallons	12-59 Gallons	365	Liquid, Mix
SPECIAL LUBE OILS *	1200-2999 Gallons	600-1199 Gallons	365	Liquid, Mix
Urea	60-119 Gallons	60-119 Gallons	365	Liquid, Pure

**Aboveground Storage Tank (AST)*

EDR **cluster E**, including E30, **Bradford and Sons Construction.**, and E31 & E32, **Davies Used Equipment Company,** are/were located at 4618 Saco Road, located 0.65 miles SE of Phase 1. Ag Spray Equipment has operated from this location since approximately November 2014.

E31 reports that Davies has/had one UST. Neither the California Regulated Site Portal nor the Geo-Tracker UST databases indicate a UST is currently or was previously located at this site. E32 reports that 900 gallons (3.42 tons) of waste oil and mixed oil was transported (manifested) off-site May 10, 1995. Per aerial imagery, Davies closed operations between October 2009 and April 2011, and remained vacant until July 2014. The 5.17 acre parcel was transferred to the Davies Revocable Living Trust April 1, 2014.

E30, Bradford & Sons Construction, owned by JABRACO, Inc., an excavation and septic system contractor and a home remodel/repair company, was reported to operate at 4618 Saco Road. EDR indicates the site has 13,000 gallons of APSA storage, but no records have been filed with CERS. Bradford & Sons Construction and JABRACO, Inc. are registered to operate out of an office at 13061 Rosedale Hwy, Suite G-218, Bakersfield.

Ag Spray Equipment currently (since November 2014) operates out the site. Ag Spray Equipment is a liquid application and fluid handling equipment manufacturing company offering sprayers, liquid fertilizer applicators, nurse tenders, storage trailers, as well as other brands of pumps, tanks and valves for the agricultural industry nationwide. Ag Spray Equipment obtained Kern County Building and Health permits for tenant improvements, septic system improvements and a ground mounted AC, with final inspection approved on November 19, 2014. Ag Spray Equipment has not required a CUPA inspection.

EDR **cluster F**, includes D25 for **Gray Lift, Inc.** reported as located at 4806 Saco Road, F34-F36, F39 for **East Bay Clarklift, Inc.** and F37-38 for **Gray Lift, Inc.** are located at 4608 Saco Road, approximately 0.7 miles SE of Phase 1. **Cromer Material Handling** (formerly Gray Lift) currently operates from the site offering forklifts and warehouse material handling systems.

Currently, a diesel AST with containment is located on the facility. The facility has a submitted and approved SPCC plan as of August 5, 2015. There have not been any APSA violations since compliance with the May 15, 2015 CUPA inspection was completed.

The facility has no RCRA violations since 2017 (EPA ID: CAL000419767). Facility is considered as RCRA-Non Generator and is no longer regulated as an EPA hazardous waste generator.

East Bay Clarklift, Inc. is a registered Waste Tire Hauler, and does not accept tires from the public.

Kern County Environmental Health Services Department performed a routine Hazardous Material Business Plan Inventory Inspection, Aboveground Petroleum Storage and Hazardous

Waste Generator Inspection on May 23, 2018 for East Bay Clarklift dba Gray Lift (CERS ID: 10230880). During the routine Compliance Evaluation Inspection of the property, the following violation was observed. All noted violations were mitigated within the allowed compliance period.

East Bay Clarklift dba Gray Lift (CERS Site ID: 10230880) Hazardous Waste Generator (HWG) Inspection Violations	
Inspection Date	**Violation / Corrective Action Required**
2018-05-23	Failure to obtain an Identification Number prior to treating, storing, disposing of, transporting or offering for transportation any hazardous waste. Obs.: Review of Department of Toxic Substance Control (DTSC) website indicates that the EPA number, CAL000419767, submitted to California Environmental Reporting System (CERS) website is INACTIVE. Corr. Action: Provide current and active EPA number. Update the facility business activity page in CERS to reflect ACTIVE EPA ID number. Returned to compliance on 10/08/2018.

No violations for APSA, HMRRP were observed.

An updated Hazardous Materials Business Inventory (CERS ID 10230880) was provided to Kern County Environmental Health Services Department on June 5, 2018 via CERS for permitted inventory on the property as follows.

East Bay Clarklift dba Gray Lift (CERS Site ID: 10230880) Hazardous Materials Business Plan Inventory – 6/5/2018				
Chemical Name	**Max Daily Amount / Unit**	**Avg Daily Amount / Unit**	**Days Onsite**	**Physical State(s)**
Acetylene	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
Carbon Dioxide/Argon Mixture	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Mix
Dextron II Transmission oil	60-119 Gallons	12-59 Gallons	0	Liquid
Diesel Fuel *	600-1199 Gallons	120-599 Gallons	365	Liquid, Mix
HYDRAULIC OIL *	60-119 Gallons	12-59 Gallons	365	Liquid, Mix
Motor Oil	120-599 Gallons	120-599 Gallons	365	Liquid, Mix
Non-RCRA Hazardous Waste Liquid (Waste Oil)	120-599 Gallons	120-599 Gallons	365	Liquid
Oxygen Difluoride	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
Propane	600-1199 Gallons	120-599 Gallons	365	Liquid, Pure
USED ANTIFREEZE/COOLANT	12-59 Gallons	12-59 Gallons	365	Liquid
USED OIL FILTERS MIXTURE	100-499 Pounds	0-99 Pounds	365	Solid

**Aboveground Storage Tank (AST)*

EDR **cluster G**, including G41-42, **Grana Enterprises, Inc. (JPS & Co Transportation)**, a U.S. Mail carrier headquartered in Palmdale, Ca, and G43-44, **Francia Trucking,** a U.S. Mail carrier headquartered in Ontario, Ca, are trucking operations located at 3149 Petrol Road, located 0.8 miles SE of Phase 1.

The facility has no RCRA violations since 2017 (EPA ID: CAL000444355). Facility is considered as RCRA-Non Generator and is no longer regulated as an EPA hazardous waste generator.

Permanent structures are not on the property, a non-ADA compliant commercial coach and tent structures are.

EDR **cluster H**, including H45, **T M CompostingNA Inc.** and H46, **T M Transportation, Inc.,** are trucking operations located at 3322 Saco Road, are trucking operations located 0.8 miles SE of Phase 1. CERS ID 10232560 is associated with H46 as: RMP Reporter and Hazardous Waste Program, no data is provided.

EDR **cluster I**, including I47, **AmeriGas/Coast Gas - Endes** and I48, **Coast Gas,** is an LPG (propane) distributor located at 19428 Endes St, Bakersfield, approximately 0.8 miles SE of Phase 1.

Kern County Environmental Health Services Department performed a routine Hazardous Material Business Plan Inventory Inspection on February 20, 2019 for AmeriGas/Coast - Endes (CERS ID: 10231729). During the routine Compliance Evaluation Inspection of the property, no violations were observed.

An updated Hazardous Materials Business Plan Inventory (CERS ID 10231729) was provided to Kern County Environmental Health Services Department on January 8, 2019 via CERS for permitted inventory on the property as follows.

AmeriGas/Coast - Endes (CERS Site ID: 10231729) Hazardous Materials Business Plan Inventory – 1/8/2019				
Chemical Name	**Max Daily Amount / Unit**	**Avg Daily Amount / Unit**	**Days Onsite**	**Physical State(s)**
Liquified Petroleum Gas	12000-59999 Gallons	12000-59999 Gallons	365	Liquid, Pure

EDR **cluster J**, including J49-J55, **Gilliam and Sons, Inc., (Yard)** is a grading and general contractor with an equipment yard located at 19420 Endes St, Bakersfield, approximately 0.8 miles SE of Phase 1.

The facility has no RCRA violations since 2017 (EPA ID: CAL000346727). Facility is considered as RCRA-Non Generator and is no longer regulated as an EPA hazardous waste generator.

Currently, AST's with a combined capacity of 12,800 gallons (EDR J52) are reported to be located on the facility. Up until 2012, 4 AST's inside walled containments were on the facility. Currently there are two AST's within the same containment, approximately 3,450 gal clear diesel and 300 gal red diesel. The AST facility had a submitted and approved SPCC plan as of

May 2, 2016. The SPCC plan was not available for review during the April 15, 2019 CUPA inspection as noted below.

Kern County Environmental Health Services Department performed a routine Hazardous Material Business Plan Inventory, Aboveground Petroleum Storage and Hazardous Waste Generator Inspections on April 15, 2019 for Gilliam & Sons, Inc. (Yard) (CERS ID 10234222). During the routine Compliance Evaluation Inspection of the property the following violation(s) were observed. Three of the inspection violations have not been satisfactory mitigated. One violations was mitigated within the allowed compliance period.

Gilliam & Sons, Inc. (Yard) (CERS Site ID: 10234222) Aboveground Petroleum Storage (APSA) Inspection Violation	
Inspection Date	**Violation / Corrective Action Required**
2019-04-15	Failure to prepare a Spill Prevention, Control, and Countermeasures (SPCC) Plan. Obs.: Spill Prevention Control and Counter-measure (SPCC) plan was not available for review at the time of inspection. Corr. Action: Provide Tier I Qualified Facility SPCC plan for review. Email or fax the SPCC plan to Kern County Environmental Health Division. Attn: Christian Iwuchukwu (Email: iwuchukwuc@kerncounty.com; Fax: 661-862-8701). Facility has NOT been returned to compliance.
Hazardous Materials Release Response Plans (HMRRP) Inspection Violation	
Inspection Date	**Violation / Corrective Action Required**
2019-04-15	Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities. Obs.: Some of the hazardous materials/hazardous waste observed on site are not properly reported and/or incorrectly reported to California Environmental Reporting System (CERS). Please make the following corrections to the Hazardous Materials Inventory: 1) Automatic Transmission Fluid - update "Average Daily Amount" = 30 gallons; 2) Moly Grease - update "Maximum Daily Amount" = 1200 pounds, "Average Daily Amount" = 600 pounds, "Largest Container Size" = 400 pounds, and change "Unit of Measurement" from Gallons to Pounds; 3) Engine Oil - update "Average Daily Amount" = 375 gallons; 4) WASTE OIL FILTERS - update "Maximum Daily Amount" = 1750 pounds, "Average Daily Amount" = 875 pounds, "Largest Container Size" = 350 pounds, "Annual Waste Amount" 1400 pounds, "Waste Code" = 223, and change "Unit of Measurement" from Gallons to Pounds; 5) OILY SOLID DEBRIS - update "Maximum Daily Amount" = 400 pounds, "Average Daily Amount" = 200 pounds, "Largest Container Size" = 400 pounds. Returned to compliance on 05/15/2019.
Hazardous Waste Generator (HWG) Inspection Violations	
Inspection Date	**Violation / Corrective Action Required**
2019-04-15	Failure to properly label hazardous waste accumulation containers and portable tanks with the following requirements: "Hazardous Waste", name and

	address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date. Obs.: Two 55-gallon waste oil drums were observed not labeled according to hazardous waste regulation such as "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and accumulation start date. Corr. Action: Properly label all hazardous waste containers according to hazardous waste regulation. Provide these information on all the containers used in storing hazardous waste: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and accumulation start date. Take photos of properly labeled containers and send photos to Kern County Environmental Health Division. Attn: Christian Iwuchukwu (Email: iwuchukwuc@kerncounty.com; fax: 661-862-8701). Facility has NOT been returned to compliance.
	Failure to manage empty containers greater than 5 gallons in capacity that previously held a hazardous material/waste in accordance with 22 CCR 11 66261.7 including but not limited to the following: (e)(2)By reclaiming its scrap value onsite or shipping the container or inner liner to a person who reclaims its scrap value; or (3) By reconditioning or re manufacturing the container or inner liner onsite for subsequent reuse, or shipping the container or inner liner to a person who reconditions or re-manufactures the container or inner liner; or (4) By shipping the container or inner liner to a supplier or to another intermediate collection location for accumulation prior to managing the container or inner liner pursuant to subsections (e)(2) or (e)(3) of 22 CCR 11 66261.7; or (i) By shipping the container or inner liner back to the supplier for the purpose of being refilled. (f) A container or an inner liner removed from a container larger than five gallons in capacity which is managed pursuant to subsection (e) of 22 CCR 11 66261.7 shall be marked with the date it has been emptied and shall be managed within one year of being emptied. Obs.: Empty containers greater than 5 gallons were observed. The empty containers were not marked with the word "EMPTY" or "OUT OF SERVICE" and date emptied. Empty containers were not managed within the time limit of one year from the date emptied. Corr. Action: Mark all empty containers identified at the time of inspection with the word 'EMPTY' or 'OUT OF SERVICE' and date emptied. Manage the empty containers within one year from the date emptied. Send photos of properly marked empty containers around the facility to Kern County Environmental Health Division. Attn: Christian Iwuchukwu (Email: iwuchukwuc@kerncounty.com; fax: 661-862-8701). Facility has NOT been returned to compliance.

An updated Hazardous Materials Business Plan Inventory (CERS ID 10234222) was provided to Kern County Environmental Health Services Department on November 14, 2018 via CERS for permitted inventory on the property as follows.

Gilliam & Sons, Inc. (Yard) (CERS Site ID: 10234222) Hazardous Materials Business Plan Inventory – 11/14/2018				
Chemical Name	**Max Daily Amount / Unit**	**Avg Daily Amount / Unit**	**Days Onsite**	**Physical State(s)**
Chevron Moly Grease EP 1,2	12-59 Gallons	12-59 Gallons	365	Solid, Mix
Diesel Exhaust Fluid	120-599 Gallons	60-119 Gallons	365	Liquid, Pure
Diesel Fuel - Clear *	3000-5999 Gallons	3000-5999 Gallons	365	Liquid, Pure
Diesel Fuel-Red *	120-599 Gallons	12-59 Gallons	365	Liquid, Pure
Havoline Full Synthetic Multi-Vehicle ATF	12-59 Gallons	0-11 Gallons	365	Liquid, Mix
MOBIL DELVAC 1300 SUPER 15W-40	600-1199 Gallons	60-119 Gallons	365	Liquid, Mix
Non-RCRA Hazardous Waste Liquid (Waste Oil)	120-599 Gallons	120-599 Gallons	365	Liquid
OILY SOLID DEBRIS	12-59 Gallons	0-11 Gallons	365	Solid, Mix
WASTE OIL FILTERS	60-119 Gallons	60-119 Gallons	365	Solid

**Aboveground Storage Tank (AST)*

EDR **cluster L**, located at 3143 Petrol Road, Bakersfield, is approximately 0.85 miles SE of Phase 1, including:

L62, **West Coast Construction and Mechanical**, L63, **COS Petroleum**,
L64 & L71, **TS Transportation, Inc.**, (U.S. Mail carrier)
L65, **GIC Corporation** USDOT 1136836 2055 McKee Rd and L68, **G.I.C. Transport**,
L66, **Dale Dwight Trucking** and L70, **Dale Dwight**,
L67, **Liberty Logistics, Inc.** and L72, **Liberty Logistics**,
L69, **Veto Transportation**,
G41, **JPS & Co Transportation**, (U.S. Mail carrier) also parks trucks here per Google Earth, May 2019.
M80, CHMIRS Orphan incident

The 1.74 acre facility at 3143 Petrol Road was developed in 1987 by Dale Dwight in an M-2 zone for trucking company operations including truck service and repair. Site has two permitted buildings totaling 5,794 sf. An approximate 10,000 gallon AST within walled containment is located in the southwest corner of the facility, and has been on the site since before 1994, but is presumed out of service as there are not CERS data for it.

West Coast Construction and Mechanical is a general engineering contractor that provides construction and maintenance services to the oil and gas industry. It is currently located at 5400 Rosedale Highway, Bakersfield. At this site, West Coast was a HW transporter and in the Used Oil program.

West Coast has no RCRA violations since 2017 (EPA ID: CAR000248104). Facility is considered as RCRA-Non Generator and is no longer regulated as an EPA hazardous waste generator.

On June 12, 2012, **COS Petroleum** prepared HW manifest 009714821JJK for 1.5 tons of contaminated soil from site cleanup. HW was transported by CVC Environmental, Inc. to World Oil Recycling in Compton, CA for sludge treatment and/or dewatering processing, received on June 15, 2012. Note: Per address on manifest, shipper was actually **Cox Petroleum Transport**, located at 7641 Edison Highway. Per US EPA, Cox is registered as H.F. Cox Inc., Petroleum Transport as a SQG, and has no violations in the past 3 years.

TS Transportation, Inc., a U.S. Mail carrier headquartered in Lancaster, Ca, is registered at the site with the US EPA as "Other Miscellaneous Waste Manage Services; Repair Shops and Related Services, Not Otherwise Classified." TS Transportation, Inc. has no RCRA violations since 2017 (EPA ID: CAR000248104). Facility is considered as RCRA-Non Generator and is no longer regulated as an EPA hazardous waste generator.

On May 15, 2013, **GIC Corporation** (USDOT 1136836, 2055 McKee Rd) prepared HW manifest 006487675FLE for 42.48 tons (36cy) of contaminated soil from site cleanup. HW was transported by Coles Environmental, Inc. to Hazmat TSDF, Inc., Formerly Recycle Filter Recycling Services, Inc. in Rialto, CA for Storage, bulking, and/or transfer off-site with no treatment/recycling, received on May 16, 2013.

G.I.C. Transport has US EPA FRS #: 110065530303 with no activity or information recorded.

On September 12, 2013, **Dale Dwight Trucking** prepared HW manifest 011813027JJK for 5.004 tons (1,200 gallons) of unspecified oil-containing waste. HW was transported by West Coast Environmental Solutions, Inc. to Bakersfield Transfer, Inc. in Bakersfield for storage, bulking, and/or transfer off-site with no treatment/recycling, received on September 12, 2013.

In 2005, **Dale Dwight** had two manifested HW loads, including 4.17 tons (1,000 gallons) oil/water separation sludge, and 0.165 tons (50 gallons) off specification, aged or surplus organics.

Liberty Logistics, Inc. is the transportation operating group for Liberty Compost (land disposal facility, formerly San Joaquin Composting) located at 12421 Holloway Road near Lost Hills, Ca. Liberty maintains its own full-service repair facility for the complete maintenance/repair of its transportation fleet (http://www.libertyrecyc.com).

On July 19, 2006, 1,900 gallons of oil/water separator sludge was manifested and transported to Filter Recycling Services. In 2007, 10 gallons of hydrocarbon solvents were manifested and transported to Safety-Kleen Systems, Inc. In 2008, 95 gallons of hydrocarbon solvents were manifested and transported to Safety-Kleen Systems, Inc.

Liberty Logistics is reported as the owner of 11,700 gallons of aggregate AST capacity at 3143 Petrol Rd. As mentioned above, these tanks are not reported in CERS, and may be the diesel tanks at the composting facility in Lost Hills.

On November 28, 2005, **Veto Transportation**, manifested and transported 350 pounds of other organic solids to Filter Recycling Services.

Regarding site M80, on June 16, 1990, an agency of Cal OES responded to an incident at the southwest corner of Colombo St and Petrol Road at 8:30 am. Incident responder completed investigation at 10:45 a.m. A report was filed June 18, 1990 by J. Lehman. Incident is reported in the California Hazardous Material Incident Report System (CHMIRS), ID S100276347. No other data is available.

EDR **clusters M** & **Q**, located at 19400 & 19404 Colombo St, Bakersfield, is approximately 0.90 miles SE of Phase 1, including:

M76, **CMS Custom Spreading Inc. (E)**,
M80, CHMIRS Orphan incident,
M85 & M86, **Sequoia Equipment Company, Inc.,**
Q88-Q93, **Smith and Sons Ranch**

CMS Custom Spreading Inc. (E) at 19400 Colombo Street is a commercial pest control company with valid California Department of Pesticide Regulation (CDPR) Pest Control Business main (PCM) license 30066 occupying the west building of a two building industrial complex. Enforcement of the pesticide regulations in Kern County are the responsibility of the Kern County Agriculture Commissioner.

M80 is discussed in Cluster L above as the location was reported as the SW corner of Colombo St & Petrol Rd.

Sequoia Equipment Company, Inc., located at 19404 Colombo St, is a branch of a Fresno equipment rental company offering small earthmoving machinery. Sequoia Equipment Company, Inc. has no RCRA violations since 2017 (EPA ID: 110070421312). Facility is considered as RCRA-Non Generator and is no longer regulated as an EPA hazardous waste generator.

Smith and Sons Ranch, located in the east building at 19400 Colombo Street is a small family business that grows, processes and packages pistachios for sale under its own name. The main structure was constructed in 2010. A structural addition was added late 2013/early 2014.

According to SJVAPCD, the latest air emissions reporting indicated 0.01159 tons of Total Organic Hydrocarbon Gases, 0.0051 tons of Reactive Organic Gases, 0.0779 tons of Carbon

Monoxide, 0.077 tons of NOX, 0.002264 tons of SOX and 0.03816 tons of Particulate Matter of which 0.02883 tons were PM_{10} were released in 2017.

The facility has no RCRA violations since 2017 (EPA ID: 110066555267). Facility is considered as RCRA-Non Generator and is not regulated as an EPA hazardous waste generator.

Currently, an AST with a capacity of 1,500 gallons is located on the facility. The AST facility has a submitted and approved SPCC plan.

Kern County Environmental Health Services Department performed a routine Hazardous Material Business Plan Inventory Inspection, Aboveground Petroleum Storage and Hazardous Waste Generator Inspection on September 13, 2018 for Smith and Sons Ranch (CERS ID: 10231687). During the routine Compliance Evaluation Inspection of the property, the following violation was observed. All noted violations were mitigated within the allowed compliance period.

Smith and Sons Ranch (CERS Site ID: 10231687) Hazardous Materials Release Response Plans (HMRRP) Inspection Violation	
Inspection Date	**Violation / Corrective Action Required**
2018-09-13	Failure to annually review and electronically certify that the business plan is complete and accurate on or before the annual due date. Obs.: Review of California Environmental Reporting System (CERS) indicates that the last submittal of the Hazardous Materials Inventory was done on April 28, 2016. The facility failed to annually review and electronically certify that the Hazardous Materials Business Plan (HMBP) was complete and accurate on or before April 27, 2017. Violation was corrected on site. No further action is required. Corr. Action: Immediately review the CERS and electronically certify that the Hazardous Materials Business Plan (HMBP) is complete and accurate. Violation was corrected on site. No further action is required. Returned to compliance on 09/13/2018.

No violations for APSA or HWG were observed.

An updated Hazardous Materials Business Inventory (CERS ID 10231687) was provided to Kern County Environmental Health Services Department on September 14, 2018 via CERS for permitted inventory on the property as follows. All noted violation(s) were mitigated within the allowed compliance period.

Smith & Sons Ranch (CERS Site ID: 10231687) Hazardous Materials Business Plan Inventory – 9/14/2018				
Chemical Name	**Max Daily Amount / Unit**	**Avg Daily Amount / Unit**	**Days Onsite**	**Physical State(s)**
Acetylene	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
AQUEOUS ALKALINE	12-59 Gallons	12-59 Gallons	365	Liquid
ARGON/CARBON DIOXIDE MIX	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Mix

ARGON/CARBON DIOXIDE/HELIUM	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Mix
Diesel Exhaust Fluid	12-59 Gallons	12-59 Gallons	365	Liquid, Mix
DIESEL RED *	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Pure
Drained Used Oil Filters	100-499 Pounds	100-499 Pounds	365	Solid
HYDRAULIC OIL	120-599 Gallons	120-599 Gallons	365	Liquid, Pure
Motor Oil	120-599 Gallons	120-599 Gallons	365	Liquid, Pure
Non-RCRA Hazardous Waste Liquid (Waste Oil)	120-599 Gallons	120-599 Gallons	365	Liquid
OXYGEN	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
Power Mix 500	60-119 Gallons	12-59 Gallons	365	Liquid, Mix

**Aboveground Storage Tank (AST)*

EDR **cluster N**, including N77-N79, **JTS Truck Repair**, was located at 4300 Saco Road, approximately 0.90 miles SE of Phase 1. JTS Truck Repair was located at this site at least through October 2018. The site was vacant at least from May 2019 through September 2019. By February 2020, an RV trailer sales commenced operations at the site. JTS Truck Repair was noted in Section 3.4 as a HWG.

JTS Truck Repair is registered at the site with the US EPA as "Specialized Freight (except Used Goods) Trucking, Long-Distance." JTS Truck Repair has no RCRA violations since 2017 (EPA ID: CAL000276925). Facility is considered as RCRA-Non Generator and is not regulated as an EPA hazardous waste generator. There is no CERS data for this facility.

EDR **cluster O**, located at 19417 & 19421 Colombo St, Bakersfield, is approximately 0.90 miles SE of Phase 1, including:

O81 & O84, **Process Flow Technology**,
O82, unknown RCRA non-generator, **NOV**
O83, **NOV Process & Flow Technologies,**
O94, **National Water Works HDWW1770,**
O95, **Core & Main, LP 177,**
O96, **WTW Bakersfield,**
O97 & O98, **HD Supply Waterworks LTD WW1770,**

EDR O81-84, **Process Flow Technology (PFT)**, later renamed **NOV Process & Flow Technologies** at 19417 Colombo Street is an oilfield service company involved with downhole and surface production facilities equipment and services. NOV does not conduct business from this location anymore, the site is currently occupied by San Joaquin Construction Service, a residential and commercial roofing, solar, plumbing & general construction company.

PFT and later NOV PFT operated at the facility with an Industrial Storm Water Permit, WDID as per NPDES Order Number CA000001, General Permit for Storm Water Discharges Associated with Industrial Activities per California Order 97-03-DWQ, superseded July 1, 2015 with Order 2014-0057-DWQ. This permit allows indirect discharge to the Beardsley Canal. Facility has 6 discharge points, but were not used. NOV PFT has had one recent violation, a

non-compliance for failure to submit the required annual report by July 15, 2017 (EDR O81, 83 & 84). Annual report was filed November 13, 2017 The 2019-2020 annual report was filed October 29, 2019, further indicating NOV PFT does not operate from this site. A Notice of Termination has not been filed to date, but is required to terminate the permit and annual reporting requirements.

POV PFT reported manifested HW's generated at the facility from 2014-2017. The two 2017 shipments included: On July 11, 2017, Manifest 017148452JJK was prepared for 1,500 gallons Unspecified Oil-Containing Waste transported by Cole's Environmental to Bakersfield Transfer, Inc. On November 4, 2017, Manifest 017847445JJK was prepared for 300 gallons Unspecified Oil-Containing Waste transported by Cole's Environmental to Bakersfield Transfer, Inc.

POV PFT has no RCRA violations since 2017 (EPA ID: CAL000293199). Facility is considered as RCRA-Non Generator and is not regulated as an EPA hazardous waste generator (EDR O82).

Other than the above mentioned Industrial Storm Water Permit, this facility does not have reported CERS data for the HMPRP or HWG programs, nor a HMBP chemical inventory.

EDR 094-98, is a series of plastic pipe and fire protection products distributors located at 19421 Colombo Street, Bakersfield. Home Depot, USA Inc. operated as **National Water Works HDWW1770** and **HD Supply** from 2002 through 2007. HD Supply was sold by Home Depot in 2007, but continued with the name. The Waterworks division of HD supply was sold August 2017, and the name changed to **Core & Main**.

EDR O94, **National Water Works HDWW1770,** was a registered small quantity HWG in 2006 with one manifested load on March 17, 2006. O94 and O97-98 **HD Supply Waterworks LTD WW1770** both used the same EPA Generator ID: CAR000170787.

EDR O96, **WTW Bakersfield,** has no reported EPA Facility or compliance data associated with the provided ECHO/FRS ID: 110064978056.

EDR O95, **Core & Main, LP 177,** is the most recent commercial business registered at the facility.

Kern County Environmental Health Services Department performed a routine Hazardous Material Business Plan Inventory Inspection on September 13, 2018 for Core & Main, LP 177 (CERS ID: 10145897). During the routine Compliance Evaluation Inspection of the property, no violations were observed.

An updated Hazardous Materials Business Plan Inventory (CERS ID 10145897) was provided to Kern County Environmental Health Services Department on February 15, 2019 via CERS for permitted inventory on the property as follows.

Core & Main, LP 177 (CERS Site ID: 10145897) Hazardous Materials Business Plan Inventory – 2/15/2019				
Chemical Name	**Max Daily Amount / Unit**	**Avg Daily Amount / Unit**	**Days Onsite**	**Physical State(s)**
Propane	0-2599 Gallons	0-2599 Gallons	365	Gas, Pure

EDR Items P99 & 100, **Derrel's Mini Storage Facility 80**, is a commercial mini-storage facility being constructed on the north side of 7th Standard Road between Raymond Street and Pardon Court in Shafter, Ca and is located approximately 0.70-1.0 miles south of Phase 1. The 32.28 acre project obtained an NPDES construction storm water permit WDID 5F15C385055 as per General Order 2009-0009-DWQ from the State Water Board via Storm Water Multiple Application and Report Tracking System (SMARTS) October 29, 2018, with construction allowed April 1, 2018 through April 1, 2021. Site has on-site terminal drainage basin. The 2018-2019 Annual Report was field August 28, 2019. Project is active.

EDR Items R101 & 102, **Continental Grain Company**, an animal food processor, reported to be at Hwy 99 near 7th Standard Road is probably located at 34716 7th Standard Road, approximately 0.5 miles south of Phase 1. Continental Grain is entered into the EPA's Emission Inventory System (EIS) with NAISC Code 311119 for "Other Animal Food Manufacturing", with system ID's 422011 for "Hazardous air Pollutant Major" and 14378711 for "Air Emissions Classification Unknown", last updated March 6, 2019.

EDR Item R132, **1X, Stein, Harry**, is reported to be a HW shipment of 1.251 tons of unspecified oil-containing waste from 13000 Golden State Highway on December 1, 1990 by Richard Warner, a Fresno contractor, to Gibson Environmental. Actual location not known.

EDR **cluster S**, located at 19420 Colombo St, Bakersfield, is an automobile service center approximately 1.0 miles SE of Phase 1, including:

S103, **Springs A-Specialty**,
S104 & 106, **Chester Avenue Brake and Supply, LLC**,
S105, **Chester Ave Brake**

Springs A-Specialty is listed on EDR's Historical Auto List as a potential high risk past service station. EDR represents that the business was operating in 2002, along with EDR S104. EDR data indicates Springs A-Specialty and Chester Ave Brake are owned by the same person, and per Google Earth street view dated May 2019, Springs A-Specialty was still in business. Therefore this is not a historical business of concern.

Chester Avenue Brake and Supply LLC has no reported EPA regulatory enforcement or compliance information (EPA ID: 110066212734) but does submit the facility's CERS data.

Chester Ave Brake has no RCRA violations since 2017 (EPA ID: CAD981613425). Facility is considered as RCRA-Non Generator and is not regulated as an EPA hazardous waste generator.

Kern County Environmental Health Services Department performed a routine Hazardous Material Business Plan Inventory Inspection and Hazardous Waste Generator Inspection on September 14, 2018 for Chester Avenue Brake and Supply LLC (CERS ID: 10231195). During the routine Compliance Evaluation Inspection of the property, no violations were observed.

An updated Hazardous Materials Business Plan Inventory (CERS ID 10231195) was provided to Kern County Environmental Health Services Department on September 14, 2018 via CERS for permitted inventory on the property as follows.

Chester Avenue Brake and Supply LLC (CERS Site ID: 10231195) Hazardous Materials Business Plan Inventory – 9/14/2018				
Chemical Name	**Max Daily Amount / Unit**	**Avg Daily Amount / Unit**	**Days Onsite**	**Physical State(s)**
2-Butanone	12-59 Gallons	12-59 Gallons	365	Liquid, Pure
Acetylene	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
Argon/Carbon Dioxide Mix	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Mix
DEGREASER	12-59 Gallons	12-59 Gallons	365	Liquid, Mix
Ethylene Glycol	12-59 Gallons	12-59 Gallons	365	Liquid, Pure
Non-RCRA Hazardous Waste Liquid (Waste Oil)	60-119 Gallons	60-119 Gallons	365	Liquid
Oxygen	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
TEROSON SB A602B	12-59 Gallons	12-59 Gallons	365	Liquid, Mix
USED OIL FILTER	100-499 Pounds	100-499 Pounds	365	Solid

EDR **cluster T**, located at 4252 Saco Road, Bakersfield, is a John Deere construction equipment dealer located approximately 0.95 miles SE of Phase 1, including:

T108, T110-112, **Coastline Equipment**,
T109 & T113, **Lougee-Michael Equipment,**

EDR T109 & T113 report that an UST was installed at the facility for **Lougee-Michael Equipment** prior to June 1994. On June 1, 1988, the SWRCB reported that the following UST was located at 4252 "Golden State Highway": Tank 1, 5,000 gallons motor vehicle diesel installed February 1982. A KCEHS permit to operate the UST was filed March 13, 1985, approved July 16, 1986. The UST was removed from service April 1992 by the owner after a January 16, 1992 KCEHS facility inspection identified facility integrity concerns. Lougee-Michael Equipment filed for a KCEHS permit to remove the UST November 5, 1992, approved November 9, 1992. 1,000 gallons of non-RCRA hazardous waste liquid were manifested to Gibson Oil & Refining November 17, 1992. The UST was removed by Bay City Crane & Rigging

and disposed at Golden State Metals of Bakersfield on November 18, 1992. Adjacent soils were sampled for testing November 18, 1992, tested and determined to be non-contaminated November 19, 23 & 24, 1992. KCEHS approved closure of the removal of the UST February 2, 1993 with Permit #: A1795-39/390006.

Lougee-Michael Equipment has no RCRA violations since 2017 (EPA ID: CAD983645102). Facility is considered as RCRA-Non Generator and is not regulated as an EPA hazardous waste generator. Both Lougee-Michael & Coastline Equipment have utilized CAD983645102 for reporting.

Coastline Equipment reported manifested HW shipments in 1992 and 1994-2018, including oil/water separation sludge, unspecified oil-containing waste, unspecified organic liquid mixture, and other organic solids. Facility is considered as RCRA-Non Generator and is not regulated as an EPA hazardous waste generator.

AST(s) with an aggregate capacity of 2,600 gallons are located on the facility. The AST facility has a submitted and approved SPCC plan as of January 1, 2020.

Kern County Environmental Health Services Department has not performed a routine Hazardous Material Business Plan Inventory Inspection, Aboveground Petroleum Storage and Hazardous Waste Generator Inspection for Coastline Equipment-Bakersfield (CERS ID: 10754977) as the CERS registration was performed January 26, 2018 with data update submittal April 17, 2020. Per KCEHS, a routine Compliance Evaluation Inspection is due in 2020.

An updated Hazardous Materials Business Inventory (CERS ID 10754977) was provided to Kern County Environmental Health Services Department on April 17, 2020 via CERS for permitted inventory on the property as follows.

Coastline Equipment - Bakersfield (CERS Site ID: 10754977) Hazardous Materials Business Plan Inventory – 4/17/2020				
Chemical Name	**Max Daily Amount / Unit**	**Avg Daily Amount / Unit**	**Days Onsite**	**Physical State(s)**
Acetylene	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
Argon Carbon Dioxide Mix	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Mix
Diesel *	600-1199 Gallons	600-1199 Gallons	365	Liquid, Pure
Ethylene Glycol	120-599 Gallons	120-599 Gallons	365	Liquid, Pure
Helium	2600-12999 Cubic Feet	2600-12999 Cubic Feet	365	Gas, Pure
Lead Acid Batteries	12-59 Gallons	12-59 Gallons	365	Liquid, Mix
Liquefied Petroleum Gases	120-599 Gallons	120-599 Gallons	365	Liquid, Pure
Motor Oil	1200-2999 Gallons	1200-2999 Gallons	365	Liquid, Mix
Nitrogen	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
Oxygen	2600-12999 Cubic Feet	2600-12999 Cubic Feet	365	Gas, Pure
Urea	120-599 Gallons	120-599 Gallons	365	Liquid, Mix

Used Antifreeze	12-59 Gallons	12-59 Gallons	365	Liquid
Used Lead Acid Batteries	0-11 Gallons	0-11 Gallons	365	Liquid, Mix
Used Oil *	120-599 Gallons	120-599 Gallons	365	Liquid
Used Oil Filters (Drained)	1000-4999 Pounds	100-499 Pounds	365	Solid, Mix

**Aboveground Storage Tank (AST)*

EDR **cluster U**, located at 19433 Colombo Street, Bakersfield, is approximately 0.95 miles SE of Phase 1, is the site for the oilfield service companies under Baker Hughes Oilfield Operations, Inc., which commenced operations at the site August 1994 as BJ Chemical Services, ownership changed to Baker Hughes in June 2011, including:

U114, **BJ Chemical Services**,
U115, **BJ Chemical Services Co**,
U116 & U125, **Bakersfield Upstream Chemicals**,
U117, **BJ Unichem Chemical Services**,
U118, **Baker Petrolite LLC**,
U119, **Baker Hughes**,
U120, **Baker Hughes Oilfield Operations, Inc.**, HazNet 2012
U121, **Western Unichem**,
U122, **Baker Hughes**,
U123 & U 126, **Baker Petrolite**,
U124, **BJ Services Co., U.S.A.**,
U127, **Pall Well Technology**, inactive at this site,
U128, **Unichem, a Division of BJ Services Co., U.S.A.**,
U129, **BJ Chemical Services**,
U130, **BJ Unichem Chemical**,

Baker Petrolite LLC operates at the facility with an Industrial Storm Water Permit, WDID 5F15I023925 as per NPDES Order Number CA000001, General Permit for Storm Water Discharges Associated with Industrial Activities per California Order 2014-0057-DWQ. This permit allows indirect discharge to the "Kern River and various canals of the Tulare Lake Basin". Facility has 1 discharge point, a 3" valved pipe located at the east parking area curb discharging to Colombo St. **BJ Chemical Services** had one release of approximately 2 gallons of a flammable material on February 8, 1999, there have been no releases in the pasts five years. The facility monitors water quality for each qualifying rain event at two sample points. The 2019-2020 Annual Report was filed July 1, 2020 reporting three qualifying events.

EDR U129 indicates APSA AST's with an aggregate capacity of 28,845 gallons are located on the facility. The June 29, 2015 SWPPP filed for the Industrial SW permit indicates that there were 7-4,000 gallon & 1-2,500 gallon tanks on the facility within walled containment. Current aerial imagery indicates 8 larger tanks and 1 smaller tank. Most of the tanks contain corrosion inhibitors, stimulation fluid, demulsifiers, or asphaltene dispersant, which contain petroleum or oil products. The others contain non petroleum products including ammonium chloride. Pursuant to the most recent APSA inspection, the facility's CERS reporting is current. Other

chemicals stored on site are within totes (IBCs) with secondary containment or drums on pallets to allow easy inspection.

According to SJVAPCD, the latest air emissions reporting by **BJ Chemical Services Co.** indicated 0.87955 tons of Total Organic Hydrocarbon Gases, 0.61445 tons of Reactive Organic Gases were released in 2012 and 0.87965 tons of Total Organic Hydrocarbon Gases, 0.61453 tons of Reactive Organic Gases were released in 2013. In 2014, Baker Hughes reported release of 3.45 pounds of xylene though the National Emissions Inventory (NEI) program.

Hazardous waste is generated at the facility and manifested for disposal when required. Following are the annual quantities in tons generated by the various entities *(Refer to Appendix M for waste types):*

Western Unichem (Generator ID: CAL000129983) Hazardous Waste Generated – 1995 - 2004		
Year Shipped	**Manifested Load Count**	**Total Tons**
1995	1	6.58
1996	1	0.187
2003	2	1.3662
2004	1	0.68805

BJ Chemical Services Co. (Generator ID: CAL000130960) Hazardous Waste Generated – 1999 - 2014		
Year Shipped	**Manifested Load Count**	**Total Tons**
1999	10	48.1179
2000	2	3.2045
2001	10	6.973
2003	3	2.9375
2005	3	45.5112
2006	3	3.5785
2007	3	0.61485
2008	2	2.2203
2009	4	1.2914
2010	12	3.7278
2011	3	2.923
2012	1	0.8
2014	1	1.386

Pall Well Technology (Generator ID: CAL000040113) Hazardous Waste Generated – 2004 - 2014		
Year Shipped	**Manifested Load Count**	**Total Tons**
2004	1	0.42
2005	2	0.2856
2006	4	2.4466
2007	2	0.752
2014	1	0.19

Baker Hughes Oilfield Operation Inc. Bakersfield Upstream Chemicals (Generator ID: CAL000379080) Hazardous Waste Generated – 2012 - 2016		
Year Shipped	**Manifested Load Count**	**Total Tons**
2012	2	0.166
2014	1	1.26
2015	18	19.8356
2016	7	2.3746

The facility was originally classified as a SQG beginning 04-13-1995 (EDR U117), was reclassified to a LQG on 02-26-2004 (EDR U117) and continues to be a LQG per US EPA's Detailed Facility Report (EDR U125). **Bakersfield Upstream Chemicals/Baker Petrolite LLC** has no RCRA violations since 2017 (EPA ID: CAL000379080). Facility is not considered as RCRA-Non Generator and is regulated as an EPA hazardous waste generator.

Pesticides were produced by **Unichem, a Division of BJ Services Co., U.S.A.** from 2000-2006, and by **BJ Services Co., U.S.A.** from 2007-2009. Effective April 10, 2010, the facility is no longer listed on the Active EPA-Registered Foreign & Domestic Pesticide Producing Establishments. The closest pesticide manufacturers ares Suez WTS USA, Inc. located 2.5 miles SE of Phase 1 and Wilbur Ellis Company, LLC located 6.7 miles west of Phase 2. Baker Petrolite LLC does operate a pesticide facility at 5135 Boylan Street, Bakersfield, approximately 4.1 miles SE of Phase 2.

In addition to the above mentioned Industrial Storm Water Permit, this facility is inspected for CUPA compliance.

Kern County Environmental Health Services Department performed a routine Hazardous Material Business Plan Inventory Inspection, Aboveground Petroleum Storage and Hazardous Waste RCRA Large Quantity Generator Inspection on September 24, 2018 for **Baker Petrolite, LLC** (CERS ID: 10233049). During the routine Compliance Evaluation Inspection of the

property, the following violation was observed. All noted violations were mitigated within the allowed compliance period.

Baker Petrolite LLC (CERS Site ID: 10233049) Hazardous Materials Release Response Plans (HMRRP) Inspection Comments	
Inspection Date	**Comment / Corrective Action Required**
2018-09-24	1) Comments by regulator: The certification at the bottom of Business Owner/Operator Identification regarding Name/Title of Document Preparer/Signer needs to be completed. Resubmit with all other elements once all corrections have been made within 30 days. Christian Iwuchukwu – 661-862-8767 – iwuchukwuc@kerncounty.com 2) Comments by regulator: Please make the following corrections to the Hazardous Materials Inventory: add “Storage Pressure” and "Storage Temperature" to INDUSTRIAL BIOCIDE (XC320); add “Storage Pressure” to OILY RAGS ABSORBANT.; and, change "Storage Pressure" for CORROSION INHIBITOR (CRO8254U) from Above Ambient to Ambient. Resubmit with all other elements once all corrections have been made within 30 days. Christian Iwuchukwu – 661-862-8767 – iwuchukwuc@kerncounty.com. Returned to compliance on 09/26/2018.

No violations for APSA or HWG were observed.

Kern County Environmental Health Services Department performed routine Hazardous Waste RCRA Large Quantity Generator Inspection on November 7, 2019, and determined by inspection that the facility is no longer a LQG, and is now classified as a Small Quantity Generator, SQG.

An updated Hazardous Materials Business Inventory (CERS ID10233049) was provided to Kern County Environmental Health Services Department on September 27, 2018 via CERS for permitted inventory on the property as follows. All noted inspector comments of 9/24/2018 inspection were mitigated with September 26, 2018 CERS submittal.

Baker Petrolite LLC (CERS Site ID: 10233049) Hazardous Materials Business Plan Inventory – 9/27/2018				
Chemical Name	**Max Daily Amount / Unit**	**Avg Daily Amount / Unit**	**Days Onsite**	**Physical State(s)**
ASPHALT OIL EMULSIFIER (PAW 4HF)	600-1199 Gallons	600-1199 Gallons	365	Liquid, Mix
ASPHALTENE DISPERSANT (PAO 3047) *	3000-5999 Gallons	3000-5999 Gallons	365	Liquid, Mix
INDUSTRIAL BIOCIDE (XC320)	3000-5999 Gallons	3000-5999 Gallons	365	Liquid, Mix
INDUSTRIAL BIOCIDE (XC402)	1200-2999 Gallons	1200-2999 Gallons	365	Liquid, Mix
INDUSTRIAL BIOCIDE (XC520)	600-1199 Gallons	120-599 Gallons	365	Liquid, Mix
CORROSION IHIBITOR (CRO 9081) *	3000-5999 Gallons	3000-5999 Gallons	365	Liquid, Mix
CORROSION INHIBITOR (CGO 118A) *	1200-2999 Gallons	1200-2999 Gallons	365	Liquid, Mix
CORROSION INHIBITOR (CRO 396)	600-1199 Gallons	600-1199 Gallons	365	Liquid, Mix
CORROSION INHIBITOR (CRO8254U)	600-1199 Gallons	120-599 Gallons	365	Liquid, Mix
CORROSION INHIBITOR (MD2934)	1200-2999 Gallons	1200-2999 Gallons	365	Liquid, Mix
DEMULSIFIER (DMO 146) *	3000-5999 Gallons	3000-5999 Gallons	365	Liquid, Mix
STEAM ADDITIVE (DMW 8900X)	3000-5999 Gallons	3000-5999 Gallons	365	Liquid, Mix
INDUSTRIAL BACTERICIDE (XC102)	600-1199 Gallons	120-599 Gallons	365	Liquid, Mix
METHANOL (M 2443)	3000-5999 Gallons	3000-5999 Gallons	365	Liquid, Mix

OILY RAGS ABSORBANT	100-499 Pounds	0-99 Pounds	365	Solid
OILY WATER	12-59 Gallons	12-59 Gallons	365	Liquid
PARAFFIN DISPERSANT (PAO 103)	3000-5999 Gallons	3000-5999 Gallons	365	Liquid, Mix
PARAFFIN DISPERSANT (PAO 2066)	1200-2999 Gallons	1200-2999 Gallons	365	Liquid, Mix
PARAFFIN DISPERSANT (PAO104)	120-599 Gallons	120-599 Gallons	365	Liquid, Mix
PARAFFIN INHIBITOR (PAO 48)	120-599 Gallons	120-599 Gallons	365	Liquid, Mix
PARAFIN DISPERSANT (PAO2000)	600-1199 Gallons	120-599 Gallons	365	Liquid, Mix
SCALE INHIBITOR (SCW4003)	1200-2999 Gallons	1200-2999 Gallons	365	Liquid, Mix
SCALE INHIBITOR (SCW4013)	600-1199 Gallons	120-599 Gallons	365	Liquid, Mix
SCALE INHIBITOR (SCW4056)	120-599 Gallons	120-599 Gallons	365	Liquid, Mix
SCALE INHIBITOR (SRW 4805)	3000-5999 Gallons	3000-5999 Gallons	365	Liquid, Mix
SCALE/CORROSION INHIBITOR (XP401)	3000-5999 Gallons	1200-2999 Gallons	365	Liquid, Mix
SCALE INHIBITOR (SCW4002)	1200-2999 Gallons	600-1199 Gallons	365	Liquid, Mix
SCALE INHIBITOR (SCW 245)	3000-5999 Gallons	3000-5999 Gallons	365	Liquid, Mix
SCALE INHIBITOR (SCW 4003)	1200-2999 Gallons	1200-2999 Gallons	365	Liquid, Mix
SCALE REMOVER (SRW 4808S)	600-1199 Gallons	600-1199 Gallons	365	Liquid, Mix
SURFACTANT-ISOPROPANOL (RESTORE PEP 3) *	3000-5999 Gallons	3000-5999 Gallons	365	Liquid, Mix
2-BUTOXYETHANOL (WAW 5206)	120-599 Gallons	120-599 Gallons	365	Liquid, Mix
WETTING AGENT (WAW 273)	3000-5999 Gallons	3000-5999 Gallons	365	Liquid, Mix
WETTING AGENT (WAW 4000)	3000-5999 Gallons	3000-5999 Gallons	365	Liquid, Mix
XYLENE (PFR83)	600-1199 Gallons	600-1199 Gallons	365	Liquid, Mix

**Aboveground Storage Tank (AST)*

EDR **cluster V**, located at 34758 & 34750 Lencioni Avenue, Bakersfield, is approximately 0.95 miles SE of Phase 1, including:

V135, V136 & V141, **Swaim and Sons**,
V137-V139, **Swaims Machine Shop Inc. dba Swaim and Sons, Inc.**,
V140, **Swaim & Sons**,
V142, **Mody Pumps, Inc.**

Swaim and Sons and **Swaims Machine Shop Inc.** is a machine shop supporting the local oil industry with pumping equipment and is located at 34758 Lencioni Avenue. Each has their own US EPA Registry ID, but Swain and Sons does not have US EPA history, but Swaim Machine Shop, Inc. has last updated record.

An AST with unknown capacity is located on the facility. The AST facility has a submitted and approved SPCC plan as of January 2, 2020.

Swaim & Sons reported one manifested HW shipment on November 20, 2007, including 7.014 tons of "aqueous solution (2<PH<12.5) with total organic residues less than 10 percent" for recovery. **Swaims Machine Shop Inc.** reported two manifested HW shipments on May 21, 2014, including 1.9 tons of "waste oil and mixed oil". Facility is considered as RCRA-Non Generator and is not regulated as an EPA hazardous waste generator.

Kern County Environmental Health Services Department performed a routine Hazardous Material Business Plan Inventory Inspection, Aboveground Petroleum Storage and Hazardous Waste Generator Inspection on November 26, 2018 for Swaim and Sons (CERS ID: 10233007).

During the routine Compliance Evaluation Inspection of the property, the following violation was observed. All noted violations were mitigated within the allowed compliance period.

Swaim and Sons (CERS Site ID: 10233007) Aboveground Petroleum Storage (APSA) Inspection Violation	
Inspection Date	**Violation / Corrective Action Required**
2018-11-26	Failure to maintain a complete copy of the SPCC Plan at the facility if the facility is normally attended at least four hours per day, or at the nearest field office if the facility is not so attended. Obs.: Spill Prevention Control and Counter-measure (SPCC) plan was not available for review at the time of inspection. Corr. Action: Provide Tier I Qualified Facility SPCC plan for review. Email or fax the SPCC plan to Kern County Environmental Health Division. Attn: Christian Iwuchukwu (Email: iwuchukwuc@kerncounty.com; Fax: 661-862-8701). Returned to compliance on 01/02/2020.
Hazardous Materials Release Response Plans (HMRRP) Inspection Violation	
Inspection Date	**Violation / Corrective Action Required**
2018-11-26	Failure to annually review and electronically certify that the business plan is complete and accurate on or before the annual due date. Obs.: Review of California Environmental Reporting System (CERS) indicates that the last submittal of the Hazardous Materials Inventory was done on July 07, 2016. The facility failed to annually review and electronically certify that the Hazardous Materials Business Plan (HMBP) was complete and accurate on or before July 06, 2017. Corr.: Immediately review the CERS and electronically certify that the Hazardous Materials Business Plan (HMBP) is complete and accurate. Returned to compliance on 12/17/2018.
Hazardous Waste Generator (HWG) Inspection Violations	
Inspection Date	**Violation / Corrective Action Required**
2018-11-26	Failure to properly label hazardous waste accumulation containers and portable tanks with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date. Obs.: Hazardous waste containers observed at the time of inspection were not properly labeled and marked accumulation start dates. Corr. Action: Properly label and mark hazardous waste containers with accumulation start dates. Manage the containers according to hazardous waste regulation. Send photos of properly labeled and marked hazardous waste containers to Kern County Environmental Health Division. Attn: Christian Iwuchukwu (Email: iwuchukwuc@kerncounty.com; fax: 661-862-8701). Returned to compliance on 12/17/2018.

	Failure to keep a copy of each properly signed manifest for at least three years from the date the waste was accepted by the initial transporter. The manifest signed at the time the waste was accepted for transport shall be kept until receiving a signed copy from the designated facility which received the waste. Obs.: Hazardous Waste manifests/bill of ladings were not available for review at the time of inspection. Corr. Action: Provide 3 years of Hazardous Waste manifests/bill of ladings (2016 to 2018) for review. Email or fax 2016 -2018 bill of ladings or manifest for hazardous waste disposal to Kern County Environmental Health Division. Attn: Christian Iwuchukwu (Email: iwuchukwuc@kerncounty.com; Fax: 661-862-8701). Returned to compliance on 12/17/2018.
	Failure to ensure that all employees are thoroughly familiar with proper waste handling and emergency procedures, relevant to their responsibilities during normal facility operations and emergencies. Obs.: Uncovered absorbent soaked with oil/water; incorrect or incomplete labeling of hazardous waste containers; unavailability of employee training logs and certification; and unavailability of hazardous waste manifests/bills of lading. Corr. Action: Employee training is required on proper hazardous materials/waste management and handling procedures. Provide hazardous materials/waste handling procedures and management training to all employees, and send signed training log which indicates topic of training received to Kern County Environmental Health Division. Attn: Christian Iwuchukwu (Email: iwuchukwuc@kerncounty.com; fax: 661-862-8701). Returned to compliance on 12/15/2018.

An updated Hazardous Materials Business Inventory (CERS ID 10233007) was provided to Kern County Environmental Health Services Department on December 27, 2018 via CERS for permitted inventory on the property as follows. All noted violation(s) were mitigated within the allowed compliance period.

Swaim and Sons (CERS Site ID: 10233007)
Hazardous Materials Business Plan Inventory – 12/17/2018

Chemical Name	Max Daily Amount / Unit	Avg Daily Amount / Unit	Days Onsite	Physical State(s)
Acetylene	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
ARGON/CARBON DIOXIDE	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
BLACK MAGIC RT S26	60-119 Gallons	12-59 Gallons	365	Liquid, Mix
CASTROL HYSOL MB 50 (COOLANT)	60-119 Gallons	12-59 Gallons	365	Liquid, Mix
CHEVRON AW HYDRAULIC OIL 32	60-119 Gallons	12-59 Gallons	365	Liquid, Pure
CHEVRON WAY OIL VISTAC ISO 68	12-59 Gallons	12-59 Gallons	365	Liquid, Pure
COOLANT MIX AND WATER	60-119 Gallons	12-59 Gallons	365	Liquid, Mix
HARD SURFACE CLEANER	12-59 Gallons	12-59 Gallons	365	Liquid, Mix
HYDRAULIC OIL ISO 32	60-119 Gallons	12-59 Gallons	365	Liquid, Pure
INORGANIC ACID SOLUTION	12-59 Gallons	0-11 Gallons	365	Liquid, Mix
METAL GUARD 700	60-119 Gallons	12-59 Gallons	365	Liquid, Mix
MI-CLEAN 100	60-119 Gallons	12-59 Gallons	365	Liquid, Mix
MIXURE OF PETROLEUM HYDROCARBONS	12-59 Gallons	12-59 Gallons	365	Liquid, Mix

Non-RCRA Hazardous Waste Liquid (Waste Oil)	120-599 Gallons	12-59 Gallons	365	Liquid
Oxygen Difluoride	0-2599 Cubic Feet	0-2599 Cubic Feet	365	Gas, Pure
POWER CAT HD SOAP 797 HD	60-119 Gallons	12-59 Gallons	365	Liquid, Mix
Used Absorbent	500-999 Pounds	0-99 Pounds	365	Solid
WASTE OIL AND WATER MIXTURE	1200-2999 Gallons	120-599 Gallons	365	Liquid

Mody Pumps, Inc. operated for a short term in the south building and is currently located at 2221 Orpheus Ct., Bakersfield. Mody Pumps reported one manifested HW shipment on March 16, 2004, including 0.19 tons of "waste oil and mixed oil".

4.0 Site Reconnaissance

A site reconnaissance visit was conducted on January 27, 2020 for the proposed project and the surrounding areas. This section provides the methodology for the site reconnaissance visit, and specific onsite and offsite observations.

4.1 Methodology

The objective of the site reconnaissance is to visually inspect and observe current physical conditions of the proposed project and its surroundings. Emphasis was placed on the proposed project area to determine if visible and recognizable hazardous materials and/or substances were present on the property. Prior to the site reconnaissance visit, all available environmental records and historical aerial photographs of the proposed project were reviewed in an attempt to identify those locations where hazardous materials could have been stored or discarded. The objective of the site reconnaissance is to obtain information indicating the likelihood of identifying recognized environmental conditions such as hazardous substances and petroleum products in connection with the proposed project, including soils, surface waters, and groundwater.

4.2 Proposed Project - Onsite Observations

Table 4-1 summarizes conditions encountered during the site reconnaissance on the proposed project. An explanation of the visual observations follows Table 4-1 Summary of Site Reconnaissance.

Table 4-1 Summary of Site Reconnaissance

Site Reconnaissance		
Proposed Project Feature's	**Observed**	**Not Observed**
Structures (existing)	X	
Evidence of past uses (foundations, debris)	X	
Hazardous substances and/or waste oil in containers	X	

Aboveground storage tanks (ASTs)	X	
Underground storage tanks (USTs) or evidence of USTs		X
Underground petroleum/natural gas pipelines		X
Strong, pungent or noxious odors		X
Pools of liquid; hazardous materials or petroleum products		X
Drums		X
Unidentified substance containers		X
Potential polychlorinated biphenyl (PCB) - containing equipment		X
Subsurface hydraulic equipment		X
Heating/ventilation/air conditioning (HVAC) units		X
Stains or corrosion on floors, walls or ceilings		X
Floor drains and sumps	X	
Canals, pits, ponds, ditches or lagoons	X	
Stained soil and/or pavement greater than de minimis		X
Stressed vegetation		X
Waste or wastewater discharges to the ground surface or surface waters on the proposed project (including storm water)		X
Wells (irrigation, domestic, dry, injection, abandoned, and monitoring wells)	X	
Cleanout ports for septic systems	X	

- The proposed project was observed to be agricultural land with most cultivated with table grapes or fallow being prepared for replanting of table grapes. All crops are drip irrigated. *(Refer to Figure N-1 Aerial Photograph Index) (Refer to Appendix N, Figures N-2 through N-24 Site Photos)*

- Pacific Gas and Electric Company has 70 KV transmission and 12 KV distribution electrical powerlines on the same wooden poles on the east side of the SR-99 fenceline for the full western boundaries of Phases 1 and 2.

- Pacific Gas and Electric Company has three single pole mounted transformers along SR 99, one at each of Malibu Vineyards four water wells, one each near the northeast and southwest corners of the O&M facility pond and southeast of Malibu's Phase 2 pond area. PG&E also has triple transformers on a single pole in the Lerdo Canal property just east of Malibu's Phase 2 pond area filters and water well. On Lerdo Canal property near the proposed project boundaries, PG&E also has a single pole mounted transformer on the east side of the Lerdo Canal serving two Zaninovich pumps which pump canal water eastward in a buried 18" pipeline along the Section 30 midsection line to parcels east of the proposed project, a single pole mounted transformer west of the northwest corner of Phase 1 servicing NKWSD well 88-0-13, just south of Cawelo Pump Plant B, a single pole with three transformers on the west side of the canal south of Cawelo Pump Plant B, a single pole mounted transformer on the west bank west of

the Cawelo Pump Plant B servicing CRC's meter station, and a ground mount transformer serving NKWSD well 88-0-14 northwest of Malibu's Phase 2 ponds. The Cawelo Pump Plant B also has a ground mounted transformer in its substation area. *(Refer to Figures E-5A & E-5B) (Refer to Appendix N Site Photos)*

- The proposed project has four irrigation water wells with electric motors owned by Malibu Vineyards, in or near the proposed project, with two located on the south side of Burbank Street, one near the northeast corner of Phase 1 (Lerdo East), approximately 165' west of the east boundary, and one near the northwest corner of the pond at the O&M facility. Malibu well 73349, drilled 2012, is located just west of the east quarter corner of Sec. 30. Malibu Ranch well (KC permit WP 13887), drilled 2013, is located west of the Lerdo Canal and south of the ponds in Section 24 in the 1954 QC-1 Parcel. There are no oil or diesel stained soils observed around the locations of the irrigation water wells. *(Refer to Figure H-7 Malibu Vineyards Irrigation Water Wells)*

- Imperial Street is located on the eastern two thirds of the south side of Phase 1. In this location the road is basically a single lane oil sanded unimproved road. Non-potable water pipeline markers are visible. Imperial Street swings southernly with a 150 foot radius curve 2-lane asphalt road to meet up with Saco Road, the frontage road along SR-99.

- Imperial Road, an unimproved single lane dirt road north of Imperial Street provides the east boundary of the south half of Phase 1, providing access to the adjacent grapes, Malibu well 73349, and to the Section 30 O&M facility at Burbank Street. PG&E has an electrical distribution line on the east side of Imperial Road, and a single guy pole on the west side of Imperial Road at Imperial Street.

- On the west side of Phase 1 is SR-99 for 0.30 miles from Imperial Street. A NKWSD access road and PG&E transmission and distribution lines are adjacent to the ROW fence. Between the road and the vineyard, non-potable water pipeline markers are visible.

- A CRC/NKWSD valve station in a concrete valve box is located near the southwest corner angle point of Phase 1 north of the Zaninovich pumps and south of the Lerdo Canal farmer bridge. CRC's non-potable water pipeline markers are visible northwest and southeast of the valve station near the edge of the vineyard. The NKWSD branch heads west under the Lerdo Canal and the extreme southeast corner of Phase 2 as it continues under SR-99 and the UPRR, then continues west along the Sections 30 and 25 mid-section lines to NKWSD's Rosedale Spreading Ponds in Section 27. The SR-99 casing vent and guard posts for the pipeline are visible near the SR-99 fence line.

- The Lerdo Canal crosses under SR-99 0.33 miles northwesterly of Imperial Street and continues in a 300' wide ROW along the west boundary of Phase 1 to the Cawelo Pump Plant B in the southeast corner of Section 24. Malibu's vineyards encroach into the Lerdo Canal ROW approximately 30-70 feet depending on the location.

- Near the east-west Section 30 mid-section line, two vertical pumps (Zaninovich) are located within a fenced area on the canal ROW, which discharge into an 18" pipeline that continues east along the mid-section line for the full width of Phase 1.

- Remnants of a tailwater ditch are visible between the east canal bank road and the farm access road paralleling the canal that continues northwest to an old tailwater pond in the northeast corner of Section 25. In this tailwater pond area, NKWSD well 88-03-13 is located near the canal with a pole mounted transformer on a pole. A second out of service water well is/was located 112 feet ENE of the NKWSD well along with a service pole with no electrical services provided and a standpipe.

- The Cawelo Station B Pump Plant is located northwest of the northwest corner of Phase 1 in Sec. 24 on the east bank of the Lerdo Canal. Included in the fenced area is the pump forebay, vertical pumps, hydropnuematic tank, a substation with a ground mounted transformer, and a control building.

- To the northwest of the Cawelo Pump Plant is CRC's metering facility for the 24" non-potable water pipeline previously mentioned. The Pipeline crosses the Lerdo Canal twice in pipe bridges to avoid the Cawelo Pump Plant. CRC's pole mounted transformer for the metering facility is located on the west side of the Lerdo Canal west of the north pipe bridge.

- Burbank Street, an unimproved dirt road front the north boundary of Phase 1 with vineyards on both sides, and a PG&E 4.77 KV distribution on the north side of Burbank Street from the northwest corner of Phase 1 east one mile to Malibu O&M facility, where the electrical lines cross Burbank at Amos Road and continue east on the south side of Burbank Street past the northeast corner of Phase 1 in Section 29. Two single pole mounter transformers are located north of the pond corners. A single pole mounted transformer is located east of Malibu well "Lerdo East". *(Refer to Figure E-5A Phase 1 Electrical Transformers Map) (Refer to Appendix N, Figures N-7, image 23 and N-8, image 23 Site Photos)*

- The Malibu Vineyards Ranch 20 O&M facility is located at the northeast corner of Section 30 in Phase 1. The facility includes a fenced irrigation pond developed between 1937 and 1942 west of Imperial Road, a water well to supply the pond, a standpipe, drip system pumps and filters, a small wooden restroom structure, a large metal shop building, a chemical storage building, a wood and metal ag repair shop building, a 2,500

sf concrete equipment storage slab that previously supported a building removed in 2009, a 2,000 gallon gasoline AST in concrete containment, a propane tank, a parking shade structure, and a 20' x 25' concrete adjacent to septic system manholes for a 1,300 sf house/office building removed 2008-2009. Three electrical transformers on a double pole structure are located south of the [pond and east of the metal shop building. Numerous empty poly tanks, silos, and IBP's are located at the facility. *(Refer to Figure E-5A Phase 1 Electrical Transformers Map) (Refer to Appendix N, Figures N-8 and N-9 Site Photos)*

- A 12 KV distribution line is located on the south side of a dirt access road on the south side of Section 29 portion of Phase 1.

- SR-99 fronts the west boundary of Phase 2, boundary is defined with a barbed wire fence. To the east of the fence is an unimproved dirt agriculture access road and two tail water ponds.

- The grape vines in the north quarter mile of section 24 and the portion south of Burbank Street in Section 25 in Phase 2 had been removed. The trellises remain for the next planting.

- On the west side of the Lerdo Canal approximately 0.25 miles northwest of the Cawelo Pump Plant, two irrigation ponds within fencing exist in the "QC-1" parcel, as well as Malibu's Ranch well, pumps and filters for the drip system in Phase 2, and a poly chemical tank and metal chemical silo, also fenced. Three transformers, PMT-14, on a single pole are located east of the filters in the Lerdo Canal right-of-way service this facility.

- South of the Malibu well, pond and filter facility is an abandoned wooden structure with a concrete loading ramp, a single pole mounted transformer PMT-13, an electrical panel box, and an irrigation distribution pipeline system.

- On the north side of the dirt road between Sections 24 and 25 in Phase 2 is PG&E's 70 KV transmission line to the Cawelo Station B Pump Plant on the east side of the Lerdo Canal. *(Refer to Figure E-3 PG&E Transmission Lines Map)*

4.3 Adjacent Properties and Usages

The current adjacent properties and roads usages. *(Refer to Table 4-2 Adjacent Properties Usages) (Refer to A-2 Aerial Photograph Proposed Project Location) (Refer to A-3 Aerial Photography – One Mile Radius)*

Table 4-2 Adjacent Properties Usage

Adjacent Properties Land Use, General Plan and Zoning			
Location	**General Plan**	**Current Land Use**	**Zoning**
North	R-IA (Resource Intensive Agriculture) 8.1 (Resource Intensive Agriculture)	Agricultural	A (Exclusive Agriculture)
South	SI (Service Industrial) LI (Light Industrial)	Agricultural	A (Exclusive Agriculture) M-2 PD (Medium Industrial Precise Development Combining)
East	R-IA (Resource Intensive Agriculture) R-MP (Resource Mineral & Petroleum) SI (Service Industrial)	Agricultural, commercial	A (Exclusive Agriculture) M-2 (Medium Industrial) M-2 PD (Medium Industrial Precise Development Combining)
West	R-IA (Resource Intensive Agriculture) HI (Heavy Industrial) SI (Service Industrial) (City of Shafter) Specific Plan	Highway 99, Union Pacific RR, vacant	Specific Plan – Coberly West

Source: Metropolitan Bakersfield General Plan West – March 21, 2013 (County Maintained) and General plan – Central Section – July 27, 2010

4.3.1 Pole & Ground Mounted Electrical Transformers

There are four pole mounted electrical transformer that are located on the proposed project, and two addition pole mounted electrical transformers are adjacent to the proposed project. The ground surface below each pole mounted electrical transformer displayed no evidence of discoloration from fluid leakage. *(Refer to Table 4-3 Pole Mounted Electrical Transformer Locations) (Refer to Figures E-5A & E-5B Electrical Transformers Maps)*

Table 4-3 Pole & Ground Mounted Electrical Transformer Locations

Location	Number of *PMTs/ID	*PG&E Power Rating	Year Installed	PG&E Map Number
PMT (1) - Northeast corner of the proposed project on the south	1 GM5199430	72*KvA [3]	1987	BJ136-N02

side of the Burbank St., Phase 1-Section 29, Malibu water Well.				
PMT (2) – Offsite **-** NE corner of Burbank St. & Imperial Rd./Amos Rd. Services Malibu water well and non-Malibu pump for Pond northeast of O&M facility.	1 WO013022D	36*KvA [3]	1994	BJ136-N01
PMT (3) – Offsite **–** North side of Burbank St., northwest of pond. Services Malibu O&M Facility.	2 WO013338G	2.4*KvA [3]	1981	BJ136-N01
PMT (4) **–** Southeast of O&M pond, east side of Imperial Rd.	1 WO717710G	108*KvA [3]	1990	BJ136-N06
PMT (5) **–** East of Metal shop building, south of filters.	3 Unknown	36*KvA [3]	Unknown	BJ136-N06
PMT (6) **–** West side of Imperial Rd. for Malibu water well at east quarter corner Section 30	1 Unknown	144*KvA [3]	2012	BJ136-N06
PMT (7) – Offsite **–** East side of Lerdo Canal serving Zaninovich pumps	1 WO410447A	108*KvA [3]	1985	BJ136-M09
PMT (8) **–** located on east side of SR-99, north of Lerdo Canal crossing of SR-99, south end of Phase 2	1 PM131360618	Unknown	2018	BJ136-M09
PMT (9) – Offsite **–** West side of Lerdo Canal, south of Cawelo Pump Plant. Unknown use.	3 Unknown	12*KvA [3]	Unknown	BJ136-M09
PMT (10) – Offsite **–** East side of Lerdo Canal, south of Cawelo Pump Plant for NKWSD well 88-0-13	1 PM30671279	144*KvA [3]	2009	BJ136-M04
PMT (11) – Offsite **–** East side of Lerdo Canal, south of Cawelo Pump Plant for NKWSD well 88-0-13	1 PM30671279	15A [1]	2009	BJ136-M04
GMT (1) – Offsite **–** East side of Lerdo Canal, located in Cawelo Pump Plant substation.	1 Unknown	Unknown [3]	1989	BJ136-M04

PMT (12) – Offsite – West side of Lerdo Canal, west of Cawelo Pump Plant for CRC pipeline meter station.	1 PM31155892	21.6*KvA [3]	2015	BJ136-M03
PMT (13) – Offsite – West side of Lerdo Canal, south of Phase 2 Malibu pond. Malibu well drilled 2013.	1 WO7126120	144*KvA [3]	1989	BJ136-M03
PMT (14) – Offsite – West side of Lerdo Canal, east of Phase 2 Malibu pond filters. Malibu service.	3 119762-A	1.2*KvA [3]	1981	BJ136-M03
GMT (2) – Offsite – West bank of Lerdo Canal, north of Phase 2 pond. NKWSD well 88-0-14	1 PM31229599	360*KvA [3]	2017	BJ136-M03
R (1 & 2) – Regulators located on east side of SR-99, south of Lerdo Canal Crossing	2 B332	150A	2009	BJ136-M15

[1] Single-Phase Transformer
[3] Three-Phase Transformer
[B] Blue sticker indicates transformer is confirmed PCB-free
*KvA - Kilovolt-Amperes
*PG&E - Pacific Gas and Electric Company
*GMTs – Ground Mounted Transformers
*PMTs – Pole Mounted Transformers
*PCBs – Polychlorinated Biphenyls

The Pacific Gas and Electric Company (PG&E) is the owner of the pole mounted electrical transformers. The Pacific Gas and Electric Company's transformer database, compiled circa 1990, does not indicate whether polychlorinated biphenyls (PCBs) are present in the electrolytic fluids of older transformers, especially those installed prior to the year 1990. However, pole mounted transformers installed subsequent to 1990 likely do not contain polychlorinated biphenyl (PCB) insulating fluids. Pole mounted electrical transformers and re-closers labeled with a blue "non-PCB" sticker do not contain polychlorinated biphenyls (PCB) fluids. It is unknown if the onsite pole mounted transformers absent blue "non-PCB" stickers contain polychlorinated biphenyls (PCB) fluids. Based on the visual absence of apparent unauthorized releases of insulating fluids from the electrical transformers they are considered to be less than significant impacts to the proposed project. Pacific Gas and Electric Company (PG&E) should be contacted for their removal prior to the proposed project development.

5.0 Proposed Project Usage Survey

The proposed project usage survey included determining the property history with respect to hazardous materials by examining and interpreting visible features on aerial photographs, reviewing County of Kern building permits and summarizing replies in a Farmland Conversion Evaluation Questionnaire with Hazardous Materials questions provided by Mr. Daryl Bishop, CFO of MMG Agribusiness, Inc.

5.1 Site History

5.1.1 Aerial Photographs Interpretation

The historical and current aerial photographs were reviewed to help establish the history of the subject property. Historically, the majority of the site has been used as agricultural land. Available historical aerial photographs for the years 1937, 1942, 1952, 1968, 1973, 1984, 1994, 2005, 2012, and 2016 were reviewed to assess the history of the proposed project. These aerial photographs were obtained from EDR's database. Additional aerial photographs for 2017 and 2018 were obtained from the Google Earth online website, as well as for closeups of the Malibu Vineyards' O&M facility from 1994 to 2018. *(Refer to Appendix B – Aerial Photographs)*

5.1.2 Historical and Current Aerial Photographs

The historical and current aerial photographs were reviewed to help establish the history of the subject property. Historically, the majority of the site has been used as agricultural land. The following aerial photographs are provided as listed below (Refer to Appendix "B"):

1937 - Undeveloped and Agricultural land

Phase 1 - The proposed project is comprised of native land crisscrossed by dirt roads. Crops are being grown east and north of the proposed project. Runoff flowing onto the proposed project from the crops east and north of the proposed project is evident. Native land comprises land to the south. On the west boundary, 2-lane paved US-99 (previously SR-4, now SR-99) is visible, as well as the UPRR. The original alignment of Lerdo Canal is visible as well as a tail water pond near the northwest corner of Phase 1. Properties of Phase 2 are being cultivated. Small farms are visible to the west, and east.

Phase 2 – All portions of the proposed project except the extreme narrow southeast portion between US-99 and the Lerdo Canal are being actively farmed. The Lerdo Canal is visible to the east. An irrigation pond for the LMWC1 constructed about 1925 in Section 24 is visible along the west side of the Lerdo Canal. Dirt access roads similar to the Lerdo Subdivision "A" lot layout are visible. On the west boundary, US-99 is visible, as well as the UPRR. Farming activity is also visible west and north. The Lerdo Canal is visible along the east boundary of the proposed project site.

1942 - Agricultural land

Phase 1 - Farming activity is visible on all portions of the proposed project site. The irrigation pond and five structures are visible in the northeast corner of Section 30. The barren area for the Lerdo East irrigation well drilled in 1940 in the northeast corner of the Section 29 portion of the proposed project is visible. Tail water ditches are visible along the east bank of the Lerdo Canal indicating active agricultural use of the proposed project. US-99 and UPRR are visible along a portion of the west boundary of the project site. The Lerdo Canal is also visible along a portion of the western boundary. Property south of the proposed project remains native. Farming operations continue in the north, east and west.

Phase 2 – All portions of the proposed project except the extreme narrow southeast portion between US-99 and the Lerdo Canal are being actively farmed. A small structure has been added south of the irrigation pond. Farming operations continue in the north, east and west. US-99 and UPRR are visible along the west boundary of the project site. The Lerdo Canal is visible along the east boundary of the proposed project site.

1952 - Agricultural land

Phase 1 - Farming activity is visible on all portions of the proposed project site. The wood and metal agriculture repair shop building and a 2,500 sf structure have been added near the southwest corner of the pond. A 1,300 sf house/office building has been added 200 feet west of the pond just south of Burbank Street. A small irrigation pond has been added at the north quarter corner of Section 30 south of Burbank Street. US-99 has been widened to a 4-lane divided highway reducing the southwest portion of Phase 1 of the proposed project. The Lerdo Canal at its crossing of US-99 has been modified to its existing alignment to provide for the widening of US-99, also reducing the southwest portion of Phase 1 of the proposed project. Farming operations continue in the north, east and west. Farming has commenced south of Phase 1. A small irrigation pond has been installed northeast of the O&M facility pond across Burbank Street. US-99 and UPRR are visible along a portion of the west boundary of the project site. The Lerdo Canal is also visible along a portion of the western boundary.

Phase 2 – All portions of the proposed project except the extreme narrow southeast portion between US-99 and the Lerdo Canal are being actively farmed. Farming operations continue in the north, east and west. US-99 and UPRR are visible along the west boundary of the proposed project site. US-99 has been widened to a 4-lane divided highway reducing the acreage of Phase 2 of the proposed project. The Lerdo Canal is visible along the east boundary of the proposed project site.

1968 - Agricultural land

Phase 1 – Farming activity is visible on all portions of the proposed project site. A small irrigation pond was added to the southwest corner pf the Section 29 portion of the proposed project. The building that is now chemical storage has been added southwest of the O&M facility pond. The access road along SR-99 to the Lerdo Canal has been widened. State Route

99 (renamed 1964) has been widened 23 feet to its current ROW width and is visible along the west boundary of the project site. SR-99 and UPRR are visible along a portion of the west boundary of the project site. The Lerdo Canal is also visible along a portion of the western boundary. The farmer bridge crossing of the Lerdo Canal has been completed. The Saco Road to Imperial Street paved sweeping road has been completed. Farming operations continue in the north, south, east and west. Two small irrigation ponds adjacent to the east boundary are visible.

Phase 2 – Approximately two thirds of the proposed project is visibly being farmed. The irrigation pond has been expanded north to its current extent. Farming operations continue in the north, east and west. SR-99 and UPRR are visible along the west boundary of the project site. The Lerdo Canal is visible along the east boundary of the proposed project site.

1973 - Agricultural land

Phase 1 – Farming activity is visible on all portions of the proposed project site. Farming operations continue in the north, south, east and west. SR-99 and UPRR are visible along a portion of the west boundary of the project site. The Lerdo Canal is also visible along a portion of the western boundary.

Phase 2 – Farming activity is visible on all portions of the proposed project site. Farming operations continue in the north, east and west. SR-99 and UPRR are visible along the west boundary of the project site. The Lerdo Canal is visible along the east boundary of the proposed project site.

1984 - Agricultural land

Phase 1 – Farming activity is visible on all portions of the proposed project site. Proposed project properties sold to Greenleaf farms in 1978. Irrigation ponds removed at north quarter corner of Section 30 and southwest corner of Section 29 properties. The large metal shop building on the south side of the O&M facility is now visible. Farming operations continue in the north, south, east and west SR-99 and UPRR are visible along a portion of the west boundary of the project site. The Lerdo Canal is also visible along a portion of the western boundary. The Cawelo Station B Pump Plant northwest of the northwest corner of the proposed project is visible.

Phase 2 – Farming activity is visible on all portions of the proposed project site. Farming operations continue in the north, east and west. SR-99 and UPRR are visible along the west boundary of the project site. The Lerdo Canal is visible along the east boundary of the proposed project site.

1994 - Agricultural land

Phase 1 – Farming activity is visible on the southern two thirds of the proposed project site. Farming operations continue in the north, south, east and west. SR-99 and UPRR are visible

along a portion of the west boundary of the project site. The Lerdo Canal is also visible along a portion of the western boundary.

Phase 2 – Proposed project properties sold to Malibu Vineyards June 1987. Approximately 60 percent of the project site is visibly being farmed. The irrigation pond has been split into two with an internal berm. A concrete loading ramp has been added south of the irrigation pond. Diagonal access roads in the southern third have been added. Areas north, west and east are being farmed, a portion north of the Cawelo Pump Plant fallow. SR-99 and UPRR are visible along the west boundary of the project site. The Lerdo Canal is visible along the east boundary of the proposed project site.

2005 - Agricultural land

Phase 1 – Aerial photos are now available in color. Farming activity is visible over approximately two thirds of the proposed project. A filter system is visible south of the irrigation pond. The aboveground storage tank is visible. A nursery area is visible east of the metal shop building. Farming operations continue in the north, south and east. Area west is fallow. SR-99 and UPRR are visible along a portion of the west boundary of the project site. The Lerdo Canal is also visible along a portion of the western boundary.

Phase 2 – Farming continues within the northern two thirds of the proposed project site. Farming is also visible west, north and east. SR-99 and UPRR are visible along the west boundary of the project site. The Lerdo Canal is visible along the east boundary of the proposed project site.

2009 - Agricultural land

Phase 1 – Farming activity is visible over approximately 60 percent of the proposed project. The 1,300 sf home/office west of the irrigation pond has been removed. The 2,500 sf structure near the southwest corner of the pond has been removed, slab remains for equipment storage. Farming operations continue in the north, south, east and west. SR-99 and UPRR are visible along a portion of the west boundary of the project site. The Lerdo Canal is also visible along a portion of the western boundary.

Phase 2 – Farming continues over all except the middle quarter of the proposed project site. A cover structure has been added to the north half of the concrete loading ramp. Farming is also visible west, north and east. SR-99 and UPRR are visible along the west boundary of the project site. The Lerdo Canal is visible along the east boundary of the proposed project site.

2012 - Agricultural land

Phase 1 – Farming activity is visible on approximately 40 percent of the proposed project site. By August 2012, the northern quarter of Section 30 had been replanted with table grapes. Malibu 73349 irrigation water well has been installed at the east quarter corner of Section 30. The nursery area east of the metal shop building was leveled and used as storage hereafter. Farming operations continue in the north, south, east and west. SR-99 and UPRR are visible

along a portion of the west boundary of the project site. The Lerdo Canal is also visible along a portion of the western boundary.

Phase 2 – Farming activity is visible on all portions of the proposed project site. Farming operations continue in the north, east and west. SR-99 and UPRR are visible along the west boundary of the project site. The Lerdo Canal is visible along the east boundary of the proposed project site.

2016 - Agricultural land

Phase 1 – Farming activity is visible on approximately 40 percent of the proposed project site. Farming operations continue in the north, south and east. Portions east and west are fallow. SR-99 and UPRR are visible along a portion of the west boundary of the project site. The Lerdo Canal is also visible along a portion of the western boundary.

Phase 2 – Farming continues over all except the middle quarter of the proposed project site. A Malibu Ranch irrigation water well was installed in 1013 just south of the irrigation ponds in Section 24. Farming operations continue in the north, east and west. Portions west and south are fallow. SR-99 and UPRR are visible along the west boundary of the project site. The Lerdo Canal is visible along the east boundary of the proposed project site.

2017 - Agricultural land

Phase 1 – Farming activity is visible on all portions of the proposed project site. Pond northeast of O&M facility removed and filled in. Farming operations continue in the north, south and east. Portions east and north are fallow. SR-99 and UPRR are visible along a portion of the west boundary of the project site. The Lerdo Canal is also visible along a portion of the western boundary.

Phase 2 – Farming activity is visible over approximately 15 percent of the proposed project (north portion). Farming operations continue in the north, east and west. Portions west and south are fallow or converted to temporary percolation ponds. SR-99 and UPRR are visible along the west boundary of the project site. The Lerdo Canal is visible along the east boundary of the proposed project site.

2018 - Agricultural land

Phase 1 – Farming activity is visible on all portions of the proposed project site. Farming operations continue in the north, south and east. A portion east is fallow. SR-99 and UPRR are visible along a portion of the west boundary of the project site. The Lerdo Canal is also visible along a portion of the western boundary.

Phase 2 – Farming continues over the middle quarter of the proposed project site, the balance is fallow. Farming operations continue in the north, east and west. Portions west and south are fallow or converted to temporary percolation ponds. SR-99 and UPRR are visible along the

west boundary of the project site. The Lerdo Canal is visible along the east boundary of the proposed project site.

Malibu Vineyards Ranch 20 Section 30 O & M Facility

Aerial images of the Section 30 O & M facility for years 1994, 2003, 2008, 2009, 2012, 2016 and 2018 are provided in Appendix B, Figures B-25 to B-28 reflecting the site changes described above.

5.1.3 Sanborn Fire Insurance Maps

As the project site is rural, McIntosh & Associates did not order an EDR Sanborn Map Report. McIntosh & Associates attempted to review available Sanborn fire insurance maps for the subject property using the Library of Congress' collection of Sanborn maps for Kern County and Bakersfield. The northern limits of the available Bakersfield maps typically extended to 23rd Street and Chester Avenue. Due to the rural character of the project site, the site is not identified by Sanborn mapping and therefore the McIntosh & Associates Sanborn map review did not produce useful findings.

5.1.4 Kern County Assessor-Recorder's Office

The Kern County Assessor-Recorder's Office was contacted to obtain appraisal history records were reviewed for the proposed project. The Kern County Assessor-Recorder's Office had not responded prior to the preparation of this report.

5.1.5 Kern County Building Inspection Department

The Kern County Building Inspection website was reviewed for building permits approved since July 13, 2000. The following information was provided:

Table 5-1 Kern County Building Inspection Department, Building Permits since July 13, 2000

Available Kern County Building Permit Number	Assessor's Parcel Number	Description of Permit
K200901886 (4/16/2009)	091-200-05	300 Hp Ag pump electrical permit for NKWSD Well 88-0-13, located in APN: 091-190-12 NEC Section 25, (Lerdo Canal per Bk 4863, Pg 388, Parcel 4), Note: Not a Malibu Vineyards well.
K201204056 (7/31/2012)	482-010-01	200 Hp Ag pump electrical permit for Malibu Vineyards well 73349 (KCEHS Permit WP13432) located at E/4 corner, Section 30.

K201303361 (6/04/2013)	091-160-16	380 Hp Ag pump electrical permit for Malibu Vineyards well (KCEHS Permit WP13887) in north portion excepted in project legal description, Sec. 24.

The Kern County Building Inspection Department has been contacted in order to obtain historical building permit information prior to 2000 for the proposed project. Waiting on Assessor permit information with respect to permits for items such as underground storage tanks, septic systems, building, demolition, or any previous structures that are on file for the proposed project.

5.1.6 Utilities

Pacific Gas and Electric Company (PG&E) is currently serving or would serve the proposed project. The County of Kern requires the developer to install street lights and Pacific Gas and Electric Company (PG&E) would own and maintain the entire street lighting system. A new PG&E electrical substation and distribution will most likely be required.

Southern California Gas Company (SoCal Gas) currently includes the proposed project within its service area, but does not have any gas pipelines within the project boundary and will need to extend its existing distribution system to service the proposed project. A new SoCal Gas natural gas pressure reducing station, gas main and laterals will be required.

AT&T, Inc.'s (previously American Telephone and Telegraph Company) current facilities would not currently support and serve a development of this size, but would reinforce their facilities as needed to satisfy the growth.

Water on the proposed project is currently used solely for irrigation for the agricultural crops, and it does not service the property with domestic water at this time. Currently Phase 1 is within the boundary of the Cawelo Water District, and Phase 2 is within the boundary of the North Kern Water Storage District. Neither of these districts provide potable water, but manage the groundwater in the vicinity of the proposed project. The Oildale Mutual Water District will be the local water purveyor for the proposed project. The Oildale Mutual Water District has a pumping agreement with Cawelo Water District, but will need to negotiate with the NKWSD to be able to withdraw water in Phase 2 if required.

The project will be within the boundary of the North of River Sanitary District and the district will require the installation of a new sewer trunk from the future intersection of Imperial Street at Endes Street south to SR 99, then cross under SR 99 and the UPRR tracks, continue to and follow 7th Standard Road west until Coffee Road, then south along Coffee Road 1.5 miles to North of River Sanitary District's 36" trunk line in Norris Road. All of Phase 1 will

require a sewer lift station to reach the new sewer trunk described above. Sewer service to Phase 2 is unknown at this time.

6.0 Impacts

The Lead Agency (County of Kern) typically bases a determination of hazardous materials significance on the thresholds established by the California Environmental Quality Act (CEQA) Guidelines. The Environmental Checklist Form of the California Environmental Quality Act Guidelines contains a list of effects that may be deemed potentially significant. The following questions are found in the Hazards and Hazardous Materials Section of Environmental Checklist "G":

a) Would the proposed project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

The final uses for each proposed parcel has not been identified. Typically, general or agricultural warehouses and supporting offices do not generate, store, or dispose of significant quantities of hazardous materials. Manufacturing facilities may use, process, sell or dispose of small quantities of hazardous products and wastes in conformance with conditions of their respective Hazardous Materials Business Inventory permits issued by the Kern County Environmental Health Services Department. No significant impacts are anticipated to the public or the environment.

b) Would the proposed project create a significant hazard to the public or the environment through reasonable foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

The routine transport, use, or disposal of hazardous materials during construction activities is temporary. Excavation, grading, framing, glazing, masonry, plumbing, and other construction activities for the proposed project are not anticipated to release hazardous materials or present significant hazards to construction workers, the general public, or the environment. The routine transport, use, or disposal of hazardous materials during operations activities is dependent upon the use of the facility. All facilities using hazardous materials will be required to prepare an Emergency Response Plan and train their employees. Operations activities for the proposed project are not anticipated to release hazardous materials or present significant hazards to facility, the general public, or the environment.

c) Would the proposed project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing school or proposed school?

The proposed project is not located within one-quarter mile of an existing school or a proposed school, therefore, it would not create a significant hazard.

d) Is the proposed project located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and, as a result, would it create a significant hazard to the public or the environment?

The proposed project is not located on a site which is included on a list of hazardous materials compiled pursuant to Government Code Section 65962.5; therefore, it would not create a significant hazard to the public or the environment.

e) For a proposed project located within an airport land use plan, or, where such a plan has not been adopted that is within two miles of a public airport or public use airport, would the proposed project result in a safety hazard for people residing or working in the project area?

A very small portion of the proposed project is located within Area B-2 and Area C of the Meadows Field Airport Land Use Plan. Currently, only the Malibu Vineyards O & M facility is located within the airport zone. The mitigation requirements of the Airport Land Use Plan allow for conditional design of the structures, and the air traffic activities will not create a hazard for the people working in the project area.

f) Would the proposed project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Previously adopted emergency response plans or emergency evacuation plans will not be impaired by the implementation of the proposed project.

g) Would the proposed project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Wildlands are not situated adjacent to the proposed project; therefore, wildland fires are not a source of concern.

6.1 Onsite Features of Potential Concern

6.1.1 Water Wells and Pumps

Four active, electric motor powered irrigation wells are situated on the proposed project providing the current agricultural water demand. Two wells are located south of Burbank Street, one at the Section 30 O & M facility and one approximately one quarter mile east in Section 29. The third well is located at the east quarter corner of Section 30. The fourth water

well is located west of the Lerdo Canal south of an irrigation pond. The irrigation water wells are considered to be less than significant impacts to the proposed project. At least one well in each phase may be expected to supply water for dust suppression when the proposed project is excavated, graded and improved. If the water wells are not to be used for irrigation or industrial purposes, they should be destroyed in accordance with California Well Standards as governed by the California Department of Water Resources, and permit requirements of the Kern County Environmental Health Services Department. Oildale Mutual Water Company will need to drill their own municipal water wells to add to their Public Water System, permits will be required from the Kern County Environmental Health Services Department and the California Water Board-Division of Drinking Water.

6.1.2 Agricultural Activities

Applications of pesticides and herbicides have been conducted according to Restricted Materials Permits obtained annually from the Kern County Agricultural Department and Measurement Standards (Agricultural Commissioner) office. The Kern County Agricultural Department Commissioner's Office currently issues annual Restricted Materials Permit No. 1505134 to Grape Man Farms, LP for all of subject property and monitors the applications of agricultural chemicals. *(Refer to Farmland Conversion Study Report Final, prepared by McIntosh & Associates Engineering, Inc., dated August 2020)*

Agricultural chemicals in use today are applied in diluted concentrations, and, when used properly, degrade relatively quickly. However, some environmentally persistent pesticides can linger in the soil for many years. It is not known if environmentally-persistent pesticides and herbicides were ever applied to the proposed project. Sampling and analysis of surface soils from the proposed project has not been performed, but other McIntosh & Associates Engineering Inc. projects with similar pesticide and herbicide application histories has typically yielded non-detectable results for analyses of environmentally persistent pesticides and herbicides. The potential for elevated concentrations of environmentally persistent pesticides to exist in the near surface soils of the proposed project, which would require regulatory action, is low. Due to the current and historical agricultural activities conducted at the proposed project site, there is the potential that near surface soils may have been impacted with residual concentrations of organochlorine pesticides, herbicides, and/or metals.

The agricultural activities conducted at the proposed project may have impacted near surface soils with residual concentrations of pesticides, herbicides and associated metals. The most likely chemicals of concern might be chlorinated pesticides and associated metals, and they could be considered an environmental impact to the proposed project. Considering the land uses arising from the proposed zoning change to each parcel, historical applications of permitted agricultural chemicals to the soil are not anticipated to pose adverse impacts to the proposed project. However, contamination related to agricultural land use varies among agricultural fields and is site-specific, thus a chemical inventory and chemical impact analysis of the agricultural fields should be conducted to determine if a risk exists, and possibly

delineation, excavation, remediation, and/or completion of a human health risk assessment prior to decommissioning the existing agricultural operations. The chemical soil analysis would also test for any aerially deposited lead contamination in surface soils along SR 99 and the western boundary of the project. Therefore, mitigation measures to conduct a chemical soil analysis is recommended.

It is possible that asbestos containing materials could be present in subsurface concrete irrigation (transite) pipes on the proposed project. Concrete pipe may have been used in the 1940's and 1950's where Phase 1 was developed for agriculture, an in Phase 2 in the 1920's when the Lerdo Mutual Water Company Number One installed an underground irrigation distribution system. If concrete subsurface irrigation pipe is located on the proposed project, the San Joaquin Valley Unified Air Pollution Control District shall be contacted for proper disposal procedures and requirements. Transite pipe, if installed at the proposed project would then be removed and properly disposed, but it is considered to be a less than significant impact. It is recommended that prior to demolition an asbestos survey is conducted on the irrigation system and onsite structures to mitigate and possibly abate any impacts.

6.1.3 Pole Mounted Electrical Transformers

Fourteen pole and two ground mounted electrical transformer are located on or adjacent to the proposed project. The pole mounted electrical transformers appear to be in good condition and there is no apparent corrosion. The ground surface below each pole mounted transformer displayed no evidence of discoloration. The two ground mounted electrical transformers appear to be in good condition and there is no apparent corrosion.

The Pacific Gas and Electric Company (PG&E) is the owner of the pole mounted electrical transformers. The Pacific Gas and Electric Company's transformer database, compiled circa 1990, does not indicate whether polychlorinated biphenyls (PCBs) are present in the electrolytic fluids of older transformers, especially those installed prior to the year 1990. However, pole mounted transformers installed subsequent to 1990 likely do not contain polychlorinated biphenyl (PCB) insulating fluids. Pole mounted electrical transformers and re-closers labeled with a blue "non-PCB" sticker do not contain polychlorinated biphenyls (PCB) fluids. It is unknown if the onsite pole mounted transformers absent blue "non-PCB" stickers contain polychlorinated biphenyls (PCB) fluids. Based on the visual absence of apparent unauthorized releases of insulating fluids from the electrical transformers they are considered to be less than significant impacts to the proposed project. Pacific Gas and Electric Company (PG&E) should be contacted for their removal prior to the proposed project development.

6.1.4 Malibu Vineyards Section 30 O & M Facility / LUST

In August 1989, a 1,000 gallon underground gasoline storage tank was determined to be leaking. The tank was removed and replaced with a contained aboveground storage tank. The gasoline plume extended vertically downward to the top of a perched water table created by

the adjacent irrigation pond. The surrounding soils were sampled and tested, and determined that by July 1986, the TPH had been significantly reduced by natural occurring microbial action and the LUST case was closed November 1996. Six feet of clean soil was placed above the location of old tank. The existing soils associated with the LUST should be considered a less than significant impact. As noted in the November 27, 1996 Remedial Action Completion Certification, if a change in land use is proposed, the owner must promptly notify the KCEHS. The LUST is recorded on the Historic Cortese list, however it is noted that based on the historical agricultural land use there is potential for organochlorine pesticides, fuels and metals to be present in shallow soil at concentrations above current regulatory environmental screening levels or hazardous waste characterization thresholds for waste disposal. It is recommended that a soil management plan is prepared to provide the construction team guidance for the proper handling and management of contaminated soil should it be encountered during redevelopment of the LUST area.

6.1.5 Malibu Vineyards Section 30 O & M Facility

The O&M facility and irrigation pond has been located at the northeast corner of Section 30 since the early 1940's. Currently, five structures and a carport/parking shade structure are located on the property. The buildings and carport are expected to be demolished with a substantial portion of the debris material suitable for recycling; a demolition permit obtained from the Kern County Building Inspection Department may be required. The wooden carport structure located at the north portion of the facility is considered a less-than-significant impact. The small wooden office building located at the middle of the facility is considered a less-than-significant impact. The floor slab of the wood and metal agriculture repair shop building may have oil staining, but this building should also be is considered a less-than-significant impact. The existing 2,500 sf concrete slab adjacent to the irrigation may have oil stains from equipment parking, but slab removal should be considered a less-than-significant impact. The metal shop building located along the south fence line is considered a less-than-significant impact. With proper transport or disposal of the enclosed hazardous materials, the chemical storage building should be considered a less-than-significant impact. The propane tank is considered a less-than-significant impact, and appears to be in good condition and might conceivably be utilized elsewhere. Final disposition for the current gasoline Aboveground Storage Tank is considered a less than significant impact, and shall consist of obtaining the necessary permits for closure of tank and transport to a local metals dismantling/recycling facility for destruction. Conducting a chemical soil analysis would ensure proper mitigation of any potential impacts the agricultural chemical storage areas had on the site.

6.2 Proposed Project Impacts

Approval of the proposed project by the County of Kern would allow for medium industrial uses. Industrial uses may result in increased risks from hazardous materials. These types of industrial uses may allow the installation of aboveground and/or underground storage tanks utilized for fueling vehicles and backup generators (this short list is not all-inclusive). These uses could potentially result in environmental impacts from hazardous materials and/or substances. However, various government entities require permits for the abovementioned concerns. These various permits require controls that would reduce the potential impacts to a less than significant level. The proposed project would comply with all applicable rules and regulations dealing with hazardous materials and/or substances from the following agencies:

- San Joaquin Valley Air Pollution Control District
- California Regional Water Quality Control Board
- California Integrated Waste Management Board
- California Department of Toxic Substances Control
- California Office of Environmental Health Hazard Assessment
- Kern County Department of Environmental Health Services
- Kern County Fire Department

Small portions of the proposed project are located within an airport land use plan, but the proposed project does not constitute a remote safety hazard. In addition, the proposed project is not located within one-quarter mile of a school.

The proposed project would not create a significant hazard to the public or the environment through the routine transport, use, and/or disposal of hazardous materials. It would not create a significant hazard to the public or the environment through reasonable foreseeable upset and accident conditions involving the release of hazardous materials into the environment. The proposed project would not be a source of hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing school or proposed school.

6.2.1 Government Code, Section 65962.5

The California Legislative Information for Section 65962.5 (a) - The Department of Toxic Substances Control shall compile and update as appropriate, but at least annually, and shall submit to the Secretary for Environmental Protection a list of all of the following:

- Section 65962.5 (1) - All hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of the Health and Safety Code.
    - Health and Safety Code (HSC) Section 25187.5 (a) – If corrective action is not taken on or before the date specified in an order issued pursuant to Section 25187, or if in the judgement of the department immediate corrective action is necessary to remedy or prevent an imminent substantial danger to the public

health, domestic livestock, wildlife, or the environment, the department may take, or contact for the taking of, that corrective action and recover the cost.

The proposed project is not included on any hazardous materials sites lists. The proposed project would not create a hazard to the public or environment through the transport, disposal and/or use of hazardous materials, and it would not create a public hazard through emissions of hazardous materials, accidental or otherwise.

6.2.2 Wildlands

Wildlands are not located adjacent to the proposed project.

7.0 Mitigation

Hazardous materials are generally substances that, by their nature and reactivity, have the capacity to cause harm or create a health hazard during normal exposure or an accidental release.

- If during excavation and construction, potential unknown buried hazardous materials are found, and/or if unidentified materials are discovered in the prescribed soil testing, health and safety procedures shall be implemented. Procedures shall include, at a minimum, emergency medical treatment, evacuation of the site and/or threatened area, and notification action. Notification shall be determined by the appropriate agency which may include but not be limited to the following agencies: Kern County Department of Environmental Health Services, Kern County Fire Department, San Joaquin Valley Unified Air Pollution Control District, and the California Regional Water Quality Control Board. Evacuation and determination regarding the type of contamination encountered and best course of action would be determined by the ranking official and any required remediation measures shall be implemented. All work would stop immediately if any heretofore unknown soil or other hazardous materials concerns arise during any part of the testing, excavation and/or construction on the proposed project.

8.0 Conclusions

Impacts related to hazardous materials and hazardous substances are considered site-specific and are generally mitigated to less than significant levels on a project-by-project basis. In the case of the proposed project, all potential hazards and potentially hazardous materials or situations that could result from the release of substances would be mitigated to less than significant levels. Compliance with the applicable federal, state, and local regulations, which includes safety standards, would minimize the potential cumulatively considerable impacts on the proposed project.

This Hazardous Materials Evaluation Report Final has determined that the proposed project at the Malibu Vineyards Industrial Park would not have a significant impact, either individually or cumulatively, for impacts relating to fixed hazards or hazardous materials or substances with the incorporation of mitigation measures.

McIntosh & Associates Engineering, Inc. has completed this Hazardous Materials Evaluation Report Final with the best available information at the time the evaluation was performed for proposed project. This report was prepared to satisfy the California Environmental Quality Act Guidelines (CCR Section 15000) Checklist Section VII using current standards of professional care.

McIntosh & Associates Engineering, Inc.

9.0 Resources

American Lung Association; "State of the Air 2020" report covering 2016-2018; http://www.stateoftheair.org/city-rankings/, reviewed April 2020

ASTM International (ASTM); E1527-13, "Standard Practice for Environmental Site Assessments: Phase I Environmental site Assessment Process", November 1, 2013

California Department of Conservation, California Geological Survey (CGS); Information Warehouse-Regulatory Maps, Special Studies Zones Map – Oildale and North of Oildale quadrangles (eff January 1, 1985); https://maps.conservation.ca.gov/cgs/informationwarehouse/regulatorymaps/; reviewed March 2020; Geologic Map of California - 2010; https://maps.conservation.ca.gov/cgs/DataViewer/; reviewed March 2020; Quaternary Surficial Deposits-Special Report 217 – East Half of the Taft Quadrangle – December 2011; https://www.conservation.ca.gov/cgs/Documents/Program-FWGP/plate19_taft.pdf; reviewed March 2020.

California Department of Conservation, Geologic Energy Management Division (CalGEM); Inland District, County of Kern; https://maps.conservation.ca.gov/doggr/wellfinder; reviewed April 2020

California Department of Finance, Report E-1, Population Estimates for Cities, Counties, and the State — January 1, 2019 and 2020; released May 1, 2020; http://www.dof.ca.gov/Forecasting/Demographics/Estimates/e-1/; reviewed May 2020

California Department of Pesticide Regulation, Licensing and Certification Current Valid Licenses (Kern County) – Business, dated July 31, 2020; https://www.cdpr.ca.gov/docs/license/pdf/Valid_Licenses_(Kern_County)-Business.pdf/; reviewed August 2020

California Department of Toxic Substances Control (DTSC); https://www.envirostor.dtsc.ca.gov/public/map/; reviewed May 2020, updated June 2020; Hazardous Waste Manifests, https://hwts.dtsc.ca.gov/report_search.cfm?id=3, reviewed July 2020

California Department of Water Resources (DWR), Water Data Library; http://www.water.ca.gov/waterdatalibrary/; reviewed April 2020

California Department of Water Resources (DWR), Well Completion Report Map Application; https://www.arcgis.com/apps/webappviewer/index.html?id=181078580a214c0986e2da28f8623b37; reviewed April 2020

California Energy Commission, California Natural Gas Pipeline and Station-Facilities Map; https://cecgis-caenergy.opendata.arcgis.com/app/california-natural-gas-pipeline-and-station-web-app; reviewed March 2020

California Environmental Protection Agency, Air Resources Board, Community Health Air Pollution Information System (CARB Pollution Mapping Tool); https://ww3.arb.ca.gov/ei/tools/pollution_map/#; reviewed May 2020 (CHAPIS website not available May 2020)

California Environmental Protection Agency (CalEPA) Regulated Site Portal; https://siteportal.calepa.ca.gov/nsite/map/results; reviewed May 2020

California Environmental Quality Act (CEQA) - Year 2020; https://www.wildlife.ca.gov/Conservation/CEQA/Purpose;

California Governor's Office of Emergency Services (Cal OES), CUPA and HazMat Spill Reports; https://www.caloes.ca.gov/; reviewed May 2020

California Office of Environmental Health Hazard Assessment (OEHHA), CalEnviroScreen 3.0; https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-30; https://oehha.ca.gov/calenviroscreen/indicator/,reviewed May 2020

California Office of the State Fire Marshall (CAlFire OSFM), Aboveground Petroleum Storage Act, Requirements for Farms per Senate Bill 612; SPCC Farm Exemption; http://osfm.fire.ca.gov/cupa/apsa; February 19, 2016, https://dtsc.ca.gov/.../APSA-and-SB-612-for-Farms.pdf

California State Water Resources Control Board-GAMA Goundwater Information System; https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/#; reviewed May 2020

California State Water Resources Control Board; Geo-Tracker – Sites & Facilities Map; https://geotracker.waterboards.ca.gov/map/?CMD=runreport&myaddress=bakersfield; Cleanup Sites & Permitted UST Sites, https://geotracker.waterboards.ca.gov/datadownload, Historical UST Facilities, https://geotracker.waterboards.ca.gov/historical_ust_facilities, reviewed May 2020

California State Water Resources Control Board; Geo-Tracker – PFAS Map; https://geotracker.waterboards.ca.gov/map/pfas_map, reviewed October 2021

Cawelo Water District (CWD) Website; https://www.cawelowd.org/; and SGMA/GSP; https://www.cawelowd.org/sgma/, reviewed April 2020

City of Bakersfield; Metro Bakersfield General Plan Map; dated February 17, 2017; Laserfiche WebLink; www.bakersfiieldcity.us; reviewed June 2017

Metropolitan Bakersfield General Plan
Metropolitan Bakersfield General Plan Map – Year 2008
Metropolitan Bakersfield General Plan Circulation Element Map

Municipal Service Review, Sphere of Influence Update and Amendment, prepared for Kern County LAFCO, December 2015.

City of Shafter; Shafter General Plan Land Use Map; dated April 6, 2005;

Shafter General Plan – April 2005
Shafter General Plan Map – Year 2005
Shafter General Plan Circulation Element Map – MSR Fig 3-7-1

Municipal Service Review, Sphere of Influence Update and Amendment, prepared for Kern County LAFCO, July 2014

Environmental Data Resources, Inc., "EDR Area/Corridor Report", "EDR DataMap™ Well Search Report" & "EDR DataMap™ Well Search Map", received February 13, 2020

Google Earth; www.google.com; Aerial Photograph dated August 30, 2018; reviewed April 2020

Institute of Hazardous Materials Management. 2020. What is a hazardous material. https://www.ihmm.org/about-ihmm/what-are-hazardous-materials. Accessed April 2020

Kern County California Agriculture and Measurement Standards website; Crop Maps; https://maps.kerncounty.com/H5/Index.html?Viewer=Agriculture, reviewed April 2020. Permit and Pesticide Use; http://www.kernag.com/ep/permit-use/permit-use.asp, May 2020

Kern County California Assessor Recorders Office; http://recorderonline.co.kern.ca.us;

Kern County California Building Inspection Department; https://kernpublicworks.com/building-and-development/building-inspection/; reviewed May 2020

Kern County California Environmental Health Services Department; data requests responses eh@kerncounty.com & PH@kerncounty.com; reviewed June- August, 2020

Kern County California Geographic Information Systems (GIS); Kern County Zoning Maps; https://maps.kerncounty.com/H5/index.html?viewer=KCPublic; multiple accesses

Kern County California Planning and Natural Resources Department; https://kernplanning.com/;
Airport Land Use Compatibility Plan, November 13, 2012.

Kern County California Public Works Website; Zoning Maps 80 & 81; https://kernpublicworks.com/maps/zone-maps/; reviewed January 2020

North Kern Water Storage District (NKWSD) Website; https://www.northkernwsd.com/; SGMA; https://www.northkernwsd.com/sustainable-groundwater-management-act/; reviewed April 2020.

Pacific Gas & Electric Company (PG&E); PG&E Electric Transmission Maps and Distribution Maps, Malibu Vineyards project area; Delineation Map Requests <DelineationMapRequests@pge.com> dated June 16, 2020, received July 14, 2020.

San Joaquin Valley Air Pollution Control District (SJVAPCD), Record Setting Air Quality in 2019; https://www.valleyair.org/documents/achievements/2019.pdf, and 2019-2020 PM2.5 Season was Cleanest on Record; https://www.valleyair.org/achievements.htm, reviewed April 2020

State of California, Department of Water Resources, California Statewide Groundwater Elevation Monitoring (CASGEM); www.casgem.water.ca.gov; reviewed June 2017

United States Census Bureau-2019 American Community Survey; Annual Estimates of the Resident Population for Counties in California: April 1, 2010 to July 1, 2019, dated March, 2020; https://www.census.gov/data/tables/time-series/demo/popest/2010s-counties-total.html; reviewed April 2020.

United States Department of Agriculture, Natural Resources Conservation Services; Kern County California, Northwestern Part (CA666); dated September 18, 2014; www.websoilsurvey.nrcs.usda.gov; reviewed March 2020

United States Environmental Protection Agency (EPA); www.epa.gov; reviewed April 2020

United States Environmental Protection Agency (EPA), Environmental Justice Screening and Mapping Tool (EJSCREEN); https://ejscreen.epa.gov/mapper/index.html; reviewed May 2020, EJSCREEN Technical Documentation; https://www.epa.gov/sites/production/files/2017-09/documents/2017_ejscreen_technical_document.pdf, September 2019

United States Environmental Protection Agency (EPA), Facility Registry Service (FRS), FRS Facility Query; https://www.epa.gov/frs/frs-query; reviewed May 2020

United States Environmental Protection Agency (EPA), Section Seven Tracking System (SSTS), Pesticide Establishment Registration and Reporting; https://www.epa.gov/compliance/pesticide-establishment-registration-and-reporting; Registered Pesticide Producing Establishments; https://www.epa.gov/compliance/national-list-active-epa-registered-foreign-and-domestic-pesticide-andor-device-producing; reviewed August 2020

United States Environmental Protection Agency (EPA), Superfund Archived Site Inventory; https://www.epa.gov/superfund/list-8r-archived-site-inventory; reviewed July 2020

United States Environmental Protection Agency (EPA), Superfund Sites-Kern County; https://cumulis.epa.gov/supercpad/cursites/srchsites.cfm; reviewed July 2020

United States Environmental Protection Agency (EPA), Toxics Release Inventory (TRI) Program; https://www.epa.gov/toxics-release-inventory-tri-program; reviewed May 2020

United States Geological Survey; Department of the Interior; USGS Store; Topographic Quadrangle Maps; 7.5 Minute Maps; https://store.usgs.gov/map-locator; reviewed April 2020

United States Geological Survey; Mineral Resource Data Center; Kramer Pit; https://mrdata.usgs.gov/mrds/show-mrds.php?dep_id=10285177; Cauley Pit; https://mrdata.usgs.gov/mrds/show-mrds.php?dep_id=10163317; reviewed July 2020

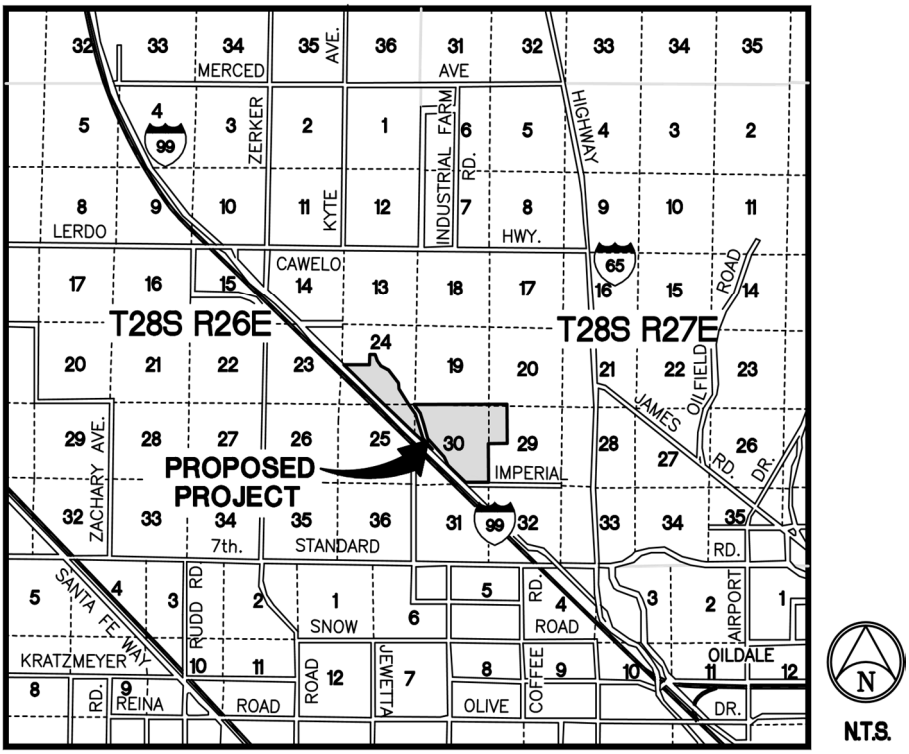
United States Department of Transportation, Pipeline and Hazardous Materials Safety Administration (PHMSA), National Pipeline Mapping System-Public Viewer application; https://pvnpms.phmsa.dot.gov/PublicViewer/, accessed April 2020

United States Library of Congress, Sanborn Maps collection; https://www.loc.gov/collections/sanborn-maps/; reviewed June 2020

APPENDIX A

Figures





PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Project Location Maps

Figure A-1

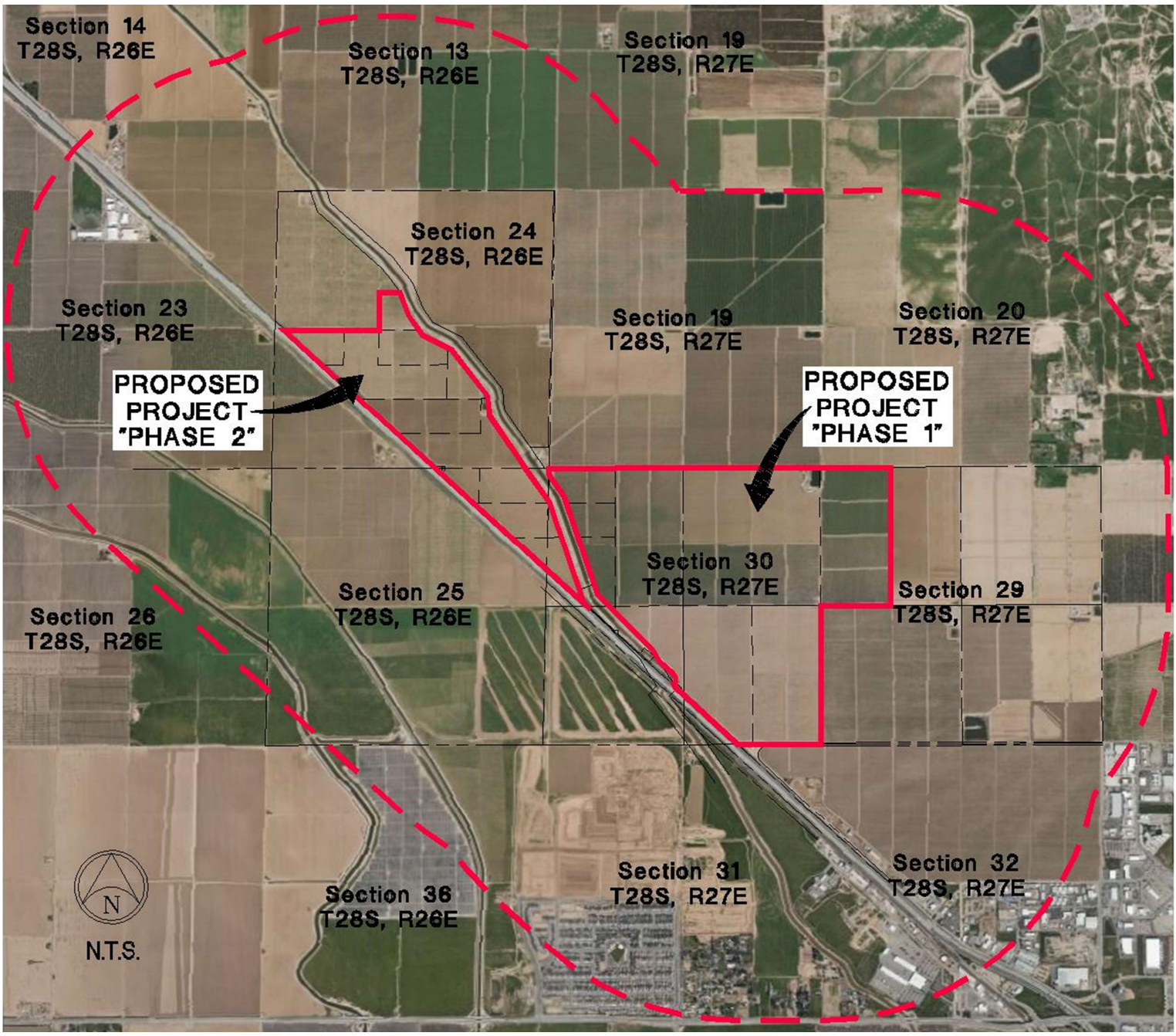


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph Proposed Project Location Map

Figure A-2

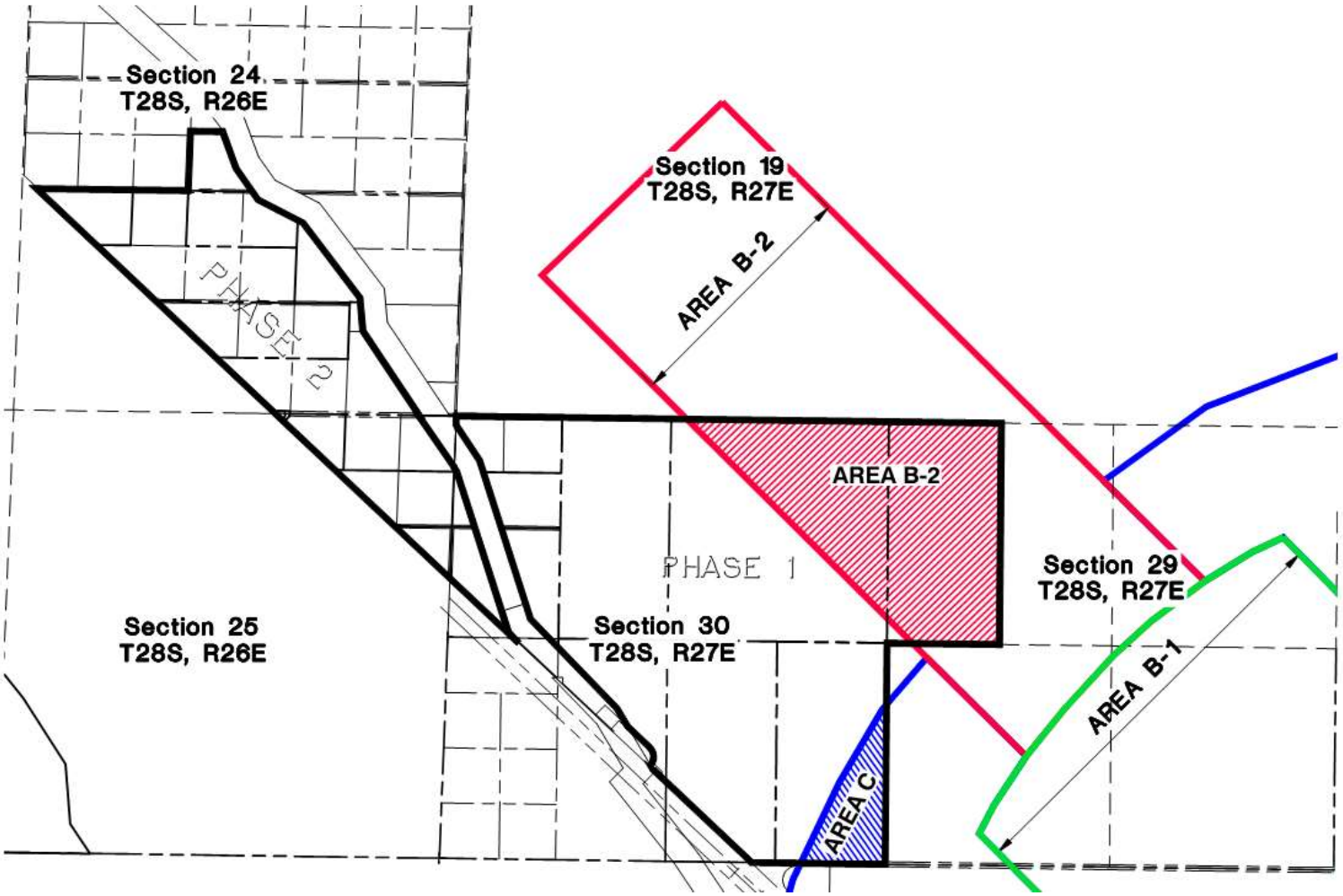


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph Proposed Project Location Map
1 Mile Radius

Figure A-3

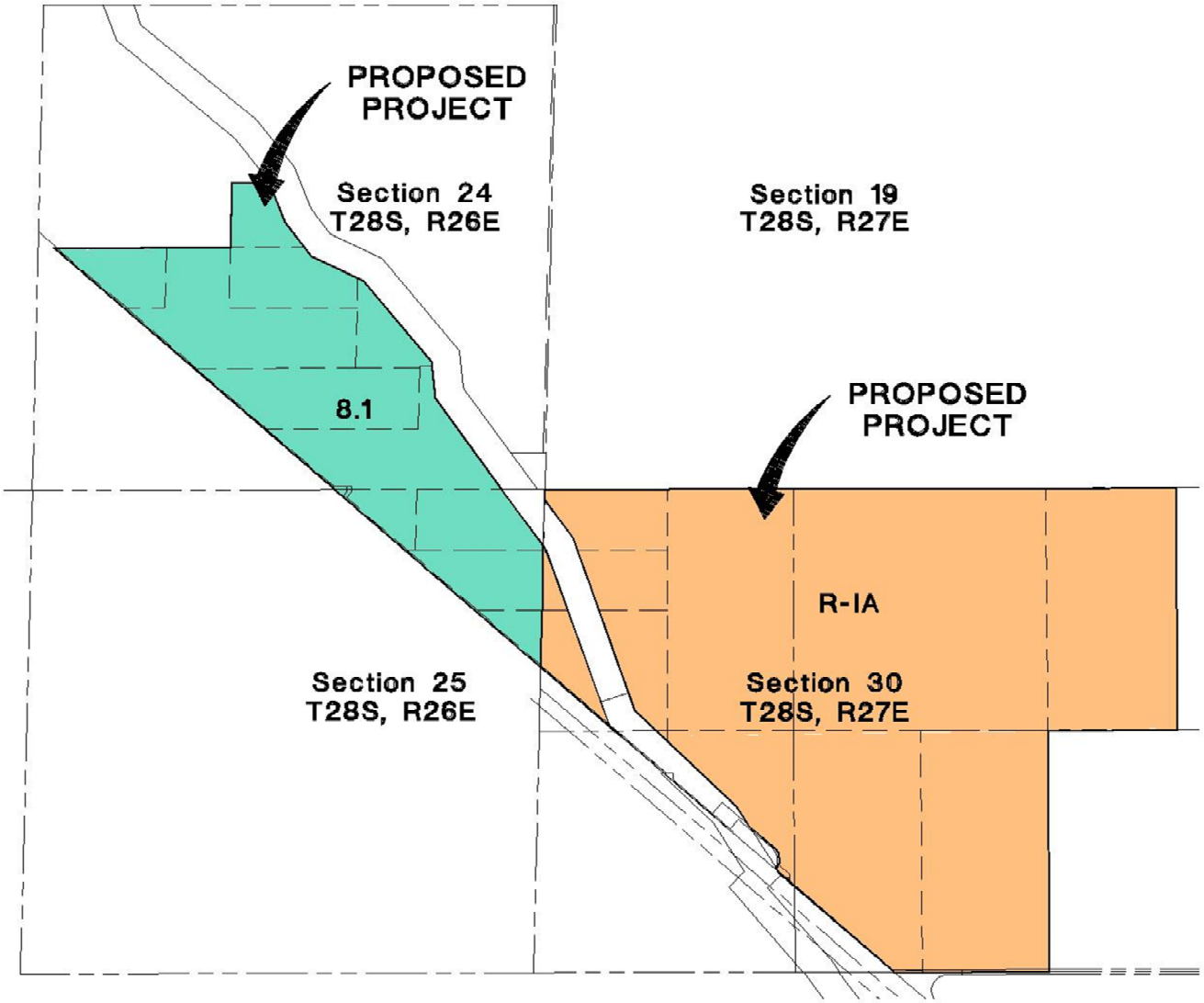


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Meadows Field Airport Land Use Plan Map

Figure A-4



ZONE LEGEND:

8.1 - INTENSIVE AGRICULTURE

R-IA - INTENSIVE AGRICULTURE

N

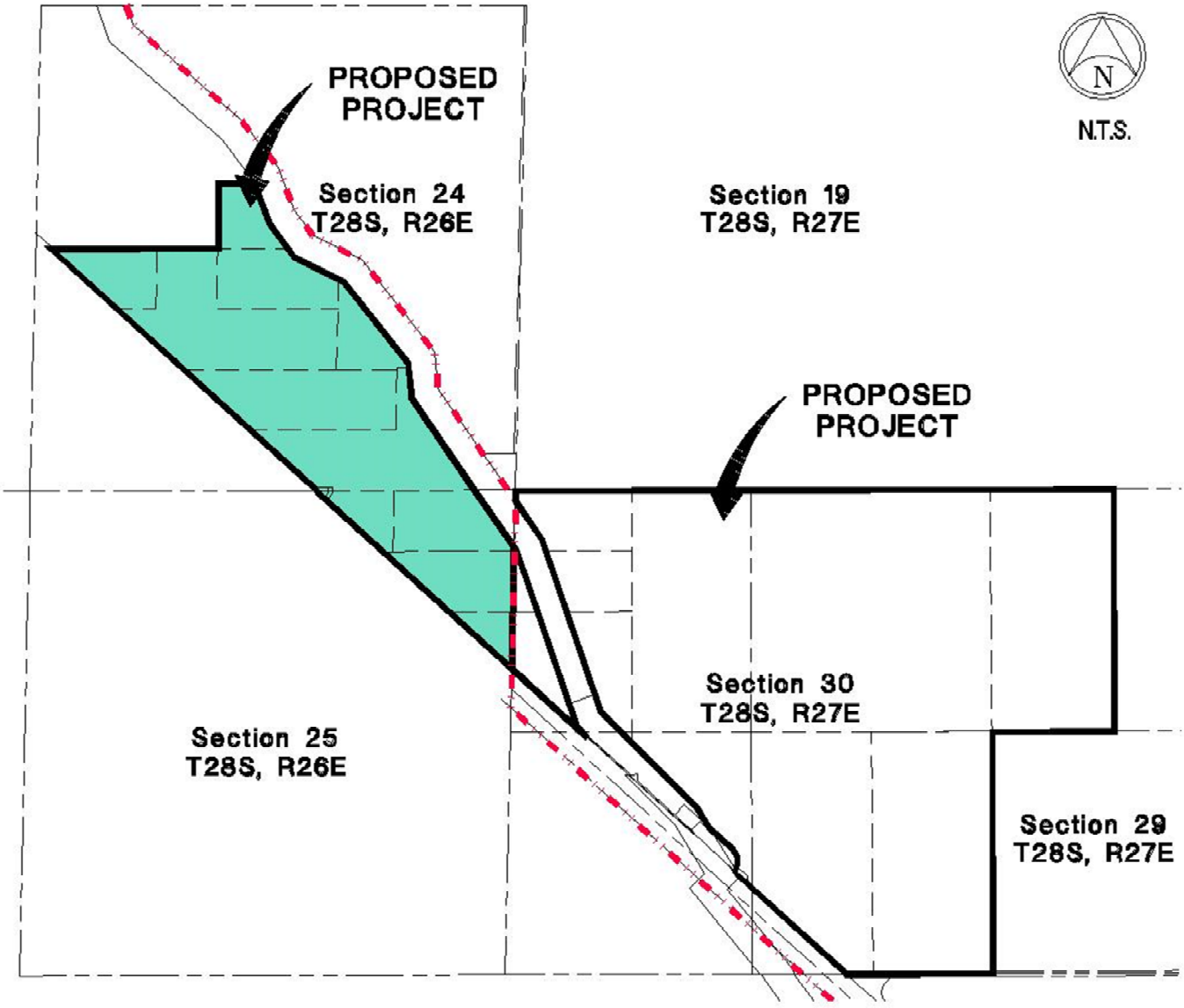
N.T.S.

PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Kern County General Plan

Figure A-5



GENERAL PLAN LAND USE LEGEND:

AGRICULTURE/OPEN SPACE

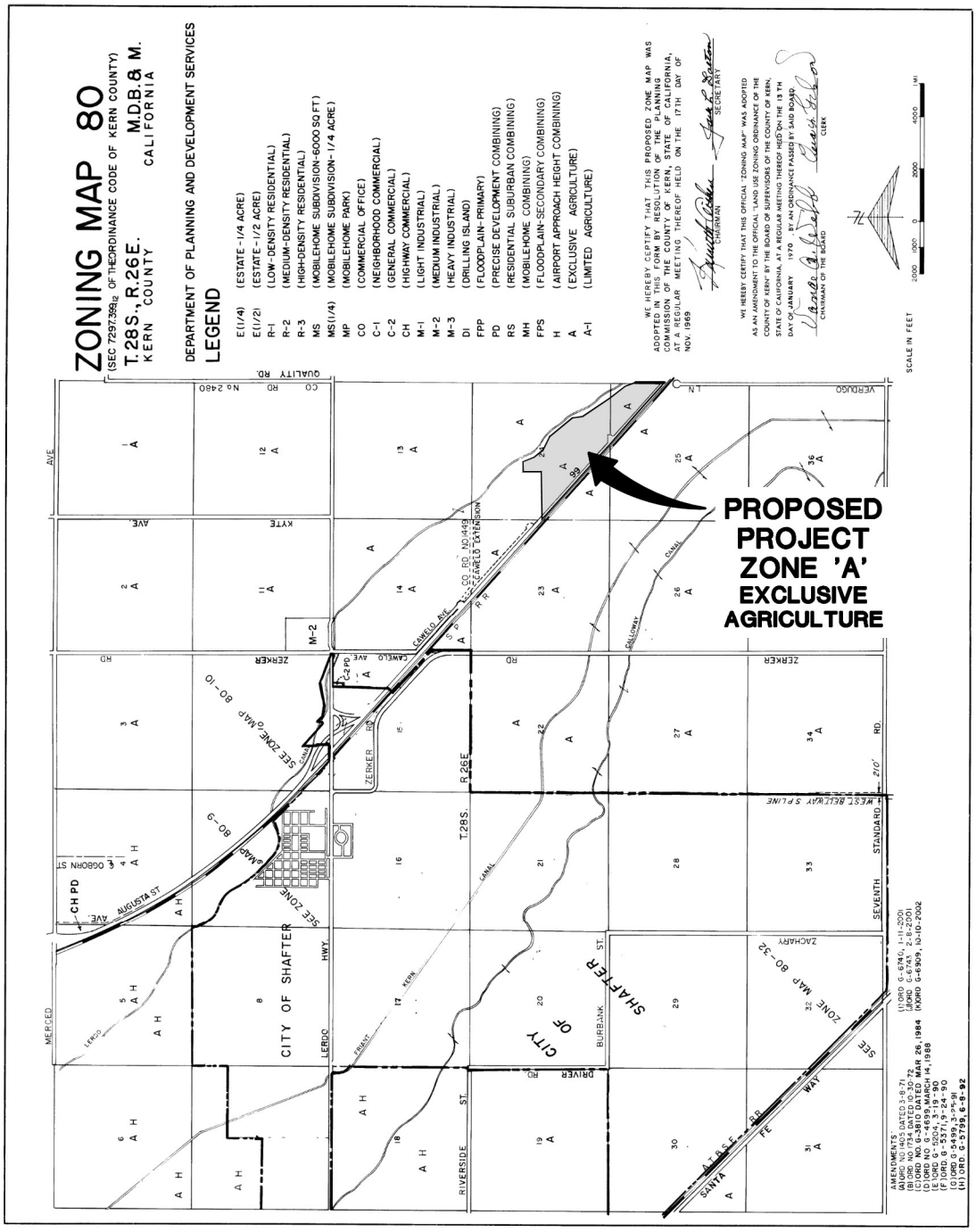
SPHERE OF INFLUENCE

PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

City of Shafter General Plan & Sphere of Influence

Figure A-6

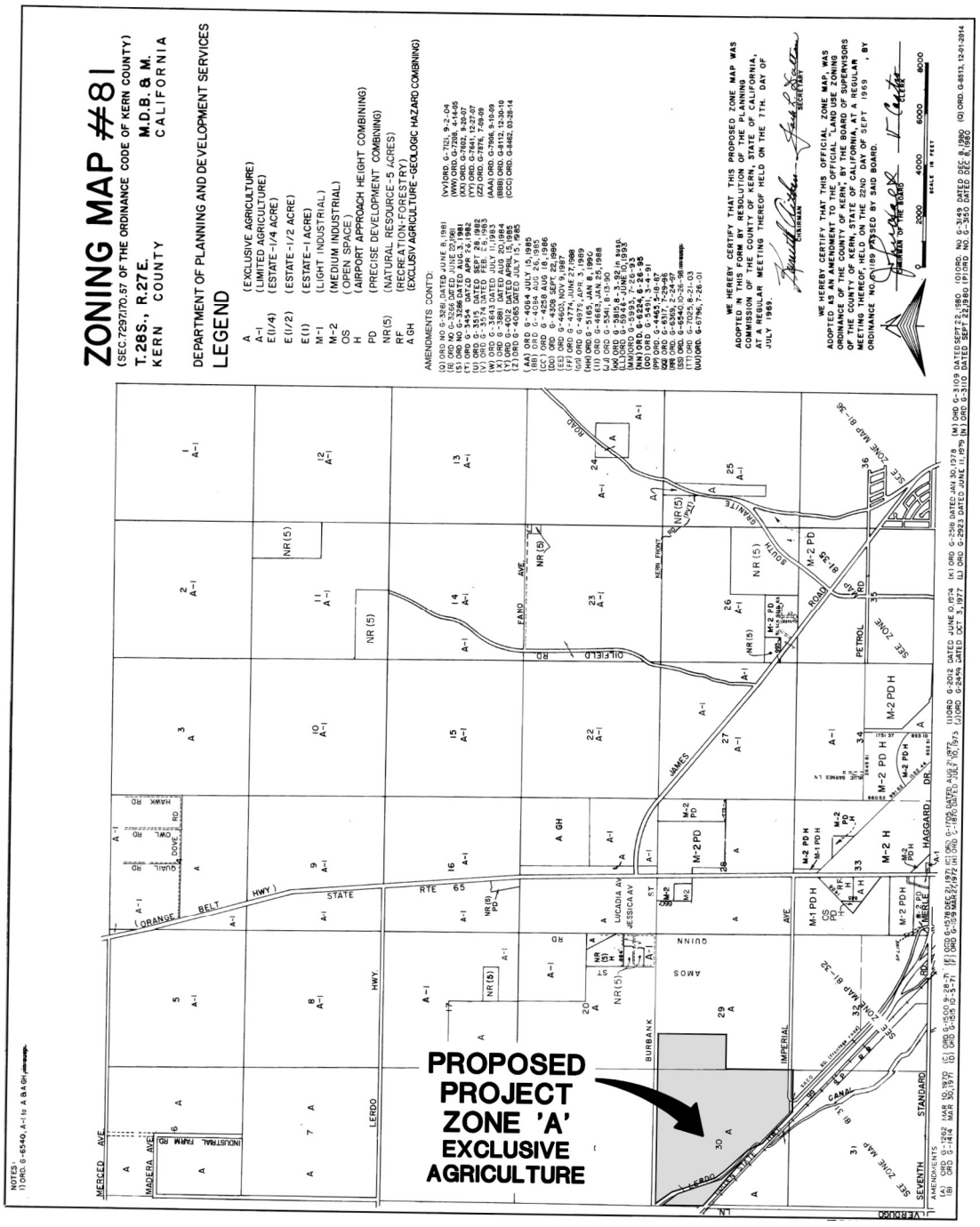


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

County of Kern Zoning Map 80

Figure A-7

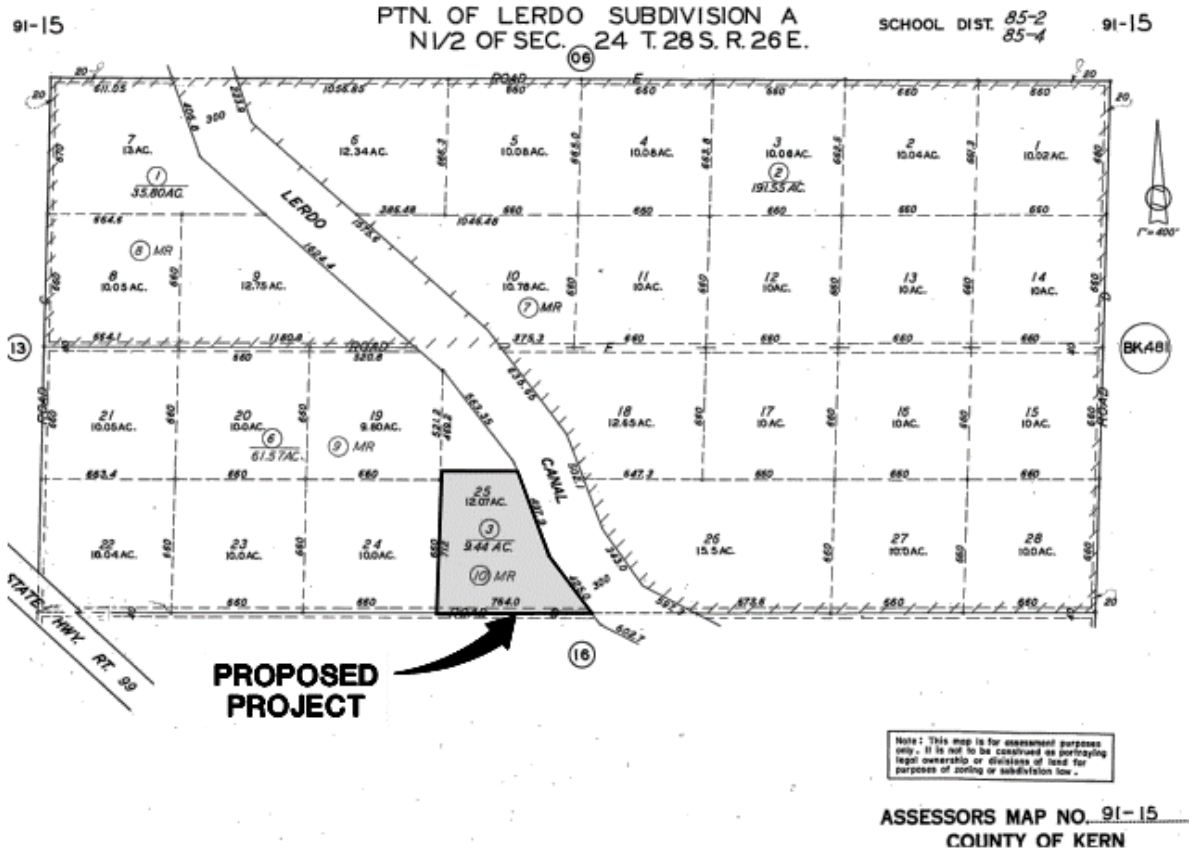


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

County of Kern Zoning Map 81

Figure A-8

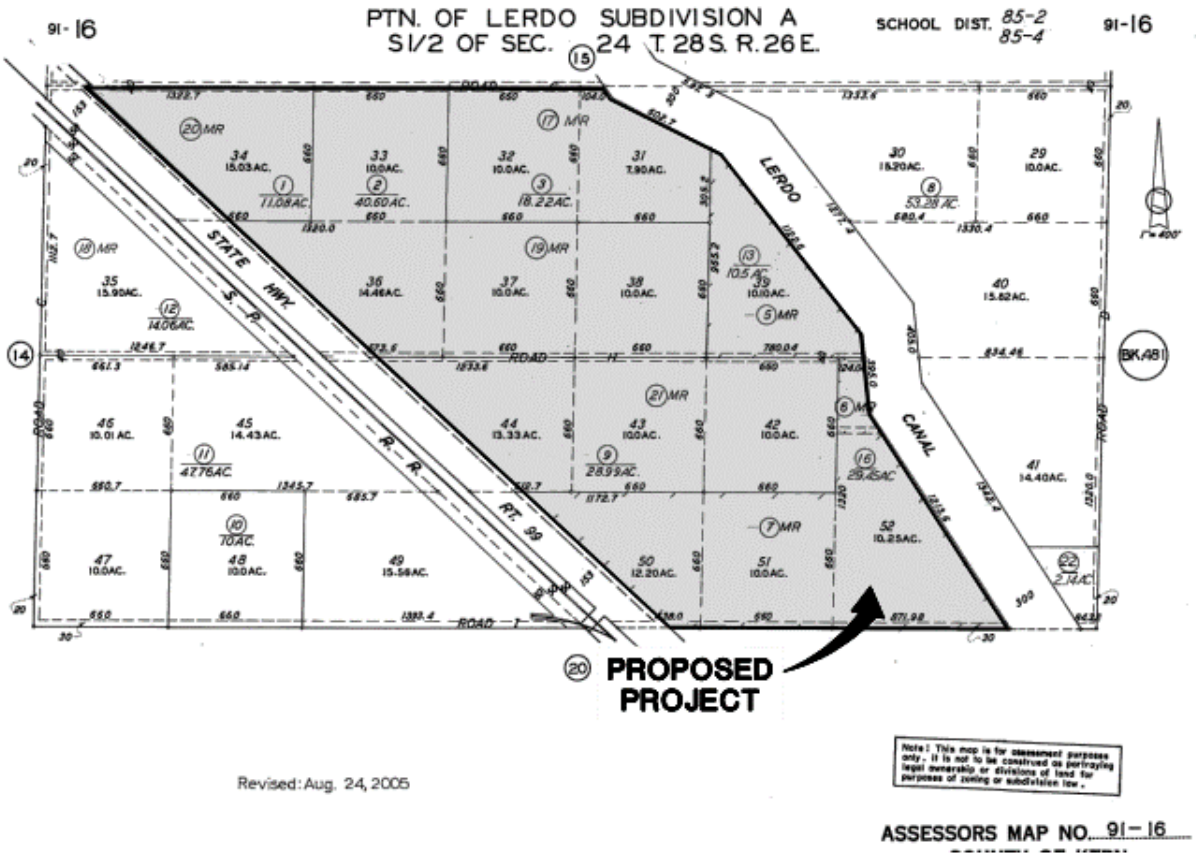


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Assessors Parcel Map 91-15

Figure A-9

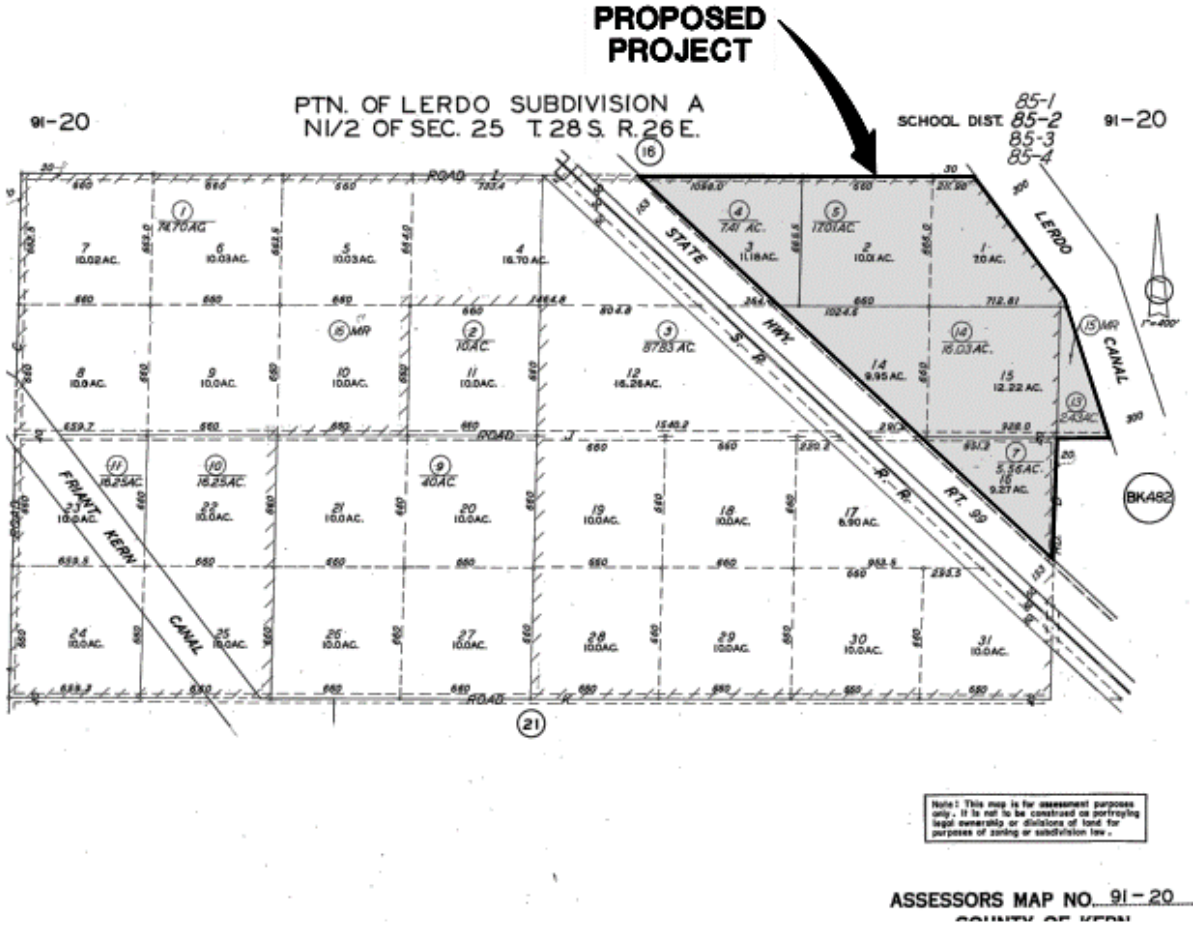


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Assessors Parcel Map 91-16

Figure A-10

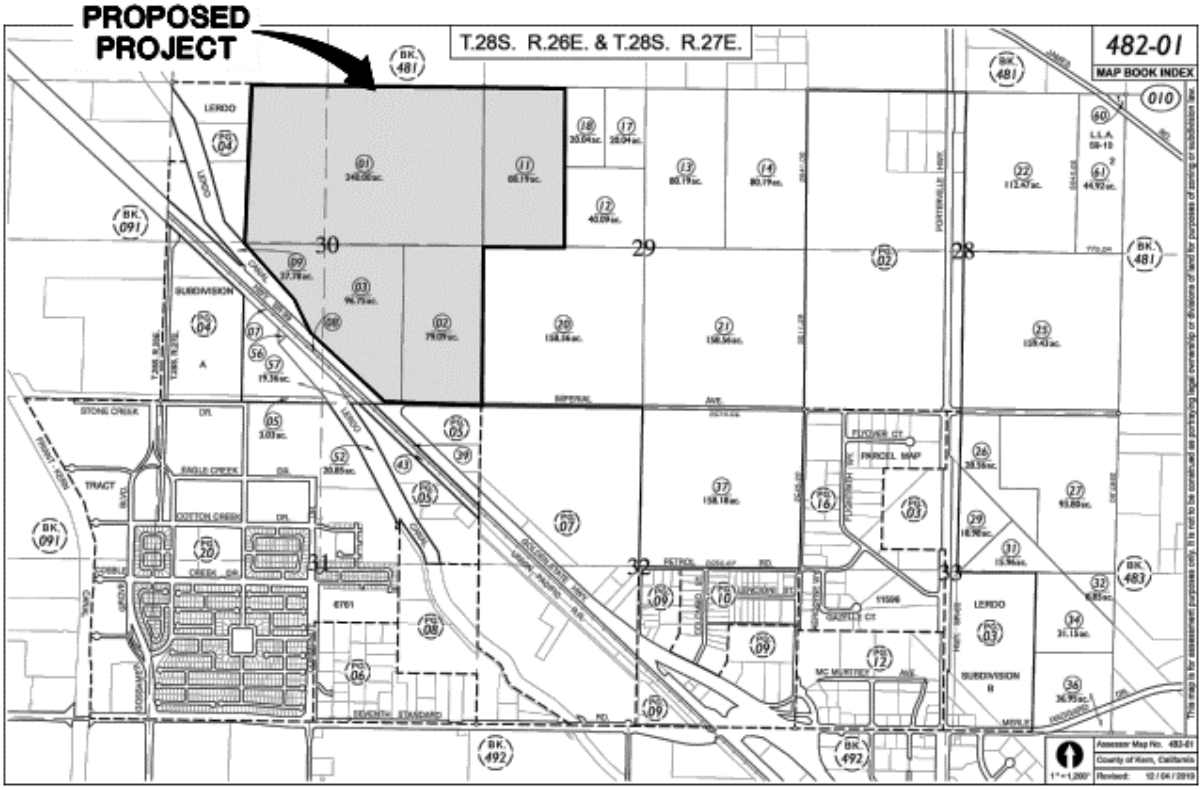


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Assessors Parcel Map 91-20

Figure A-11

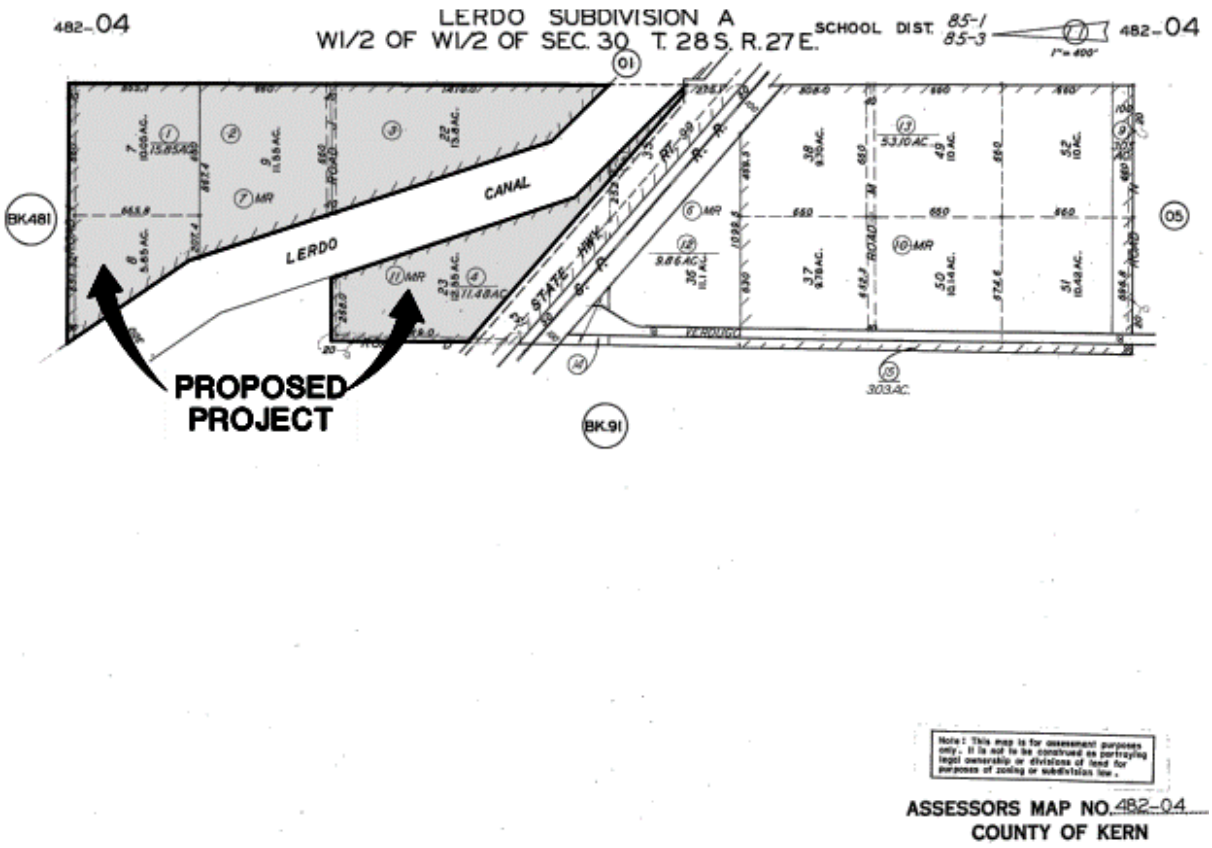


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Assessors Parcel Map 482-01

Figure A-12



PROPOSED PROJECT

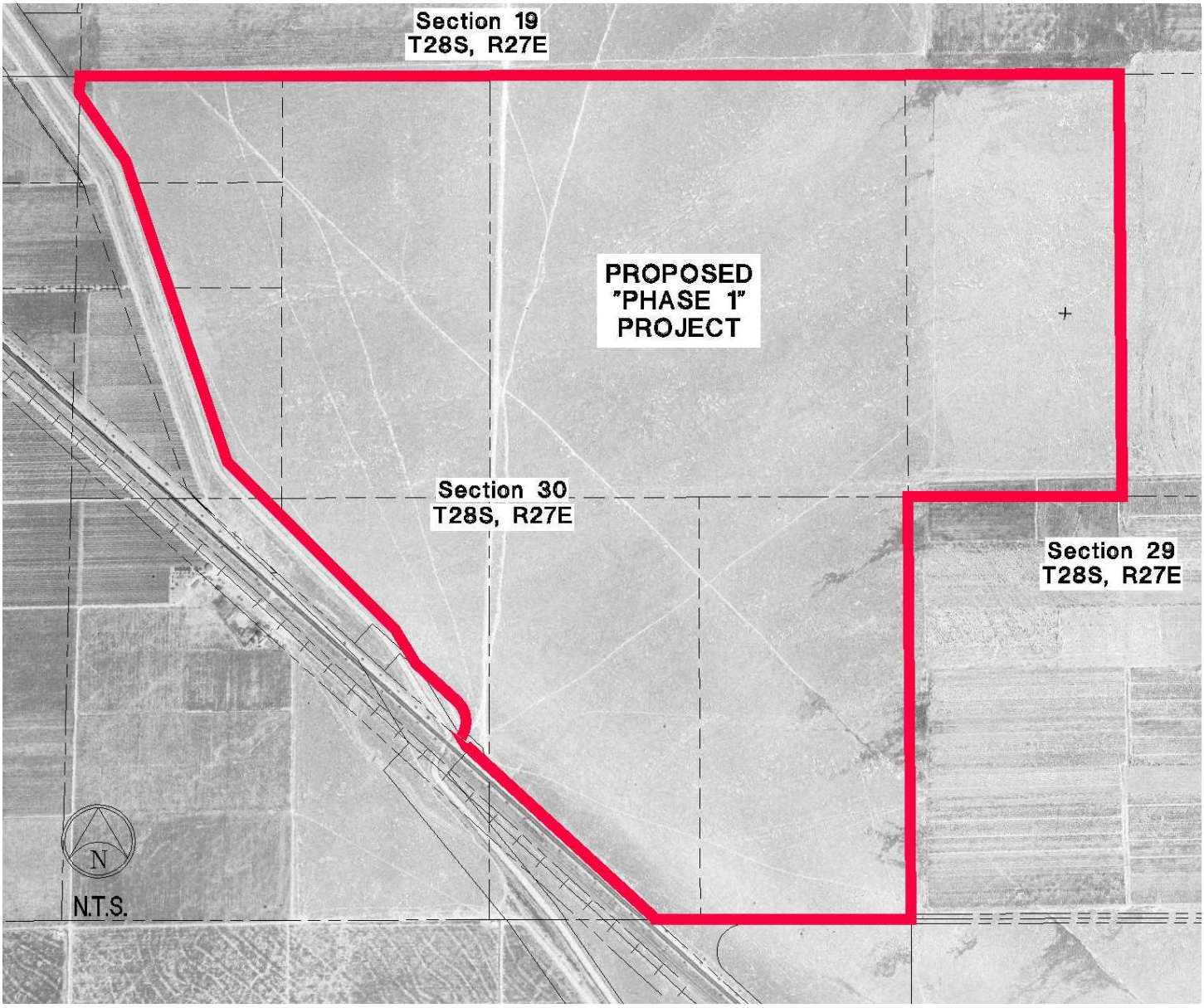
Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Assessors Parcel Map 482-04

Figure A-13

APPENDIX B

Aerial Figures

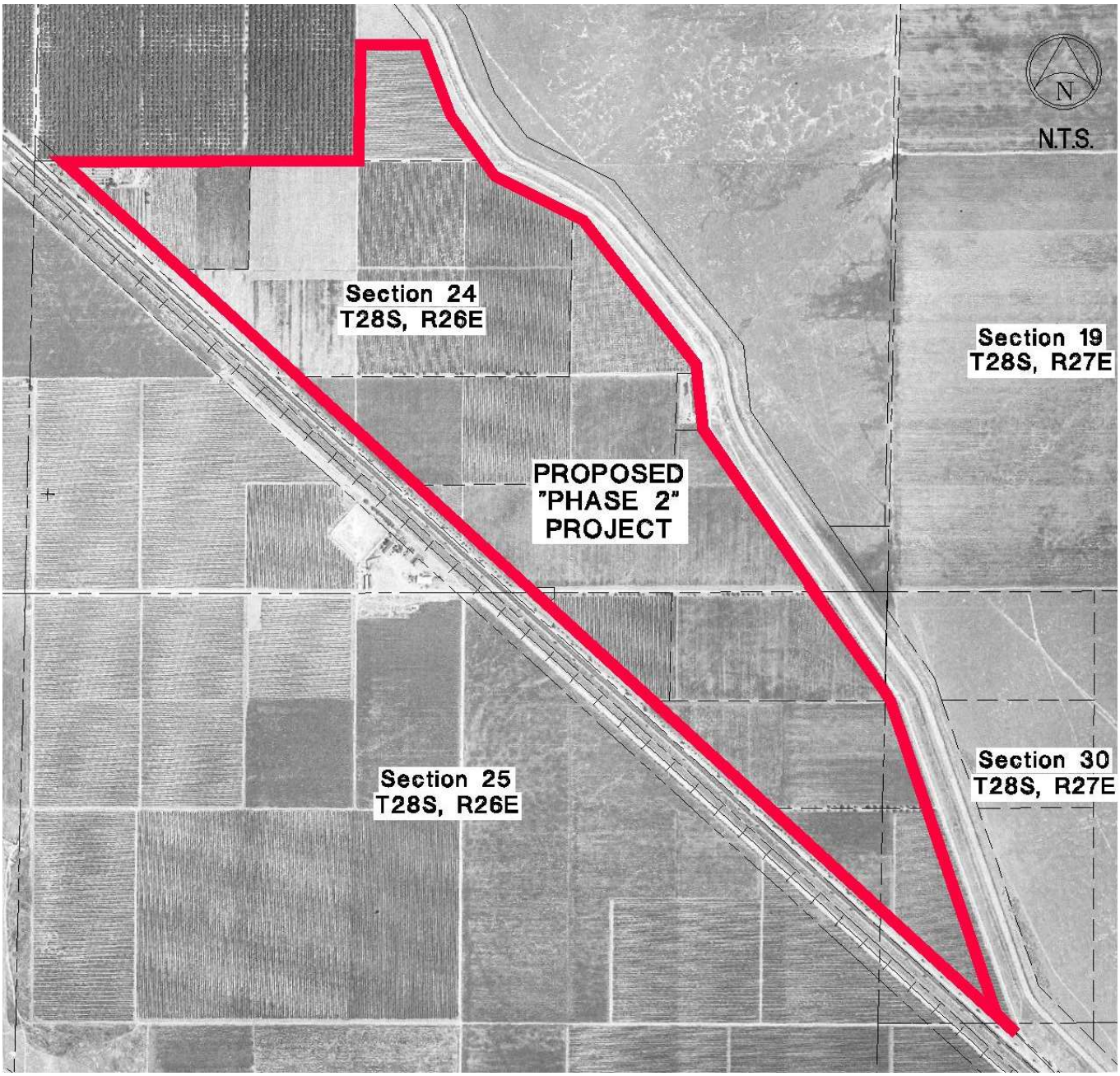


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (1937)
Proposed "PHASE 1" Project Location Map

Figure B-1

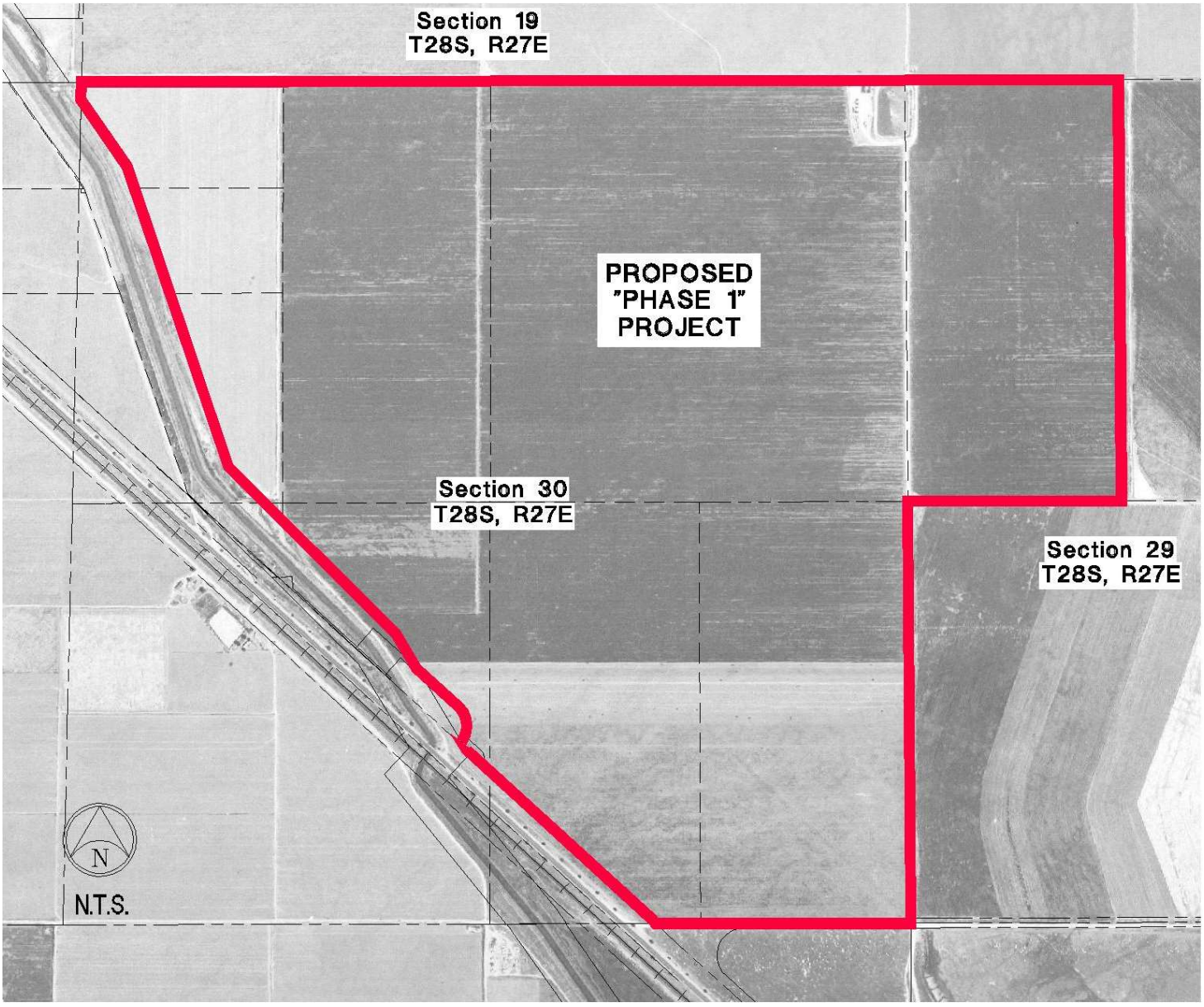


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (1937)
Proposed "PHASE 2" Project Location Map

Figure B-2

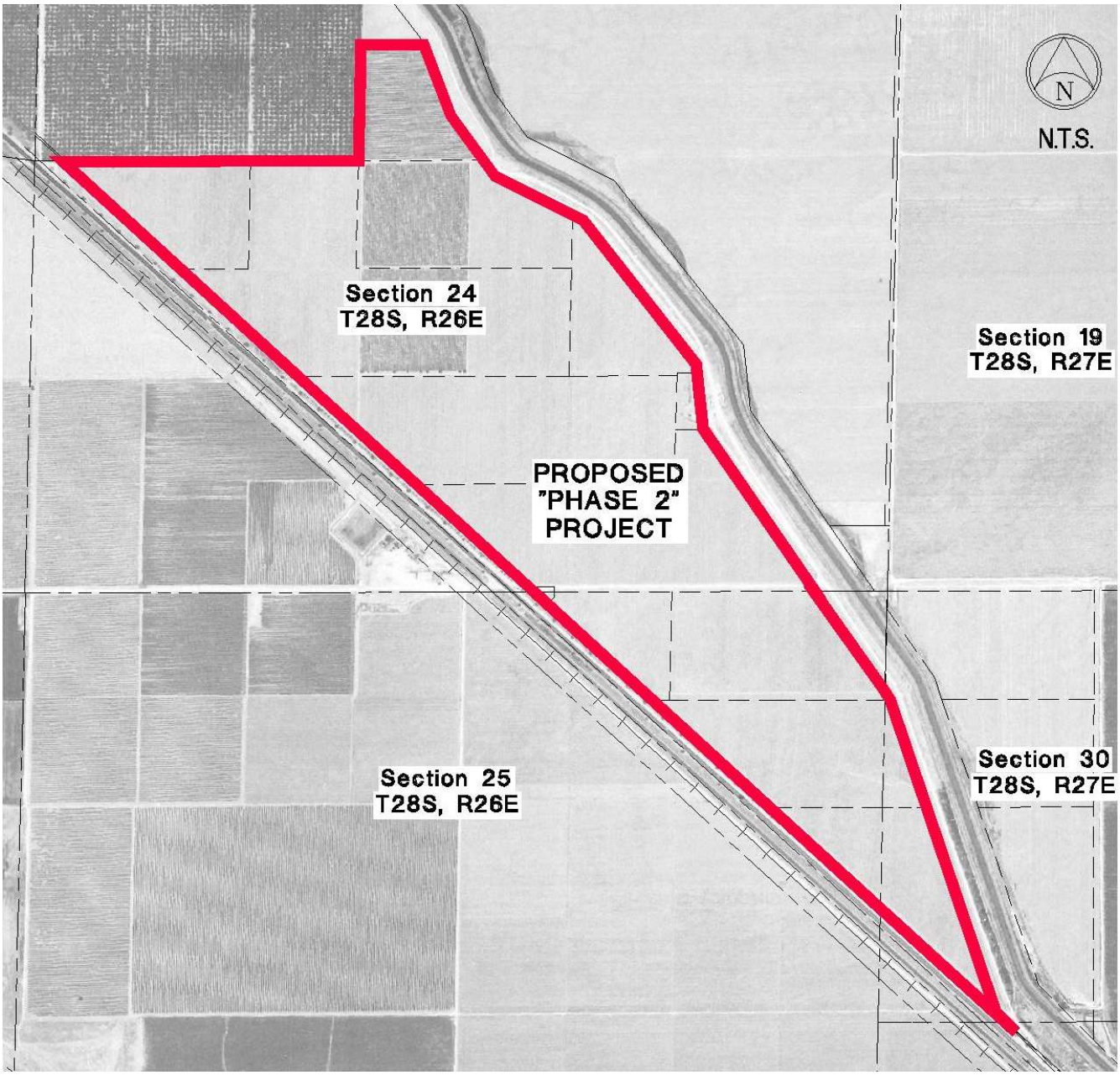


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (1942)
Proposed "PHASE 1" Project Location Map

Figure B-3

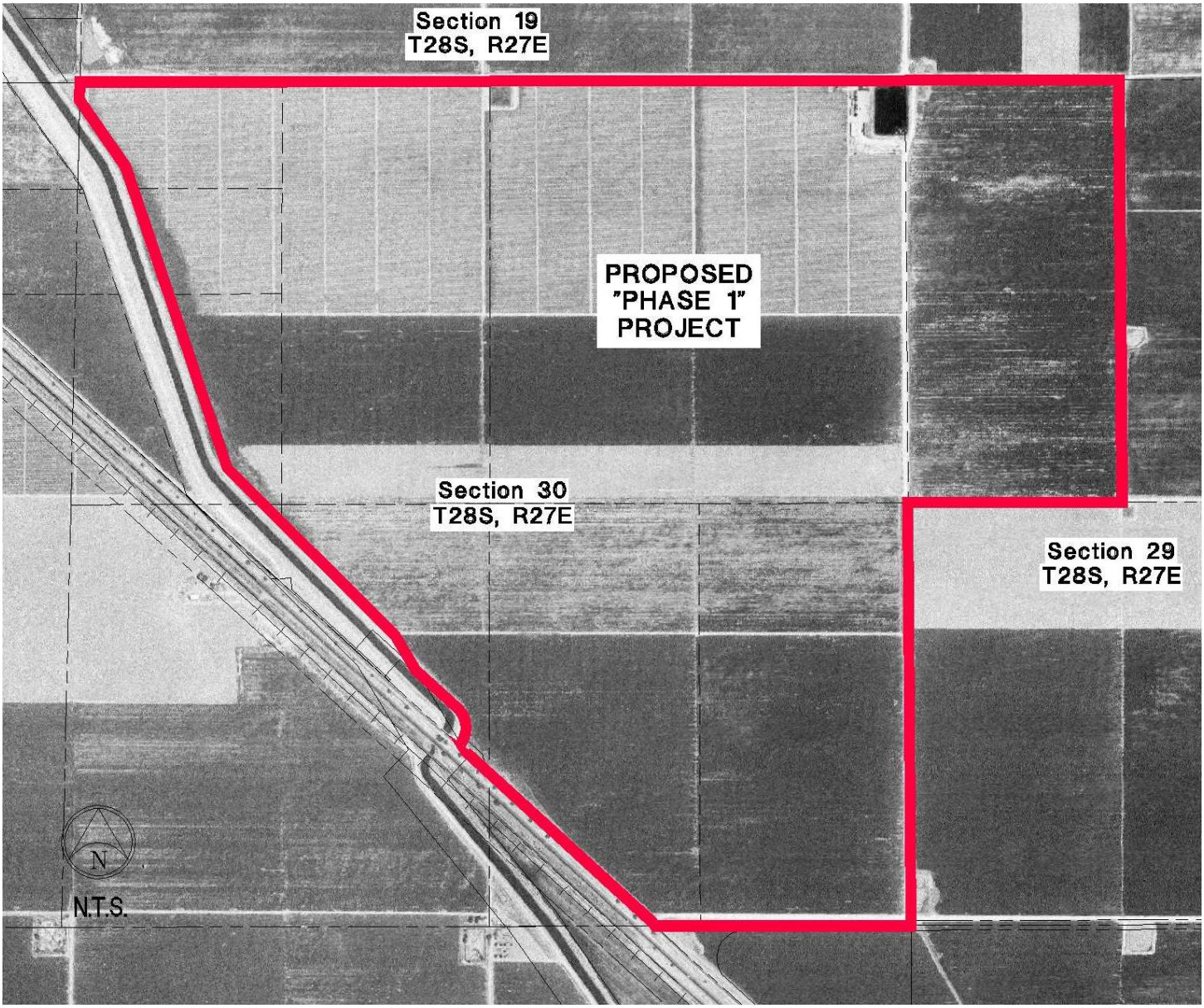


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (1942)
Proposed "PHASE 2" Project Location Map

Figure B-4

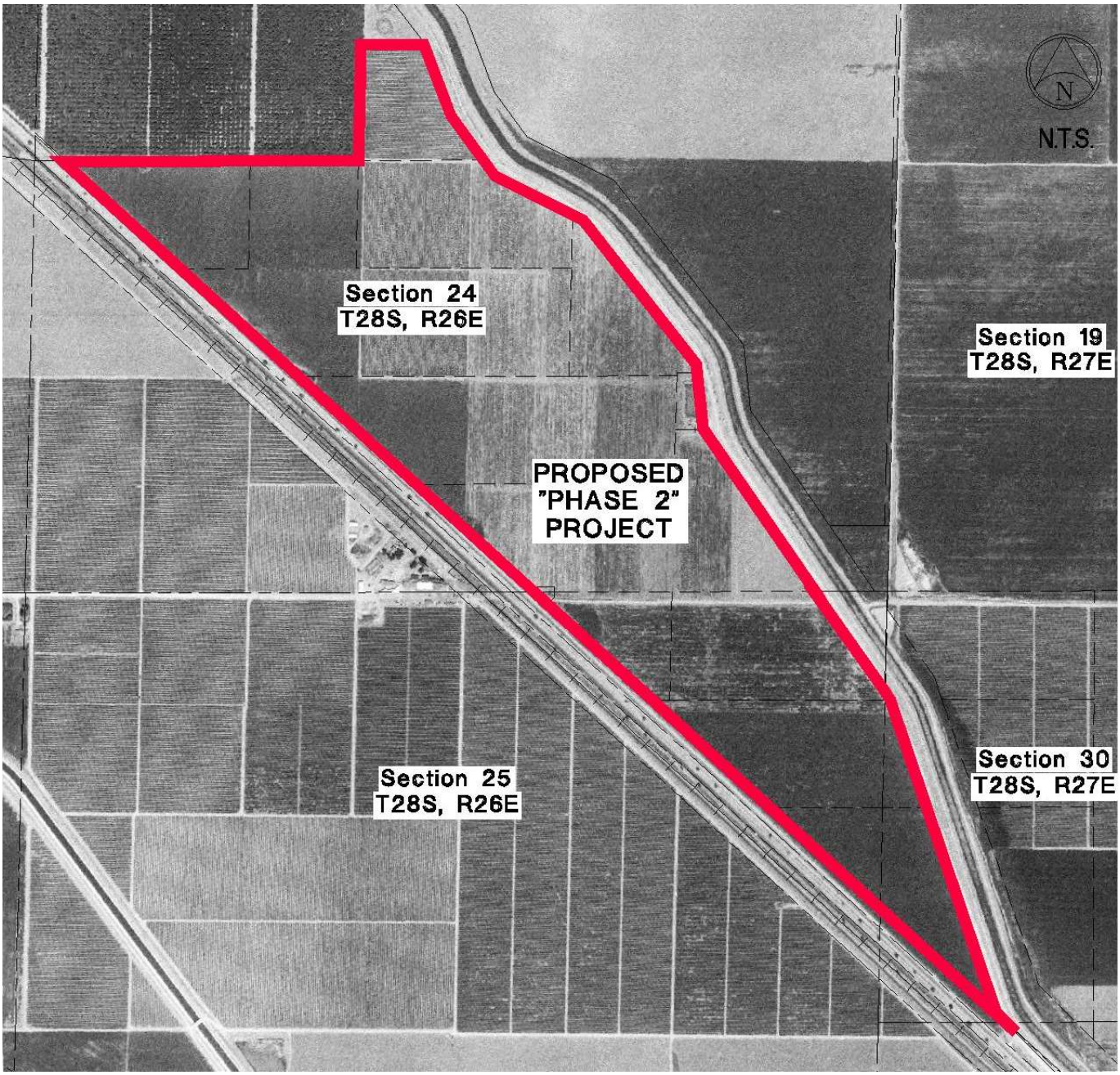


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (1952)
Proposed "PHASE 1" Project Location Map

Figure B-5

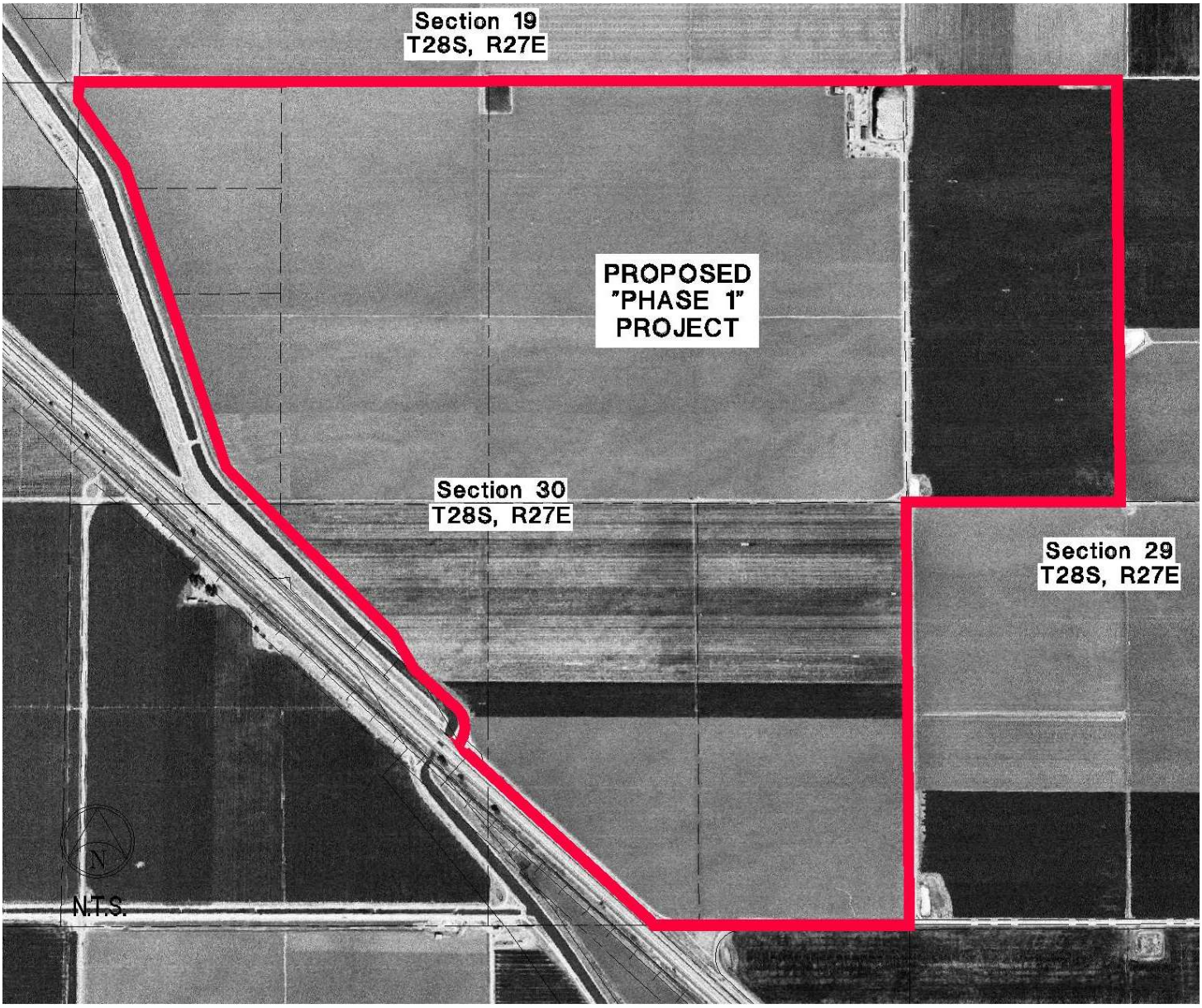


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (1952)
Proposed "PHASE 2" Project Location Map

Figure B-6

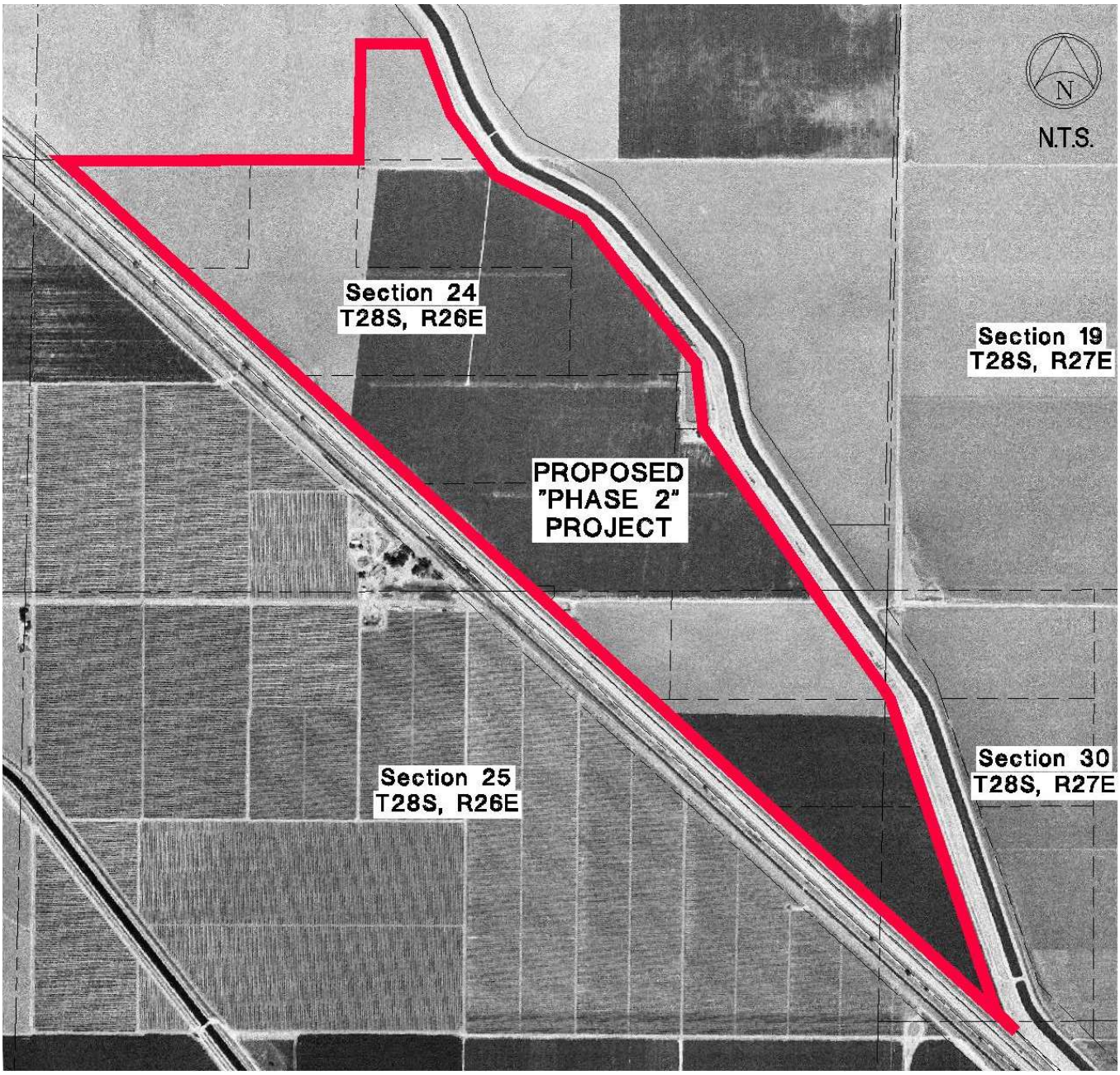


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (1968)
Proposed "PHASE 1" Project Location Map

Figure B-7

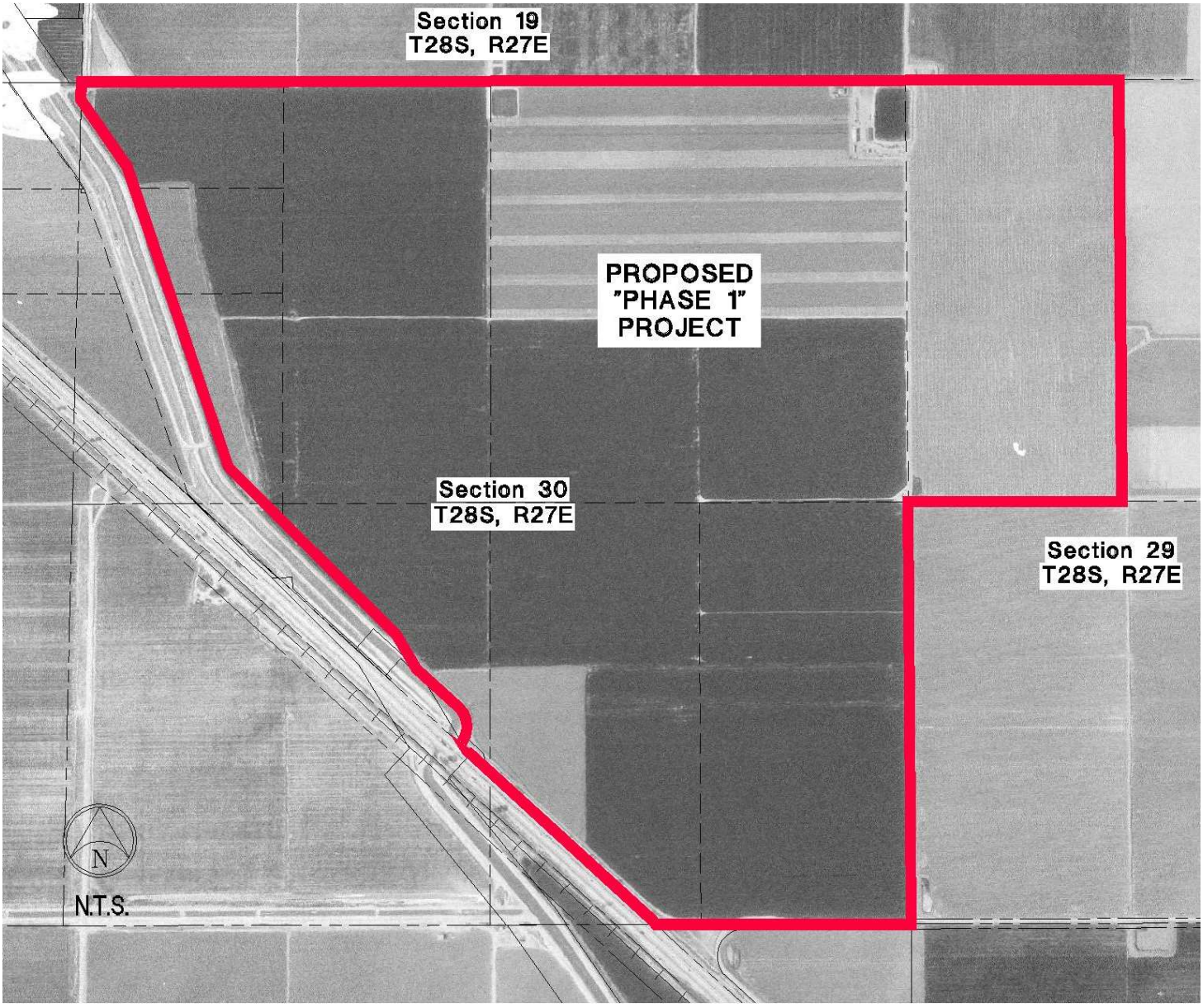


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (1968)
Proposed "PHASE 2" Project Location Map

Figure B-8

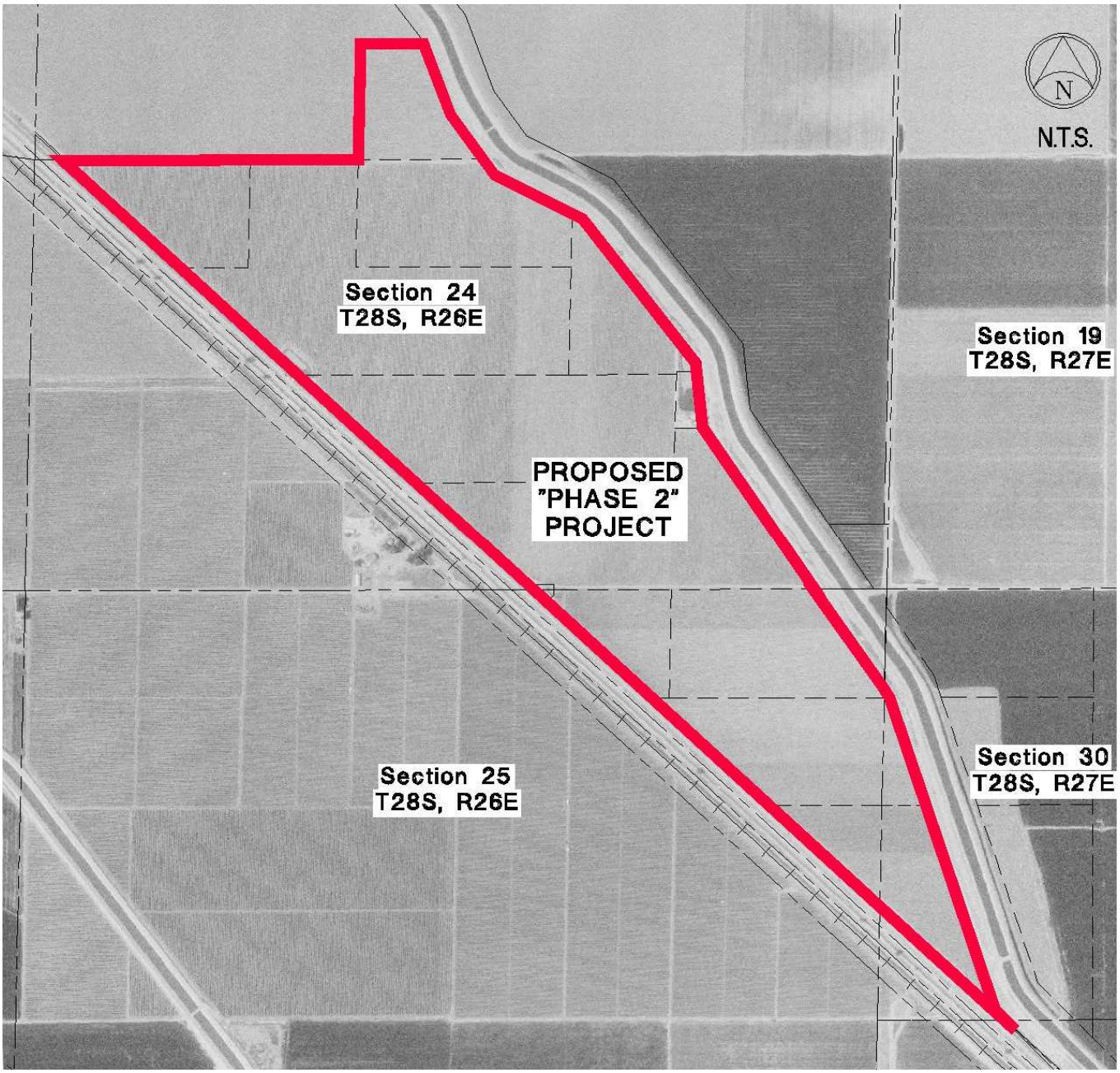


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (1973)
Proposed "PHASE 1" Project Location Map

Figure B-9

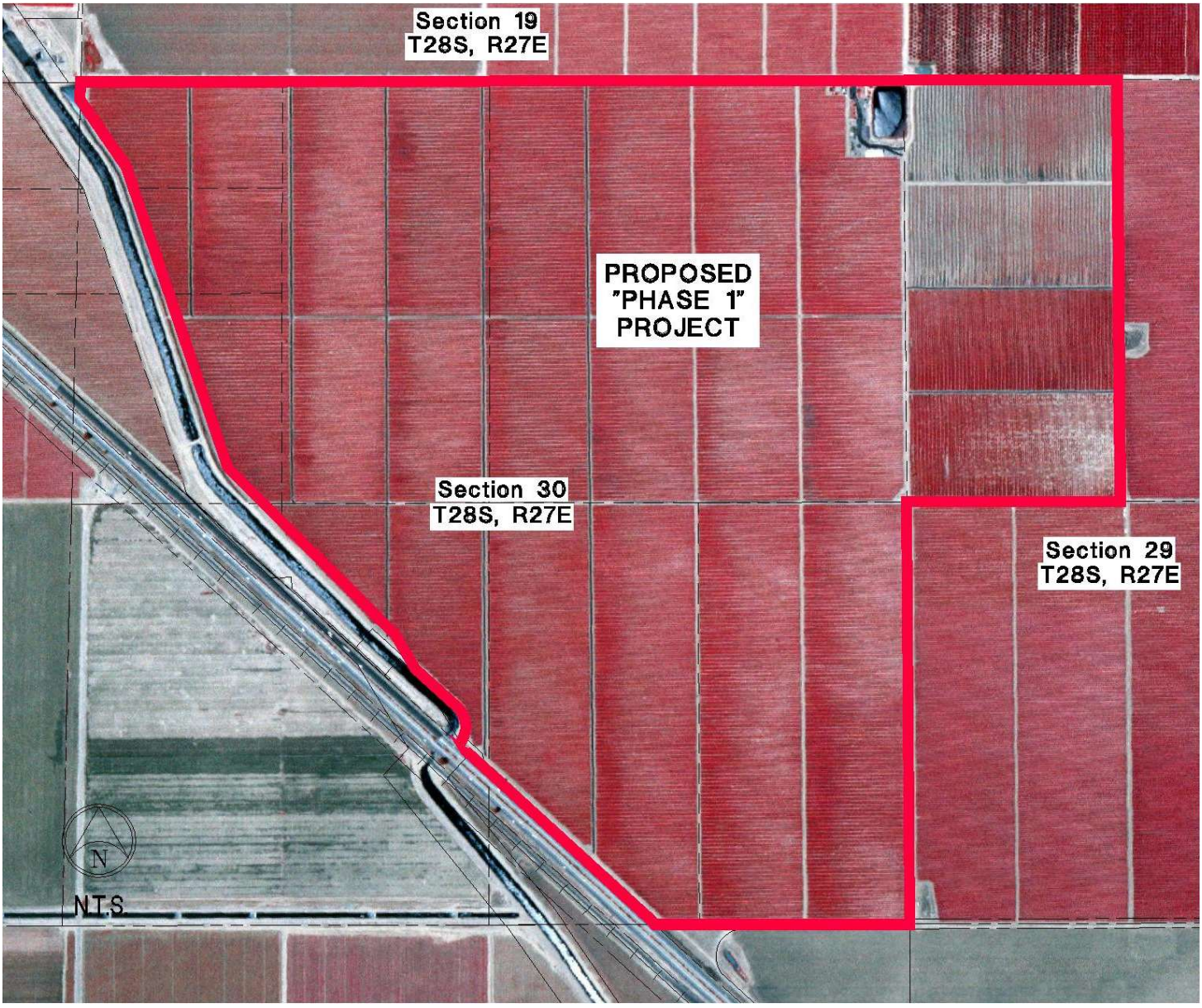


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (1973)
Proposed "PHASE 2" Project Location Map

Figure B-10

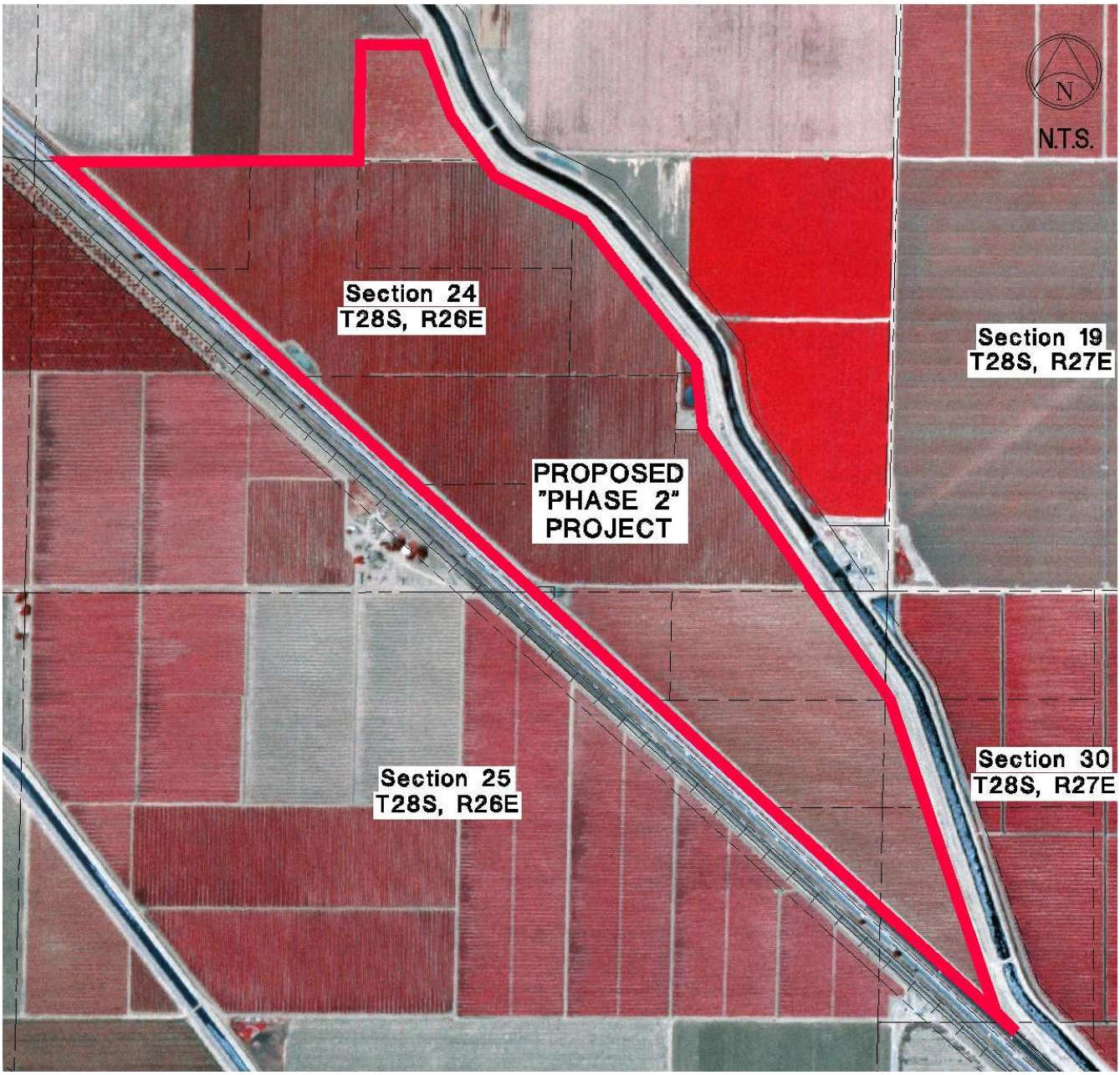


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (1984)
Proposed "PHASE 1" Project Location Map

Figure B-11



PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (1984)
Proposed "PHASE 2" Project Location Map

Figure B-12

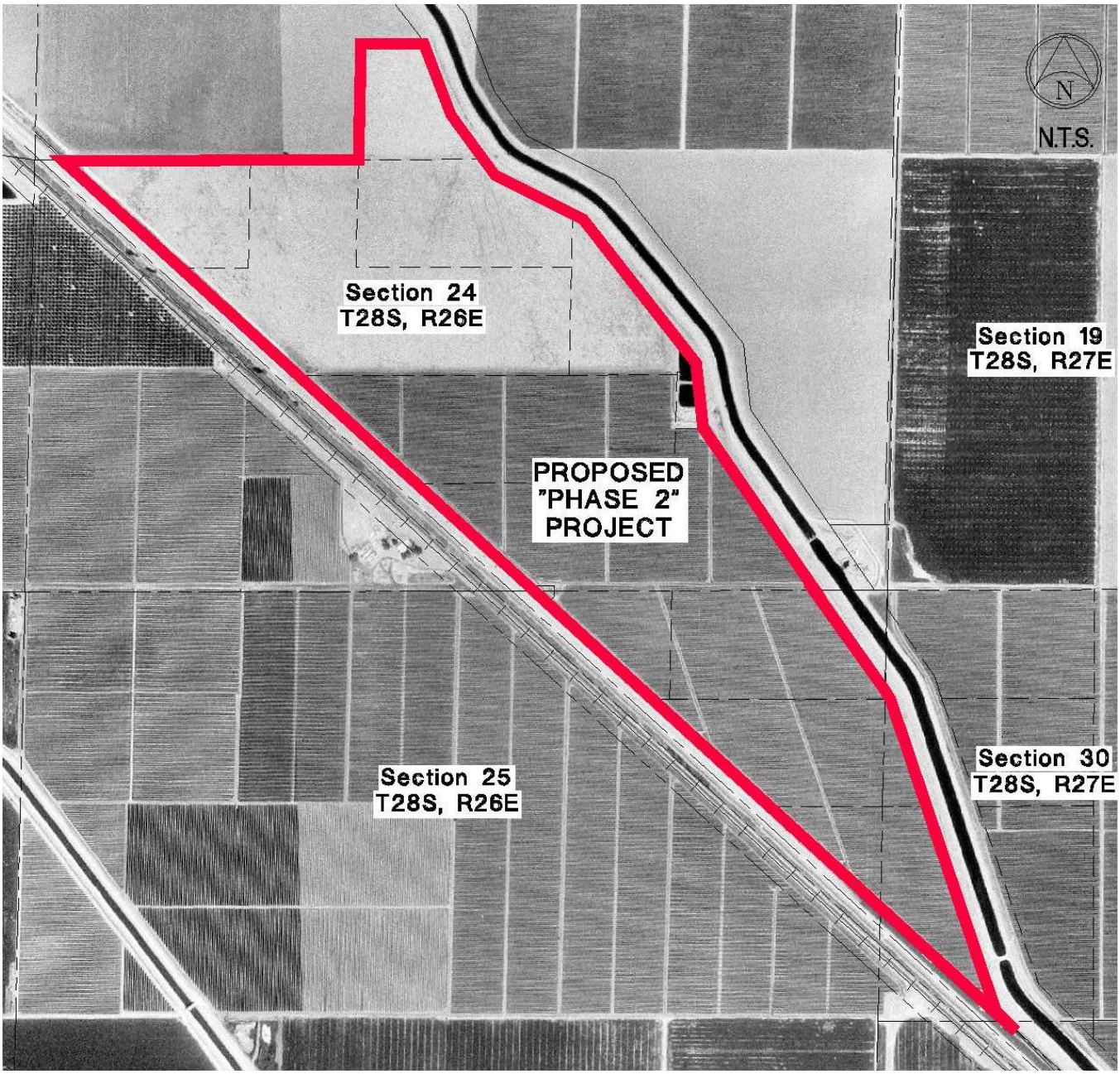


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (1994)
Proposed "PHASE 1" Project Location Map

Figure B-13

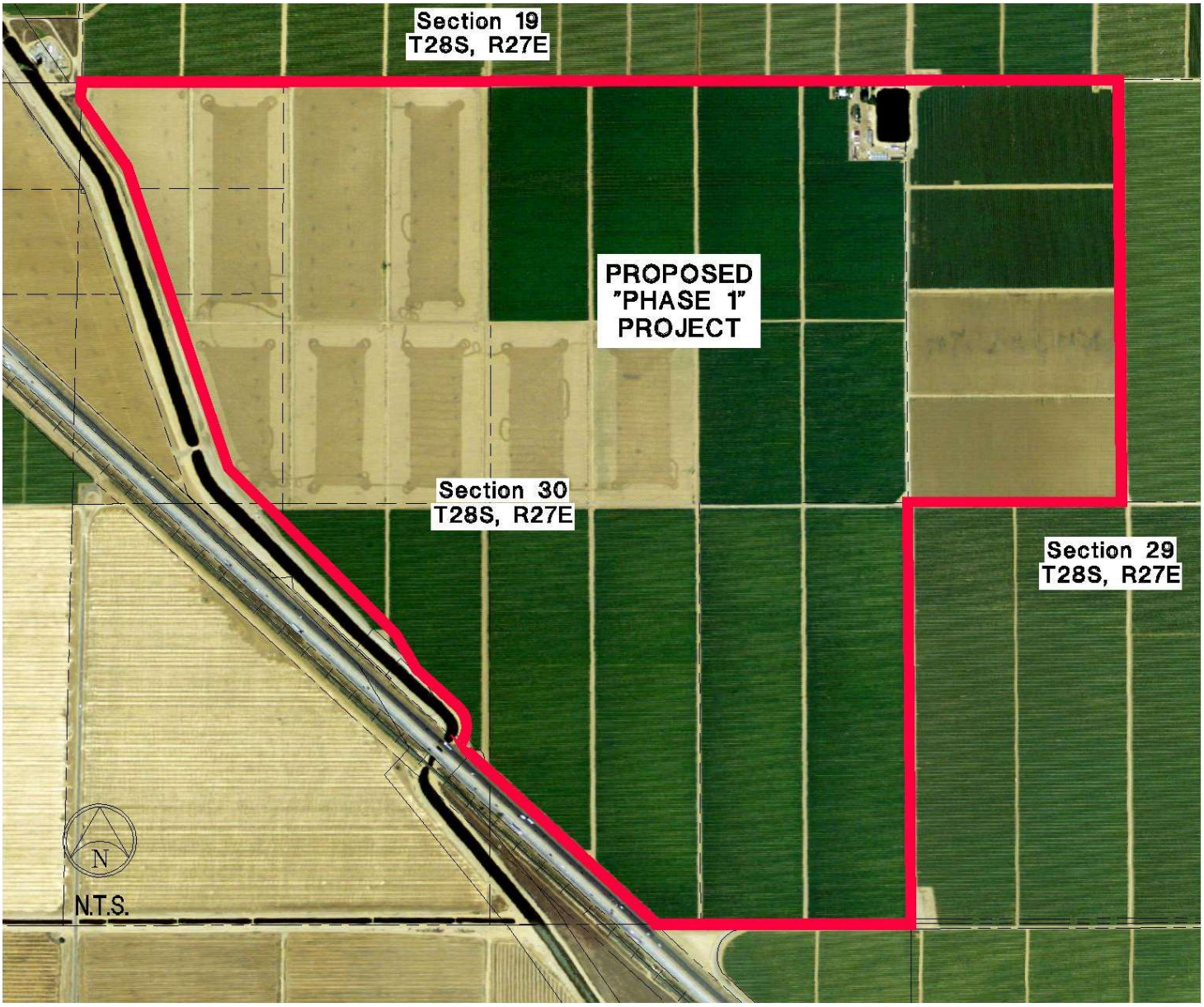


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (1994)
Proposed "PHASE 2" Project Location Map

Figure B-14

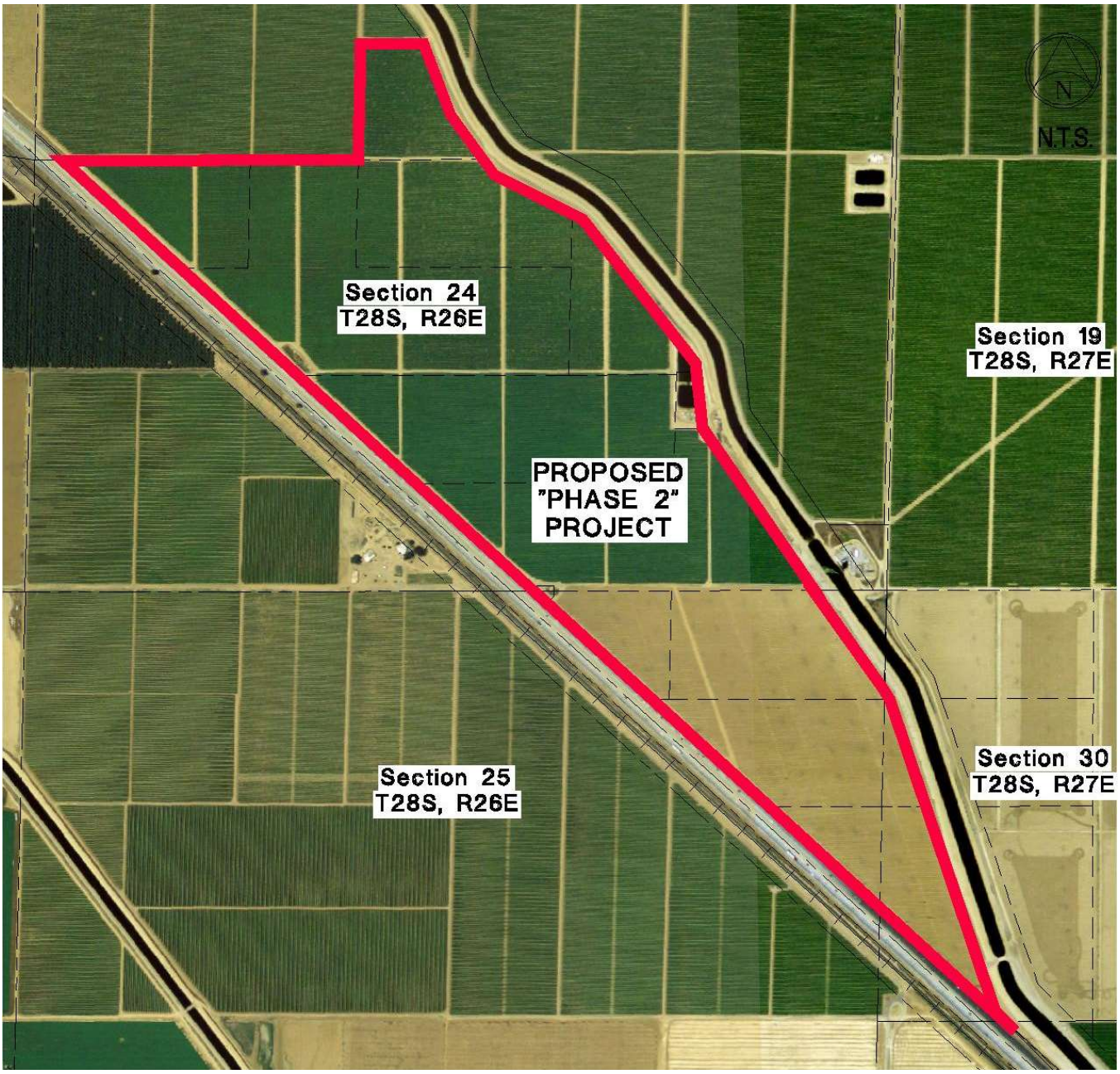


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (2005)
Proposed "PHASE 1" Project Location Map

Figure B-15

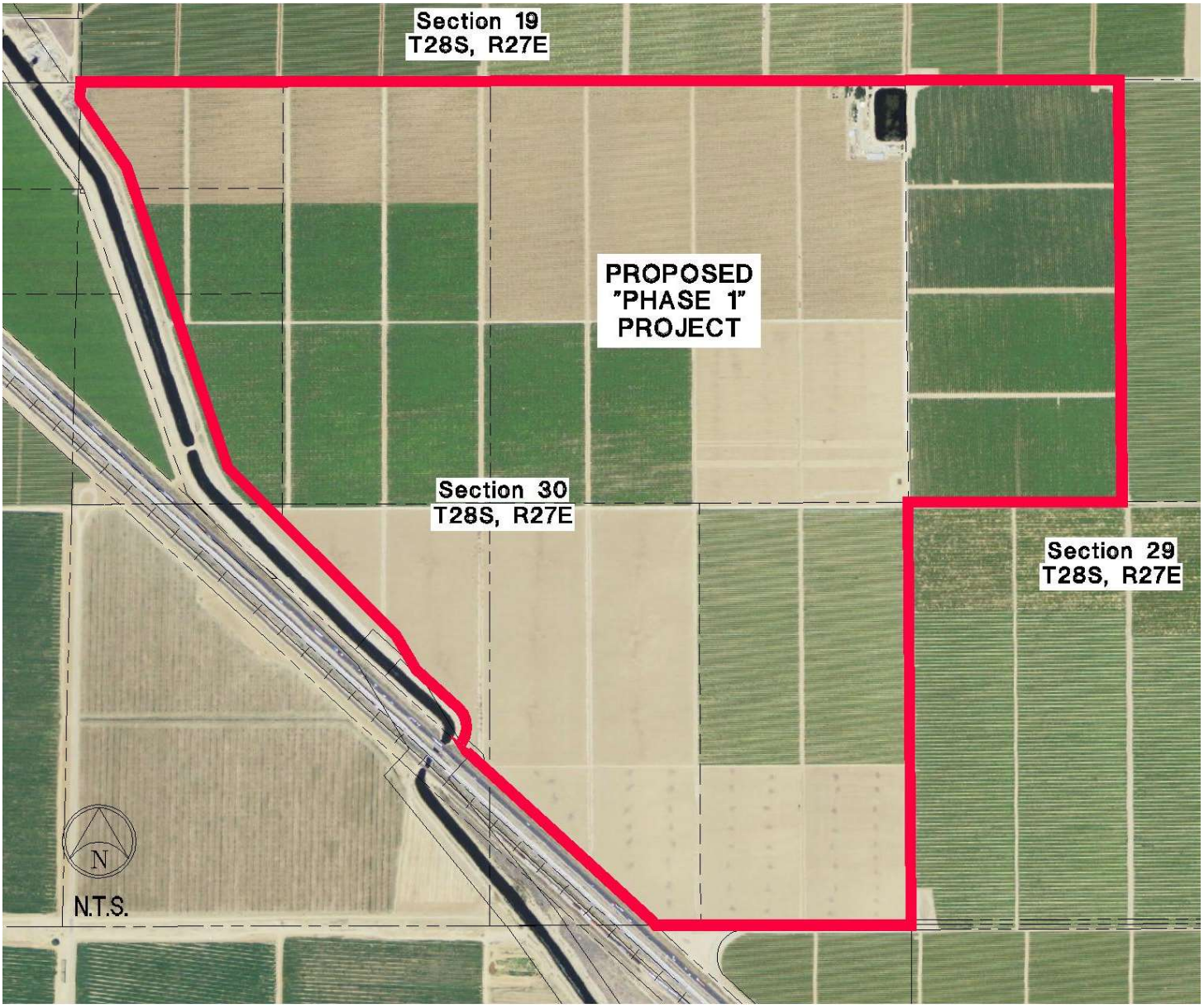


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (2005)
Proposed "PHASE 2" Project Location Map

Figure B-16

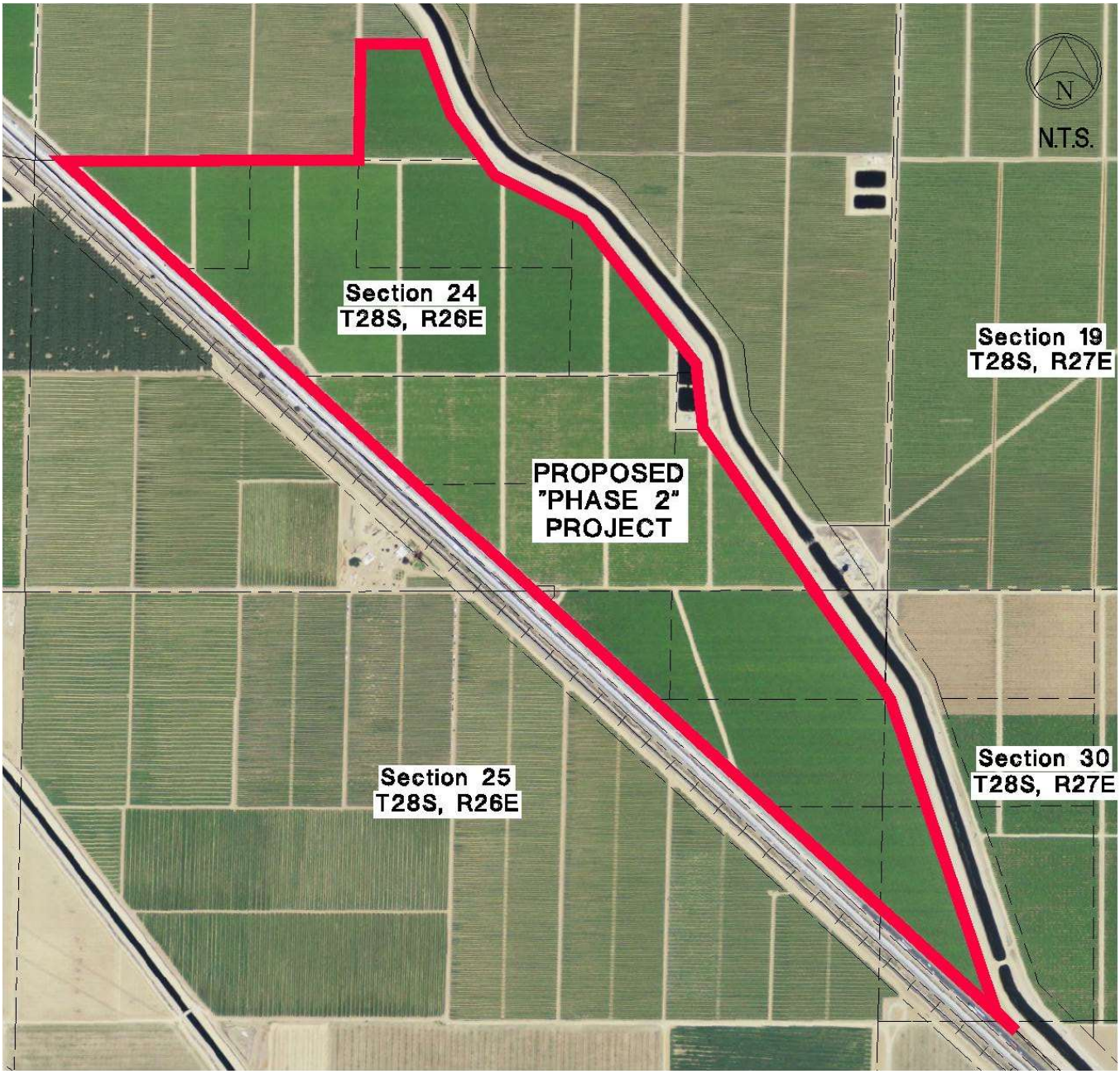


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (2012)
Proposed "PHASE 1" Project Location Map

Figure B-17

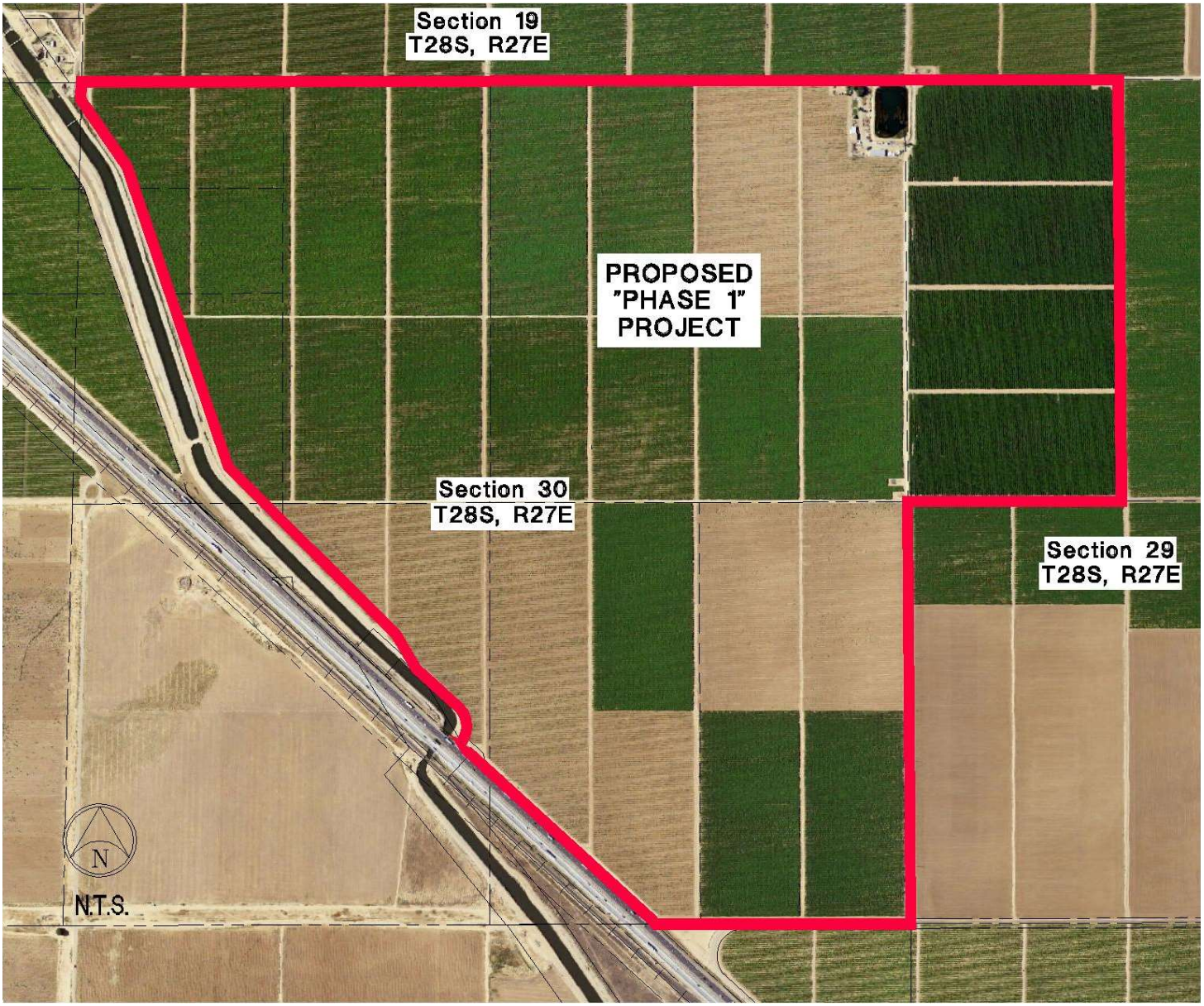


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (2012)
Proposed "PHASE 2" Project Location Map

Figure B-18

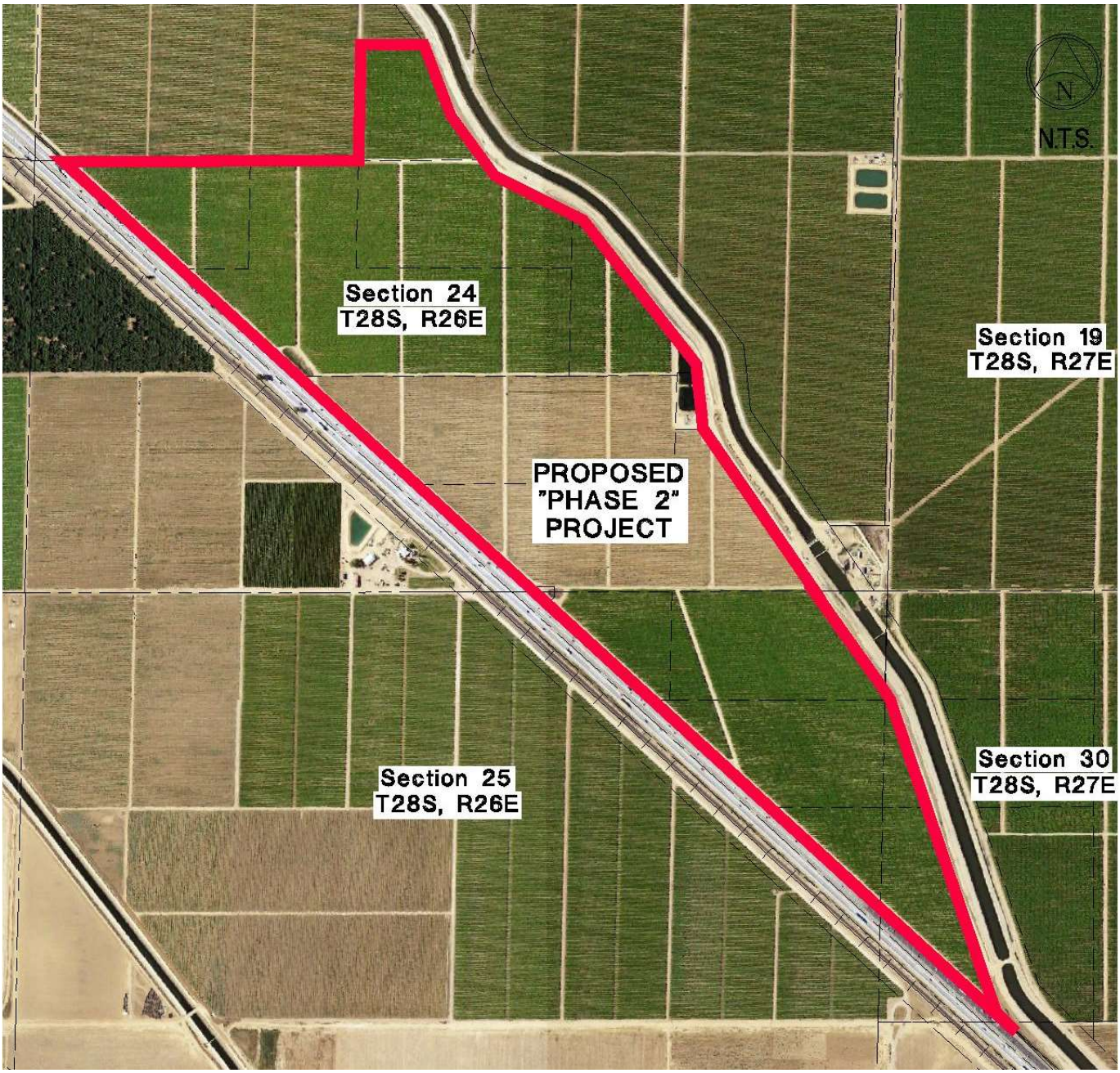


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (2016)
Proposed "PHASE 1" Project Location Map

Figure B-19

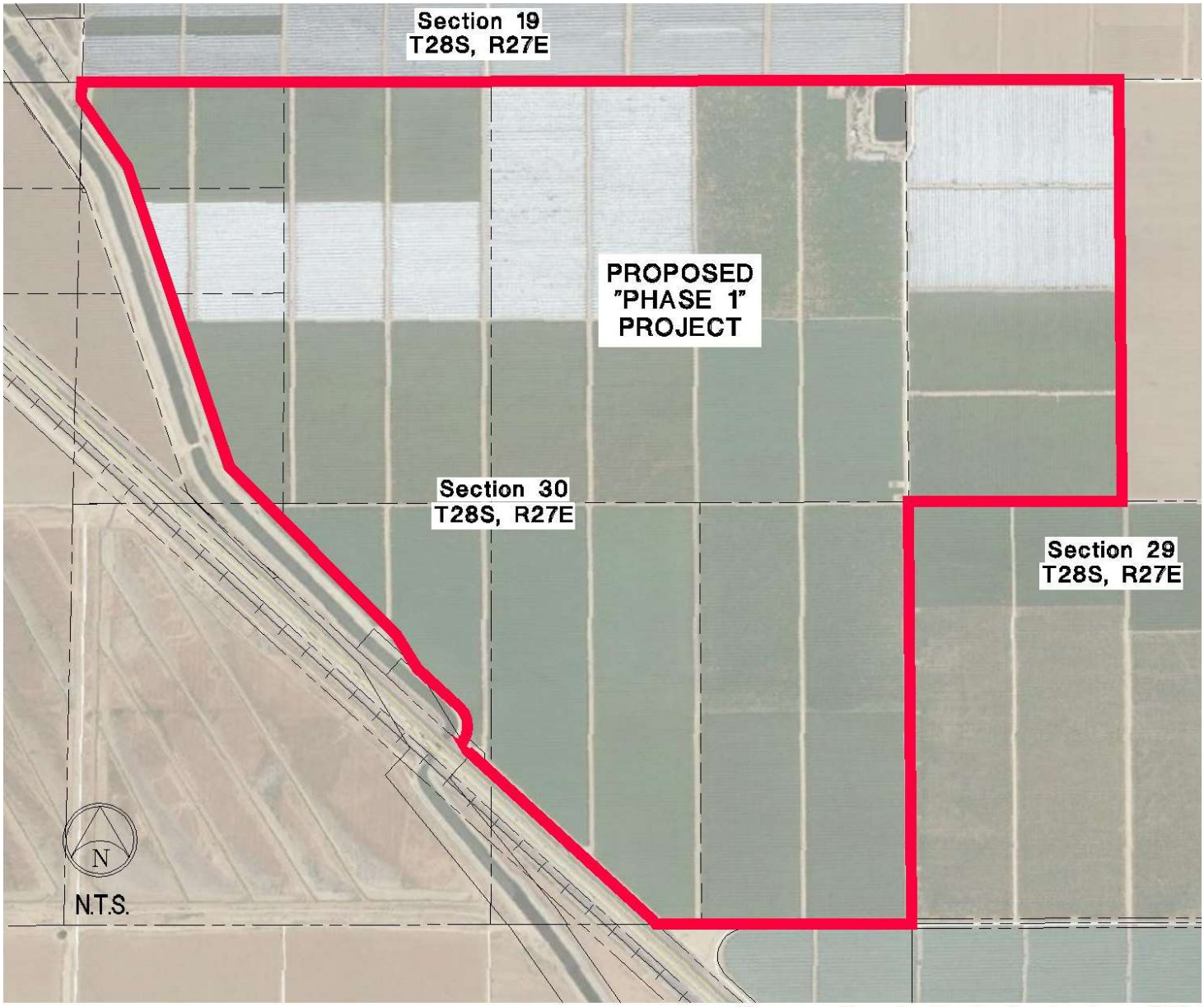


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (2016)
Proposed "PHASE 2" Project Location Map

Figure B-20



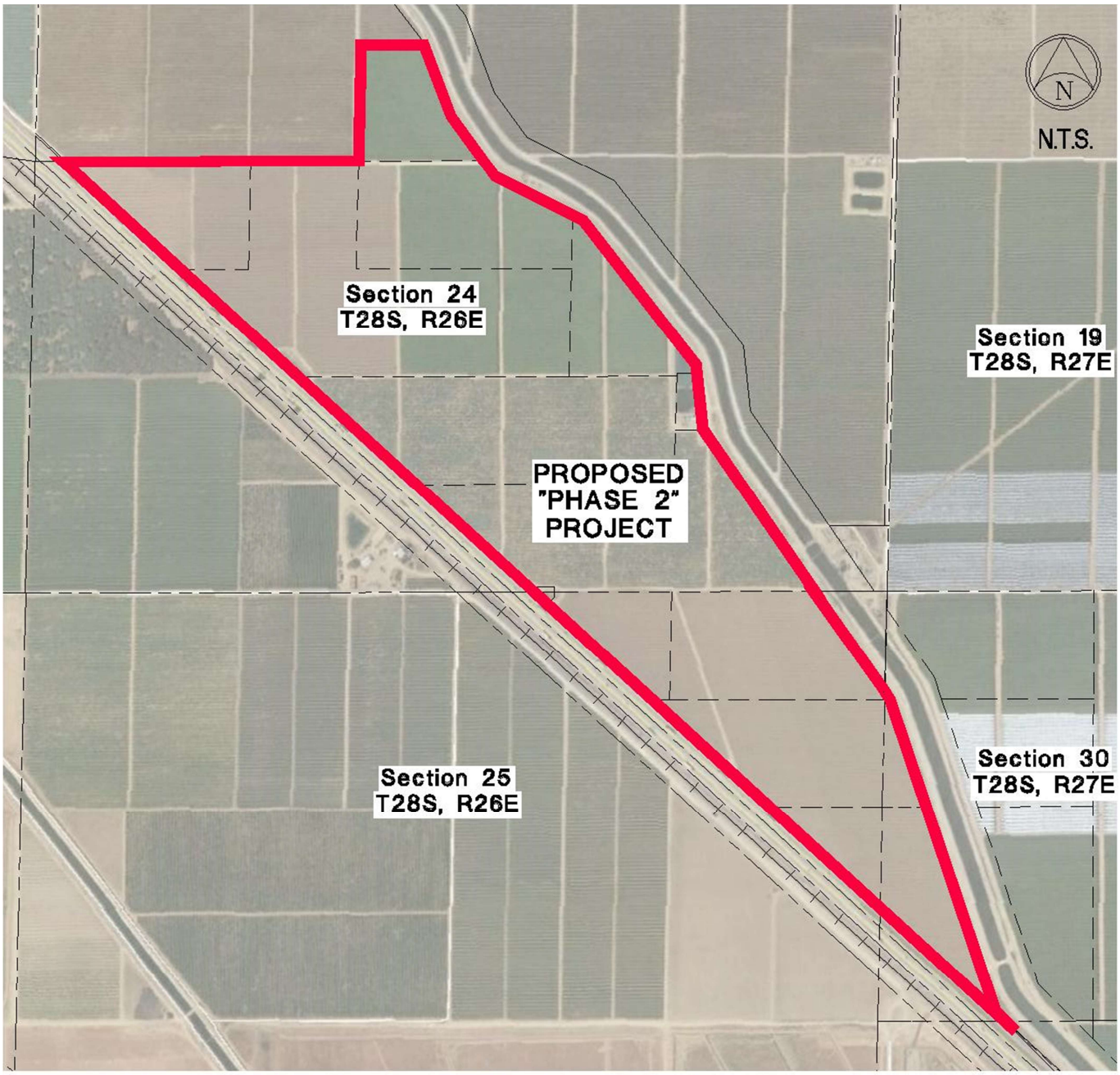
Source: Google Earth September, 2017

PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (2017)
Proposed "PHASE 1" Project Location Map

Figure B-21



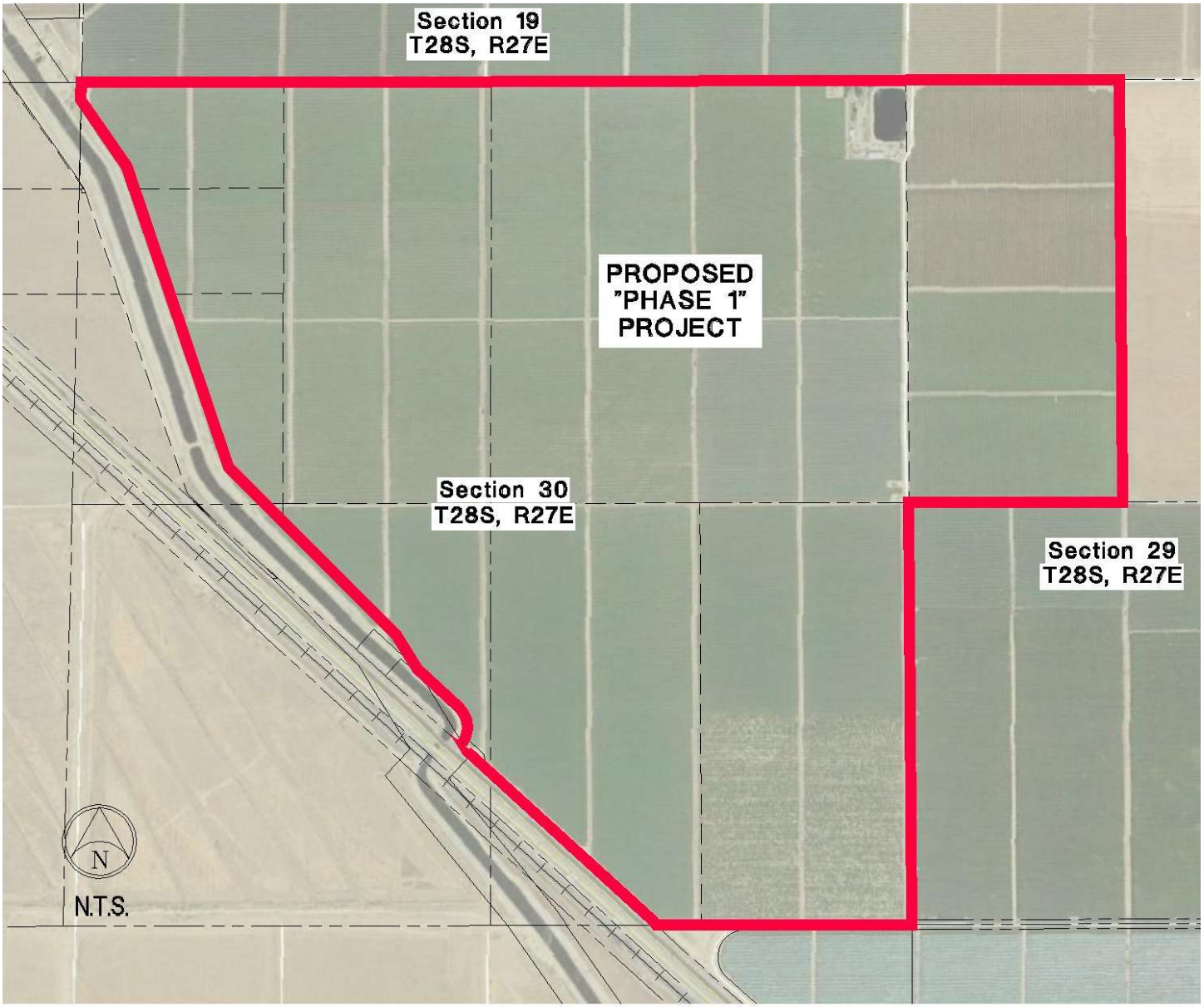
Source: Google Earth September, 2017

PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (2017)
Proposed "PHASE 2" Project Location Map

Figure B-22



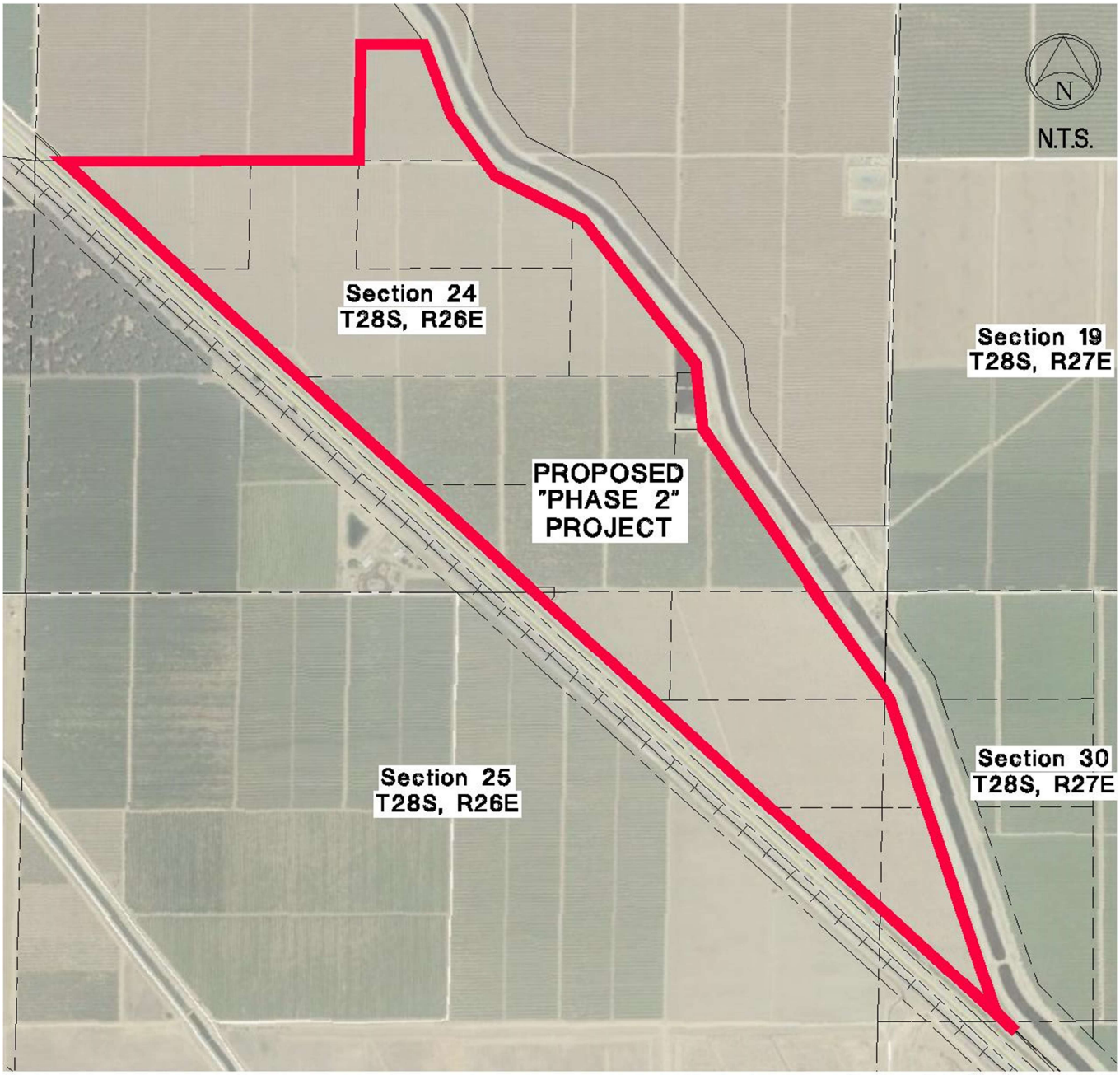
Source: Google Earth August, 2018

PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (2018)
Proposed "PHASE 1" Project Location Map

Figure B-23



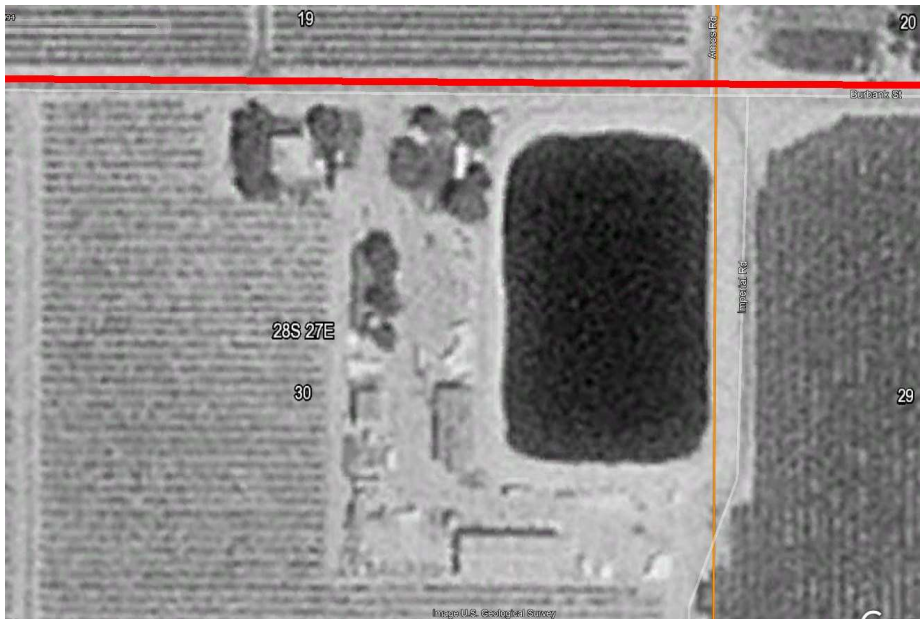
Source: Google Earth August, 2018

PROPOSED PROJECT

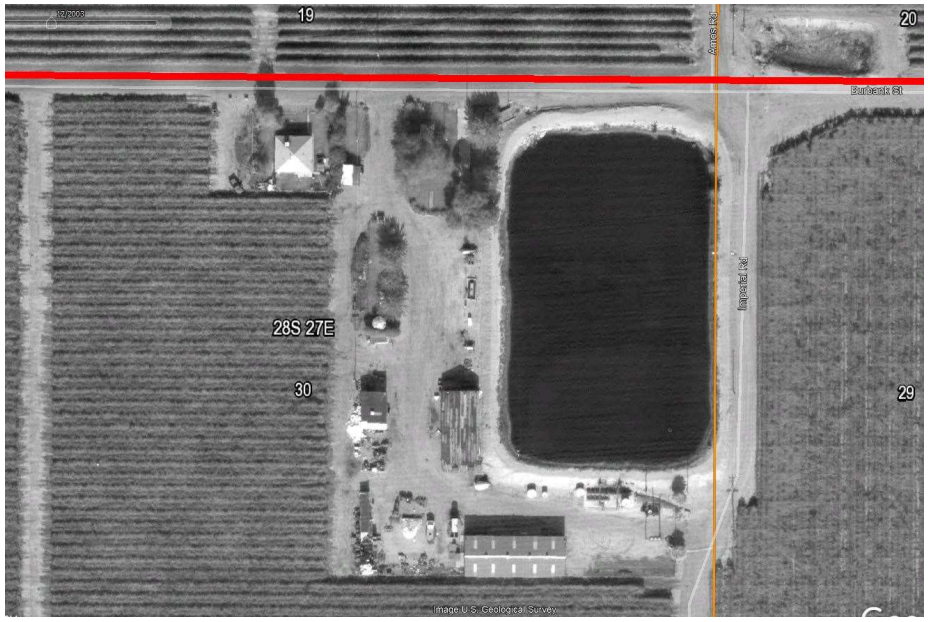
Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photograph (2018)
Proposed "PHASE 2" Project Location Map

Figure B-24



September 1994



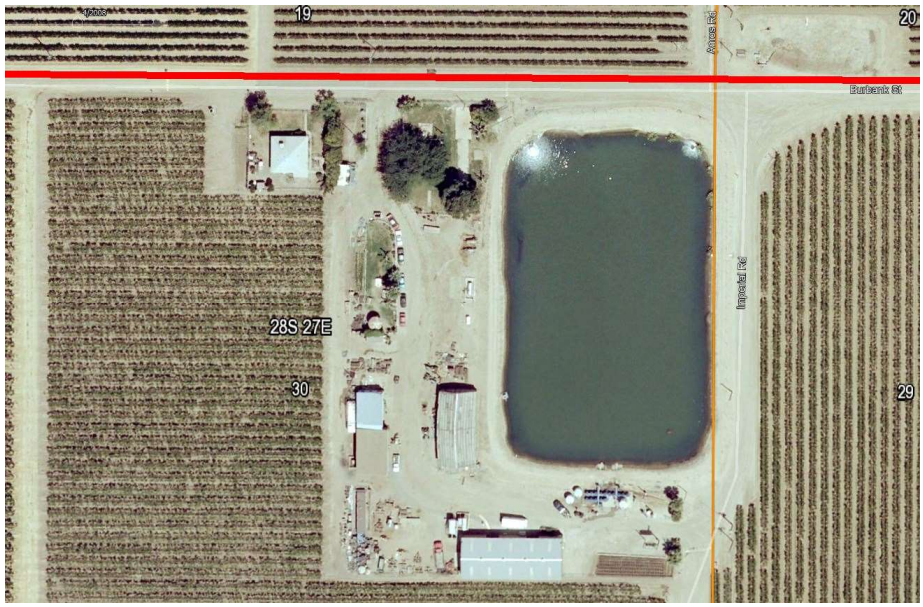
March 2003

PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photographs (1994 & 2003)
Proposed "PHASE 1" - Ex. O&M Facility

Figure B-25



April 2008



October 2009

PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photographs (2008 & 2009)
Proposed "PHASE 1" - Ex. O&M Facility

Figure B-26



August 2012



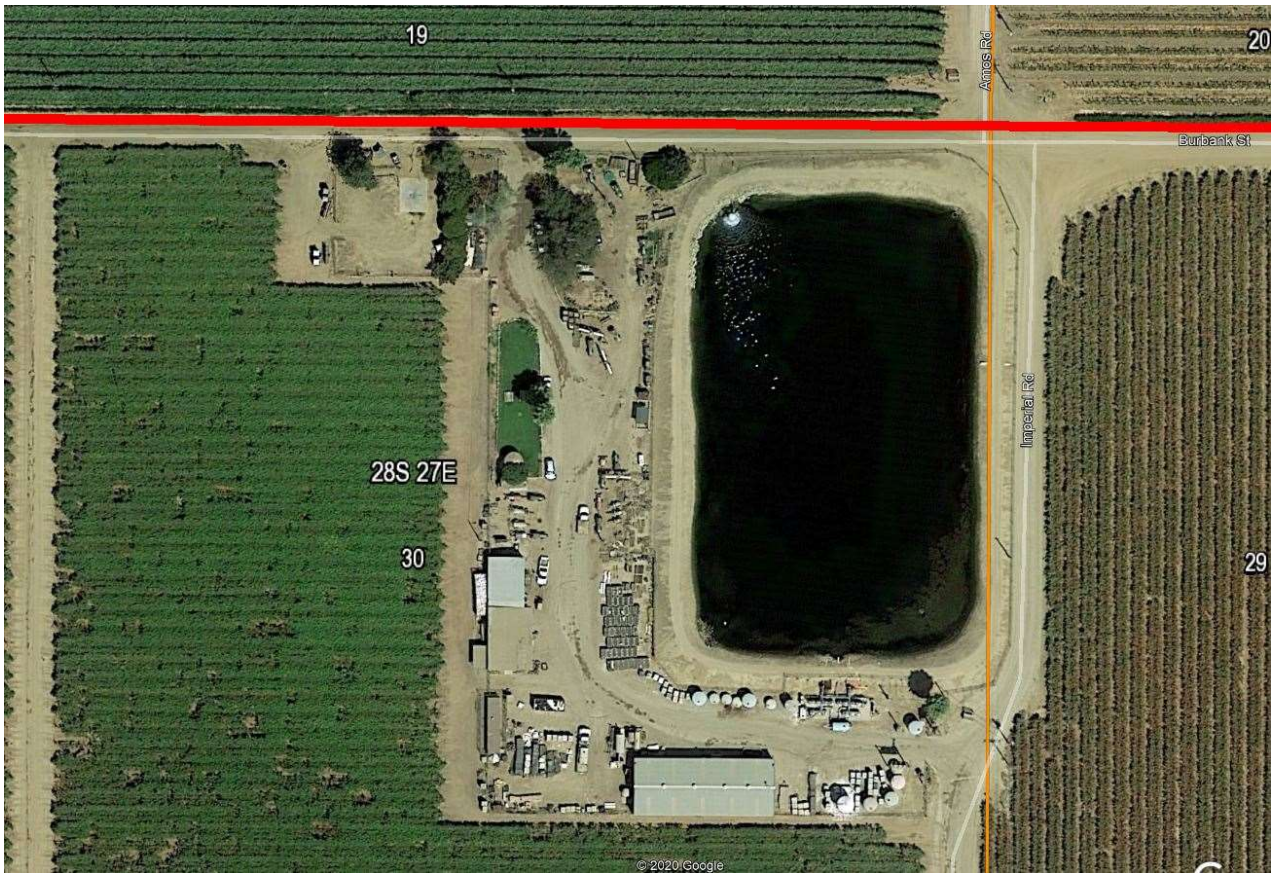
August 2016

PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photographs (2012 & 2016)
Proposed "PHASE 1" - Ex. O&M Facility

Figure B-27



August 2018

PROPOSED PROJECT

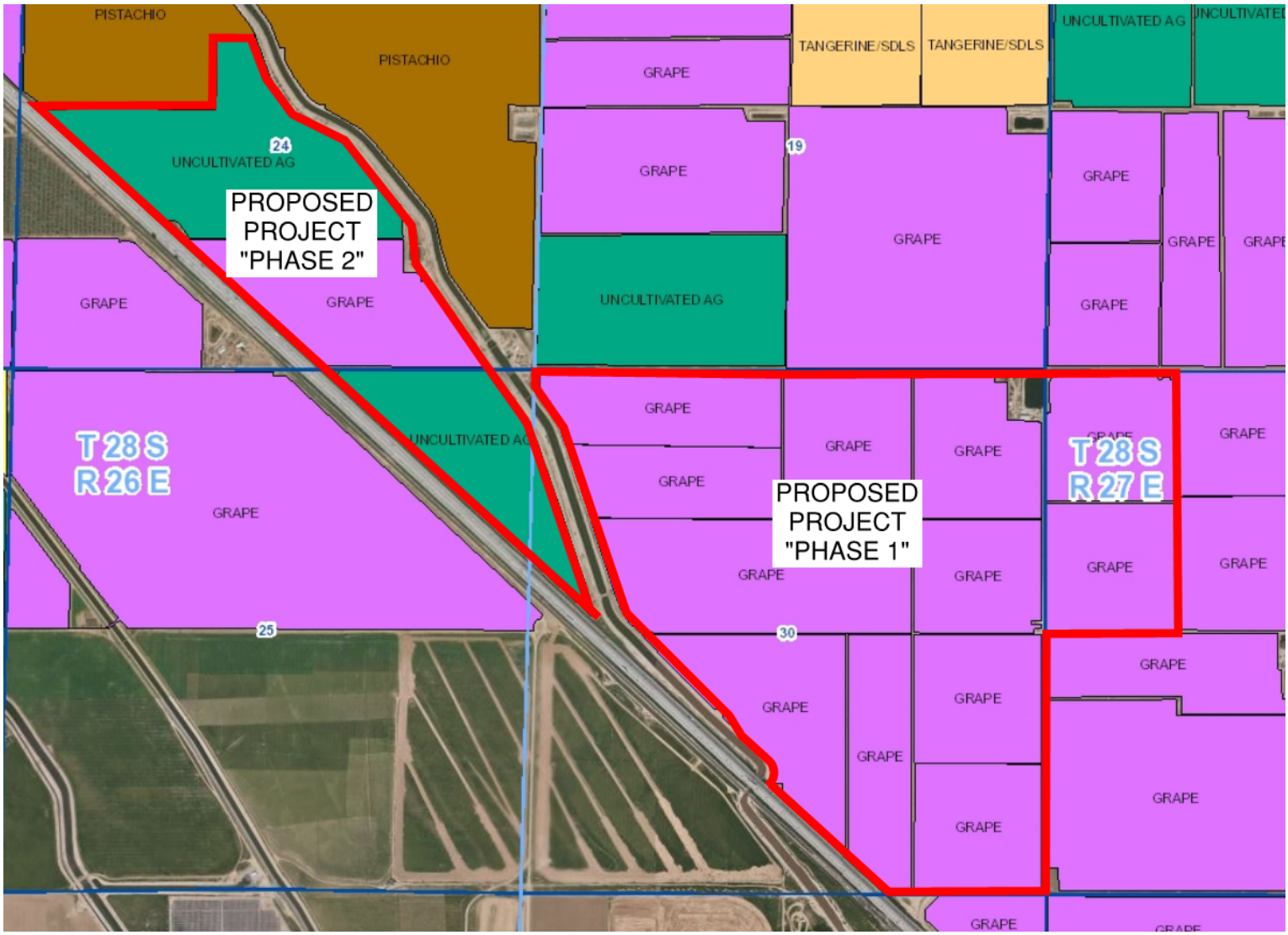
Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Aerial Photographs (2018)
Proposed "PHASE 1" - Ex. O&M Facility

Figure B-28

APPENDIX C

Figures



PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Kern County Agriculture Department
2020 Crop Map

Figure C-1

APPENDIX D

Figures

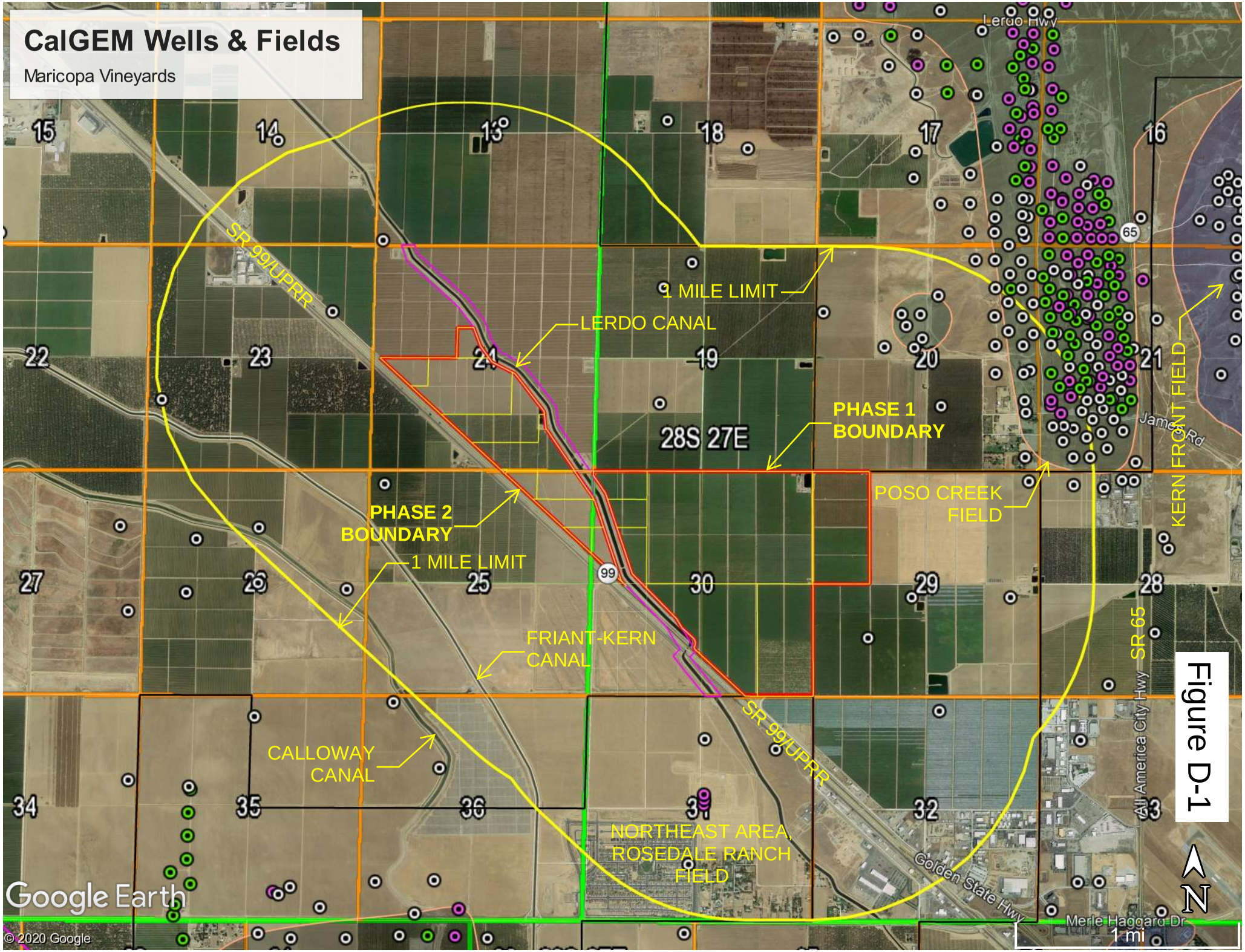
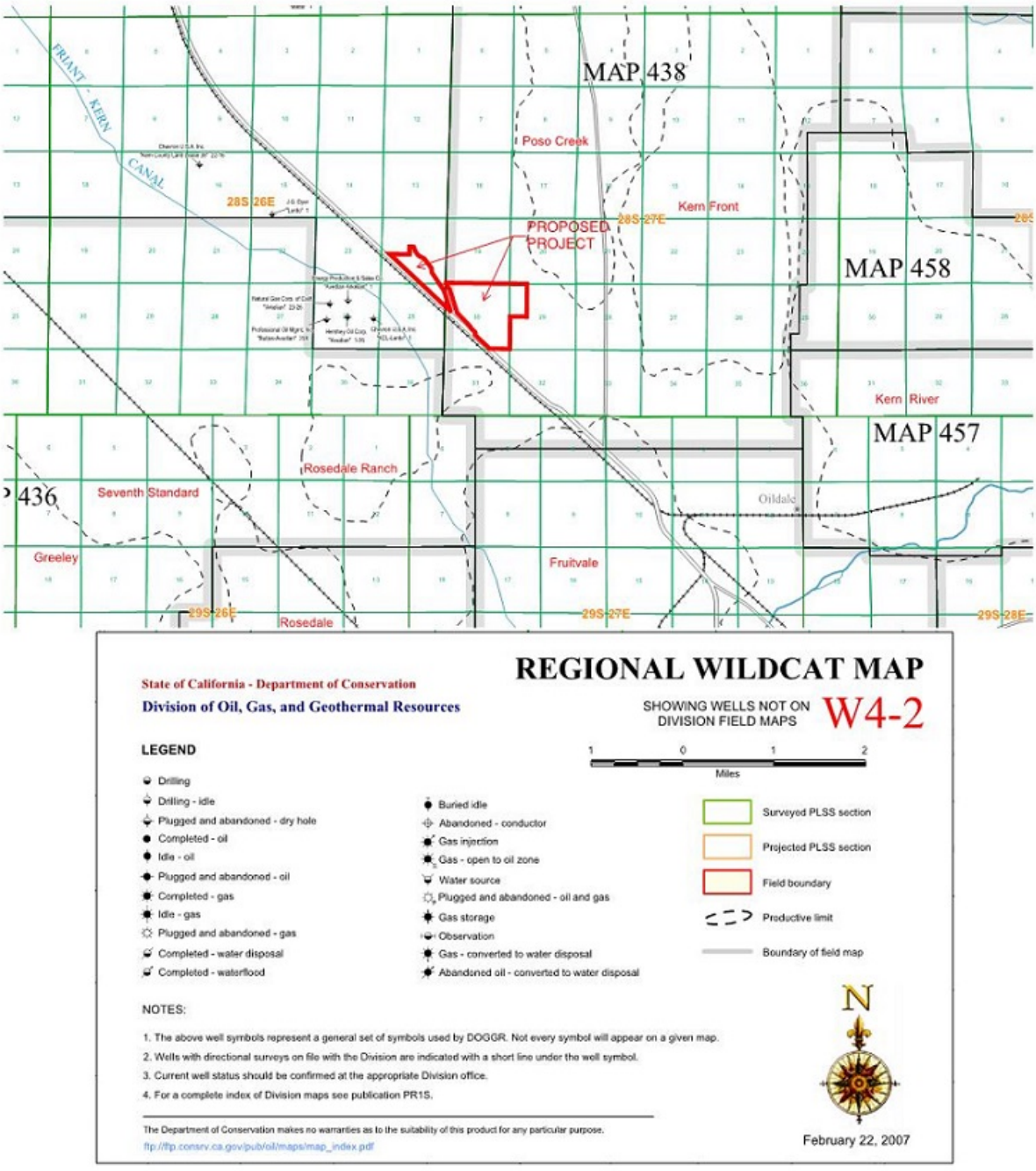

CalGEM Wells & Fields
Maricopa Vineyards
Lerdo Hwy
SR 99/UPRR
1 MILE LIMIT
LERDO CANAL
PHASE 1
BOUNDARY
28S 27E
KERN FRONT FIELD
James Rd
POSO CREEK
FIELD
PHASE 2
BOUNDARY
1 MILE LIMIT
FRIANT-KERN
CANAL
SR 99/UPRR
CALLOWAY
CANAL
NORTHEAST AREA,
ROSEDALE RANCH
FIELD
Golden State Hwy
All America City Hwy
SR 65
Merle Haggard Dr
1 mi
N
Google Earth
© 2020 Google

Figure D-1

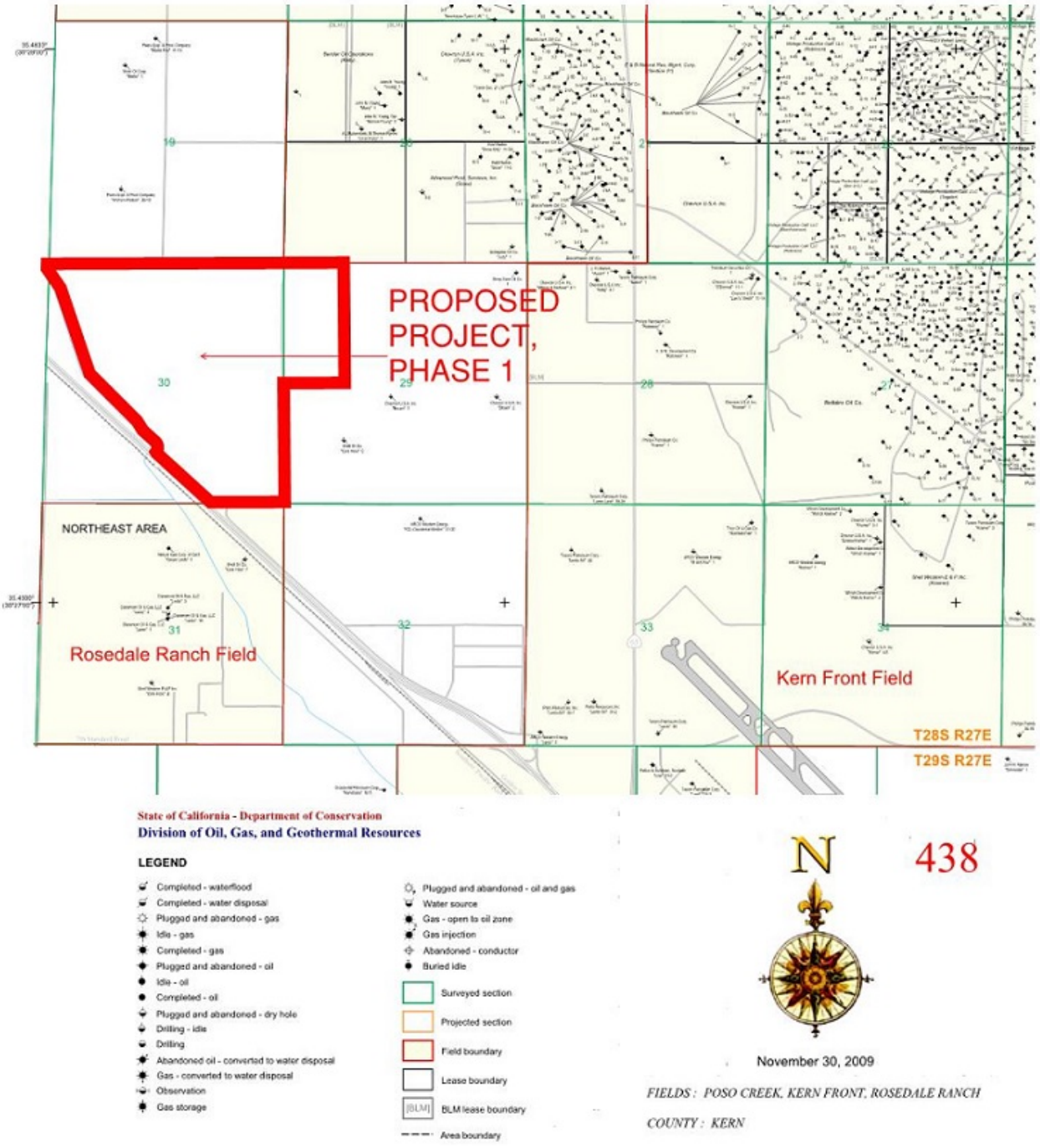


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

CalGEM Regional Wildcat Map W4-2

Figure D-2



PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

DOGGR Oil Field Map 438

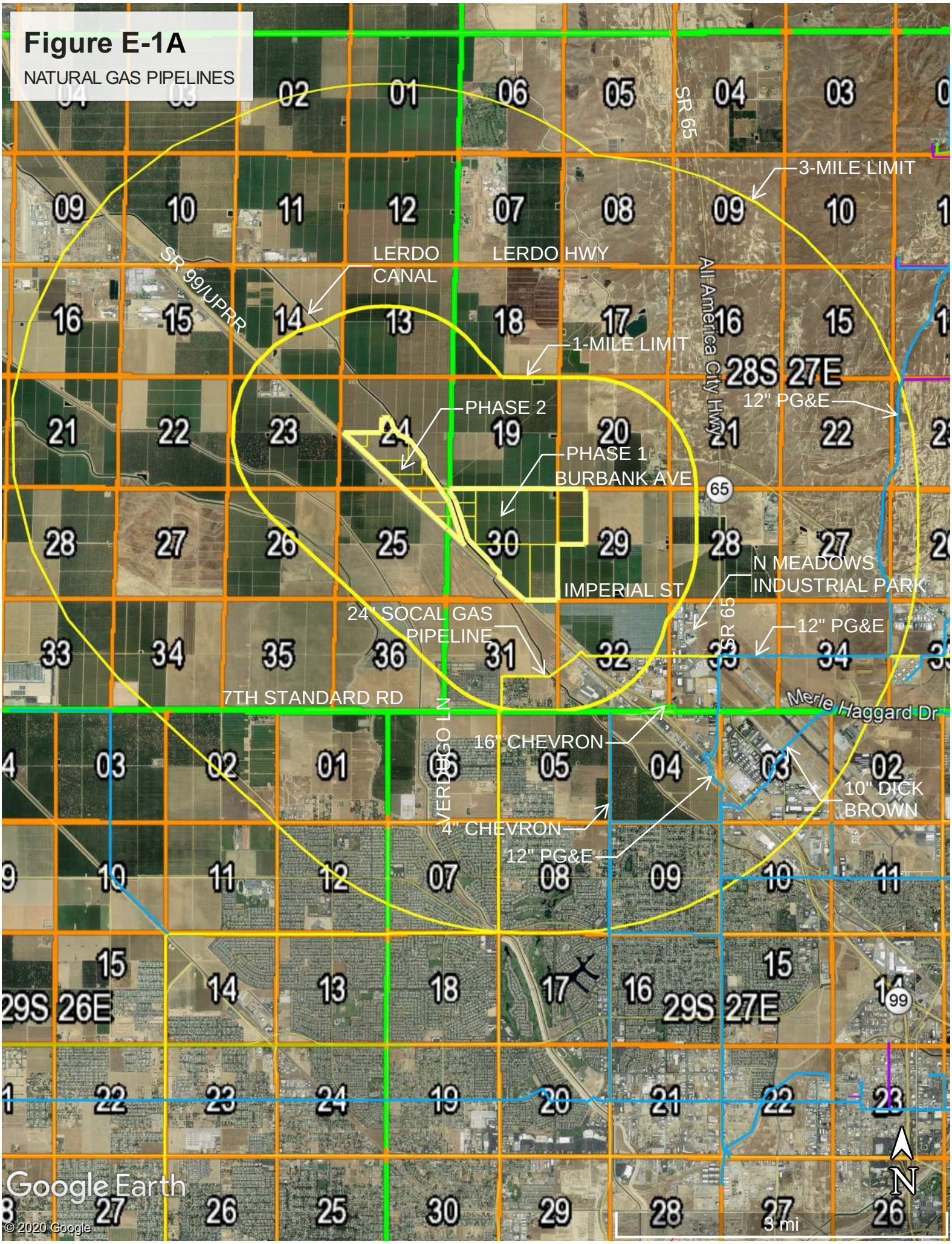
Figure D-3

APPENDIX E

Existing Utilities

Figure E-1A

NATURAL GAS PIPELINES



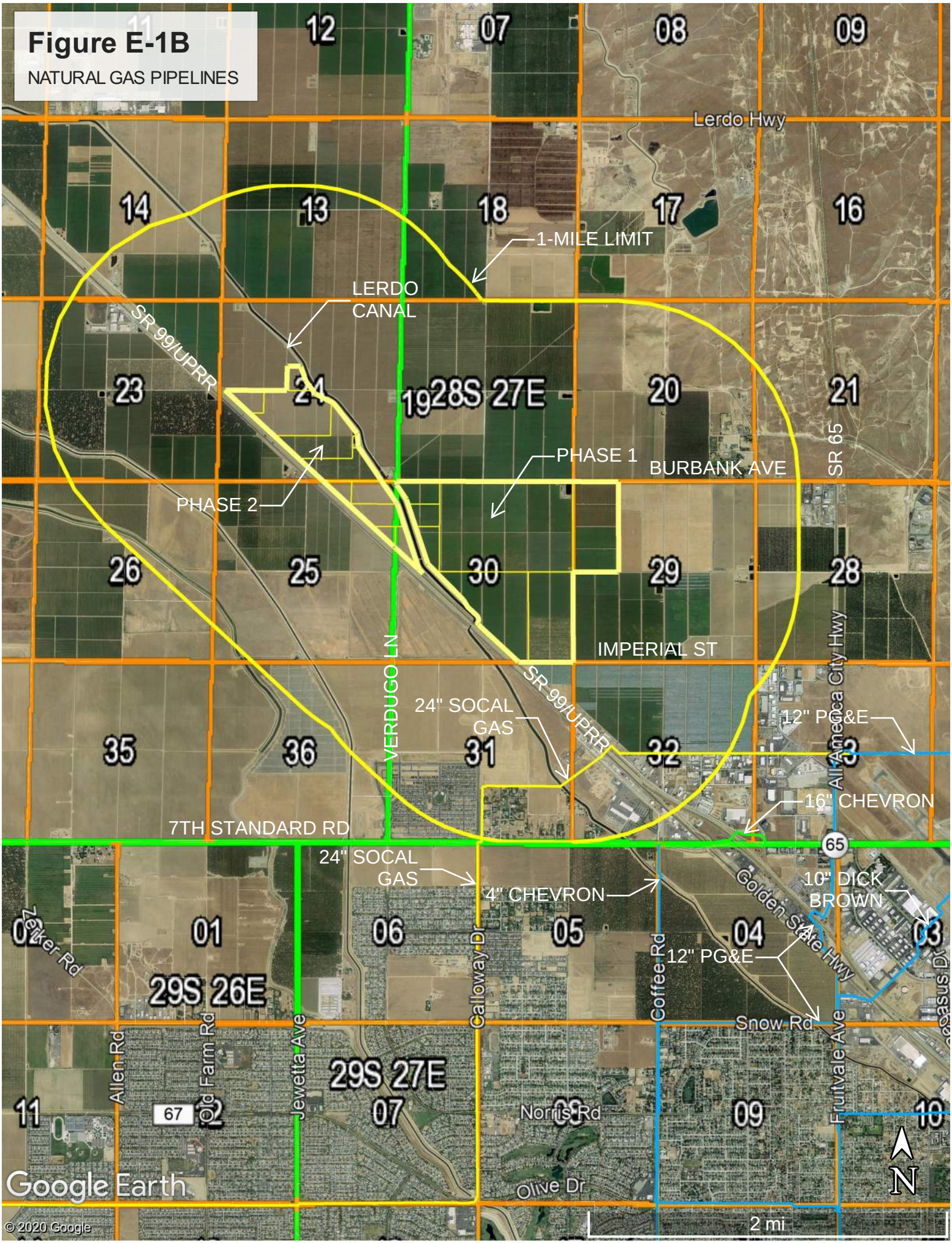
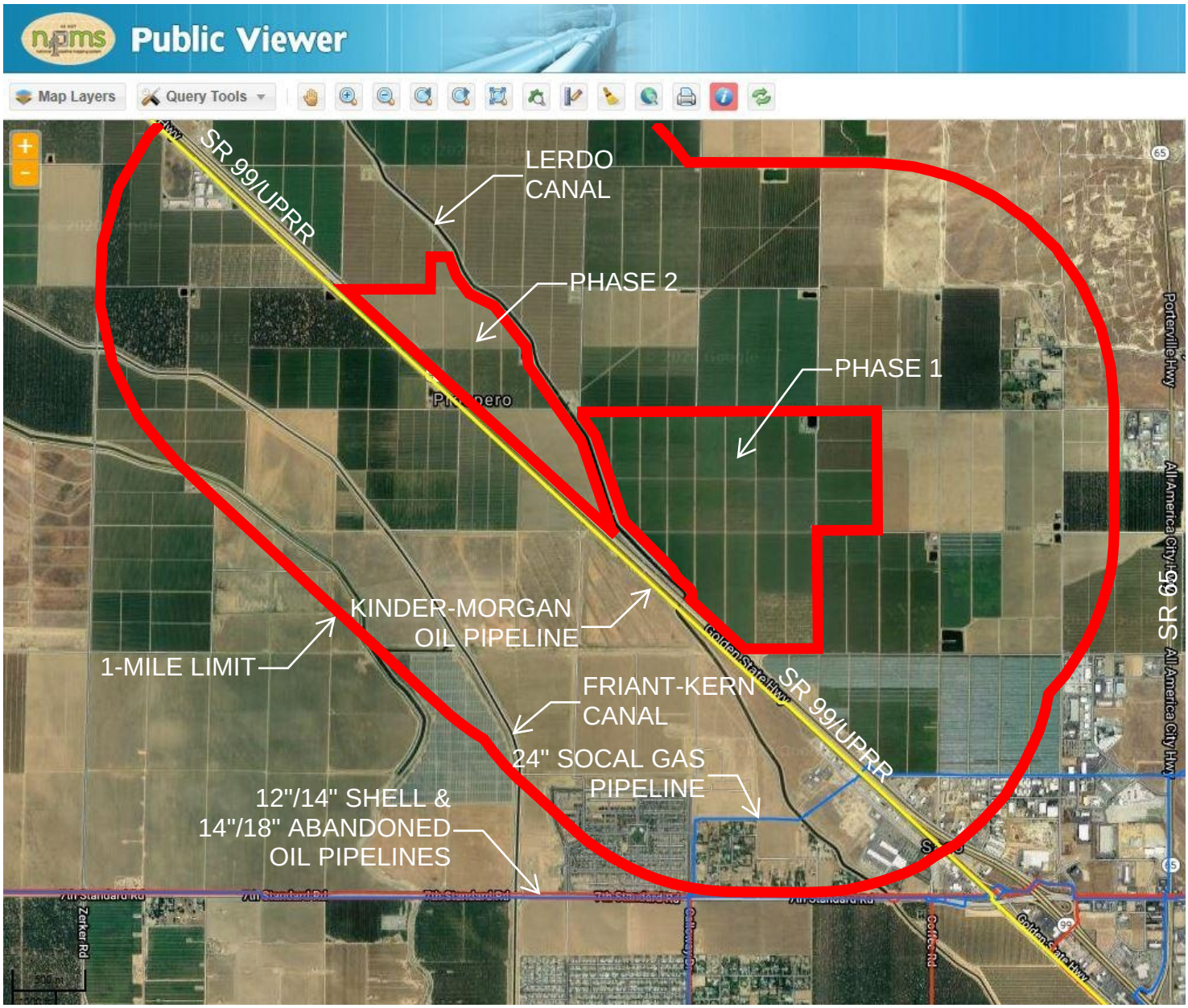
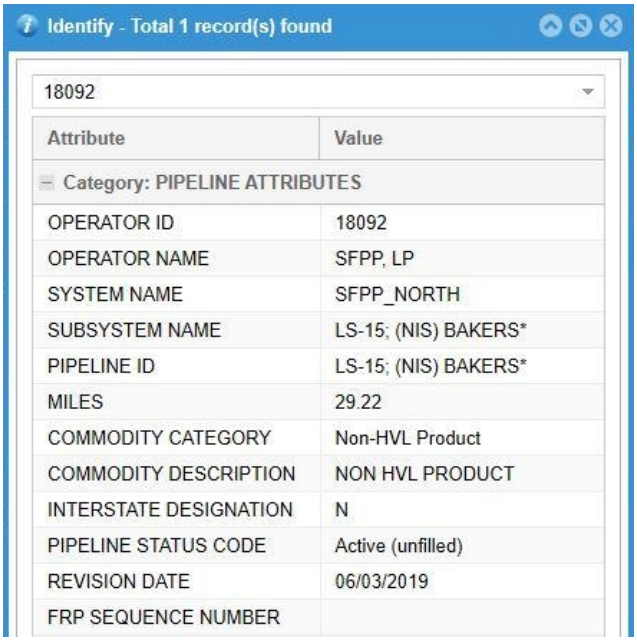


Figure E-1B
NATURAL GAS PIPELINES
Lerdo Hwy
1-MILE LIMIT
LERDO CANAL
SR 99/UPRR
28S 27E
PHASE 1
PHASE 2
BURBANK AVE
SR 65
IMPERIAL ST
VERDUGO LN
24" SOCAL GAS
12" PG&E
All America City Hwy
16" CHEVRON
7TH STANDARD RD
65
24" SOCAL GAS
4" CHEVRON
10" DICK BROWN
Golden State Hwy
Zerker Rd
12" PG&E
29S 26E
Calloway Dr
Coffee Rd
Snow Rd
Allen Rd
Old Farm Rd
Jewetta Ave
29S 27E
67
Norris Rd
Fruitvale Ave
Olive Dr
Google Earth
© 2020 Google
2 mi
N





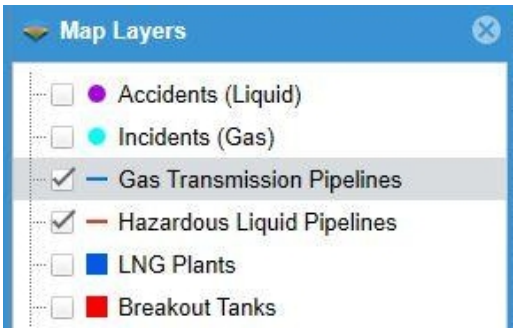


FIGURE E-2
EXISTING OIL PIPELINES

SOURCE: NATIONAL PIPELINE MAPPING SYSTEM

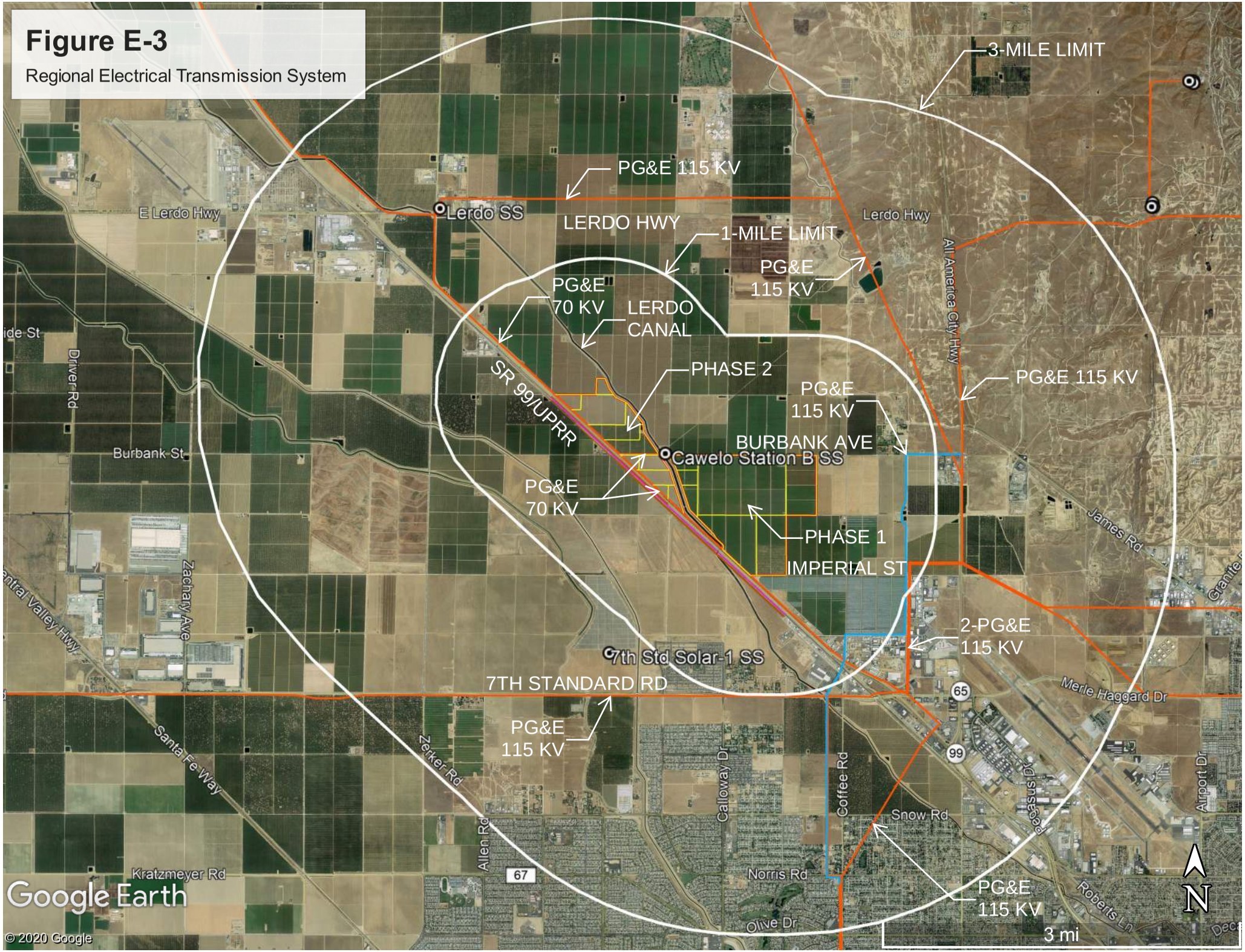


Figure E-3
Regional Electrical Transmission System
3-MILE LIMIT
PG&E 115 KV
Lerdo SS
LERDO HWY
1-MILE LIMIT
PG&E
115 KV
PG&E
70 KV
LERDO
CANAL
PHASE 2
SR 99/UPRR
PG&E 115 KV
PG&E
115 KV
BURBANK AVE
Cawelo Station B SS
PG&E
70 KV
PHASE 1
IMPERIAL ST
2-PG&E
115 KV
7th Std Solar-1 SS
7TH STANDARD RD
PG&E
115 KV
PG&E
115 KV
3 mi
N
E Lerdo Hwy
Lerdo Hwy
All American City Hwy
Driver Rd
Burbank St
Zachary Ave
Central Valley Hwy
James Rd
Merle Haggard Dr
Santa Fe Way
Zerker Rd
Allen Rd
Calloway Dr
Coffee Rd
Peoassi Dr
Airport Dr
Snow Rd
Kratzmeyer Rd
Norris Rd
Olive Dr
Roberts Ln
65
99
67
Google Earth
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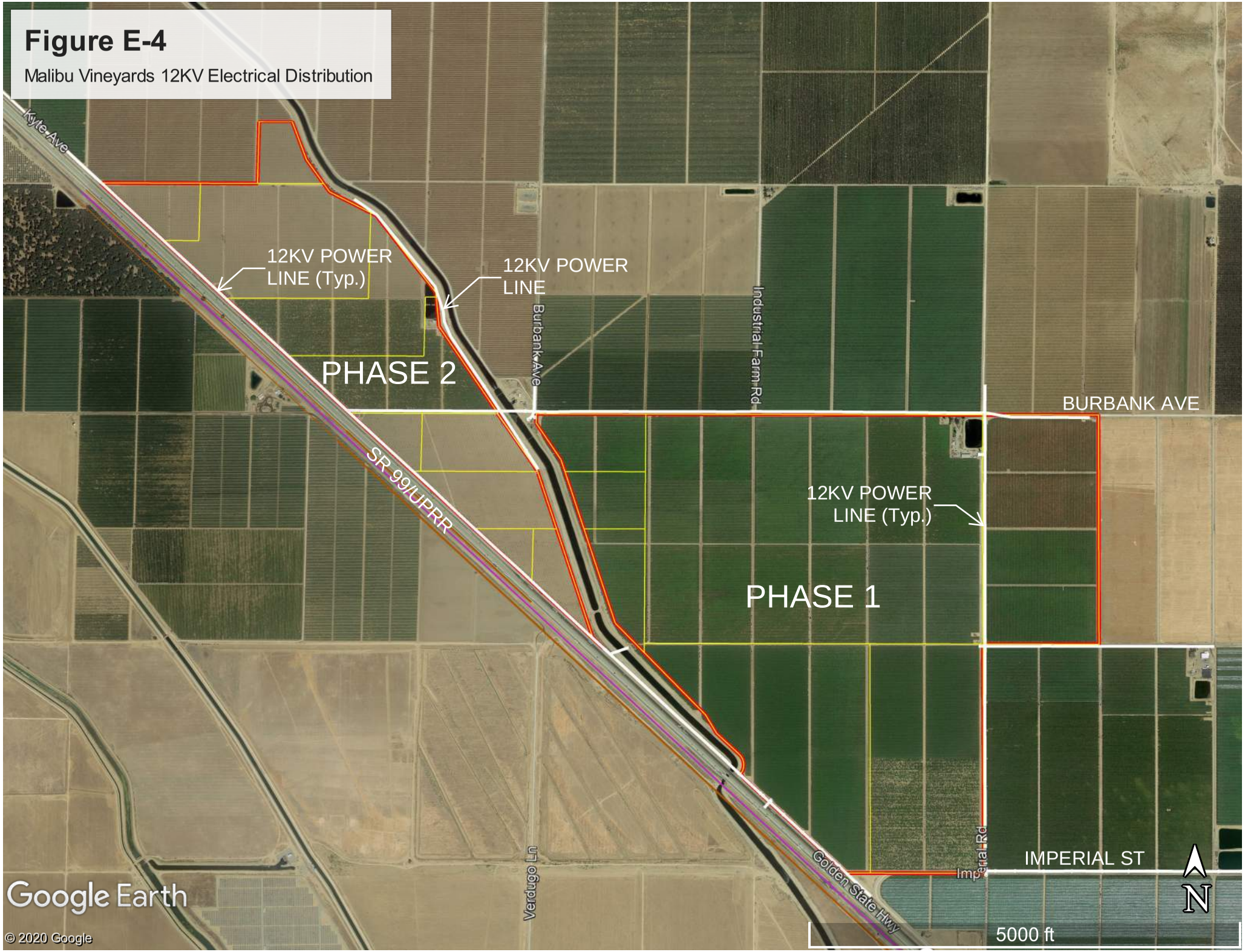
Figure E-4

Malibu Vineyards 12KV Electrical Distribution



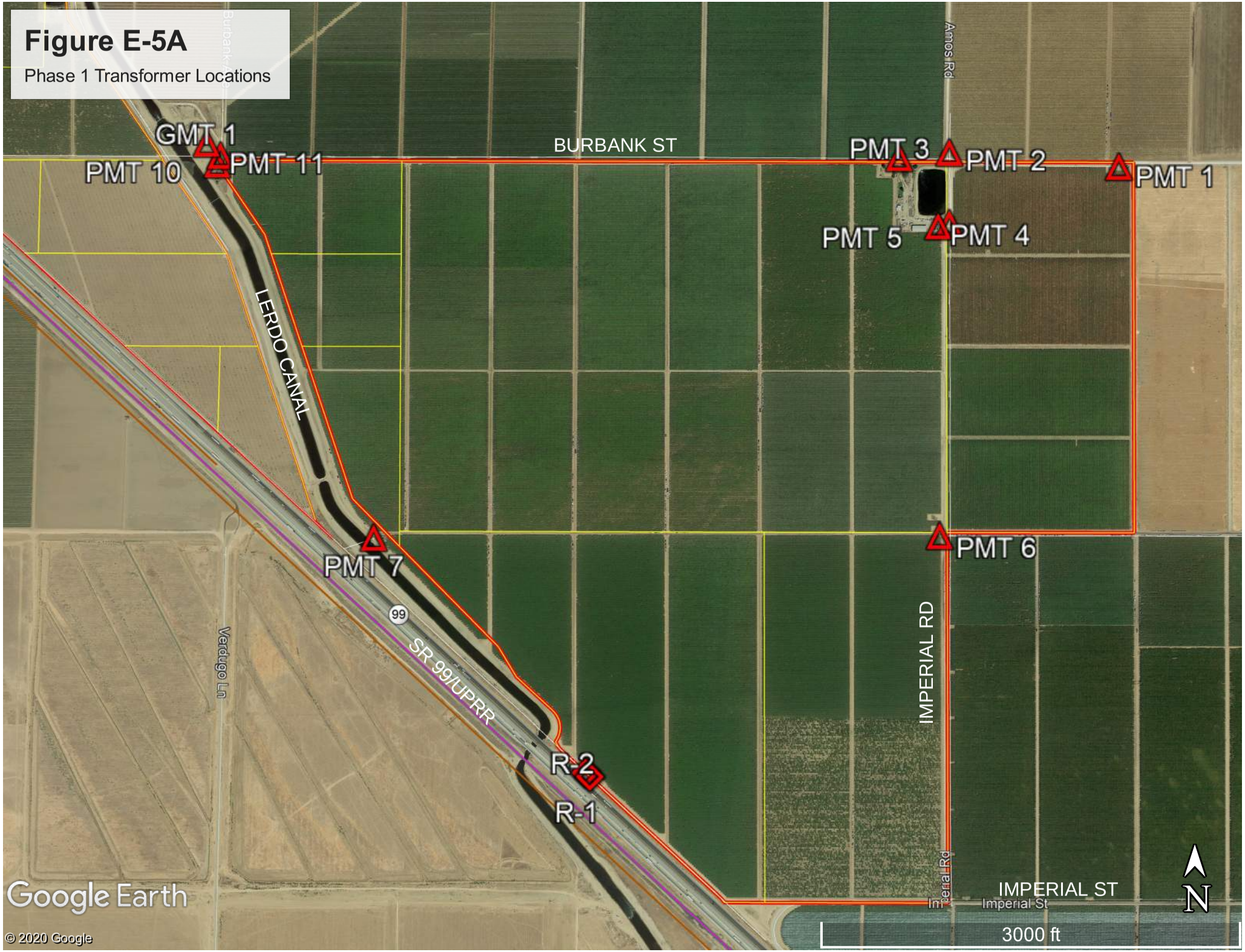


Figure E-5A
Phase 1 Transformer Locations
GMT 1
PMT 10
PMT 11
BURBANK ST
PMT 3
PMT 2
PMT 1
PMT 5
PMT 4
Amos Rd
LERDO CANAL
PMT 7
PMT 6
99
SR 99/UPRR
IMPERIAL RD
Verdugo Ln
R-2
R-1
Imperial Rd
IMPERIAL ST
Imperial St
N
3000 ft
Google Earth
© 2020 Google


Figure E-5B
Phase 2 Transformer Locations
Kyte Ave
GMT-2
PMT 14
PMT 13
Burbank Ave
PMT 12
GMT 1
PMT 11
Burbank St
PMT 10
PMT 9
PMT 8
Golden Sta
Google Earth
© 2020 Google
N
2000 ft

Figure E-6

CRC/NKWSD Non-Potable Water Pipelines



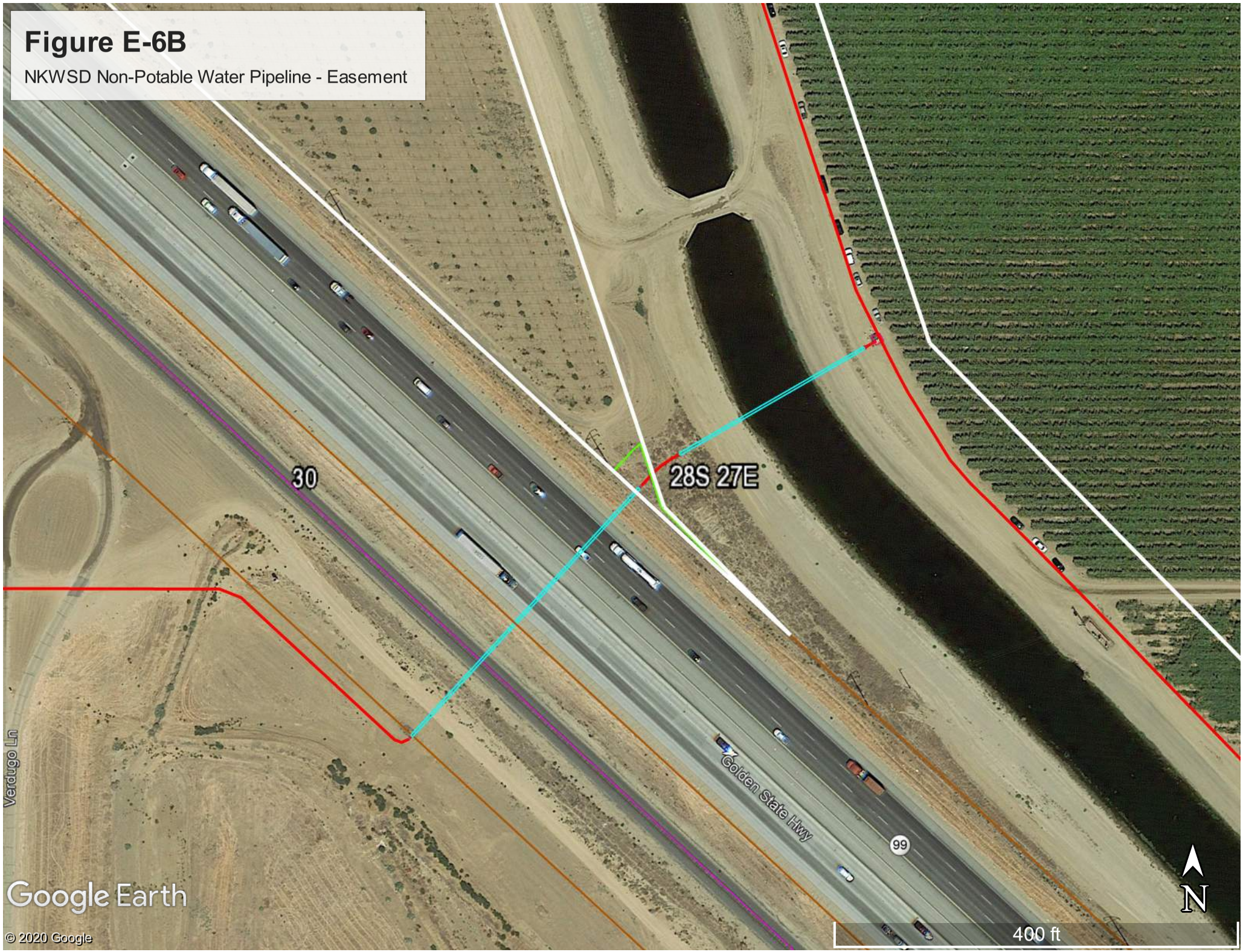
Figure E-6A

CRC Non-Potable Water Pipeline - Easement/Franchise



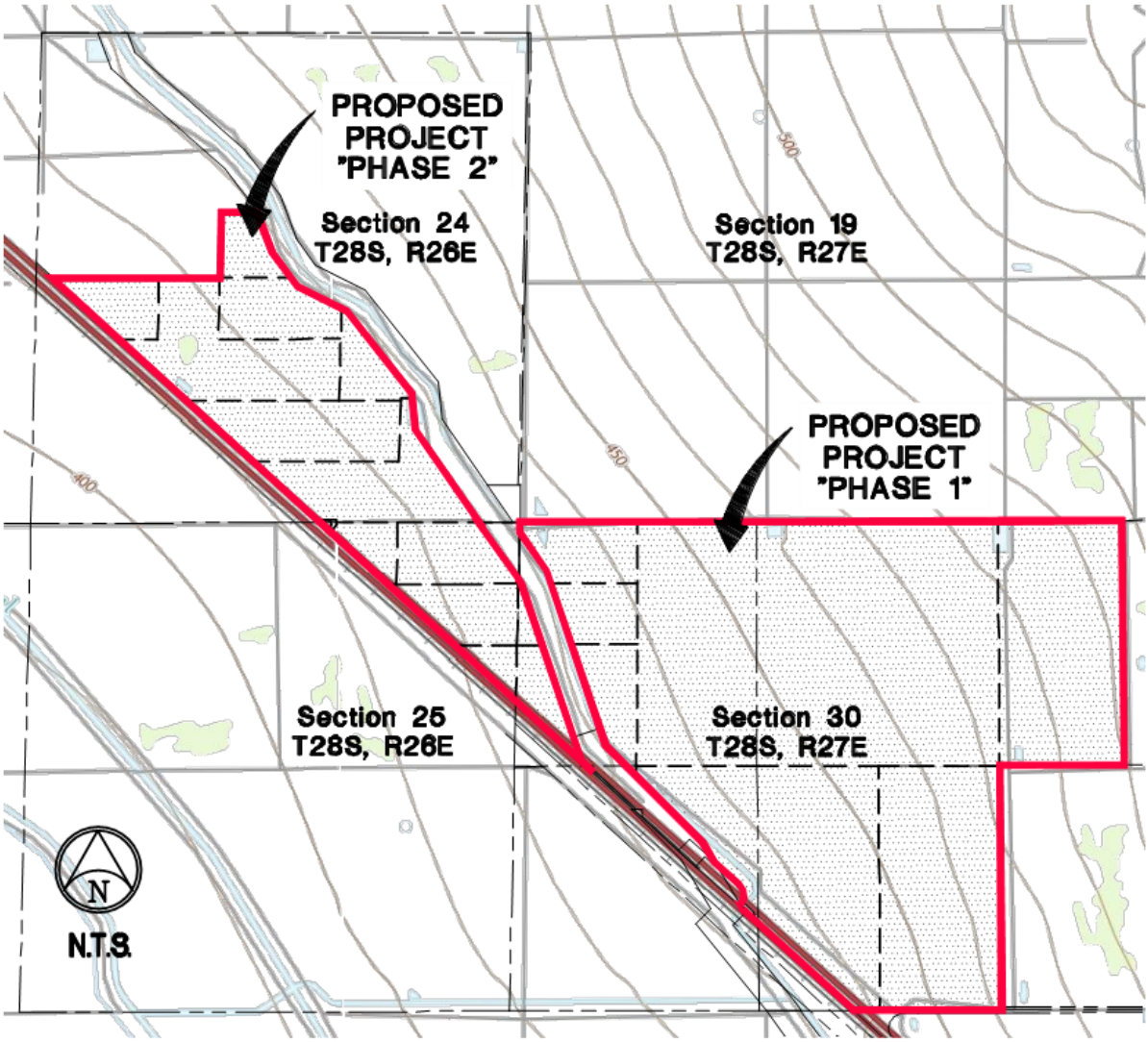
Figure E-6B

NKWSD Non-Potable Water Pipeline - Easement



APPENDIX F

Figures



USGS science for a changing world

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

ROSEDALE QUADRANGLE
CALIFORNIA - KERN COUNTY
7.5-MINUTE SERIES

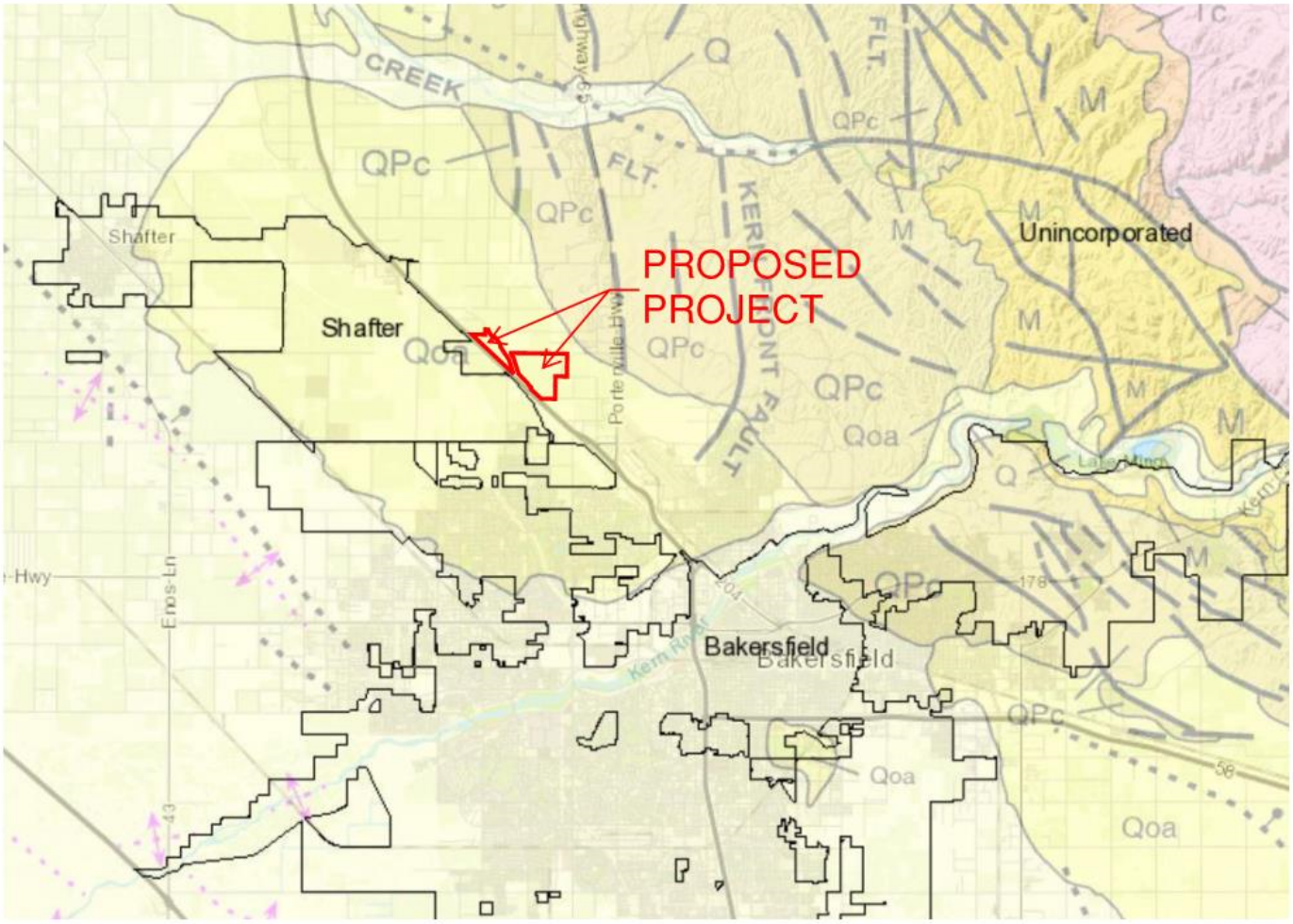
OILDALE QUADRANGLE
CALIFORNIA - KERN COUNTY
7.5-MINUTE SERIES

PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

United States Geological Survey Topographic Quadrangle Map

Figure F-1

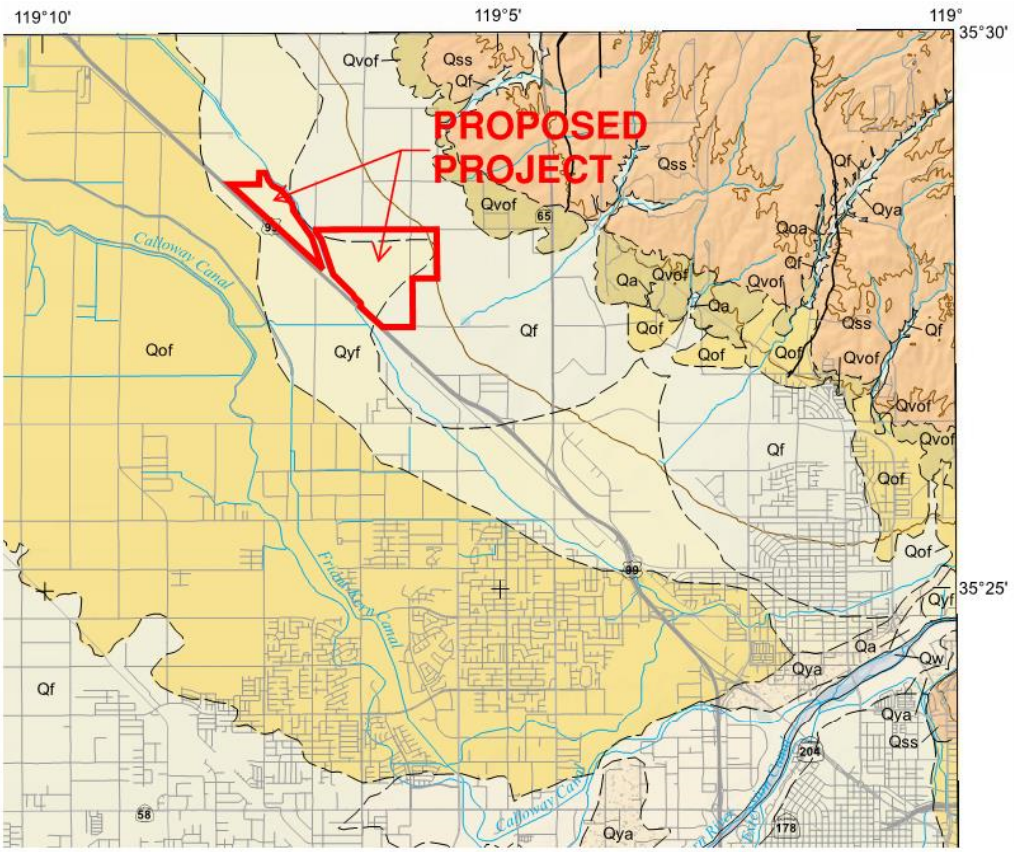


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

California Geologic Map - 2010

Figure F-2



GEOLOGIC MAP OF QUATERNARY SURFICIAL DEPOSITS IN SOUTHERN CALIFORNIA
EAST HALF OF THE TAFT 30' X 60' QUADRANGLE

A Project for the Department of Water Resources by the California Geological Survey

December 2011

MAP UNITS

Late Holocene (Surficial Deposits)

Qls **Landslide Deposits** - may include debris flows and older landslides of various earth material and movement types; unconsolidated to moderately well-consolidated

Qw **Alluvial Wash Deposits** - unconsolidated sandy and gravelly sediment deposited in recently active channels of streams and rivers; may contain loose to moderately loose sand and silty sand

Qf **Alluvial Fan Deposits** - unconsolidated boulders, cobbles, gravel, sand, and silt recently deposited where a river or stream issues from a confined valley or canyon; sediment typically deposited in a fan-shaped cone; gravelly sediment generally more dominant than sandy sediment

Qa **Alluvial Valley Deposits** - unconsolidated clay, silt, sand, and gravel recently deposited parallel to localized stream valleys and/or spread more regionally onto alluvial flats of larger river valleys; sandy sediment generally more dominant than gravelly sediment

Qt **Terrace Deposits** - includes marine and stream terrace deposits; marine deposits include slightly to moderately consolidated and bedded gravel and conglomerate, sand and sandstone, and silt and siltstone; river terrace deposits consist of unconsolidated thin- to thick-bedded gravel

Ql **Lacustrine, Playa, and Estuarine (Paralic) Deposits** - mostly unconsolidated fine-grained sand, silt, mud, and clay from fresh water (lacustrine) lakes, saline (playa) dry lakes that are periodically flooded, and estuaries; deposits may contain salt and other evaporites

Qe **Eolian and Dune Deposits** - unconsolidated, generally well-sorted wind-blown sand; may occur as dune forms or sheet sand

Holocene to Late Pleistocene (Surficial Deposits)

Qyf **Young Alluvial Fan Deposits** - unconsolidated to slightly consolidated, undissected to slightly dissected boulder, cobble, gravel, sand, and silt deposits issued from a confined valley or canyon

Qya **Young Alluvial Valley Deposits** - unconsolidated to slightly consolidated, undissected to slightly dissected clay, silt, sand, and gravel along stream valleys and alluvial flats of larger rivers

Qyl **Young Lacustrine, Playa, and Estuarine (Paralic) Deposits** - unconsolidated to slightly consolidated, undissected to slightly dissected fine-grained sand, silt, mud and clay from lake, playa, and estuarine deposits of various types

www.conservation.ca.gov/cgs

The Department of Conservation makes no warranties as to the suitability of this product for any particular purpose.

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Information on this map is not sufficient to serve as a substitute for the geologic and geotechnical site investigations required under Chapters 7.5 and 7.8 of Division 2 of the California Public Resources Code.

PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Geologic Map-Surficial Deposits - 2011

Figure F-3

Figure F-4

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Kern County, California, Northwestern Part

Malibu Vineyards



April 29, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

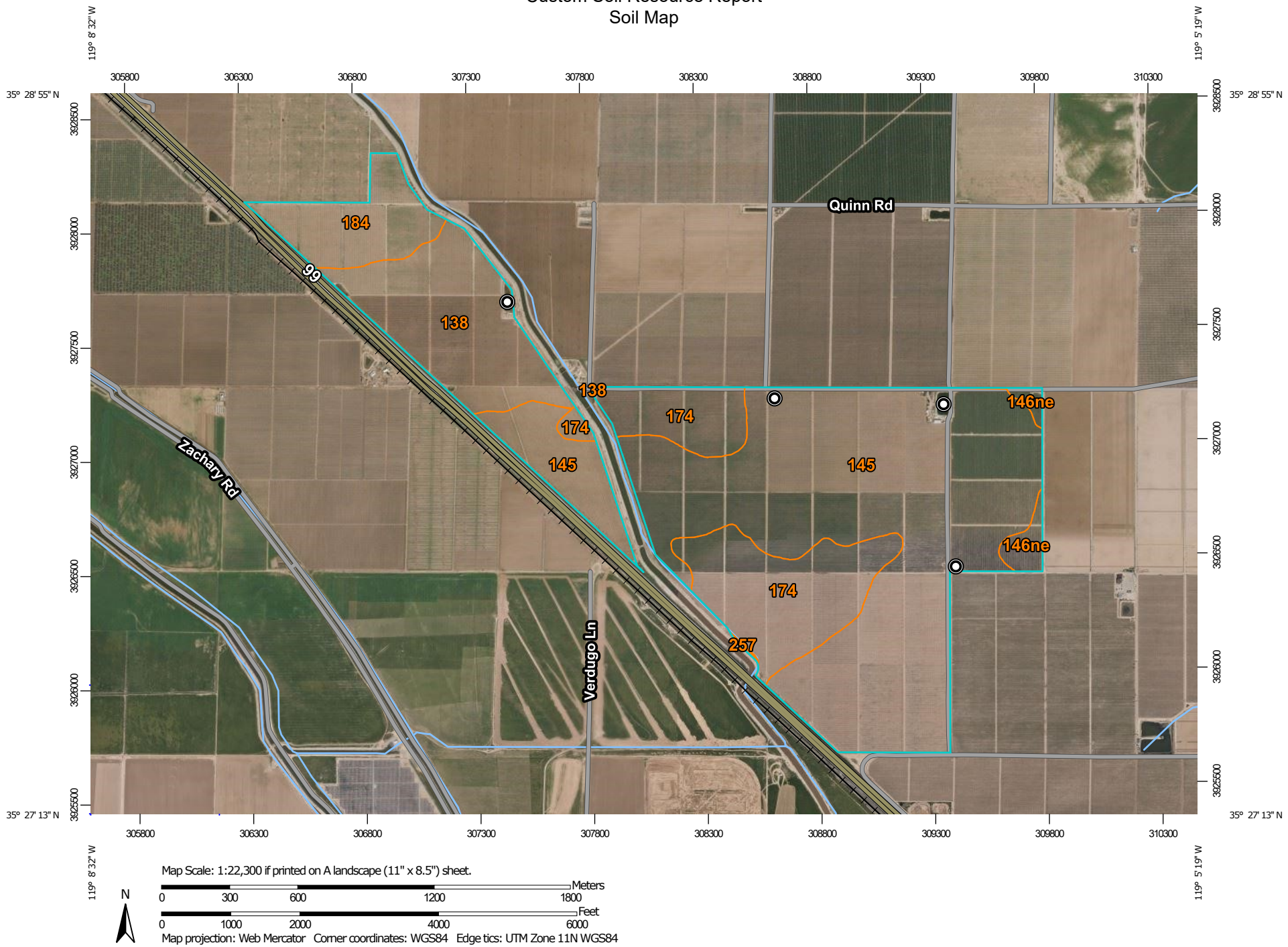
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Kern County, California, Northwestern Part
Survey Area Data: Version 12, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 11, 2019—Apr 23, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
138	Delano sandy loam, 0 to 2 percent slopes	107.5	14.6%
145	Driver coarse sandy loam, 0 to 2 percent slopes	433.4	58.7%
146ne	Delano sandy loam, 1 to 5 percent slopes	12.1	1.6%
174	Kimberlina fine sandy loam, 0 to 2 percent slopes MLRA 17	131.8	17.9%
184	Lewkalb sandy loam, 0 to 2 percent slopes	53.4	7.2%
257	Water	0.2	0.0%
Totals for Area of Interest		**738.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Kern County, California, Northwestern Part

138—Delano sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: hkhj
Elevation: 300 to 700 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 63 to 64 degrees F
Frost-free period: 260 to 290 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Delano and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Delano

Setting

Landform: Terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

Ap - 0 to 11 inches: sandy loam
Bt - 11 to 42 inches: clay loam
C - 42 to 63 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Gypsum, maximum in profile: 3 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Cuyama
Percent of map unit: 4 percent
Hydric soil rating: No

Exeter
Percent of map unit: 4 percent
Hydric soil rating: No

Wasco
Percent of map unit: 3 percent
Hydric soil rating: No

Zerker
Percent of map unit: 2 percent
Hydric soil rating: No

Kimberlina
Percent of map unit: 2 percent
Hydric soil rating: No

145—Driver coarse sandy loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: hkhr
Elevation: 400 to 520 feet
Mean annual precipitation: 7 inches
Mean annual air temperature: 63 to 64 degrees F
Frost-free period: 275 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Driver and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Driver

Setting
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile
Ap - 0 to 16 inches: coarse sandy loam
Bt - 16 to 27 inches: clay loam
Cq - 27 to 37 inches: sandy loam

2C - 37 to 65 inches: stratified loamy coarse sand to loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 30 inches to abrupt textural change
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Lewkalb

Percent of map unit: 5 percent
Hydric soil rating: No

Wasco

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed, hardpan soil

Percent of map unit: 5 percent
Hydric soil rating: No

146ne—Delano sandy loam, 1 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1sgcn
Elevation: 500 to 700 feet
Mean annual precipitation: 7 to 9 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 260 to 290 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Delano and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Delano

Setting

Landform: Fan remnants
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granitoid

Typical profile

A - 0 to 18 inches: sandy loam
Btk1 - 18 to 37 inches: sandy clay loam
Btk2 - 37 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Hesperia

Percent of map unit: 7 percent
Landform: Inset fans
Hydric soil rating: No

Pleito

Percent of map unit: 5 percent
Landform: Fan remnants
Hydric soil rating: No

Arents, loamy

Percent of map unit: 3 percent
Landform: Alluvial fans
Hydric soil rating: No

Calicreek

Percent of map unit: 2 percent
Landform: Flood plains

Hydric soil rating: No

Oil-waste land

Percent of map unit: 1 percent
Landform: Alluvial fans, depressions
Hydric soil rating: No

Urban land

Percent of map unit: 1 percent
Landform: Alluvial fans
Hydric soil rating: No

Riverwash

Percent of map unit: 1 percent
Landform: Drainageways
Hydric soil rating: No

174—Kimberlina fine sandy loam, 0 to 2 percent slopes MLRA 17

Map Unit Setting

National map unit symbol: 2ss96
Elevation: 120 to 1,160 feet
Mean annual precipitation: 4 to 8 inches
Mean annual air temperature: 63 to 64 degrees F
Frost-free period: 240 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Kimberlina and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kimberlina

Setting

Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from igneous and sedimentary rock

Typical profile

Ap - 0 to 9 inches: fine sandy loam
C - 9 to 45 inches: fine sandy loam
2C - 45 to 71 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.3 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 4.0
Available water storage in profile: Moderate (about 8.7 inches)

Interpretive groups
Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Wasco
Percent of map unit: 7 percent
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Milham
Percent of map unit: 6 percent
Landform: Alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Unnamed
Percent of map unit: 2 percent
Landform: Flood plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

184—Lewkalb sandy loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: hkk0
Elevation: 500 to 1,000 feet
Mean annual precipitation: 6 to 8 inches

Mean annual air temperature: 63 to 64 degrees F
Frost-free period: 250 to 300 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Lewkalb and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lewkalb

Setting

Landform: Terraces, alluvial fans
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from granite

Typical profile

A - 0 to 23 inches: sandy loam
Ckq - 23 to 40 inches: sandy loam
2Ckq - 40 to 65 inches: stratified loamy sand to loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 45.0
Available water storage in profile: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Wasco

Percent of map unit: 8 percent
Hydric soil rating: No

Soils with hardpan below 48 c

Percent of map unit: 7 percent
Hydric soil rating: No

257—Water

Map Unit Composition

Water: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

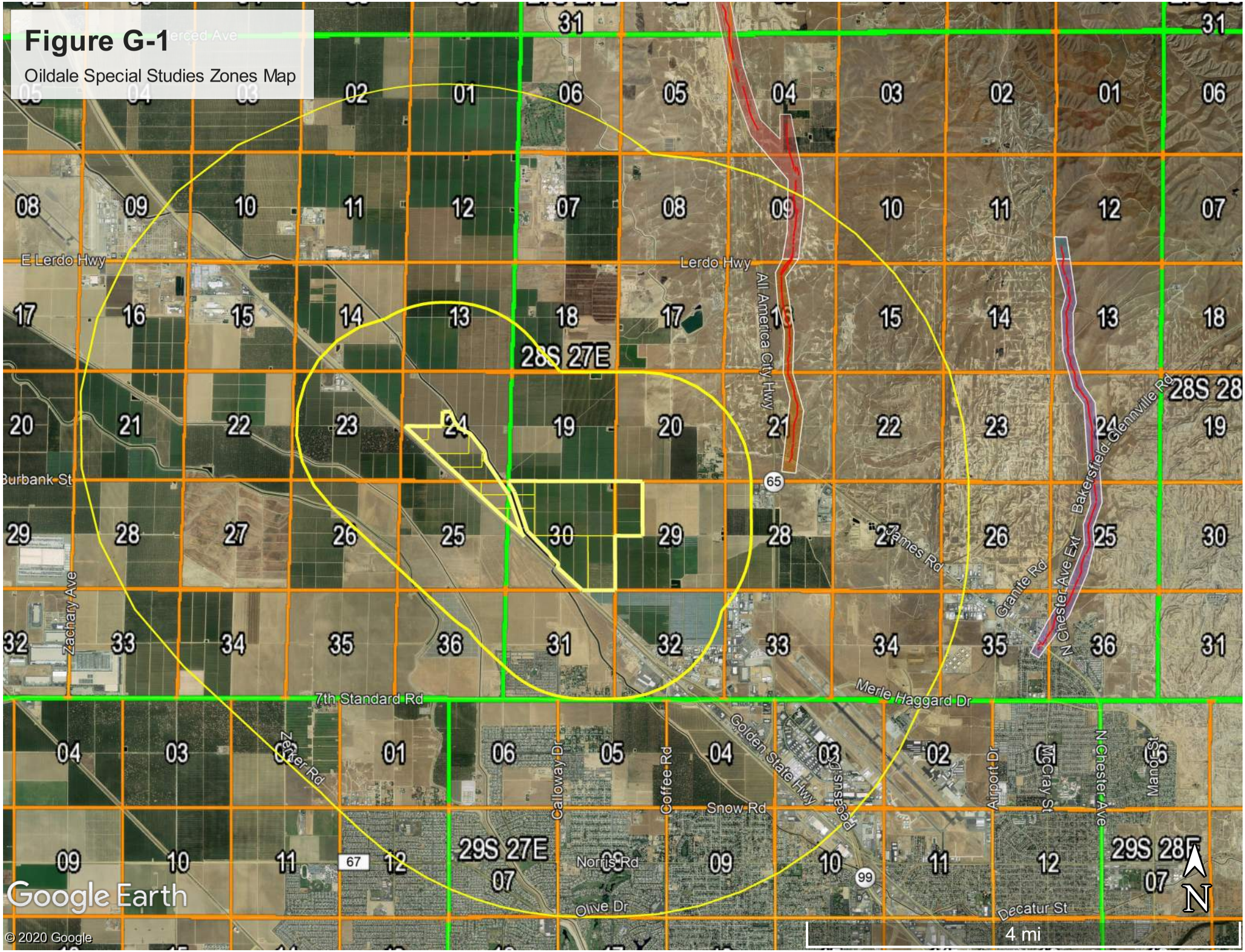
United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

APPENDIX G

Figures

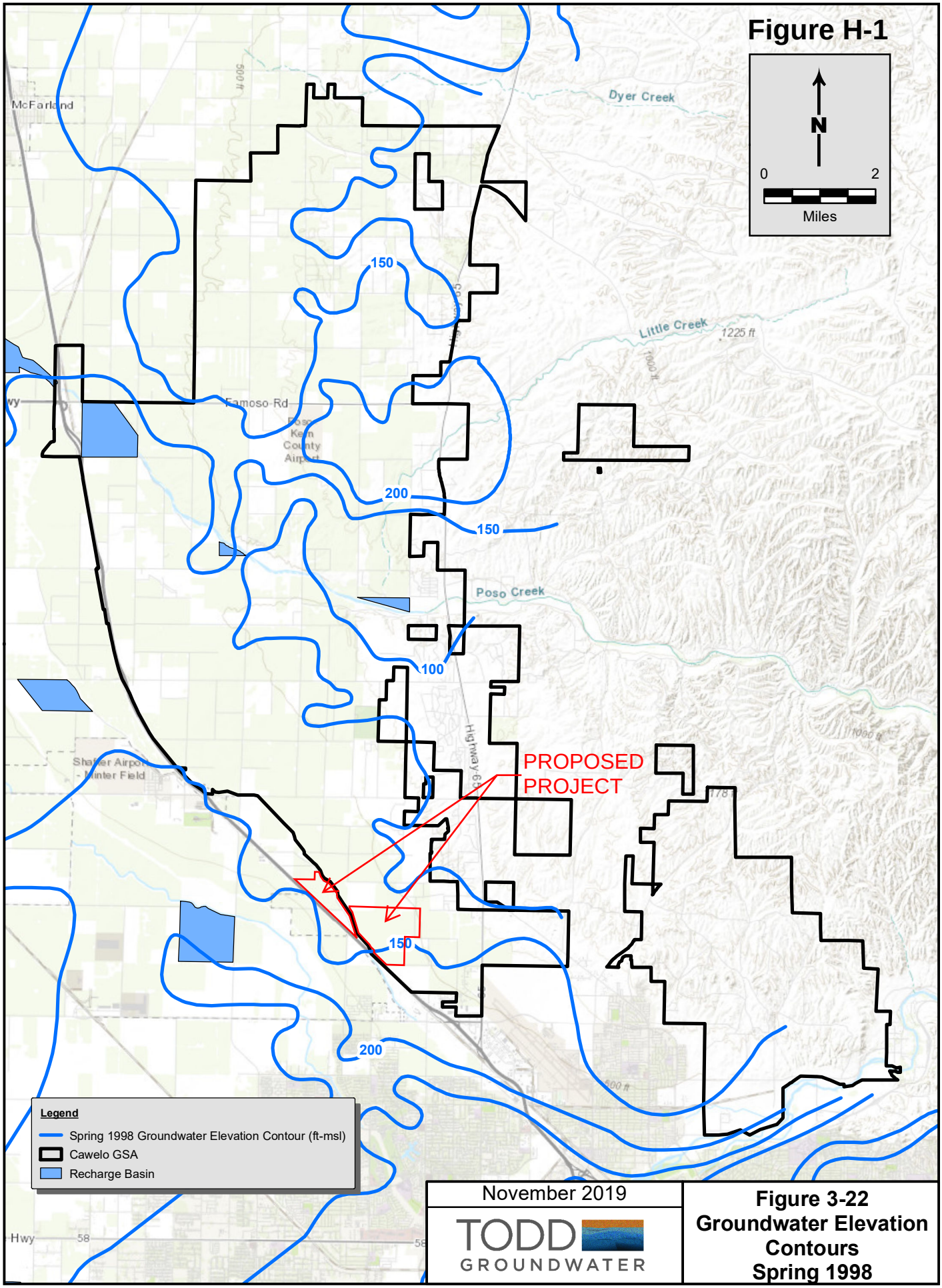
Figure G-1

Oildale Special Studies Zones Map



APPENDIX H

Figures



November 2019

TODD GROUNDWATER

Figure 3-22
Groundwater Elevation Contours
Spring 1998

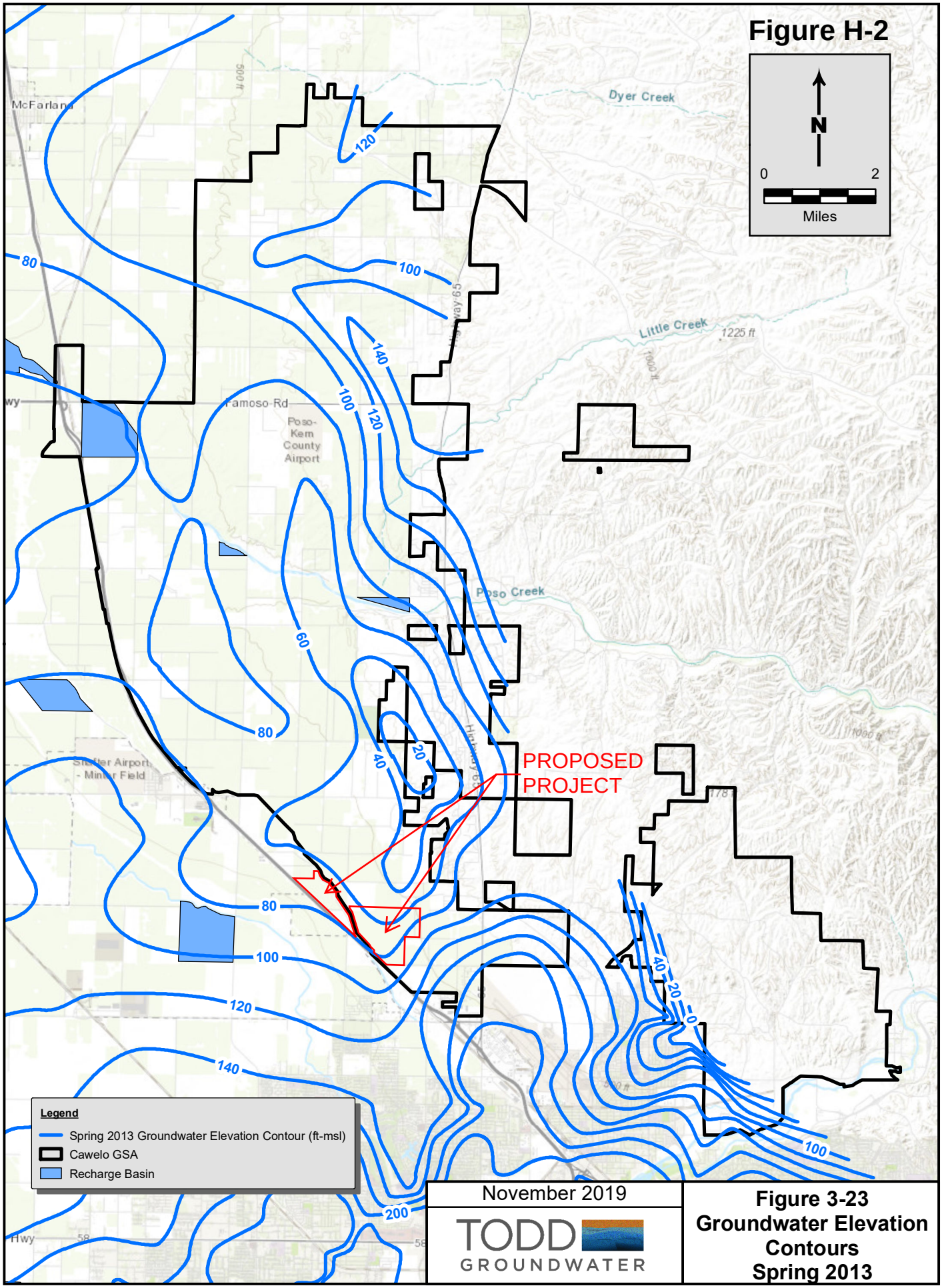


Figure H-2
N
0
2
Miles
McFarland
Dyer Creek
Little Creek
1225 ft
Famoso Rd
Poso-Kern County Airport
Poso Creek
Shafter Airport - Minter Field
PROPOSED PROJECT
Hwy 65
Hwy
80
100
120
140
60
40
20
0
200
Legend
Spring 2013 Groundwater Elevation Contour (ft-msl)
Cawelo GSA
Recharge Basin
November 2019
TODD GROUNDWATER
Figure 3-23
Groundwater Elevation Contours
Spring 2013

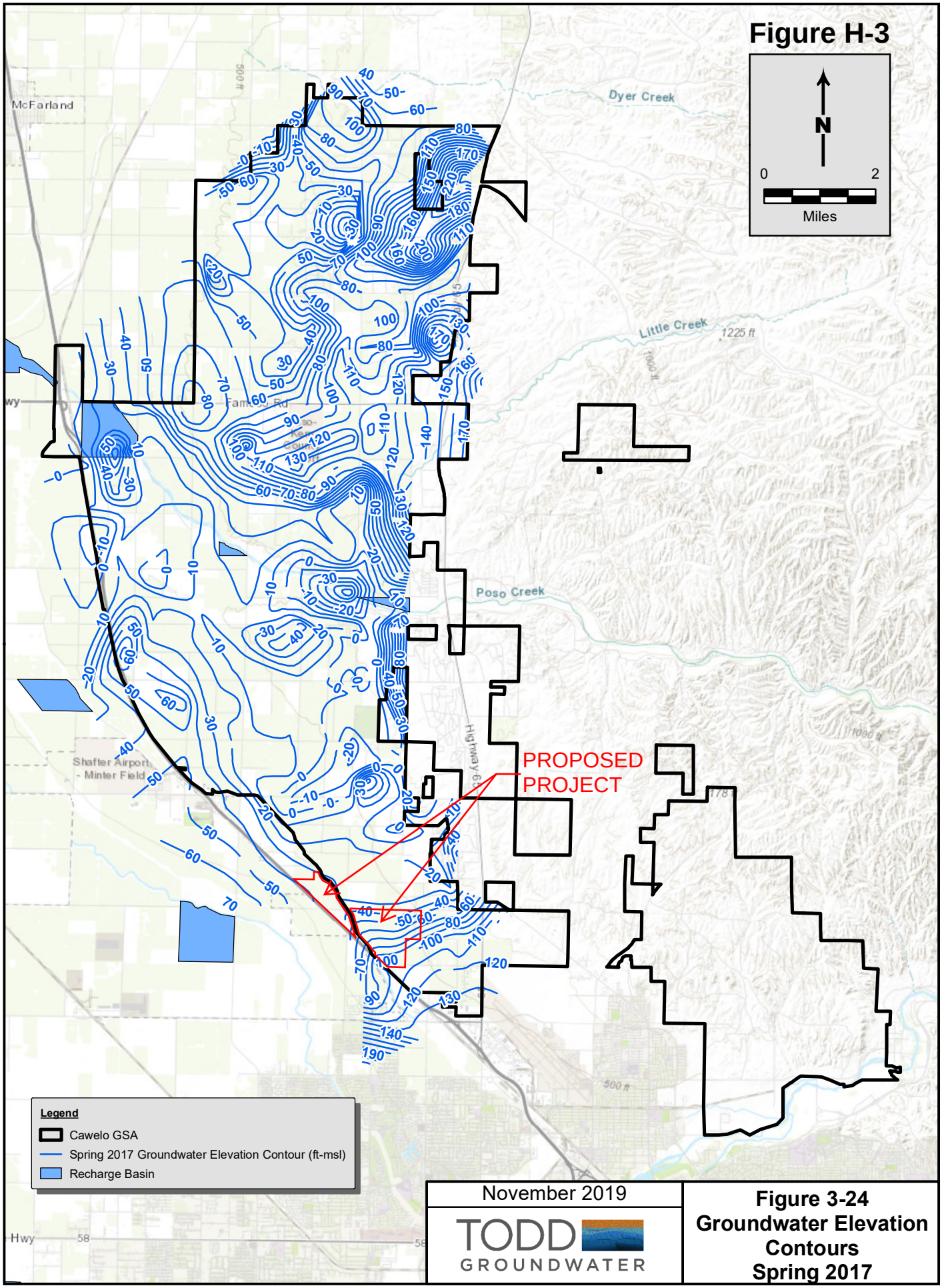


Figure H-3
N
0
2
Miles
McFarland
Dyer Creek
Little Creek
1225 ft
Poso Creek
Shafter Airport - Minter Field
Highway 99
PROPOSED PROJECT
Hwy 58
Legend
Cawelo GSA
Spring 2017 Groundwater Elevation Contour (ft-msl)
Recharge Basin
November 2019
TODD GROUNDWATER
Figure 3-24
Groundwater Elevation Contours
Spring 2017

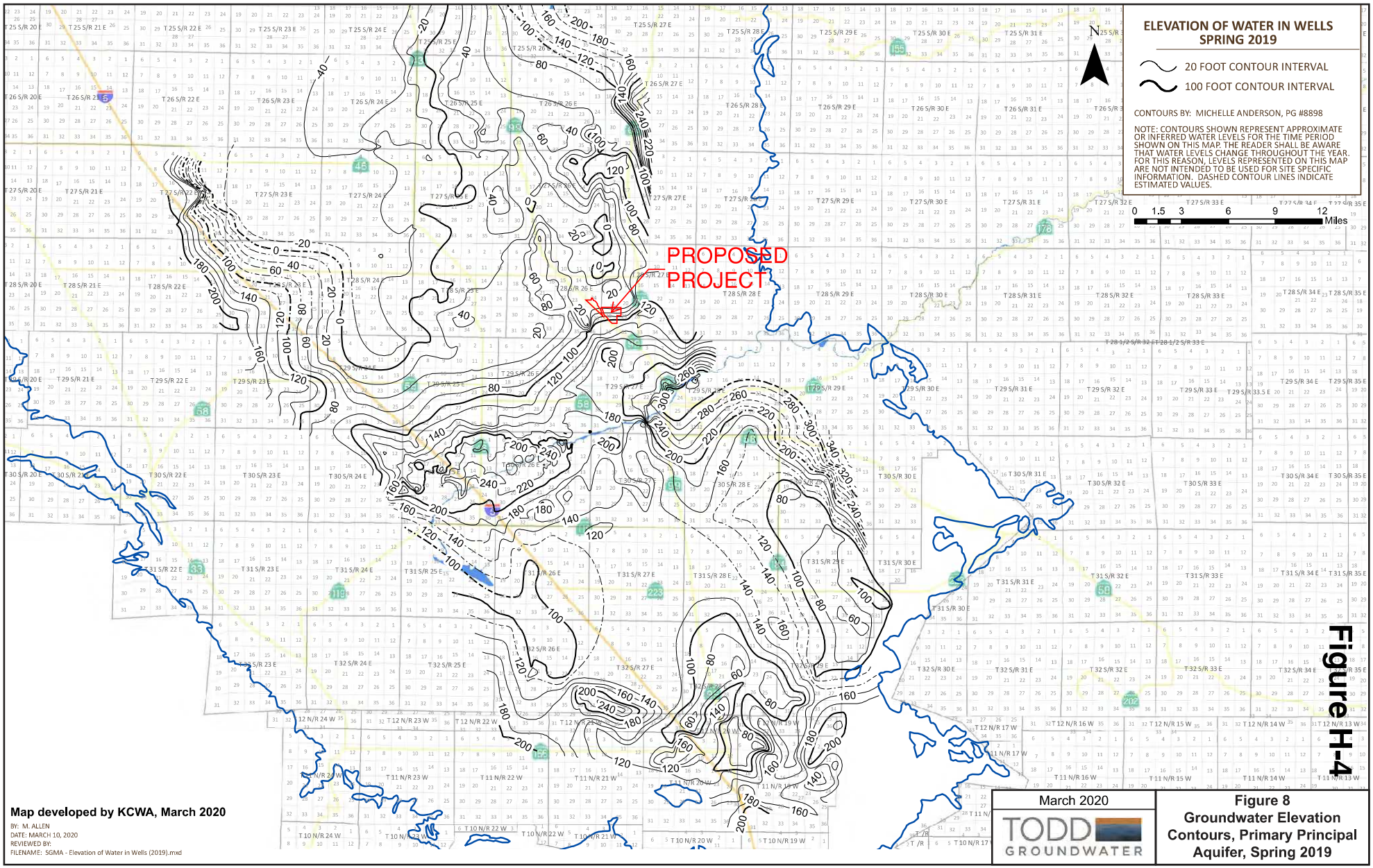
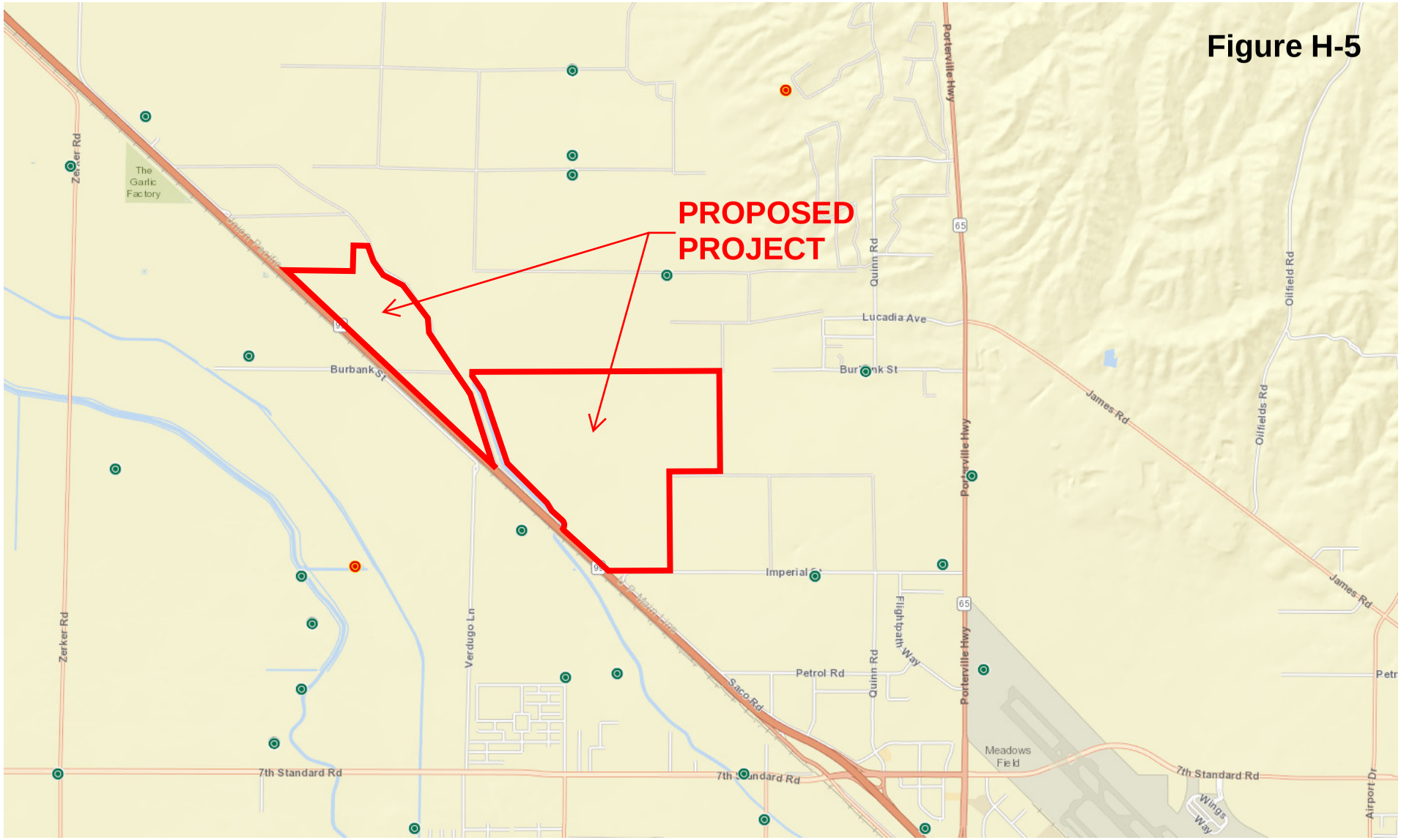

ELEVATION OF WATER IN WELLS
SPRING 2019
20 FOOT CONTOUR INTERVAL
100 FOOT CONTOUR INTERVAL
CONTOURS BY: MICHELLE ANDERSON, PG #8898
NOTE: CONTOURS SHOWN REPRESENT APPROXIMATE OR INFERRED WATER LEVELS FOR THE TIME PERIOD SHOWN ON THIS MAP. THE READER SHALL BE AWARE THAT WATER LEVELS CHANGE THROUGHOUT THE YEAR. FOR THIS REASON, LEVELS REPRESENTED ON THIS MAP ARE NOT INTENDED TO BE USED FOR SITE SPECIFIC INFORMATION. DASHED CONTOUR LINES INDICATE ESTIMATED VALUES.
N
0 1.5 3 6 9 12
Miles
PROPOSED PROJECT
Map developed by KCWA, March 2020
BY: M. ALLEN
DATE: MARCH 10, 2020
REVIEWED BY:
FILENAME: SGMA - Elevation of Water in Wells (2019).mxd
March 2020
TODD GROUNDWATER
Figure 8
Groundwater Elevation Contours, Primary Principal Aquifer, Spring 2019
Figure H-4

Figure H-5

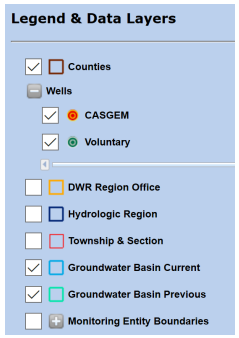


Legend & Data Layers

- Counties
- Wells
  - CASGEM
  - Voluntary

CASGEM
California Statewide Groundwater Elevation Monitoring System

https://www.casgem.water.ca.gov/OSS/(S(wwgewim2lzjx35wjpwrmr1iy))/GIS/PopViewMap.aspx?Public=Y



ME Boundaries

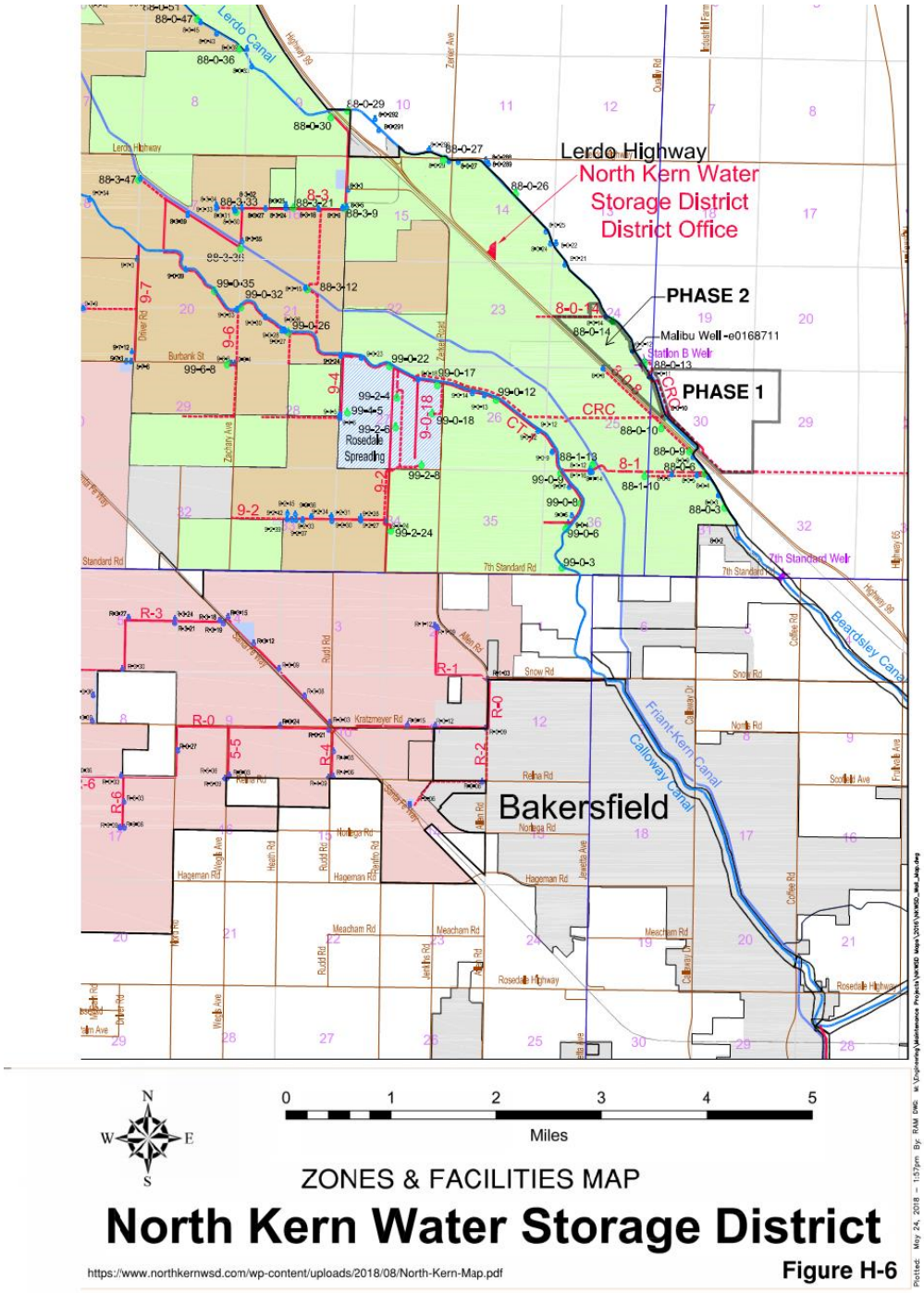
ME ID: 5033
ME Name: North Kern Water Storage District
GW Basin Name: Kern County
GW Basin Code: 5-22.14
Notif ID: 15
Portion Name: North Kern Water Storage District
Hydrologic Region: Tulare Lake
DWR Region Office: South Central Region Office
Coop Agency: Not Available
Status: Designated
Submit Date: 12/17/2010
Contact Name: Ram Venkatesan
Contact Email: dmunn@northkernwsd.com

ME Boundaries

ME ID: 5038
ME Name: Cawelo Water District
GW Basin Name: Kern County
GW Basin Code: 5-22.14
Notif ID: 23
Portion Name: Area within Cawelo Water District boundaries
Hydrologic Region: Tulare Lake
DWR Region Office: South Central Region Office
Coop Agency: Not Available
Status: Designated
Submit Date: 12/17/2010
Contact Name: David Ansolabehere
Contact Email: dansolabehere@cawelowd.org

ME Boundaries

ME ID: 5138
ME Name: Kern County Water Agency Improvement District No. 4
GW Basin Name: Kern County
GW Basin Code: 5-22.14
Notif ID: 150
Portion Name: Improvement District No. 4
Hydrologic Region: Tulare Lake
DWR Region Office: South Central Region Office
Coop Agency: Not Available
Status: Designated
Submit Date: 12/29/2010
Contact Name: Lauren Bauer
Contact Email: lbauer@kcwa.com

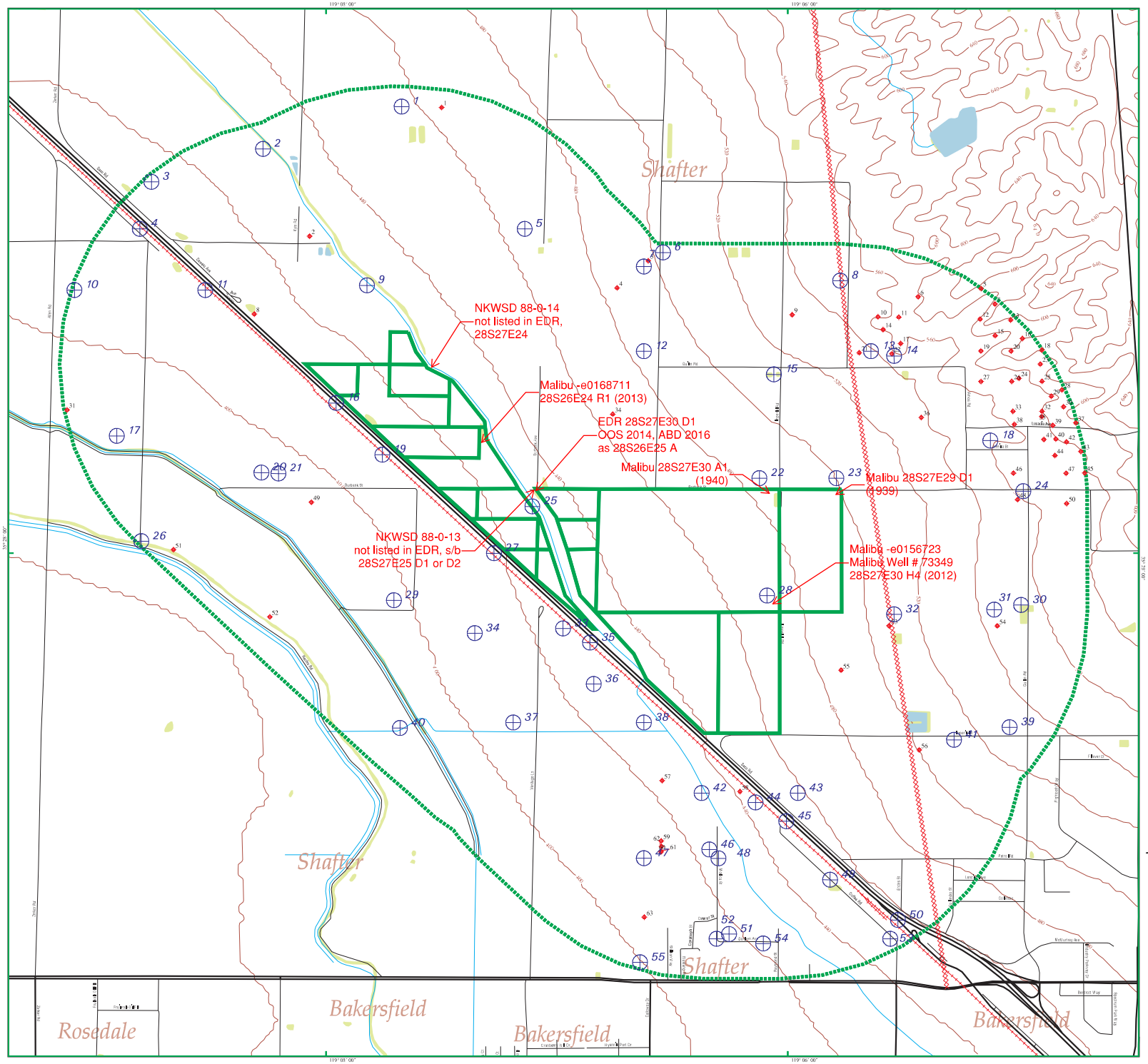


PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

NKWSD Zones & Facilities Map

Figure H-6



EDR DataMap® Well Search

Malibu Vineyards

- Listed Water Wells
- Oil & Gas Wells
- Study Boundary
- Roads
- Major Roads
- Waterways
- Railroads
- Contour Lines
- Fault Lines
- Water
- Superfund Sites
- Wetlands

MALIBU VINEYARDS
IRRIGATION WATER WELLS

N

Bakersfield, CA

0 1/4 1/2

Scale in Miles

EDR® Environmental Data Resources Inc

Figure H-7

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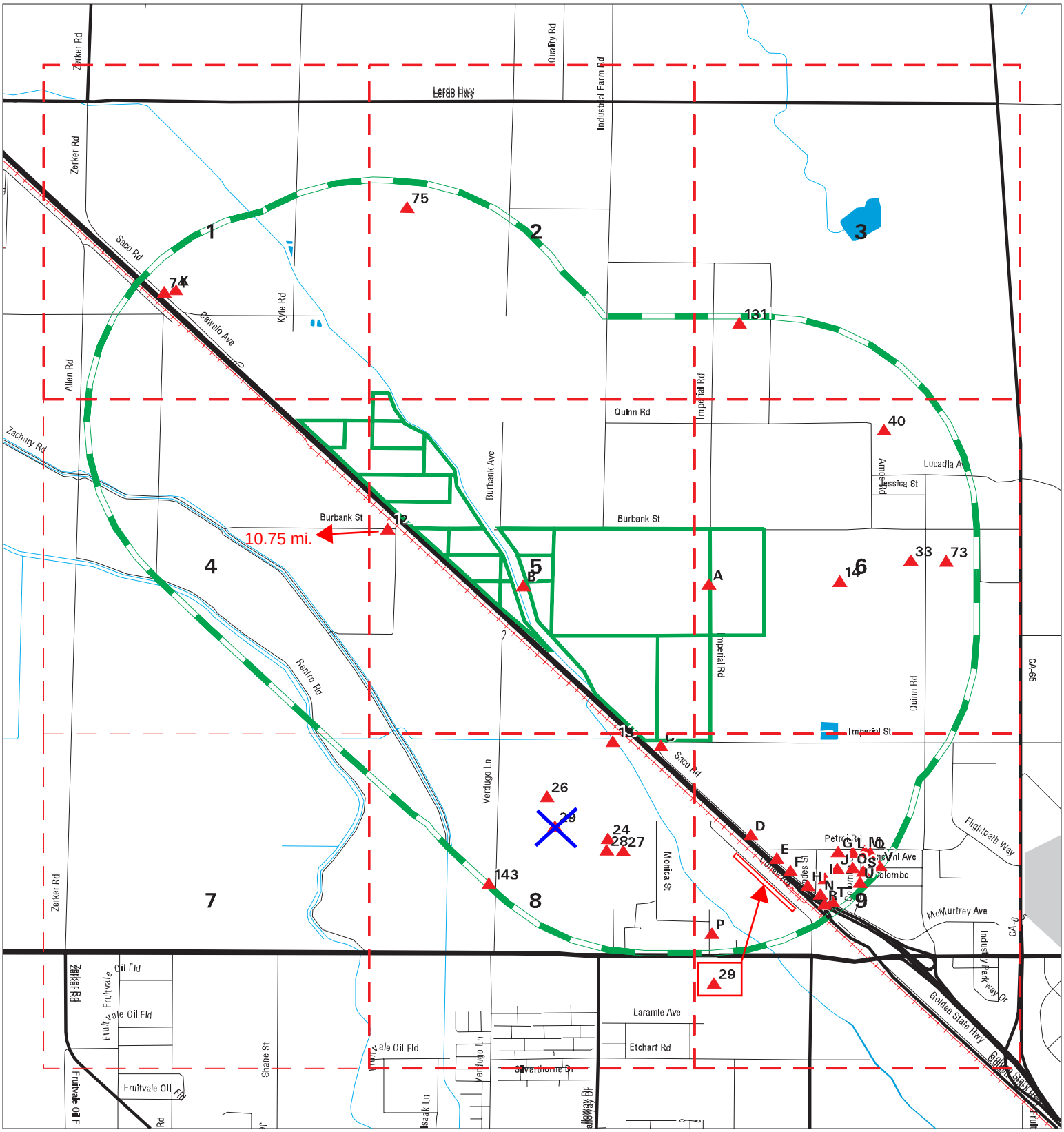
APPENDIX I

EDR Reports

Key Map - 5967931.2s



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ADDRESS: Malibu Vineyards	CONTACT: Julie Green
CITY/STATE: Bakersfield CA	INQUIRY #: 5967931.2s
ZIP: 93308	DATE: 02/12/20 12:29 PM

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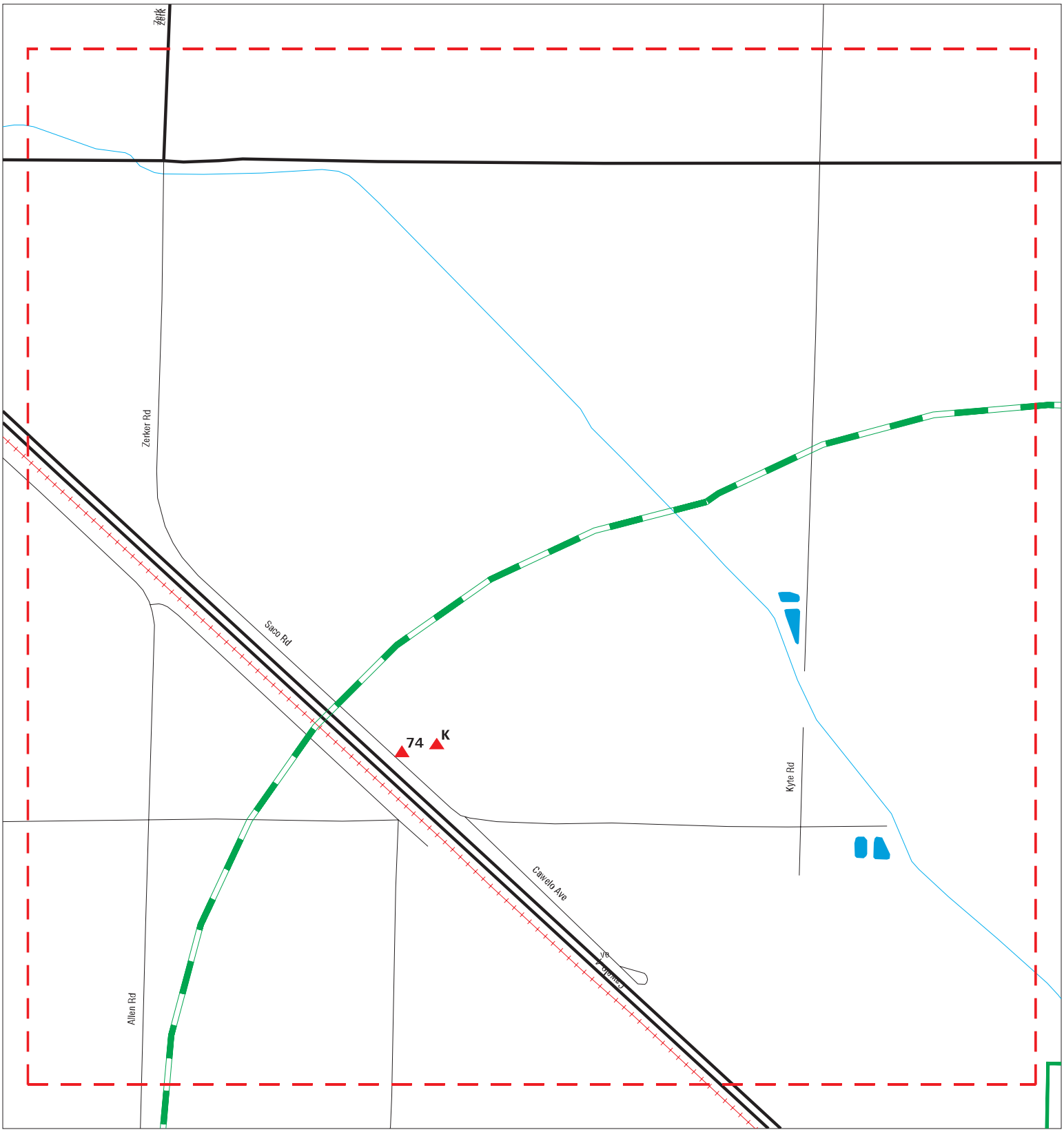

Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
National Priority List Sites
Areas of Concern
Dept. Defense Sites
Indian Reservations BIA

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SITE NAME: Malibu Vineyards ADDRESS: Malibu Vineyards CITY/STATE: Bakersfield CA ZIP: 93308	CLIENT: McIntosh & Associates CONTACT: Julie Green INQUIRY #: 5967931.2s DATE: 02/12/20

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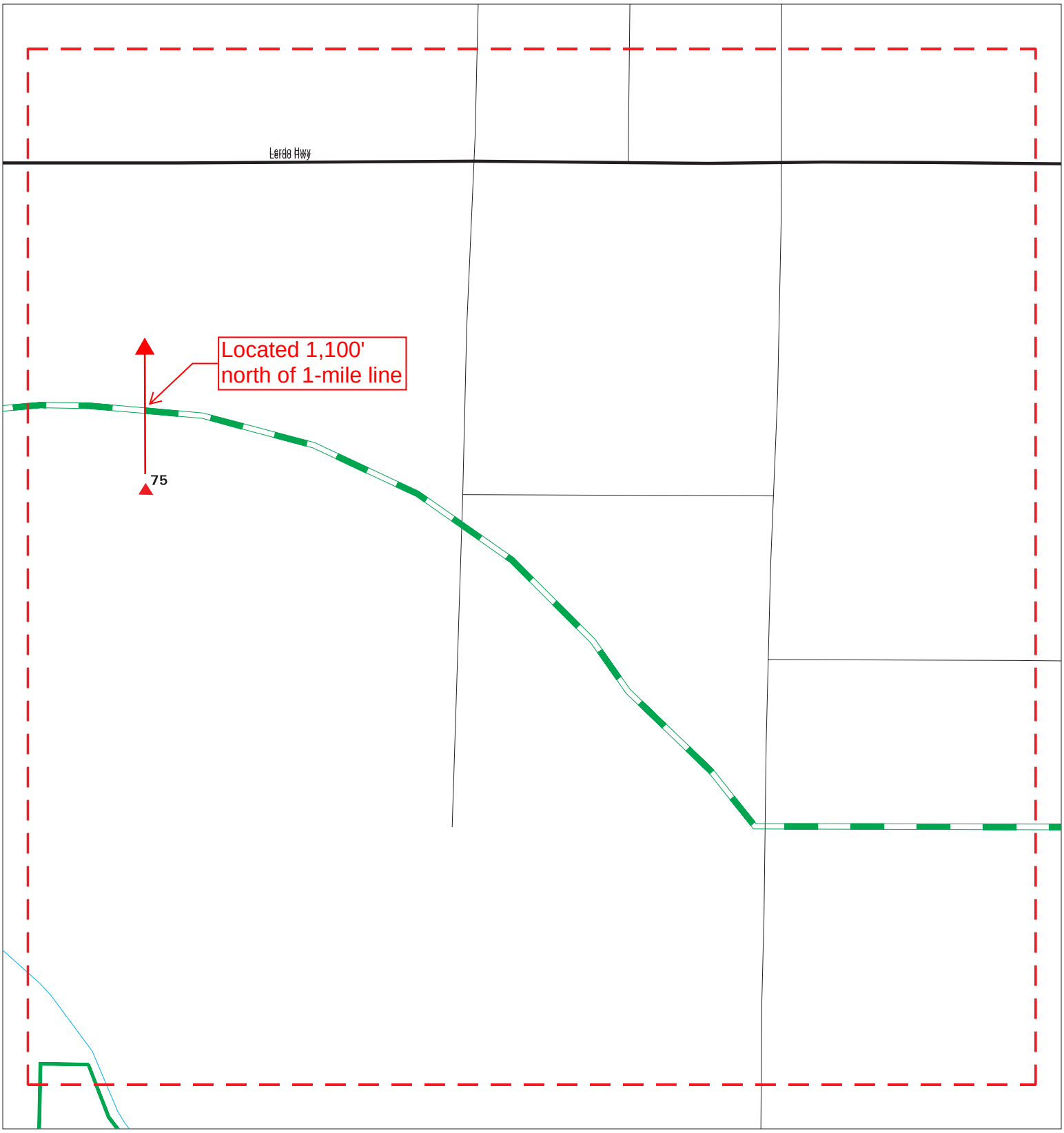

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Search Buffer
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Focus Map - Sites
National Priority List Sites
Areas of Concern
Dept. Defense Sites
Indian Reservations BIA

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ADDRESS: Malibu Vineyards	CONTACT: Julie Green
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ZIP: 93308	DATE: 02/12/20

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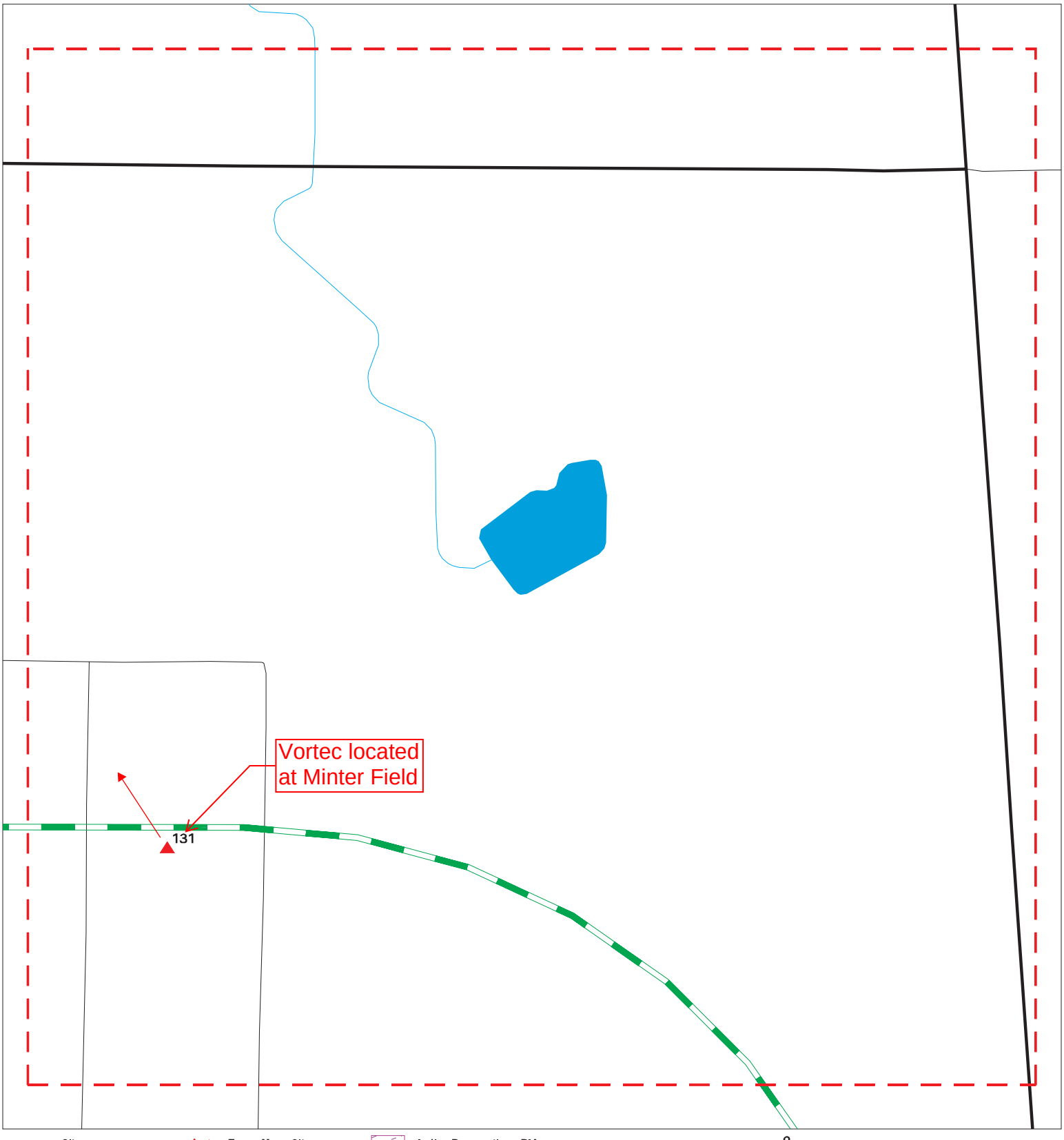

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Search Buffer
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Areas of Concern
Dept. Defense Sites
Indian Reservations BIA

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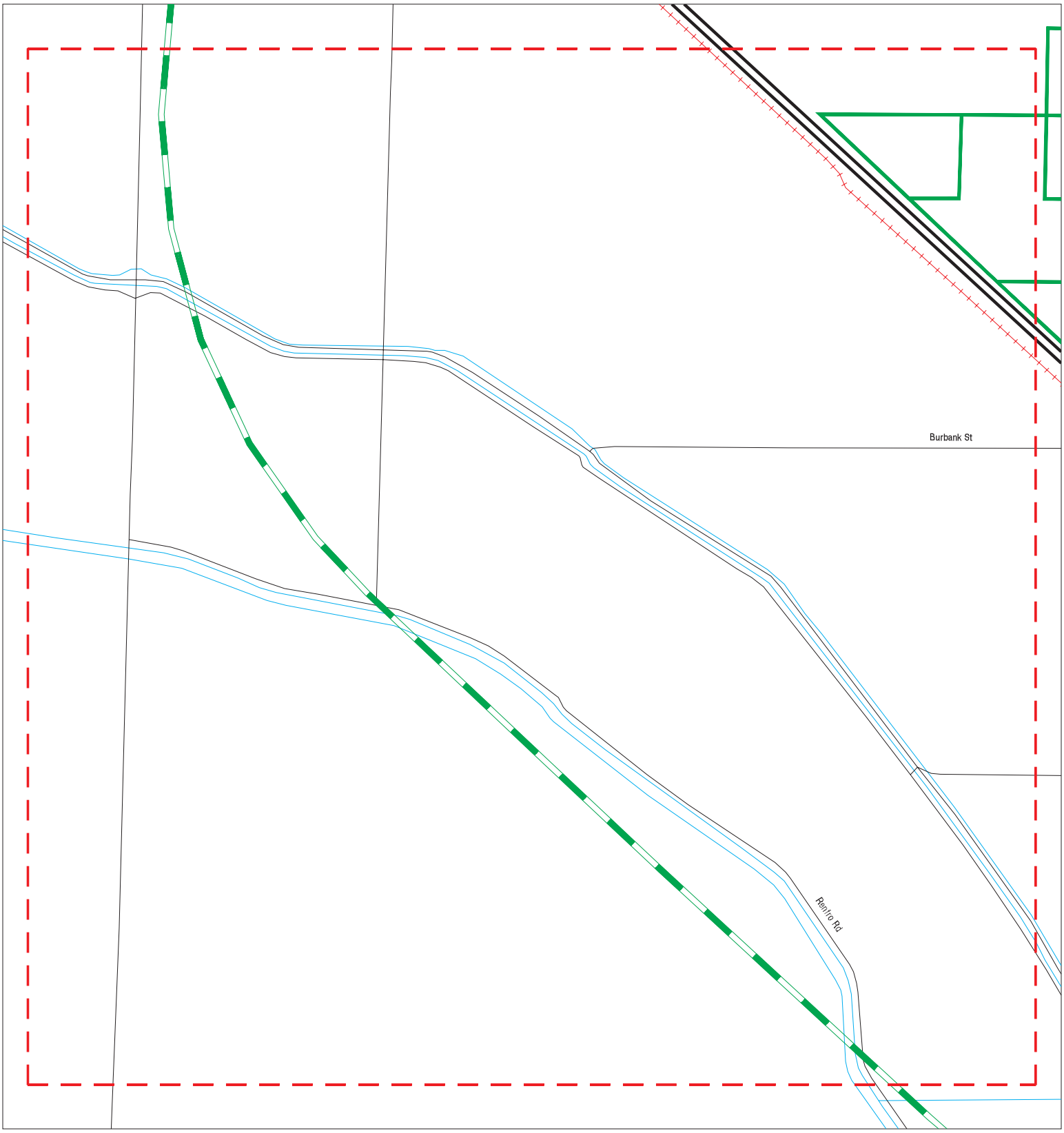

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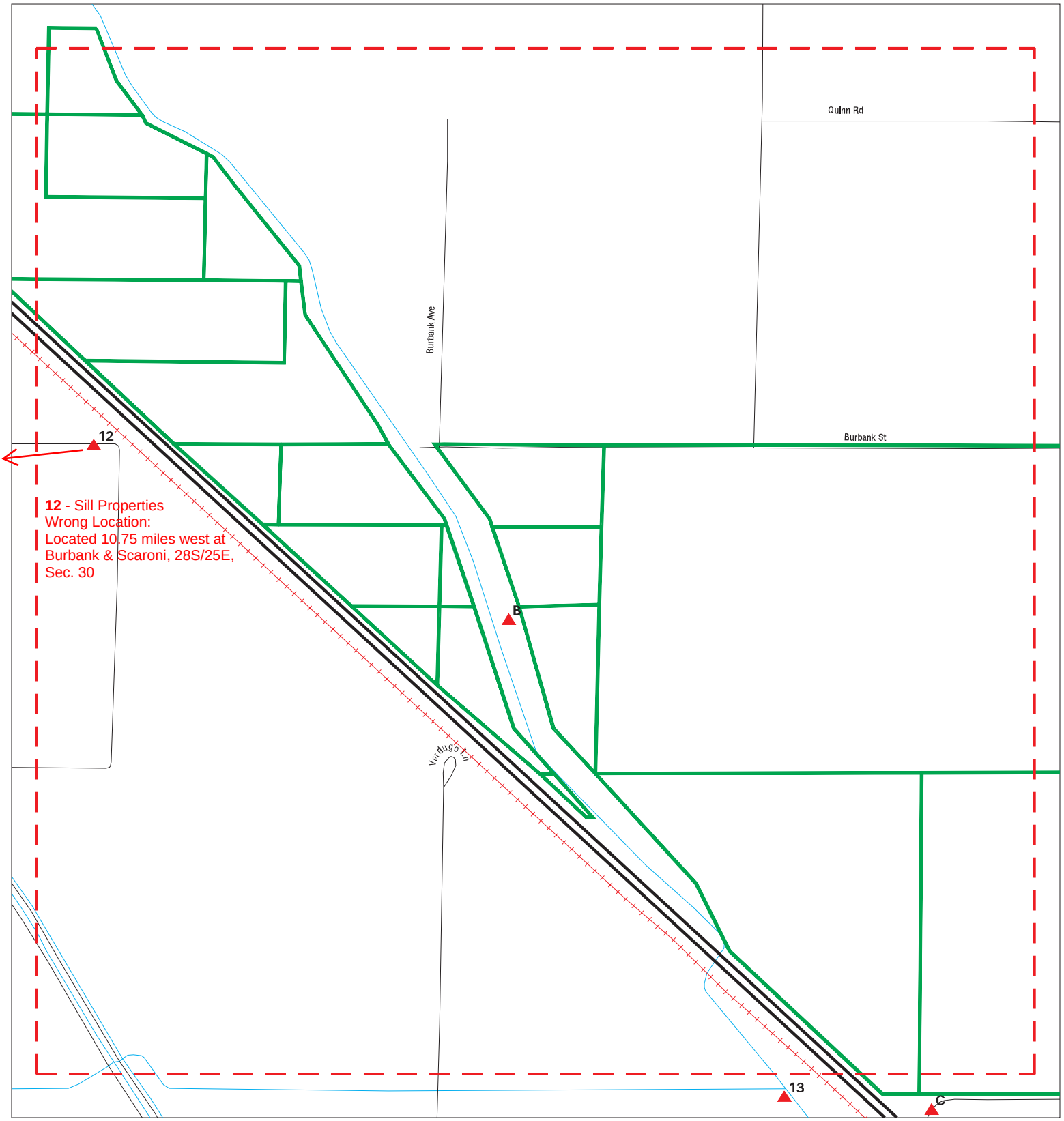
Focus Map - 5 - 5967931.2s



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Search Buffer
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Focus Map - Sites
National Priority List Sites
Areas of Concern
Dept. Defense Sites
Indian Reservations BIA

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ADDRESS: Malibu Vineyards	CONTACT: Julie Green
CITY/STATE: Bakersfield CA	INQUIRY #: 5967931.2s
ZIP: 93308	DATE: 02/12/20

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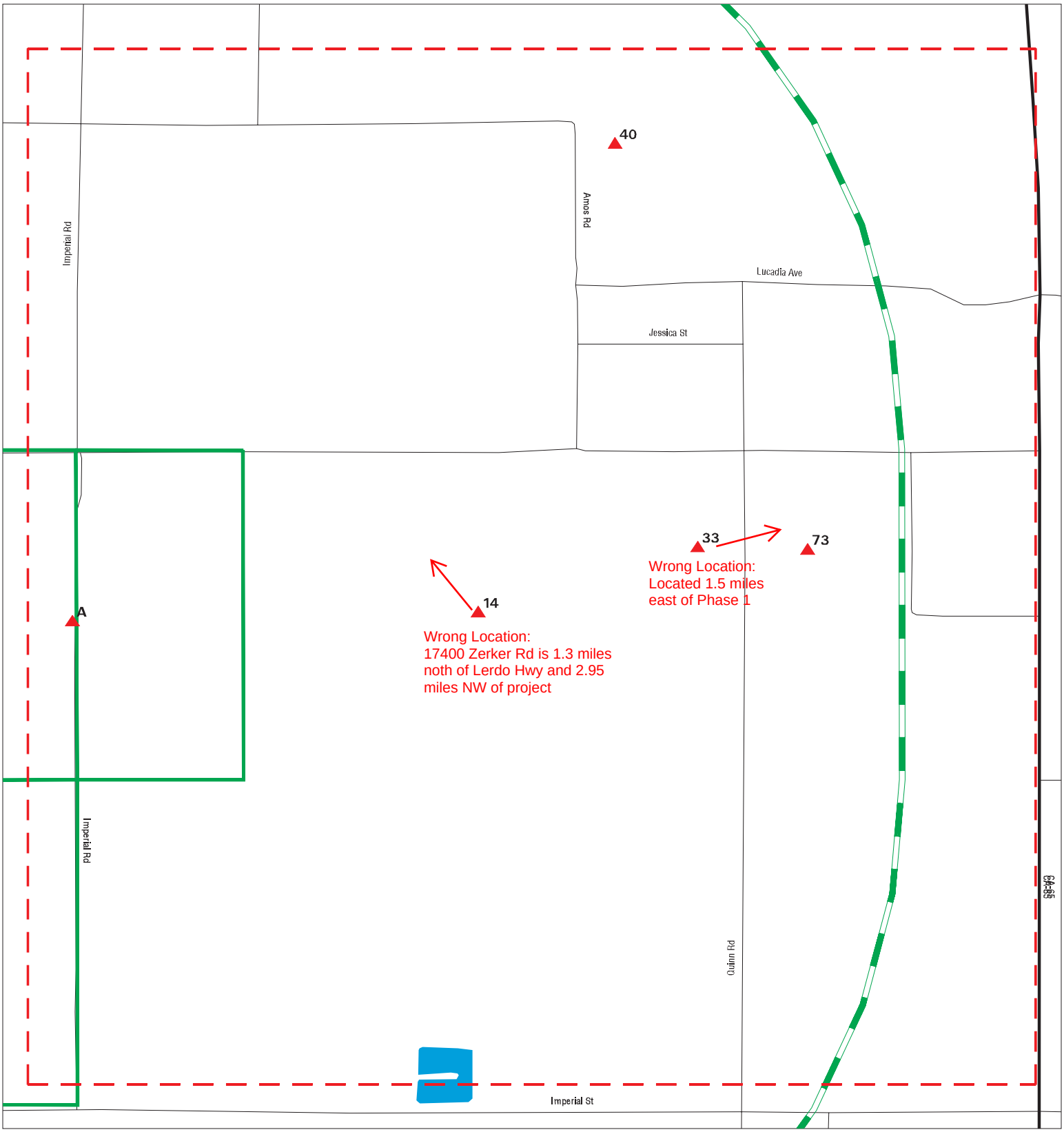
Focus Map - 6 - 5967931.2s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
National Priority List Sites
Areas of Concern
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Malibu Vineyards	CLIENT: McIntosh & Associates
ADDRESS: Malibu Vineyards	CONTACT: Julie Green
CITY/STATE: Bakersfield CA	INQUIRY #: 5967931.2s
ZIP: 93308	DATE: 02/12/20

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Focus Map - 7 - 5967931.2s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
National Priority List Sites
Areas of Concern
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Malibu Vineyards	CLIENT: McIntosh & Associates
ADDRESS: Malibu Vineyards	CONTACT: Julie Green
CITY/STATE: Bakersfield CA	INQUIRY #: 5967931.2s
ZIP: 93308	DATE: 02/12/20

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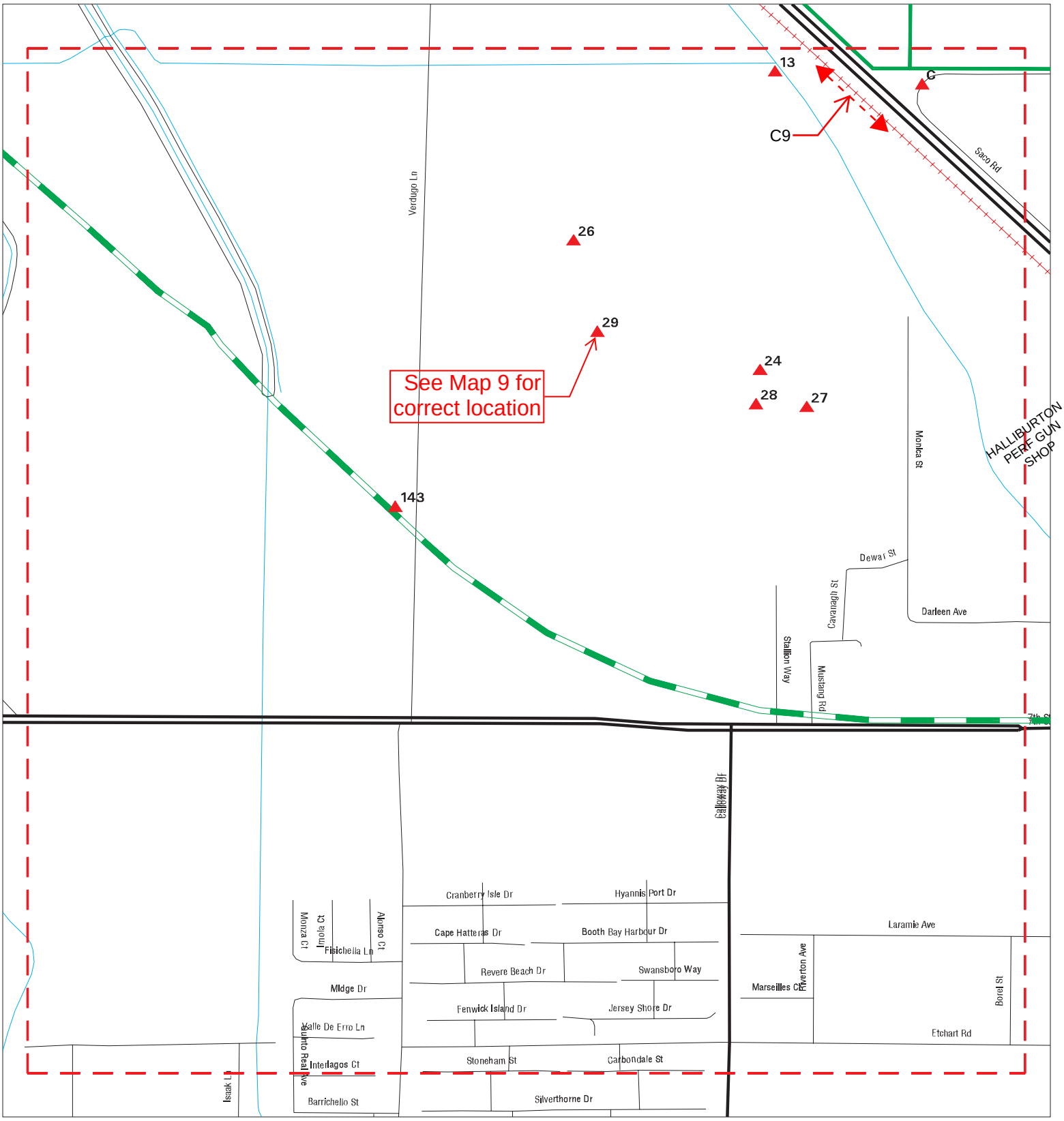
Focus Map - 8 - 5967931.2s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
National Priority List Sites
Areas of Concern
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Malibu Vineyards	CLIENT: McIntosh & Associates
ADDRESS: Malibu Vineyards	CONTACT: Julie Green
CITY/STATE: Bakersfield CA	INQUIRY #: 5967931.2s
ZIP: 93308	DATE: 02/12/20

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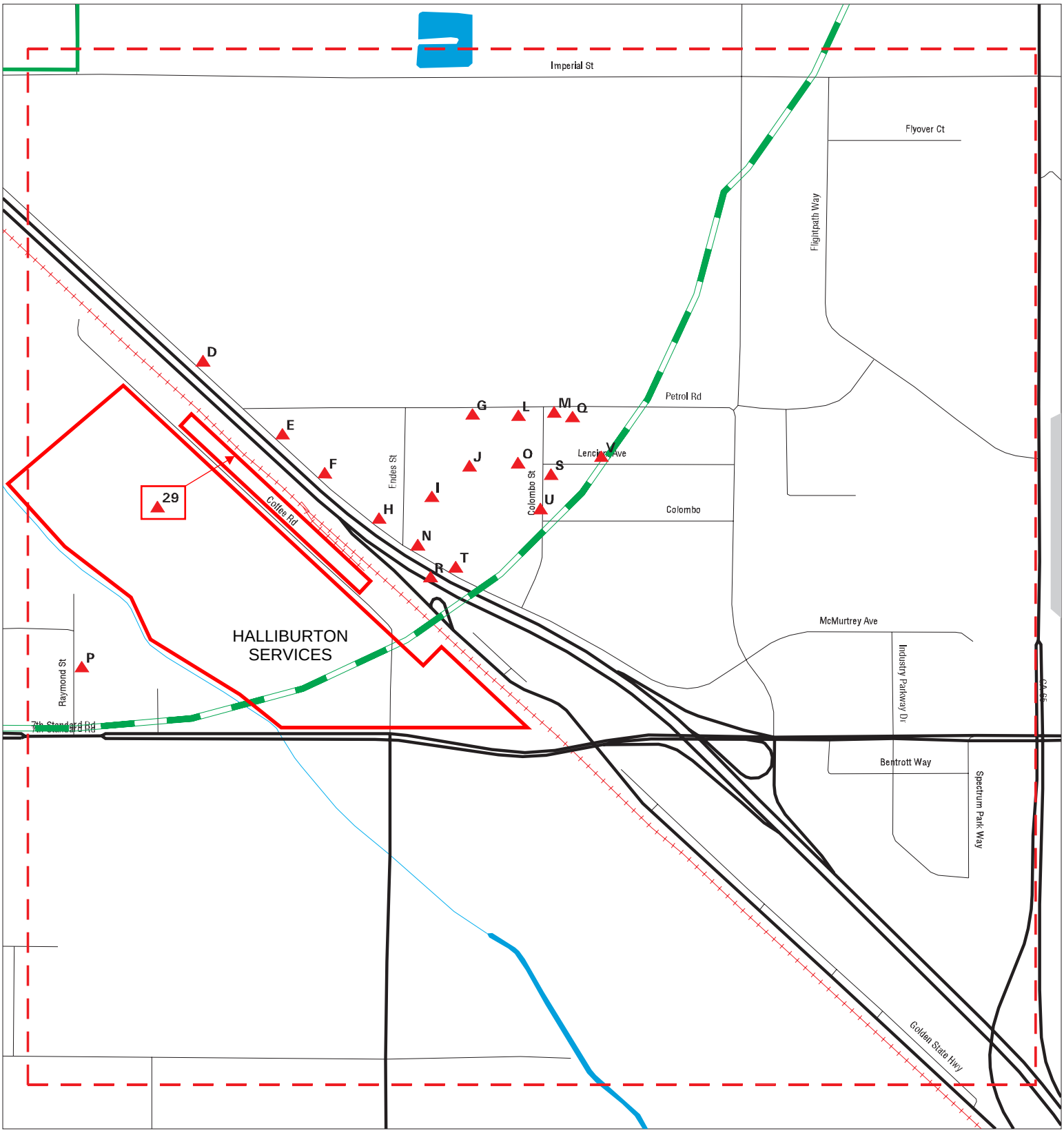
Focus Map - 9 - 5967931.2s



SITE NAME: Malibu Vineyards	CLIENT: McIntosh & Associates
ADDRESS: Malibu Vineyards	CONTACT: Julie Green
CITY/STATE: Bakersfield CA	INQUIRY #: 5967931.2s
ZIP: 93308	DATE: 02/12/20

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Malibu Vineyards
Malibu Vineyards
Bakersfield, CA 93308

Inquiry Number: 5967931.2s
February 12, 2020

EDR Area / Corridor Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

SUBJECT PROPERTY INFORMATION

ADDRESS

MALIBU VINEYARDS
BAKERSFIELD, CA 93308

TARGET PROPERTY SEARCH RESULTS

The Target Property was identified in the following databases.

Page Numbers and Map Identifcations refer to the EDR Area/Corridor Report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

STANDARD ENVIRONMENTAL RECORDS

State and tribal registered storage tank lists

AST: Aboveground Petroleum Storage Tank Facilities

A review of the AST list, as provided by EDR, has revealed that there is 1 AST site within the requested target property.

Site	Address	Map ID / Focus Map(s)	Page
MALIBU VINEYARDS RAN	34344 IMPERIAL RD	A2 / 6	37
Database: AST, Date of Government Version: 07/06/2016			

Malibu Vineyards Ranch 20

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

CERS HAZ WASTE: CERS HAZ WASTE

A review of the CERS HAZ WASTE list, as provided by EDR, and dated 10/21/2019 has revealed that there is 1 CERS HAZ WASTE site within the requested target property.

Site	Address	Map ID / Focus Map(s)	Page
MALIBU VINEYARDS RAN	***34344 IMPERIAL RD***	***A1 / 6***	***29***

EXECUTIVE SUMMARY

Local Lists of Registered Storage Tanks

CERS TANKS: California Environmental Reporting System (CERS) Tanks

A review of the CERS TANKS list, as provided by EDR, and dated 10/21/2019 has revealed that there is 1 CERS TANKS site within the requested target property.

Site	Address	Map ID / Focus Map(s)	Page
MALIBU VINEYARDS RAN	***34344 IMPERIAL RD***	***A1 / 6***	***29***

Other Ascertainable Records

CERS: CERS

A review of the CERS list, as provided by EDR, and dated 10/21/2019 has revealed that there is 1 CERS site within the requested target property.

Site	Address	Map ID / Focus Map(s)	Page
MALIBU VINEYARDS RAN	***34344 IMPERIAL RD***	***A1 / 6***	***29***

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Page Numbers and Map Identifcations refer to the EDR Area/Corridor Report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

A review of the SEMS-ARCHIVE list, as provided by EDR, and dated 10/25/2019 has revealed that there is 1 SEMS-ARCHIVE site within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
KERN FRONT OIL FIELD Site ID: 0901971 EPA Id: CAD980695258	E OF HWY 65 N OF	E 1/2 - 1 (0.690 mi.) (actually 1.47 miles east)	33 / 6	101

Kern Front Oil Field is located east of Hwy 65, primacy edge is 1.47 miles east of project. Per EPA, site was assessed, and the location is no longer judged to be a potential National Priorities List (NPL) candidate, doesn't need Superfund attention.

EXECUTIVE SUMMARY

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

A review of the RCRA-LQG list, as provided by EDR, and dated 12/16/2019 has revealed that there is 1 RCRA-LQG site within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
BAKERSFIELD UPSTREAM EPA ID:: CAL000379080	***19433 COLOMBO STREET***	***SE 1/2 - 1 (0.951 mi.)***	***U125 / 9***	***542***

RCRA-SQG: RCRA - Small Quantity Generators

A review of the RCRA-SQG list, as provided by EDR, and dated 12/16/2019 has revealed that there is 1 RCRA-SQG site within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
BJ UNICHEM CHEMICAL EPA ID:: CAL000129983	19433 COLOMBO ST	SE 1/2 - 1 (0.951 mi.)	U117 / 9	519

Federal ERNS list

ERNS: Emergency Response Notification System

ERNS records and stores information on reported releases of oil and hazardous substances.

Record Details:
Record Type: DATA SET
Product Published Date: 03/13/1998
Record Last Revised: 11/28/2017
Record ID: 2874

A review of the ERNS list, as provided by EDR, and dated 09/09/2019 has revealed that there is 1 ERNS site within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
Not reported Incident Date Time: 2009-02-07 10:00:00 NRC Report #: 896841	19433 COLOMBO ST	SE 1/2 - 1 (0.951 mi.)	U114 / 9	266

BJ Chemical Services Co (Baker Hughes)

State and tribal leaking storage tank lists

LUST: Geotracker's Leaking Underground Fuel Tank Report

A review of the LUST list, as provided by EDR, has revealed that there are 3 LUST sites within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
MALIBU VINEYARDS Database: LUST REG 5, Date of Government Version: 07/01/2008 Status: Case Closed	***IMPERIAL & SACO RD***	***S 0 - 1/8 (0.023 mi.)***	***C6 / 8***	***39***
MALIBU VINEYARDS Database: LUST, Date of Government Version: 09/09/2019 Status: Completed - Case Closed Global Id: T0602900256	IMPERIAL & SACO RD	S 0 - 1/8 (0.023 mi.)	C10 / 8	42
BAKERSFIELD VORTEC E Database: LUST REG 5, Date of Government Version: 07/01/2008	***MINTER FIELD***	***N 1/2 - 1 (0.970 mi.)***	***131 / 3***	***576***

EXECUTIVE SUMMARY

Status: Case Closed

State and tribal registered storage tank lists

UST: Active UST Facilities

A review of the UST list, as provided by EDR, has revealed that there are 5 UST sites within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
MALIBU VINEYARDS Database: KERN CO. UST, Date of Government Version: 10/28/2019	IMPERIAL & SACO RD	WSW 0 - 1/8 (0.020 mi.)	B5 / 5	38
RUSS ALLEN, AGRICULT Database: KERN CO. UST, Date of Government Version: 10/28/2019	4800 SACO RD	SSE 1/4 - 1/2 (0.481 mi.)	D18 / 9	57
DAVIES USED EQUIP CO Database: KERN CO. UST, Date of Government Version: 10/28/2019	4618 SACO	SSE 1/2 - 1 (0.634 mi.)	E31 / 9 Site vacant 10/09-04/11 to 7/14.	99
LOUGEE-MICHAEL EQUIP Database: KERN CO. UST, Date of Government Version: 10/28/2019	4252 SACO RD	SE 1/2 - 1 (0.948 mi.)	T113 / 9	265
N. KERN WATER STORAG Database: KERN CO. UST, Date of Government Version: 10/28/2019	13000 GOLDEN STATE H	SE 1/2 - 1 (0.976 mi.)	R134 / 9 @ Cluster K, Map 1	578

AST: Aboveground Petroleum Storage Tank Facilities

A review of the AST list, as provided by EDR, has revealed that there are 15 AST sites within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
MALIBU VINEYARDS RAN Database: AST, Date of Government Version: 07/06/2016	34344 IMPERIAL	WSW 0 - 1/8 (0.020 mi.)	B3 / 5	37
DOWNS EQUIPMENT Database: AST, Date of Government Version: 07/06/2016	4800 SACO RD	SSE 1/4 - 1/2 (0.481 mi.)	D17 / 9	57
DOWNS EQUIPMENT Database: AST, Date of Government Version: 07/06/2016	4800 SACO	SSE 1/4 - 1/2 (0.481 mi.)	D23 / 9	88
BRADFORD AND SONS CO Database: AST, Date of Government Version: 07/06/2016	4618 SACO	SSE 1/2 - 1 (0.634 mi.)	E30 / 9 Site vacant 10/09-04/11 to 7/14. Bradford never operated here.	98
GRAY LIFT INC Database: AST, Date of Government Version: 07/06/2016	4608 SACO RD	SSE 1/2 - 1 (0.718 mi.)	F38 / 9	114
GILLIAM AND SONS INC Database: AST, Date of Government Version: 07/06/2016	19420 ENDES ST	SE 1/2 - 1 (0.846 mi.)	J50 / 9	124
GILLIAM AND SONS INC Database: AST, Date of Government Version: 07/06/2016	19420 ENDES	SE 1/2 - 1 (0.846 mi.)	J52 / 9	125
NORTH KERN WATER STO Database: AST, Date of Government Version: 07/06/2016	***33380 CAWELO AVE***	***NW 1/2 - 1 (0.848 mi.)***	***K56 / 1***	***138***
NORTH KERN WATER STO Database: AST, Date of Government Version: 07/06/2016	33380 CAWELO	NW 1/2 - 1 (0.848 mi.)	K60 / 1	156
LIBERTY LOGISTICS Database: AST, Date of Government Version: 07/06/2016	3143 PETROL	SE 1/2 - 1 (0.851 mi.)	L72 / 9	174

EXECUTIVE SUMMARY

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
SMITH AND SONS RANCH Database: AST, Date of Government Version: 07/06/2016	19400 COLOMBO	SE 1/2 - 1 (0.918 mi.)	Q92 / 9	225
SMITH AND SONS RANCH Database: AST, Date of Government Version: 07/06/2016	19400 COLOMBO ST	SE 1/2 - 1 (0.918 mi.)	Q93 / 9	226
BAKER HUGHES Database: AST, Date of Government Version: 07/06/2016	19433 COLOMBO ST	SE 1/2 - 1 (0.951 mi.)	U122 / 9	535
B J CHEMICAL SERVICE Database: AST, Date of Government Version: 07/06/2016	19433 COLOMBO	SE 1/2 - 1 (0.951 mi.)	U129 / 9	574
SWAIM AND SONS Database: AST, Date of Government Version: 07/06/2016	34758 LENCIONI AVE	SE 1/2 - 1 (0.989 mi.)	V136 / 9	584

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Landfill / Solid Waste Disposal Sites

HAULERS: Registered Waste Tire Haulers Listing

A review of the HAULERS list, as provided by EDR, and dated 11/15/2019 has revealed that there is 1 HAULERS site within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
EAST BAY CLARKLIFT, Facility ID: 1872406	4608 SACO ROAD	SSE 1/2 - 1 (0.718 mi.)	F39 / 9	114

Local Lists of Hazardous waste / Contaminated Sites

CERS HAZ WASTE: CERS HAZ WASTE

A review of the CERS HAZ WASTE list, as provided by EDR, and dated 10/21/2019 has revealed that there are 10 CERS HAZ WASTE sites within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
WESTERN OILFIELD SUP	***17400 ZERKER RD***	***E 1/4 - 1/2 (0.356 mi.)***	***14 / 6***	***47***
DOWNS EQUIPMENT	***4800 SACO RD***	***SSE 1/4 - 1/2 (0.481 mi.)***	***D20 / 9***	***75***
EAST BAY CLARKLIFT D	***4608 SACO RD***	***SSE 1/2 - 1 (0.718 mi.)***	***F34 / 9***	***102***
GILLIAM AND SONS INC	***19420 ENDES ST***	***SE 1/2 - 1 (0.846 mi.)***	***J54 / 9***	***126***
NORTH KERN WATER STO	***33380 CAWELO AVE***	***NW 1/2 - 1 (0.848 mi.)***	***K56 / 1***	***138***
SMITH AND SONS RANCH	***19400 COLOMBO ST***	***SE 1/2 - 1 (0.918 mi.)***	***Q88 / 9***	***217***
CHESTER AVENUE BRAKE	***19420 COLOMBO ST***	***SE 1/2 - 1 (0.946 mi.)***	***S106 / 9***	***239***
COASTLINE EQUIPMENT	***4252 SACO RD***	***SE 1/2 - 1 (0.948 mi.)***	***T112 / 9***	***263***
BAKER PETROLITE LLC	***19433 COLOMBO ST***	***SE 1/2 - 1 (0.951 mi.)***	***U118 / 9***	***520***
SWAIM AND SONS	***34758 LENCIONI AVE***	***SE 1/2 - 1 (0.989 mi.)***	***V135 / 9***	***579***

EXECUTIVE SUMMARY

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there is 1 SWEEPS UST site within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
LOUGEE-MICHAEL EQUIP Comp Number: 19176	4252 SACO RD	SE 1/2 - 1 (0.948 mi.)	T109 / 9	245

HIST UST: Hazardous Substance Storage Container Database

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there is 1 HIST UST site within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
NKWSD FIELD OFFICE Facility Id: 00000021752	13000 GOLDEN STATE H	SE 1/2 - 1 (0.976 mi.)	R132 / 9 See K, Map 1 33380 Cawelo Ave	577

CERS TANKS: California Environmental Reporting System (CERS) Tanks

A review of the CERS TANKS list, as provided by EDR, and dated 10/21/2019 has revealed that there are 8 CERS TANKS sites within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
DOWNS EQUIPMENT	***4800 SACO RD***	***SSE 1/4 - 1/2 (0.481 mi.)***	***D20 / 9***	***75***
EAST BAY CLARKLIFT D	***4608 SACO RD***	***SSE 1/2 - 1 (0.718 mi.)***	***F34 / 9***	***102***
GILLIAM AND SONS INC	***19420 ENDES ST***	***SE 1/2 - 1 (0.846 mi.)***	***J54 / 9***	***126***
NORTH KERN WATER STO	***33380 CAWELO AVE***	***NW 1/2 - 1 (0.848 mi.)***	***K56 / 1***	***138***
SMITH AND SONS RANCH	***19400 COLOMBO ST***	***SE 1/2 - 1 (0.918 mi.)***	***Q88 / 9***	***217***
COASTLINE EQUIPMENT	***4252 SACO RD***	***SE 1/2 - 1 (0.948 mi.)***	***T112 / 9***	***263***
BAKER PETROLITE LLC	***19433 COLOMBO ST***	***SE 1/2 - 1 (0.951 mi.)***	***U118 / 9***	***520***
SWAIM AND SONS	***34758 LENCIONI AVE***	***SE 1/2 - 1 (0.989 mi.)***	***V135 / 9***	***579***

Records of Emergency Release Reports

CHMIRS: California Hazardous Material Incident Report System

A review of the CHMIRS list, as provided by EDR, and dated 05/15/2019 has revealed that there are 4 CHMIRS sites within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
Not reported UPRR OES Incident Number: 5-6494	FRONTAGE RD AND IMPE	S 0 - 1/8 (0.023 mi.)	C9 / 8	41
NORTH KERN WATER STO OES Incident Number: 15-1344	***33380 CAWELO AVE***	***NW 1/2 - 1 (0.848 mi.)***	***K56 / 1***	***138***
Not reported	SW CORNER OF COLOMBO	SE 1/2 - 1 (0.891 mi.)	M80 / 9	184

OES Incident Number: 099281 Date Completed: 16-JUN-90				
Not reported OES Incident Number: 9-0597	19433 COLUMBO STREET	SE 1/2 - 1 (0.969 mi.)	U130 / 9	575

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 12/16/2019 has revealed that there are 15 RCRA NonGen / NLR sites within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
DOWNS EQUIPMENT RENT EPA ID:: CAL000170111	4800 SACO RD	SSE 1/4 - 1/2 (0.481 mi.)	D15 / 9	52
EAST BAY CLARK LIFT EPA ID:: CAL000419767	4608 SACO RD	SSE 1/2 - 1 (0.718 mi.)	F36 / 9	112
Not reported EPA ID:: CAL000444355 GRANA ENT DBA JPS & CO TRANSPORTATION	3149 PETROL RD	SE 1/2 - 1 (0.796 mi.)	G42 / 9	116
FRANCIA TRUCKING EPA ID:: CAL000363115	3149 PETROL RD	SE 1/2 - 1 (0.796 mi.)	G43 / 9	118
GILLIAM & SONS INC EPA ID:: CAL000346727	19420 ENDES ST	SE 1/2 - 1 (0.846 mi.)	J49 / 9	123
NO. KERN WATER STORA EPA ID:: CAL000124225	33380 CAWELO AVE	NW 1/2 - 1 (0.848 mi.)	K58 / 1	155
TS TRANSPORTATION IN EPA ID:: CAL000431425	3143 PETROL RD	SE 1/2 - 1 (0.851 mi.)	L71 / 9	172
JTS TRUCK REPAIR EPA ID:: CAL000276925	4300 SACO RD	SE 1/2 - 1 (0.887 mi.)	N77 / 9	178
Not reported EPA ID:: CAL000293199 National Oilfield-Varco (NOV)	19417 COLOMBO ST	SE 1/2 - 1 (0.897 mi.)	O82 / 9	213
SEQUOIA EQUIPMENT CO EPA ID:: CAL000419433	19404 COLOMBO ST	SE 1/2 - 1 (0.903 mi.)	M85 / 9	215
SMITH & SONS RANCH EPA ID:: CAL000240342	19400 COLOMBO ST	SE 1/2 - 1 (0.918 mi.)	Q91 / 9	224
HD SUPPLY WATERWORKS EPA ID:: CAR000170787	19421 COLOMBO ST	SE 1/2 - 1 (0.931 mi.)	O97 / 9	232
CHESTER AVE BRAKE EPA ID:: CAD981613425	19420 COLOMBO ST	SE 1/2 - 1 (0.946 mi.)	S105 / 9	237
COASTLINE EQUIPMENT EPA ID:: CAD983645102	4252 SACO RD	SE 1/2 - 1 (0.948 mi.)	T108 / 9	243
SWAIMS MACHINE SHOP EPA ID:: CAL000326790	34758 LENCIONI AVE	SE 1/2 - 1 (0.989 mi.)	V139 / 9	587

EXECUTIVE SUMMARY

SSTS: Section 7 Tracking Systems

A review of the SSTS list, as provided by EDR, and dated 05/01/2019 has revealed that there are 2 SSTS sites within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
BJ SERVICES CO, U.S. Registration Number:: 068329CA001 Registration Number:: 068329-CA-001	19433 COLOMBO ST	SE 1/2 - 1 (0.951 mi.)	U124 / 9	536
UNICHEM, A DIV OF BJ Registration Number:: 068329CA 001 Registration Number:: 068329CA001 Registration Number:: 068329-CA-001	19433 COLOMBO	SE 1/2 - 1 (0.951 mi.)	U128 / 9	567

FINDS: Facility Index System/Facility Registry System

A review of the FINDS list, as provided by EDR, and dated 08/12/2019 has revealed that there are 32 FINDS sites within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
DOWNS EQUIPMENT RENT Registry ID:: 110058320865	4800 SACO RD	SSE 1/4 - 1/2 (0.481 mi.)	D21 / 9	87
DOWNS EQUIPMENT RENT Registry ID:: 110070446524	***4800 SACO RD***	***SSE 1/4 - 1/2 (0.481 mi.)***	***D22 / 9***	***88***
BAKERSFIELD AG CO IN Registry ID:: 110002145937	***RTE. 11 BOX 858***	***SW 1/2 - 1 (0.583 mi.)***	***29 / 8***	***98***
EAST BAY CLARK LIFT Registry ID:: 110070511510	***4608 SACO RD***	***SSE 1/2 - 1 (0.718 mi.)***	***F35 / 9***	***112***
GRAY LIFT INC Registry ID:: 110065521705	4608 SACO RD	SSE 1/2 - 1 (0.718 mi.)	F37 / 9	113
FRANCIA TRUCKING Registry ID:: 110070475912	***3149 PETROL RD***	***SE 1/2 - 1 (0.796 mi.)***	***G44 / 9***	***119***
T M COMPOSTINGNA INC Registry ID:: 110066100025	4322 SACO RD	SE 1/2 - 1 (0.820 mi.)	H45 / 9	119
T M TRANSPORTATION I Registry ID:: 110065976527	4322 N SACO RD	SE 1/2 - 1 (0.820 mi.)	H46 / 9	120
COAST GAS - ENDES Registry ID:: 110065962319	19428 ENDES ST	SE 1/2 - 1 (0.842 mi.)	I48 / 9	123
GILLIAM AND SONS INC Registry ID:: 110064958050	19420 ENDES ST	SE 1/2 - 1 (0.846 mi.)	J51 / 9	125
GILLIAM & SONS INC Registry ID:: 110070474177	***19420 ENDES ST***	***SE 1/2 - 1 (0.846 mi.)***	***J53 / 9***	***126***
NORTH KERN WATER STO Registry ID:: 110054315683	33380 CAWELO AVE	NW 1/2 - 1 (0.848 mi.)	K57 / 1	154
NO. KERN WATER STORA Registry ID:: 110070448799	***33380 CAWELO AVE***	***NW 1/2 - 1 (0.848 mi.)***	***K59 / 1***	***156***
WEST COAST CONSTRUCT Registry ID:: 110060285418	3143 PETROL RD	SE 1/2 - 1 (0.851 mi.)	L62 / 9	160
TS TRANSPORTATION IN	***3143 PETROL RD***	***SE 1/2 - 1 (0.851 mi.)***	***L64 / 9***	***161***

Registry ID:: 110070426635				
G.I.C. TRANSPORT Registry ID:: 110065530303	3143 PETROL RD	SE 1/2 - 1 (0.851 mi.)	L68 / 9	169
VINCENT B ZANINOVICH Registry ID:: 110065397671	***33905 LERDO HWY***	***N 1/2 - 1 (0.878 mi.)***	***75 / 2***	***177***
JTS TRUCK REPAIR Registry ID:: 110065403842	***4300 SACO RD***	***SE 1/2 - 1 (0.887 mi.)***	***N79 / 9***	***183***
PROCESS FLOW TECHNOL Registry ID:: 110070094270	***19417 COLOMBO STREET***	***SE 1/2 - 1 (0.897 mi.)***	***O84 / 9***	***215***
SEQUOIA EQUIPMENT CO Registry ID:: 110070421312	***19404 COLOMBO ST***	***SE 1/2 - 1 (0.903 mi.)***	***M86 / 9***	***216***
SMITH AND SONS RANCH Registry ID:: 110066555267	***19400 COLOMBO ST***	***SE 1/2 - 1 (0.918 mi.)***	***Q90 / 9***	***223***
WTW BAKERSFIELD Registry ID:: 110064978056	19421 COLOMBO ST	SE 1/2 - 1 (0.931 mi.)	O96 / 9	231
HD SUPPLY WATERWORKS Registry ID:: 110024435191	***19421 COLOMBO ST***	***SE 1/2 - 1 (0.931 mi.)***	***O98 / 9***	***234***
CONTINENTAL GRAIN CO Registry ID:: 110006836424	HWY 99 NEAR 7TH STAN	SE 1/2 - 1 (0.938 mi.)	R102 / 9	237
CHESTER AVENUE BRAKE Registry ID:: 110066212734	19420 COLOMBO ST	SE 1/2 - 1 (0.946 mi.)	S104 / 9	237
CHESTER AVE BRAKE Registry ID:: 110070442285	***19420 COLOMBO ST***	***SE 1/2 - 1 (0.946 mi.)***	***S107 / 9***	***243***
COASTLINE EQUIPMENT Registry ID:: 110019004218	***4252 SACO RD***	***SE 1/2 - 1 (0.948 mi.)***	***T111 / 9***	***263***
BAKER HUGHES Registry ID:: 110000481666	***19433 COLOMBO ST***	***SE 1/2 - 1 (0.951 mi.)***	***U119 / 9***	***524***
BAKER PETROLITE Registry ID:: 110070092182	***19433 COLOMBO ST***	***SE 1/2 - 1 (0.951 mi.)***	***U123 / 9***	***535***
BAKERSFIELD UPSTREAM Registry ID:: 110069631795	***19433 COLOMBO STREET***	***SE 1/2 - 1 (0.951 mi.)***	***U125 / 9***	***542***
SWAIMS MACHINE SHOP Registry ID:: 110070471717	***34758 LENCIONI AVE***	***SE 1/2 - 1 (0.989 mi.)***	***V137 / 9***	***585***
SWAIM AND SONS Registry ID:: 110065975840	34758 LENCIONI AVE	SE 1/2 - 1 (0.989 mi.)	V141 / 9	589

ECHO: Enforcement & Compliance History Information

A review of the ECHO list, as provided by EDR, and dated 10/06/2019 has revealed that there are 21 ECHO sites within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
DOWNS EQUIPMENT RENT Registry ID: 110070446524	***4800 SACO RD***	***SSE 1/4 - 1/2 (0.481 mi.)***	***D22 / 9***	***88***
BAKERSFIELD AG CO IN Registry ID: 110002145937	***RTE. 11 BOX 858***	***SW 1/2 - 1 (0.583 mi.)***	***29 / 8***	***98***
EAST BAY CLARK LIFT	***4608 SACO RD***	***SSE 1/2 - 1 (0.718 mi.)***	***F35 / 9***	***112***

Registry ID: 110070511510				
GRANA ENT DBA JPS & Registry ID: 110070591181	3149 PETROL RD	SE 1/2 - 1 (0.796 mi.)	G41 / 9	116
FRANCIA TRUCKING Registry ID: 110070475912	***3149 PETROL RD***	***SE 1/2 - 1 (0.796 mi.)***	***G44 / 9***	***119***
GILLIAM & SONS INC Registry ID: 110070474177	***19420 ENDES ST***	***SE 1/2 - 1 (0.846 mi.)***	***J53 / 9***	***126***
NO. KERN WATER STORA Registry ID: 110070448799	***33380 CAWELO AVE***	***NW 1/2 - 1 (0.848 mi.)***	***K59 / 1***	***156***
TS TRANSPORTATION IN Registry ID: 110070426635	***3143 PETROL RD***	***SE 1/2 - 1 (0.851 mi.)***	***L64 / 9***	***161***
VINCENT B ZANINOVICH Registry ID: 110065397671	***33905 LERDO HWY***	***N 1/2 - 1 (0.878 mi.)***	***75 / 2***	***177***
JTS TRUCK REPAIR Registry ID: 110065403842	***4300 SACO RD***	***SE 1/2 - 1 (0.887 mi.)***	***N79 / 9***	***183***
NOV PROCESS & FLOW T Registry ID: 110070589440	19417 COLOMBO ST	SE 1/2 - 1 (0.897 mi.)	O83 / 9	214
PROCESS FLOW TECHNOL Registry ID: 110070094270	***19417 COLOMBO STREET***	***SE 1/2 - 1 (0.897 mi.)***	***O84 / 9***	***215***
SEQUOIA EQUIPMENT CO Registry ID: 110070421312	***19404 COLOMBO ST***	***SE 1/2 - 1 (0.903 mi.)***	***M86 / 9***	***216***
SMITH AND SONS RANCH Registry ID: 110066555267	***19400 COLOMBO ST***	***SE 1/2 - 1 (0.918 mi.)***	***Q90 / 9***	***223***
HD SUPPLY WATERWORKS Registry ID: 110024435191	***19421 COLOMBO ST***	***SE 1/2 - 1 (0.931 mi.)***	***O98 / 9***	***234***
CHESTER AVE BRAKE Registry ID: 110070442285	***19420 COLOMBO ST***	***SE 1/2 - 1 (0.946 mi.)***	***S107 / 9***	***243***
COASTLINE EQUIPMENT Registry ID: 110019004218	***4252 SACO RD***	***SE 1/2 - 1 (0.948 mi.)***	***T111 / 9***	***263***
BAKER HUGHES Registry ID: 110000481666	***19433 COLOMBO ST***	***SE 1/2 - 1 (0.951 mi.)***	***U119 / 9***	***524***
BAKER PETROLITE Registry ID: 110070092182	***19433 COLOMBO ST***	***SE 1/2 - 1 (0.951 mi.)***	***U123 / 9***	***535***
BAKERSFIELD UPSTREAM Registry ID: 110069631795	***19433 COLOMBO STREET***	***SE 1/2 - 1 (0.951 mi.)***	***U125 / 9***	***542***
SWAIMS MACHINE SHOP Registry ID: 110070471717	***34758 LENCIONI AVE***	***SE 1/2 - 1 (0.989 mi.)***	***V137 / 9***	***585***

EMI: Emissions Inventory Data

A review of the EMI list, as provided by EDR, and dated 12/31/2017 has revealed that there are 4 EMI sites within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
DOWNS EQUIPMENT RENT Facility Id: 7172	***4800 SACO RD***	***SSE 1/4 - 1/2 (0.481 mi.)***	***D16 / 9***	***53***
NORTH KERN WATER STO	***33380 CAWELO AVE***	***NW 1/2 - 1 (0.848 mi.)***	***K56 / 1***	***138***

Facility Id: 3481				
SMITH & SONS RANCH Facility Id: 7999	19400 COLOMBO ST	SE 1/2 - 1 (0.918 mi.)	Q89 / 9	221
BJ CHEMICAL SERVICES Facility Id: 2789	***19433 COLOMBO ST***	***SE 1/2 - 1 (0.951 mi.)***	***U115 / 9***	***266***

HAZNET: Facility and Manifest Data

A review of the HAZNET list, as provided by EDR, and dated 12/31/2017 has revealed that there are 24 HAZNET sites within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
DOWNS EQUIPMENT RENT GEPAID: CAL000170111	4800 SACO RD	SSE 1/4 - 1/2 (0.481 mi.)	D19 / 9	58
GRAY LIFT INC GEPAID: CAC002627382	4806 SACO RD s/b 4608 Saco Rd	SSE 1/2 - 1 (0.505 mi.)	D25 / 9	89
DAVIES USED EQUIPMEN GEPAID: CAL930294350	4618 SACO	SSE 1/2 - 1 (0.634 mi.)	E32 / 9	100
GILLIAM & SONS INC GEPAID: CAL000346727	19420 ENDES ST	SE 1/2 - 1 (0.846 mi.)	J55 / 9	132
NO. KERN WATER STORA GEPAID: CAL000124225	33380 CAWELO AVE	NW 1/2 - 1 (0.848 mi.)	K61 / 1	157
COS PETROLEUM GEPAID: CAC002695678	3143 PETROL RD	SE 1/2 - 1 (0.851 mi.)	L63 / 9	160
GIC CORPORATION GEPAID: CAL000373532	3143 PETROL RD	SE 1/2 - 1 (0.851 mi.)	L65 / 9	162
DALE DWIGHT TRUCKING GEPAID: CAC002743475	3143 PETROL RD	SE 1/2 - 1 (0.851 mi.)	L66 / 9	163
LIBERTY LOGISTICS IN GEPAID: CAL000305414	3143 PETROL RD	SE 1/2 - 1 (0.851 mi.)	L67 / 9	164
VETO TRANSPORTATION GEPAID: CAL000102570	3143 PETROL RD	SE 1/2 - 1 (0.851 mi.)	L69 / 9	169
DALE DWIGHT GEPAID: CAC002593416	3143 PETROL RD	SE 1/2 - 1 (0.851 mi.)	L70 / 9	170
JTS TRUCK REPAIR GEPAID: CAL000276925	4300 SACO RD	SE 1/2 - 1 (0.887 mi.)	N78 / 9	179
PROCESS FLOW TECHNOL GEPAID: CAL000293199	***19417 COLOMBO STREET***	***SE 1/2 - 1 (0.897 mi.)***	***O81 / 9***	***185***
NATIONAL WATER WORKS GEPAID: CAR000170787	19421 COLOMBO ST Now Core & Main	SE 1/2 - 1 (0.931 mi.)	O94 / 9	226
COASTLINE EQUIPMENT GEPAID: CAD983645102	4252 SACO RD	SE 1/2 - 1 (0.948 mi.)	T110 / 9	245
BJ CHEMICAL SERVICES GEPAID: CAL000130960	***19433 COLOMBO ST***	***SE 1/2 - 1 (0.951 mi.)***	***U115 / 9***	***266***
BAKERSFIELD UPSTREAM GEPAID: CAL000379080	19433 COLOMBO ST	SE 1/2 - 1 (0.951 mi.)	U116 / 9	328
BAKER HUGHES OILFIEL	19433 COLOMBO ST	SE 1/2 - 1 (0.951 mi.)	U120 / 9	524

GEPAID: CAL000379080				
WESTERN UNICHEM GEPAID: CAL000129983	19433 COLOMBO	SE 1/2 - 1 (0.951 mi.)	U121 / 9	527
PALL WELL TECHNOLOGY GEPAID: CAL000040113	19433 COLOMBO ST	SE 1/2 - 1 (0.951 mi.)	U127 / 9	552
1X STEIN, HARRY GEPAID: CAC000547936	13000 GOLDEN STATE H	SE 1/2 - 1 (0.976 mi.)	R133 / 9	578
SWAIMS MACHINE SHOP GEPAID: CAL000326790	34758 LENCIONI AVE	SE 1/2 - 1 (0.989 mi.)	V138 / 9	585
SWAIM & SONS GEPAID: CAC001467152	34758 LENCIONI AVE	SE 1/2 - 1 (0.989 mi.)	V140 / 9	588
MODY PUMPS INC GEPAID: CAL000261549	34750 LENCIONI AVE Current Location 2166 Zeus Ct, Bkfd, 93308 GEPAID: CAL000295312	SE 1/2 - 1 (0.991 mi.)	V142 / 9	589

HIST CORTESE: Hazardous Waste & Substance Site List

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there are 2 HIST CORTESE sites within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
MALIBU VINEYARDS Reg Id: 5T15000257	IMPERAL & SACO RD	WSW 0 - 1/8 (0.020 mi.)	B4 / 5	38
BAKERSFIELD VORTEC E Reg Id: 5T15000362	***MINTER FIELD***	***N 1/2 - 1 (0.970 mi.)***	***131 / 3***	***576***

NPDES: NPDES Permits Listing

A review of the NPDES list, as provided by EDR, and dated 11/11/2019 has revealed that there are 7 NPDES sites within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
GOSSAMER GROVE TRACT Facility Status: Active	***N OF COBBLE CRREK DR***	***SW 1/2 - 1 (0.505 mi.)***	***26 / 8***	***90***
GOSSAMER GROVE TRACT Facility Status: Active	***COMMUNITY DR AND COB***	***S 1/2 - 1 (0.528 mi.)***	***27 / 8***	***92***
DAVIS RESIDENCE Facility Status: Active	***18212 GINA ELIZABETH***	***NE 1/2 - 1 (0.733 mi.)***	***40 / 6***	***115***
PROCESS FLOW TECHNOL Facility Status: Active	***19417 COLOMBO STREET***	***SE 1/2 - 1 (0.897 mi.)***	***O81 / 9***	***185***
DERRELS MINI STORAGE Facility Status: Active	***7TH STANDARD***	***S 1/2 - 1 (0.932 mi.)***	***P99 / 9***	***234***
BAKER PETROLITE Facility Status: Active	***19433 COLOMBO ST***	***SE 1/2 - 1 (0.951 mi.)***	***U126 / 9***	***545***
GOSSAMER GROVE TRACT Facility Status: Active	***SEC OF GOSSAMER GROV***	***SW 1/2 - 1 (0.991 mi.)***	***143 / 8***	***590***

EXECUTIVE SUMMARY

PEST LIC: Pesticide Regulation Licenses Listing

A review of the PEST LIC list, as provided by EDR, and dated 12/03/2019 has revealed that there are 2 PEST LIC sites within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
CMS CUSTOM SPREADING	19400 COLUMBO	SE 1/2 - 1 (0.887 mi.)	M76 / 9	177
RAY ETCHEVERRY	19461 RAYMOND ST	S 1/2 - 1 (0.906 mi.)	P87 / 9	217

UIC GEO: UIC GEO (GEOTRACKER)

A review of the UIC GEO list, as provided by EDR, and dated 09/09/2019 has revealed that there is 1 UIC GEO site within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
TOWER EXPLORATION, L	UNNAMED ROAD	SSW 1/4 - 1/2 (0.493 mi.)	24 / 8	89

CIWQS: California Integrated Water Quality System

A review of the CIWQS list, as provided by EDR, and dated 12/03/2019 has revealed that there are 7 CIWQS sites within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
NKWSD RSP PIPELINE	ZERKER ROAD AND CALL	SW 0 - 1/8 (0.105 mi.)	13 / 8	46
GOSSAMER GROVE TRACT	***N OF COBBLE CRREK DR***	***SW 1/2 - 1 (0.505 mi.)***	***26 / 8***	***90***
GOSSAMER GROVE TRACT	***COMMUNITY DR AND COB***	***S 1/2 - 1 (0.528 mi.)***	***27 / 8***	***92***
PROCESS FLOW TECHNOL	***19417 COLOMBO STREET***	***SE 1/2 - 1 (0.897 mi.)***	***O81 / 9***	***185***
DERRELS MINI STORAGE	7TH STANDARD	S 1/2 - 1 (0.932 mi.)	P100 / 9	236
BAKER PETROLITE	***19433 COLOMBO ST***	***SE 1/2 - 1 (0.951 mi.)***	***U126 / 9***	***545***
GOSSAMER GROVE TRACT	***SEC OF GOSSAMER GROV***	***SW 1/2 - 1 (0.991 mi.)***	***143 / 8***	***590***

CERS: CERS

A review of the CERS list, as provided by EDR, and dated 10/21/2019 has revealed that there are 26 CERS sites within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
MALIBU VINEYARDS	***IMPERIAL & SACO RD***	***S 0 - 1/8 (0.023 mi.)***	***C6 / 8***	***39***
* SILL PROPERTIES FIEL	NE NE NE 30 28 25 BU	SW 0 - 1/8 (0.085 mi.)	12 / 5	44
** ***WESTERN OILFIELD SUP***	***17400 ZERKER RD***	***E 1/4 - 1/2 (0.356 mi.)***	***14 / 6***	***47***
DOWNS EQUIPMENT RENT	***4800 SACO RD***	***SSE 1/4 - 1/2 (0.481 mi.)***	***D16 / 9***	***53***
DOWNS EQUIPMENT	***4800 SACO RD***	***SSE 1/4 - 1/2 (0.481 mi.)***	***D20 / 9***	***75***
GOSSAMER GROVE TRACT	***N OF COBBLE CRREK DR***	***SW 1/2 - 1 (0.505 mi.)***	***26 / 8***	***90***
GOSSAMER GROVE TRACT	***COMMUNITY DR AND COB***	***S 1/2 - 1 (0.528 mi.)***	***27 / 8***	***92***
EAST BAY CLARKLIFT D	***4608 SACO RD***	***SSE 1/2 - 1 (0.718 mi.)***	***F34 / 9***	***102***
DAVIS RESIDENCE	***18212 GINA ELIZABETH***	***NE 1/2 - 1 (0.733 mi.)***	***40 / 6***	***115***
AMERIGAS/COAST GAS -	19428 ENDES ST	SE 1/2 - 1 (0.842 mi.)	I47 / 9	120
GILLIAM AND SONS INC	***19420 ENDES ST***	***SE 1/2 - 1 (0.846 mi.)***	***J54 / 9***	***126***
NORTH KERN WATER STO	***33380 CAWELO AVE***	***NW 1/2 - 1 (0.848 mi.)***	***K56 / 1***	***138***
T-MOBILE WEST CORPOR	33320 CAWELO AVE	NW 1/2 - 1 (0.877 mi.)	74 / 1	175
PROCESS FLOW TECHNOL	***19417 COLOMBO STREET***	***SE 1/2 - 1 (0.897 mi.)***	***O81 / 9***	***185***
SMITH AND SONS RANCH	***19400 COLOMBO ST***	***SE 1/2 - 1 (0.918 mi.)***	***Q88 / 9***	***217***
CORE & MAIN, LP 177	19421 COLOMBO ST	SE 1/2 - 1 (0.931 mi.)	O95 / 9	229

* Sill Properties
Wrong Location:
Located 10.75 miles west at Burbank & Scaroni, 28S/25E, Sec. 30

** Western Oilfield Supply
Wrong Map Location:
17400 Zerker Road is 1.3 miles north of Lerdo Highway & 2.95 miles NW of project

EXECUTIVE SUMMARY

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
DERRELS MINI STORAGE	***7TH STANDARD***	***S 1/2 - 1 (0.932 mi.)***	***P99 / 9***	***234***
CONTINENTAL GRAIN CO	HWY 99 NEAR 7TH STAN	SE 1/2 - 1 (0.938 mi.)	R101 / 9 Air Emissions	236
CHESTER AVENUE BRAKE	***19420 COLOMBO ST***	***SE 1/2 - 1 (0.946 mi.)***	***S106 / 9***	***239***
COASTLINE EQUIPMENT	***4252 SACO RD***	***SE 1/2 - 1 (0.948 mi.)***	***T112 / 9***	***263***
BJ CHEMICAL SERVICES	***19433 COLOMBO ST***	***SE 1/2 - 1 (0.951 mi.)***	***U115 / 9***	***266***
BAKER PETROLITE LLC	***19433 COLOMBO ST***	***SE 1/2 - 1 (0.951 mi.)***	***U118 / 9***	***520***
BAKER PETROLITE	***19433 COLOMBO ST***	***SE 1/2 - 1 (0.951 mi.)***	***U126 / 9***	***545***
* ***BAKERSFIELD VORTEC E***	***MINTER FIELD***	***N 1/2 - 1 (0.970 mi.)***	***131 / 3***	***576***
SWAIM AND SONS	***34758 LENCIONI AVE***	***SE 1/2 - 1 (0.989 mi.)***	***V135 / 9***	***579***
GOSSAMER GROVE TRACT	***SEC OF GOSSAMER GROV***	***SW 1/2 - 1 (0.991 mi.)***	***143 / 8***	***590***

* Bakersfield Vortec EHF
Wrong Location:
Minter Field Industrial Park is located 3 miles NW
of Map 3 location, LUST 4/29/1994 - 3/22/1994.

MINES MRDS: Mineral Resources Data System

A review of the MINES MRDS list, as provided by EDR, and dated 04/06/2018 has revealed that there are 2 MINES MRDS sites within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
CAULAY PIT		SSW 1/2 - 1 (0.545 mi.)	28 / 8	97
KRAMER PIT		E 1/2 - 1 (0.857 mi.)	73 / 6	174

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR Hist Auto: EDR Exclusive Historical Auto Stations

A review of the EDR Hist Auto list, as provided by EDR, has revealed that there is 1 EDR Hist Auto site within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
SPRINGS A-SPECIALTY	19420 COLOMBO ST	SE 1/2 - 1 (0.946 mi.)	S103 / 9	237

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

A review of the RGA LUST list, as provided by EDR, has revealed that there are 3 RGA LUST sites within approximately1 mile of the requested target property.

Site	Address	Direction / Distance	Map ID / Focus Map(s)	Page
MALIBU VINEYARDS	IMPERIAL & SACO RD	S 0 - 1/8 (0.023 mi.)	C7 / 8	40
MALIBU VINEYARDS	IMPERIAL & SACO RD	S 0 - 1/8 (0.023 mi.)	C8 / 8	40
MALIBU VINYARD	IMPERIAL & SACO RD	S 0 - 1/8 (0.023 mi.)	C11 / 8	44

MAPPED SITES SUMMARY

Target Property:
MALIBU VINEYARDS
BAKERSFIELD, CA 93308

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION		
A1 / 6	MALIBU VINEYARDS RAN	34344 IMPERIAL RD	CERS HAZ WASTE, CERS TANKS, CERS	TP		
A2 / 6	MALIBU VINEYARDS RAN	34344 IMPERIAL RD	AST	TP		
B3 / 5	MALIBU VINEYARDS RAN	34344 IMPERIAL	AST	107	0.020	WSW
B4 / 5	MALIBU VINEYARDS	IMPERAL & SACO RD	HIST CORTESE	107	0.020	WSW
B5 / 5	MALIBU VINEYARDS	IMPERIAL & SACO RD	UST	107	0.020	WSW
C6 / 8	MALIBU VINEYARDS	IMPERIAL & SACO RD	LUST, CERS	123	0.023	South
C7 / 8	MALIBU VINEYARDS	IMPERIAL & SACO RD	RGA LUST	123	0.023	South
C8 / 8	MALIBU VINEYARDS	IMPERIAL & SACO RD	RGA LUST	123	0.023	South
C9 / 8	UPRR	FRONTAGE RD AND IMPE	CHMIRS	123	0.023	South
C10 / 8	MALIBU VINEYARDS	IMPERIAL & SACO RD	LUST	123	0.023	South
C11 / 8	MALIBU VINYARD	IMPERIAL & SACO RD	RGA LUST	123	0.023	South
12 / 5	SILL PROPERTIES FIEL	NE NE NE 30 28 25 BU	CERS	448	0.085	SW
13 / 8	NKWSD RSP PIPELINE	ZERKER ROAD AND CALL	CIWQS	554	0.105	SW
14 / 6	WESTERN OILFIELD SUP	17400 ZERKER RD	CERS HAZ WASTE, CERS	1882	0.356	East
D15 / 9	DOWNS EQUIPMENT RENT	4800 SACO RD	RCRA NonGen / NLR	2541	0.481	SSE
D16 / 9	DOWNS EQUIPMENT RENT	4800 SACO RD	EMI, CERS	2541	0.481	SSE
D17 / 9	DOWNS EQUIPMENT	4800 SACO RD	AST	2541	0.481	SSE
D18 / 9	RUSS ALLEN, AGRICULT	4800 SACO RD	UST	2541	0.481	SSE
D19 / 9	DOWNS EQUIPMENT RENT	4800 SACO RD	HAZNET	2541	0.481	SSE
D20 / 9	DOWNS EQUIPMENT	4800 SACO RD	CERS HAZ WASTE, CERS TANKS, CERS	2541	0.481	SSE
D21 / 9	DOWNS EQUIPMENT RENT	4800 SACO RD	FINDS	2541	0.481	SSE
D22 / 9	DOWNS EQUIPMENT RENT	4800 SACO RD	FINDS, ECHO	2541	0.481	SSE
D23 / 9	DOWNS EQUIPMENT	4800 SACO	AST	2541	0.481	SSE
24 / 8	TOWER EXPLORATION, L	UNNAMED ROAD	UIC GEO	2603	0.493	SSW
D25 / 9	GRAY LIFT INC	4806 SACO RD	HAZNET	2665	0.505	SSE
26 / 8	GOSSAMER GROVE TRACT	N OF COBBLE CRREK DR	NPDES, CIWQS, CERS	2668	0.505	SW
27 / 8	GOSSAMER GROVE TRACT	COMMUNITY DR AND COB	NPDES, CIWQS, CERS	2789	0.528	South
28 / 8	CAULAY PIT		MINES MRDS	2875	0.545	SSW
29 / 8	BAKERSFIELD AG CO IN	RTE. 11 BOX 858	FINDS, ECHO	3077	0.583	SW
E30 / 9	BRADFORD AND SONS CO	4618 SACO	AST	3350	0.634	SSE
E31 / 9	DAVIES USED EQUIP CO	4618 SACO	UST	3350	0.634	SSE
E32 / 9	DAVIES USED EQUIPMEN	4618 SACO	HAZNET	3350	0.634	SSE
33 / 6	KERN FRONT OIL FIELD	E OF HWY 65 N OF	SEMS-ARCHIVE	3643	0.690	East
F34 / 9	EAST BAY CLARKLIFT D	4608 SACO RD	CERS HAZ WASTE, CERS TANKS, CERS	3791	0.718	SSE
F35 / 9	EAST BAY CLARK LIFT	4608 SACO RD	FINDS, ECHO	3791	0.718	SSE
F36 / 9	EAST BAY CLARK LIFT	4608 SACO RD	RCRA NonGen / NLR	3791	0.718	SSE
F37 / 9	GRAY LIFT INC	4608 SACO RD	FINDS	3791	0.718	SSE
F38 / 9	GRAY LIFT INC	4608 SACO RD	AST	3791	0.718	SSE
F39 / 9	EAST BAY CLARKLIFT,	4608 SACO ROAD	HAULERS	3791	0.718	SSE

Located 226' west of west PL, Located west of SR 99,

Wrong Location: Located 10.75 miles west at Burbank & Scaroni, 28S/25E, Sec. 30

s/b 4608 Saco Rd

Site vacant 10/09-04/11 to 7/14.

Wrong Location: Located 1.5 miles east of Phase 1

MAPPED SITES SUMMARY

Target Property:
MALIBU VINEYARDS
BAKERSFIELD, CA 93308

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION		
40 / 6	DAVIS RESIDENCE	18212 GINA ELIZABETH	NPDES, CERS	3871	0.733	NE
G41 / 9	GRANA ENT DBA JPS &	3149 PETROL RD	ECHO	4201	0.796	SE
G42 / 9	GRANA ENT DBA JPS & CO TRANS	3149 PETROL RD	RCRA NonGen / NLR	4201	0.796	SE
G43 / 9	FRANCIA TRUCKING	3149 PETROL RD	RCRA NonGen / NLR	4201	0.796	SE
G44 / 9	FRANCIA TRUCKING	3149 PETROL RD	FINDS, ECHO	4201	0.796	SE
H45 / 9	T M COMPOSTINGNA INC	4322 SACO RD	FINDS	4332	0.820	SE
H46 / 9	T M TRANSPORTATION I	4322 N SACO RD	FINDS	4332	0.820	SE
I47 / 9	AMERIGAS/COAST GAS -	19428 ENDES ST	CERS	4447	0.842	SE
I48 / 9	COAST GAS - ENDES	19428 ENDES ST	FINDS	4447	0.842	SE
J49 / 9	GILLIAM & SONS INC	19420 ENDES ST	RCRA NonGen / NLR	4468	0.846	SE
J50 / 9	GILLIAM AND SONS INC	19420 ENDES ST	AST	4468	0.846	SE
J51 / 9	GILLIAM AND SONS INC	19420 ENDES ST	FINDS	4468	0.846	SE
J52 / 9	GILLIAM AND SONS INC	19420 ENDES	AST	4468	0.846	SE
J53 / 9	GILLIAM & SONS INC	19420 ENDES ST	FINDS, ECHO	4468	0.846	SE
J54 / 9	GILLIAM AND SONS INC	19420 ENDES ST	CERS HAZ WASTE, CERS TANKS, CERS	4468	0.846	SE
J55 / 9	GILLIAM & SONS INC	19420 ENDES ST	HAZNET	4468	0.846	SE
K56 / 1	NORTH KERN WATER STO	33380 CAWELO AVE	AST, CERS HAZ WASTE, CERS TANKS, CHMIRS,..	4477	0.848	NW
K57 / 1	NORTH KERN WATER STO	33380 CAWELO AVE	FINDS	4477	0.848	NW
K58 / 1	NO. KERN WATER STORA	33380 CAWELO AVE	RCRA NonGen / NLR	4477	0.848	NW
K59 / 1	NO. KERN WATER STORA	33380 CAWELO AVE	FINDS, ECHO	4477	0.848	NW
K60 / 1	NORTH KERN WATER STO	33380 CAWELO	AST	4477	0.848	NW
K61 / 1	NO. KERN WATER STORA	33380 CAWELO AVE	HAZNET	4477	0.848	NW
L62 / 9	WEST COAST CONSTRUCT	3143 PETROL RD	FINDS	4492	0.851	SE
L63 / 9	COS PETROLEUM	3143 PETROL RD	HAZNET	4492	0.851	SE
L64 / 9	TS TRANSPORTATION IN	3143 PETROL RD	FINDS, ECHO	4492	0.851	SE
L65 / 9	GIC CORPORATION	3143 PETROL RD	HAZNET	4492	0.851	SE
L66 / 9	DALE DWIGHT TRUCKING	3143 PETROL RD	HAZNET	4492	0.851	SE
L67 / 9	LIBERTY LOGISTICS IN	3143 PETROL RD	HAZNET	4492	0.851	SE
L68 / 9	G.I.C. TRANSPORT	3143 PETROL RD	FINDS	4492	0.851	SE
L69 / 9	VETO TRANSPORTATION	3143 PETROL RD	HAZNET	4492	0.851	SE
L70 / 9	DALE DWIGHT	3143 PETROL RD	HAZNET	4492	0.851	SE
L71 / 9	TS TRANSPORTATION IN	3143 PETROL RD	RCRA NonGen / NLR	4492	0.851	SE
L72 / 9	LIBERTY LOGISTICS	3143 PETROL	AST	4492	0.851	SE
73 / 6	KRAMER PIT		MINES MRDS	4524	0.857	East
74 / 1	T-MOBILE WEST CORPOR	33320 CAWELO AVE	CERS	4629	0.877	NW
75 / 2	VINCENT B ZANINOVICH	33905 LERDO HWY	FINDS, ECHO Located 1,100 N of 1-mile buffer	4636	0.878	North
M76 / 9	CMS CUSTOM SPREADING	19400 COLUMBO	PEST LIC	4682	0.887	SE
N77 / 9	JTS TRUCK REPAIR	4300 SACO RD	RCRA NonGen / NLR	4685	0.887	SE
N78 / 9	JTS TRUCK REPAIR	4300 SACO RD	HAZNET	4685	0.887	SE

MAPPED SITES SUMMARY

Target Property:
MALIBU VINEYARDS
BAKERSFIELD, CA 93308

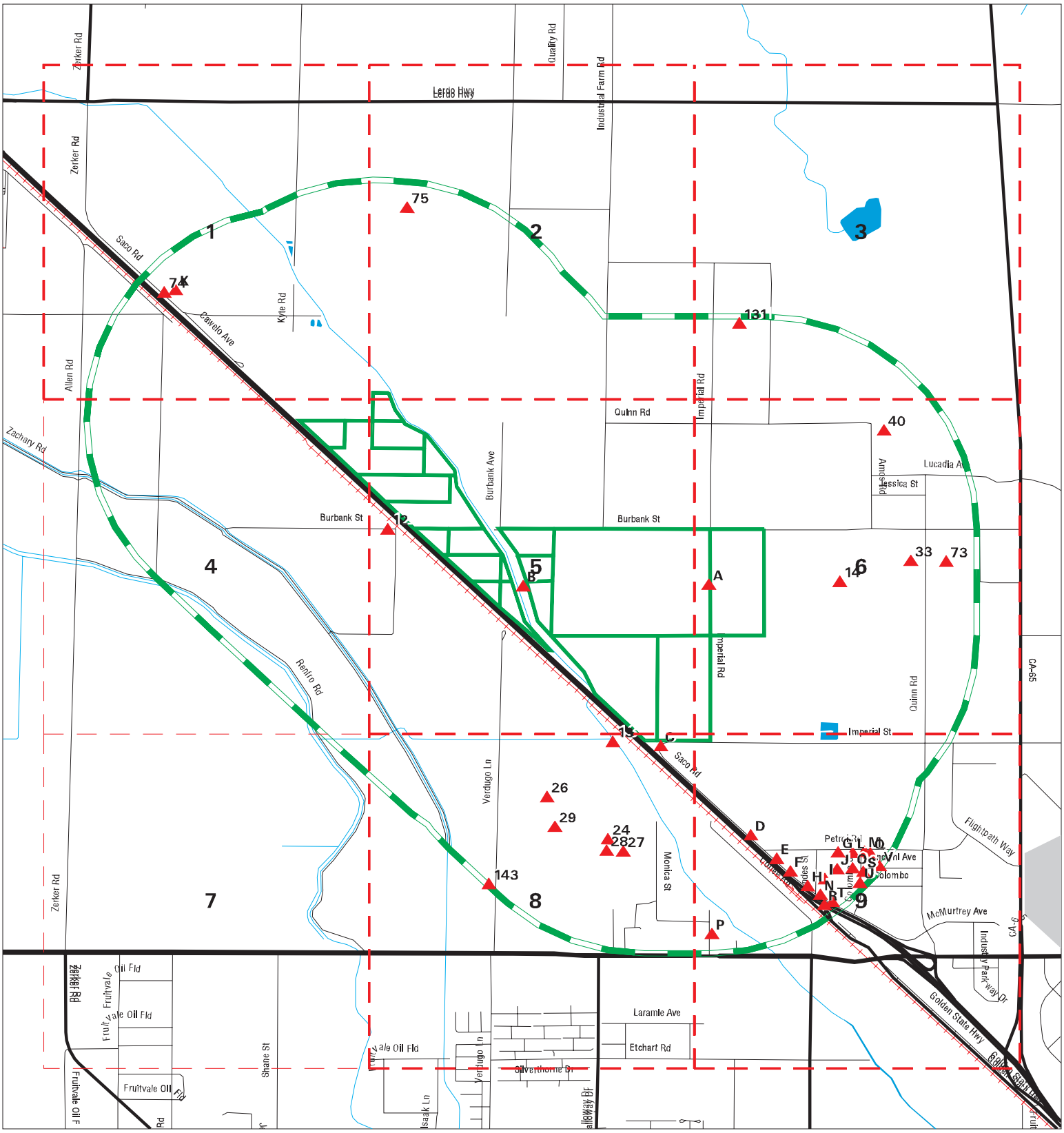
MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION
N79 / 9	JTS TRUCK REPAIR	4300 SACO RD	FINDS, ECHO	4685 0.887 SE
M80 / 9		SW CORNER OF COLOMBO	CHMIRS	4705 0.891 SE
O81 / 9	PROCESS FLOW TECHNOL	19417 COLOMBO STREET	HAZNET, NPDES, CIWQS, CERS	4734 0.897 SE
O82 / 9	National Oilfield-Varco (NOV)	19417 COLOMBO ST	RCRA NonGen / NLR	4734 0.897 SE
O83 / 9	NOV PROCESS & FLOW T	19417 COLOMBO ST	ECHO	4734 0.897 SE
O84 / 9	PROCESS FLOW TECHNOL	19417 COLOMBO STREET	FINDS, ECHO	4734 0.897 SE
M85 / 9	SEQUOIA EQUIPMENT CO	19404 COLOMBO ST	RCRA NonGen / NLR	4768 0.903 SE
M86 / 9	SEQUOIA EQUIPMENT CO	19404 COLOMBO ST	FINDS, ECHO	4768 0.903 SE
P87 / 9	RAY ETCHEVERRY	19461 RAYMOND ST	PEST LIC	4784 0.906 South
Q88 / 9	SMITH AND SONS RANCH	19400 COLOMBO ST	CERS HAZ WASTE, CERS TANKS, CERS	4846 0.918 SE
Q89 / 9	SMITH & SONS RANCH	19400 COLOMBO ST	EMI	4846 0.918 SE
Q90 / 9	SMITH AND SONS RANCH	19400 COLOMBO ST	FINDS, ECHO	4846 0.918 SE
Q91 / 9	SMITH & SONS RANCH	19400 COLOMBO ST	RCRA NonGen / NLR	4846 0.918 SE
Q92 / 9	SMITH AND SONS RANCH	19400 COLOMBO	AST	4846 0.918 SE
Q93 / 9	SMITH AND SONS RANCH	19400 COLOMBO ST	AST	4846 0.918 SE
O94 / 9	NATIONAL WATER WORKS	19421 COLOMBO ST	HAZNET Now Core & Main	4917 0.931 SE
O95 / 9	CORE & MAIN, LP 177	19421 COLOMBO ST	CERS	4917 0.931 SE
O96 / 9	WTW BAKERSFIELD	19421 COLOMBO ST	FINDS Now Core & Main	4917 0.931 SE
O97 / 9	HD SUPPLY WATERWORKS	19421 COLOMBO ST	RCRA NonGen / NLR Now Core & Main	4917 0.931 SE
O98 / 9	HD SUPPLY WATERWORKS	19421 COLOMBO ST	FINDS, ECHO Now Core & Main	4917 0.931 SE
P99 / 9	DERRELS MINI STORAGE	7TH STANDARD	NPDES, CERS	4919 0.932 South
P100 / 9	DERRELS MINI STORAGE	7TH STANDARD	CIWQS	4919 0.932 South
R101 / 9	CONTINENTAL GRAIN CO	HWY 99 NEAR 7TH STAN	CERS Air Emissions	4952 0.938 SE
R102 / 9	CONTINENTAL GRAIN CO	HWY 99 NEAR 7TH STAN	FINDS	4952 0.938 SE
S103 / 9	SPRINGS A-SPECIALTY	19420 COLOMBO ST	EDR Hist Auto	4994 0.946 SE
S104 / 9	CHESTER AVENUE BRAKE	19420 COLOMBO ST	FINDS	4994 0.946 SE
S105 / 9	CHESTER AVE BRAKE	19420 COLOMBO ST	RCRA NonGen / NLR	4994 0.946 SE
S106 / 9	CHESTER AVENUE BRAKE	19420 COLOMBO ST	CERS HAZ WASTE, CERS	4994 0.946 SE
S107 / 9	CHESTER AVE BRAKE	19420 COLOMBO ST	FINDS, ECHO	4994 0.946 SE
T108 / 9	COASTLINE EQUIPMENT	4252 SACO RD	RCRA NonGen / NLR	5007 0.948 SE
T109 / 9	LOUGEE-MICHAEL EQUIP	4252 SACO RD	SWEEPS UST	5007 0.948 SE
T110 / 9	COASTLINE EQUIPMENT	4252 SACO RD	HAZNET	5007 0.948 SE
T111 / 9	COASTLINE EQUIPMENT	4252 SACO RD	FINDS, ECHO	5007 0.948 SE
T112 / 9	COASTLINE EQUIPMENT	4252 SACO RD	CERS HAZ WASTE, CERS TANKS, CERS	5007 0.948 SE
T113 / 9	LOUGEE-MICHAEL EQUIP	4252 SACO RD	UST	5007 0.948 SE
U114 / 9	BJ Chemical Services Co (Baker Hughes)	19433 COLOMBO ST	ERNS	5022 0.951 SE
U115 / 9	BJ CHEMICAL SERVICES	19433 COLOMBO ST	EMI, HAZNET, CERS	5022 0.951 SE
U116 / 9	BAKERSFIELD UPSTREAM	19433 COLOMBO ST	HAZNET	5022 0.951 SE
U117 / 9	BJ UNICHEM CHEMICAL	19433 COLOMBO ST	RCRA-SQG	5022 0.951 SE

MAPPED SITES SUMMARY

Target Property:
MALIBU VINEYARDS
BAKERSFIELD, CA 93308

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION		
U118 / 9	BAKER PETROLITE LLC	19433 COLOMBO ST	CERS HAZ WASTE, CERS TANKS, CERS	5022	0.951	SE
U119 / 9	BAKER HUGHES	19433 COLOMBO ST	FINDS, ECHO	5022	0.951	SE
U120 / 9	BAKER HUGHES OILFIEL	19433 COLOMBO ST	HAZNET	5022	0.951	SE
U121 / 9	WESTERN UNICHEM	19433 COLOMBO	HAZNET	5022	0.951	SE
U122 / 9	BAKER HUGHES	19433 COLOMBO ST	AST	5022	0.951	SE
U123 / 9	BAKER PETROLITE	19433 COLOMBO ST	FINDS, ECHO	5022	0.951	SE
U124 / 9	BJ SERVICES CO, U.S.	19433 COLOMBO ST	SSTS	5022	0.951	SE
U125 / 9	BAKERSFIELD UPSTREAM	19433 COLOMBO STREET	RCRA-LQG, FINDS, ECHO	5022	0.951	SE
U126 / 9	BAKER PETROLITE	19433 COLOMBO ST	NPDES, CIWQS, CERS	5022	0.951	SE
U127 / 9	PALL WELL TECHNOLOGY	19433 COLOMBO ST	HAZNET	5022	0.951	SE
U128 / 9	UNICHEM, A DIV OF BJ	19433 COLOMBO	SSTS	5022	0.951	SE
U129 / 9	B J CHEMICAL SERVICE	19433 COLOMBO	AST	5022	0.951	SE
U130 / 9		19433 COLUMBO STREET	CHMIRS	5114	0.969	SE
131 / 3	BAKERSFIELD VORTEC E	MINTER FIELD	LUST, HIST CORTESE, CERS	5121	0.970	North
R132 / 9	NKWSD FIELD OFFICE	13000 GOLDEN STATE H	HIST UST @ Cluster K, Map 1	5151	0.976	SE
R133 / 9	1X STEIN, HARRY	13000 GOLDEN STATE H	HAZNET	5151	0.976	SE
R134 / 9	N. KERN WATER STORAG	13000 GOLDEN STATE H	UST @ Cluster K, Map 1	5151	0.976	SE
V135 / 9	SWAIM AND SONS	34758 LENCIONI AVE	CERS HAZ WASTE, CERS TANKS, CERS	5221	0.989	SE
V136 / 9	SWAIM AND SONS	34758 LENCIONI AVE	AST	5221	0.989	SE
V137 / 9	SWAIMS MACHINE SHOP	34758 LENCIONI AVE	FINDS, ECHO	5221	0.989	SE
V138 / 9	SWAIMS MACHINE SHOP	34758 LENCIONI AVE	HAZNET	5221	0.989	SE
V139 / 9	SWAIMS MACHINE SHOP	34758 LENCIONI AVE	RCRA NonGen / NLR	5221	0.989	SE
V140 / 9	SWAIM & SONS	34758 LENCIONI AVE	HAZNET	5221	0.989	SE
V141 / 9	SWAIM AND SONS	34758 LENCIONI AVE	FINDS	5221	0.989	SE
V142 / 9	MODY PUMPS INC	34750 LENCIONI AVE	HAZNET	5230	0.991	SE
143 / 8	GOSSAMER GROVE TRACT	SEC OF GOSSAMER GROV	NPDES, CIWQS, CERS	5231	0.991	SW

Key Map - 5967931.2s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
National Priority List Sites
Areas of Concern
Dept. Defense Sites
Indian Reservations BIA

0 1/2 1 Miles

SITE NAME: Malibu Vineyards	CLIENT: McIntosh & Associates
ADDRESS: Malibu Vineyards	CONTACT: Julie Green
CITY/STATE: Bakersfield CA	INQUIRY #: 5967931.2s
ZIP: 93308	DATE: 02/12/20 12:29 PM

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	1.000		0	0	0	0	NR	0
SEMS	1.000		0	0	0	0	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	1.000		0	0	0	1	NR	1
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	1.000		0	0	0	0	NR	0
Federal RCRA generators list								
RCRA-LQG	1.000		0	0	0	1	NR	1
RCRA-SQG	1.000		0	0	0	1	NR	1
RCRA-VSQG	1.000		0	0	0	0	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	1.000		0	0	0	0	NR	0
US ENG CONTROLS	1.000		0	0	0	0	NR	0
US INST CONTROL	1.000		0	0	0	0	NR	0
Federal ERNS list								
ERNS	1.000		0	0	0	1	NR	1
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	1.000		0	0	0	0	NR	0
State and tribal leaking storage tank lists								
LUST	1.000		2	0	0	1	NR	3

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	1.000		0	0	0	0	NR	0
CPS-SLIC	1.000		0	0	0	0	NR	0
State and tribal registered storage tank lists								
FEMA UST	1.000		0	0	0	0	NR	0
UST	1.000		1	0	1	3	NR	5
AST	1.000	1	1	0	2	12	NR	16
INDIAN UST	1.000		0	0	0	0	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	1.000		0	0	0	0	NR	0
VCP	1.000		0	0	0	0	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	1.000		0	0	0	0	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	1.000		0	0	0	0	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	1.000		0	0	0	0	NR	0
SWRCY	1.000		0	0	0	0	NR	0
HAULERS	1.000		0	0	0	1	NR	1
INDIAN ODI	1.000		0	0	0	0	NR	0
DEBRIS REGION 9	1.000		0	0	0	0	NR	0
ODI	1.000		0	0	0	0	NR	0
IHS OPEN DUMPS	1.000		0	0	0	0	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	1.000		0	0	0	0	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	1.000		0	0	0	0	NR	0
CDL	1.000		0	0	0	0	NR	0
CERS HAZ WASTE	1.000	1	0	0	2	8	NR	11
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	1.000		0	0	0	0	NR	0
PFAS	1.000		0	0	0	0	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	1.000		0	0	0	1	NR	1
HIST UST	1.000		0	0	0	1	NR	1
CA FID UST	1.000		0	0	0	0	NR	0
CERS TANKS	1.000	1	0	0	1	7	NR	9
Local Land Records								
LIENS	1.000		0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	1.000		0	0	0	0	NR	0
DEED	1.000		0	0	0	0	NR	0
Records of Emergency Release Reports								
HMIRS	1.000		0	0	0	0	NR	0
CHMIRS	1.000		1	0	0	3	NR	4
LDS	1.000		0	0	0	0	NR	0
MCS	1.000		0	0	0	0	NR	0
SPILLS 90	1.000		0	0	0	0	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	1.000		0	0	1	14	NR	15
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	1.000		0	0	0	0	NR	0
US FIN ASSUR	1.000		0	0	0	0	NR	0
EPA WATCH LIST	1.000		0	0	0	0	NR	0
2020 COR ACTION	1.000		0	0	0	0	NR	0
TSCA	1.000		0	0	0	0	NR	0
TRIS	1.000		0	0	0	0	NR	0
SSTS	1.000		0	0	0	2	NR	2
ROD	1.000		0	0	0	0	NR	0
RMP	1.000		0	0	0	0	NR	0
RAATS	1.000		0	0	0	0	NR	0
PRP	1.000		0	0	0	0	NR	0
PADS	1.000		0	0	0	0	NR	0
ICIS	1.000		0	0	0	0	NR	0
FTTS	1.000		0	0	0	0	NR	0
MLTS	1.000		0	0	0	0	NR	0
COAL ASH DOE	1.000		0	0	0	0	NR	0
COAL ASH EPA	1.000		0	0	0	0	NR	0
PCB TRANSFORMER	1.000		0	0	0	0	NR	0
RADINFO	1.000		0	0	0	0	NR	0
HIST FTTS	1.000		0	0	0	0	NR	0
DOT OPS	1.000		0	0	0	0	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	1.000		0	0	0	0	NR	0
LEAD SMELTERS	1.000		0	0	0	0	NR	0
US AIRS	1.000		0	0	0	0	NR	0
US MINES	1.000		0	0	0	0	NR	0
ABANDONED MINES	1.000		0	0	0	0	NR	0
FINDS	1.000		0	0	2	30	NR	32
ECHO	1.000		0	0	1	20	NR	21
DOCKET HWC	1.000		0	0	0	0	NR	0
UXO	1.000		0	0	0	0	NR	0
FUELS PROGRAM	1.000		0	0	0	0	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	1.000		0	0	0	0	NR	0
CUPA Listings	1.000		0	0	0	0	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	1.000		0	0	0	0	NR	0
EMI	1.000		0	0	1	3	NR	4
ENF	1.000		0	0	0	0	NR	0
Financial Assurance	1.000		0	0	0	0	NR	0
HAZNET	1.000		0	0	1	23	NR	24
ICE	1.000		0	0	0	0	NR	0
HIST CORTESE	1.000		1	0	0	1	NR	2
HWP	1.000		0	0	0	0	NR	0
HWT	1.000		0	0	0	0	NR	0
MINES	1.000		0	0	0	0	NR	0
MWMP	1.000		0	0	0	0	NR	0
NPDES	1.000		0	0	0	7	NR	7
PEST LIC	1.000		0	0	0	2	NR	2
PROC	1.000		0	0	0	0	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	1.000		0	0	0	0	NR	0
UIC GEO	1.000		0	0	1	0	NR	1
WASTEWATER PITS	1.000		0	0	0	0	NR	0
WDS	1.000		0	0	0	0	NR	0
WIP	1.000		0	0	0	0	NR	0
MILITARY PRIV SITES	1.000		0	0	0	0	NR	0
PROJECT	1.000		0	0	0	0	NR	0
WDR	1.000		0	0	0	0	NR	0
CIWQS	1.000		1	0	0	6	NR	7
CERS	1.000	1	2	0	3	21	NR	27
NON-CASE INFO	1.000		0	0	0	0	NR	0
OTHER OIL GAS	1.000		0	0	0	0	NR	0
PROD WATER PONDS	1.000		0	0	0	0	NR	0
SAMPLING POINT	1.000		0	0	0	0	NR	0
WELL STIM PROJ	1.000		0	0	0	0	NR	0
MINES MRDS	1.000		0	0	0	2	NR	2
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	1.000		0	0	0	1	NR	1
EDR Hist Cleaner	1.000		0	0	0	0	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	1.000		0	0	0	0	NR	0
RGA LUST	1.000		3	0	0	0	NR	3
- Totals --		4	12	0	16	173	0	205

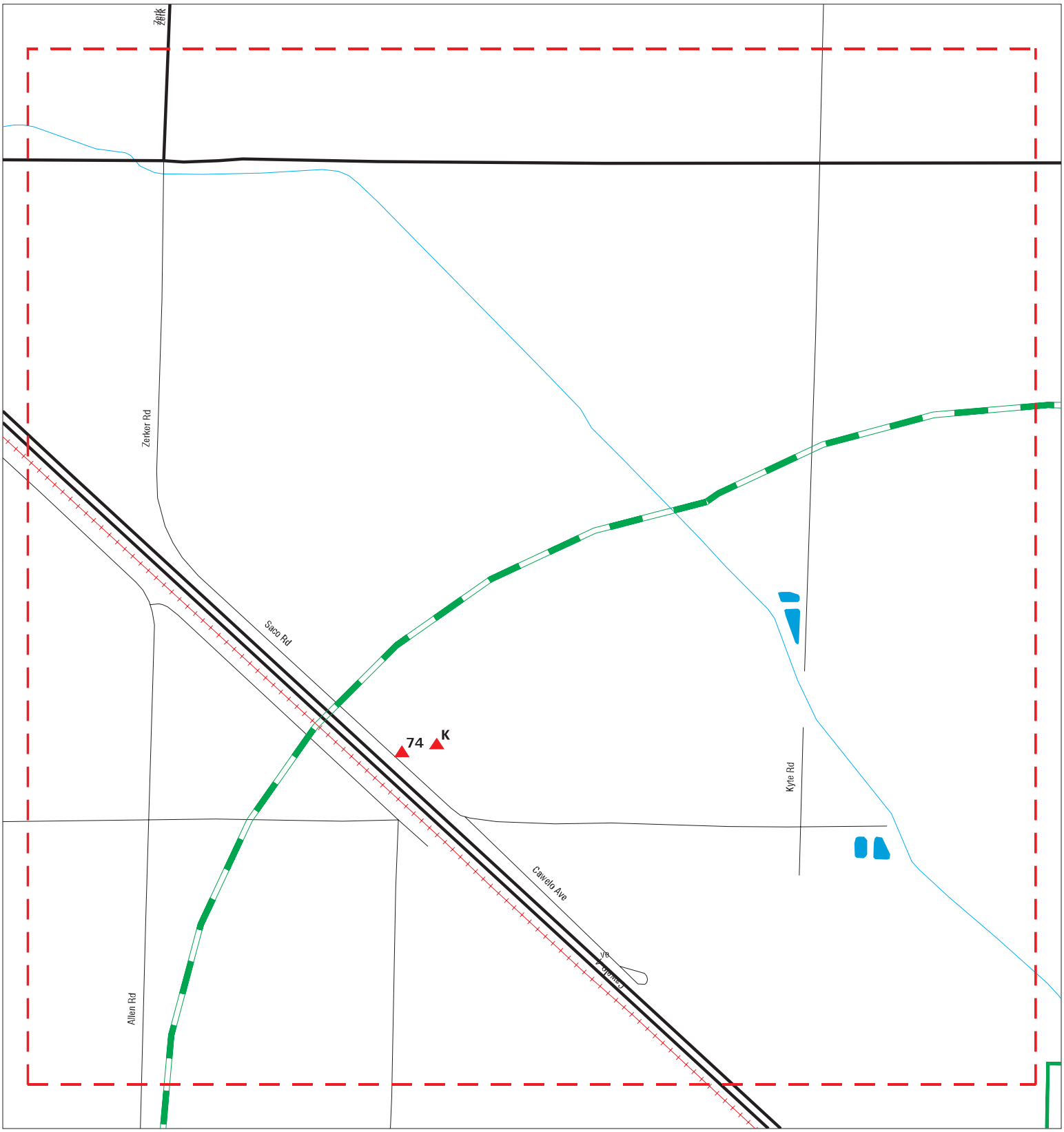
NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

Focus Map - 1 - 5967931.2s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
National Priority List Sites
Areas of Concern
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Malibu Vineyards ADDRESS: Malibu Vineyards CITY/STATE: Bakersfield CA ZIP: 93308	CLIENT: McIntosh & Associates CONTACT: Julie Green INQUIRY #: 5967931.2s DATE: 02/12/20

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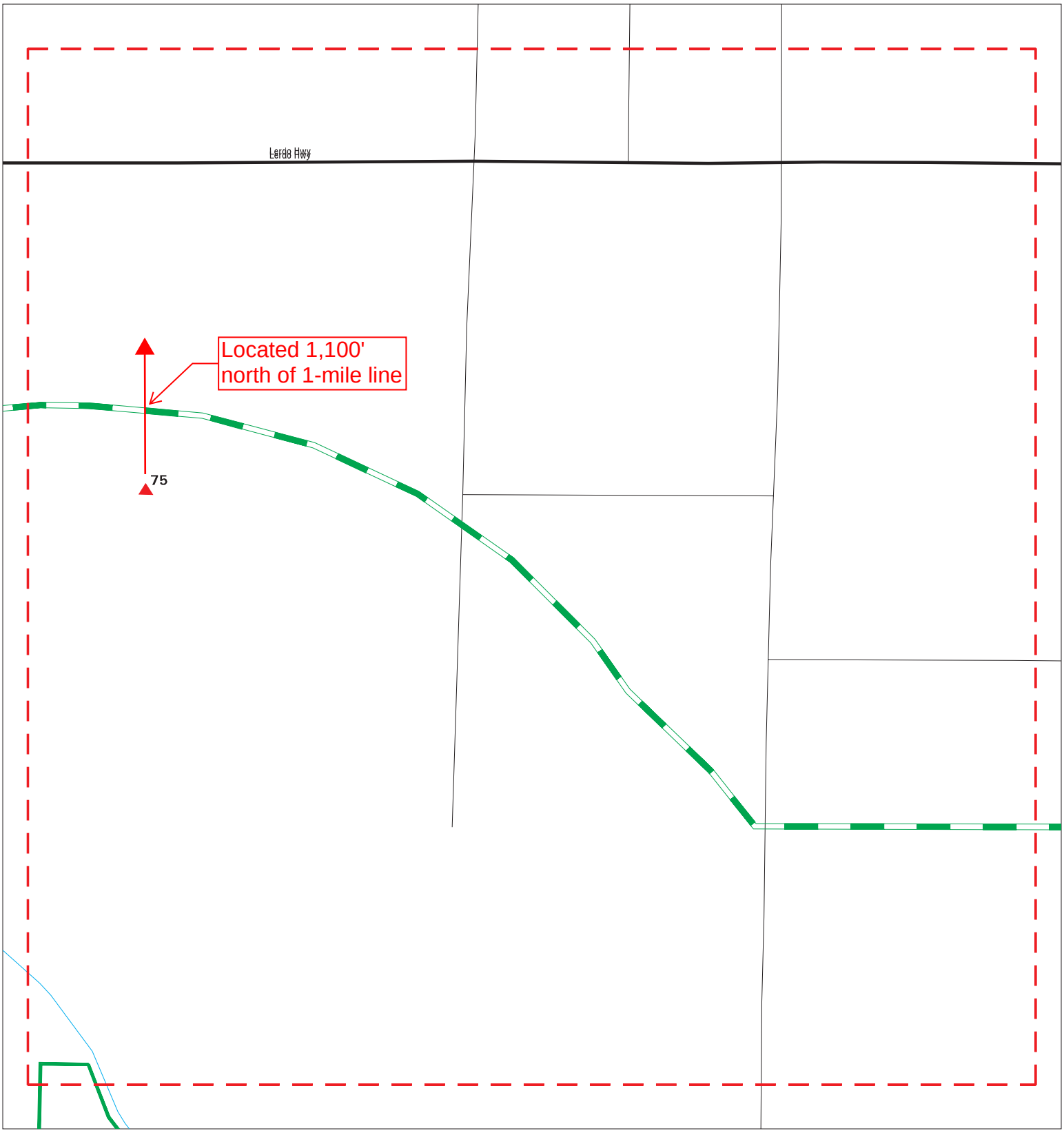
MAPPED SITES SUMMARY - FOCUS MAP 1

Target Property:
MALIBU VINEYARDS
BAKERSFIELD, CA 93308

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION		
K56 / 1	NORTH KERN WATER STO	33380 CAWELO AVE	AST, CERS HAZ WASTE, CERS TANKS, CHMIRS,..	4477	0.848	NW
K57 / 1	NORTH KERN WATER STO	33380 CAWELO AVE	FINDS	4477	0.848	NW
K58 / 1	NO. KERN WATER STORA	33380 CAWELO AVE	RCRA NonGen / NLR	4477	0.848	NW
K59 / 1	NO. KERN WATER STORA	33380 CAWELO AVE	FINDS, ECHO	4477	0.848	NW
K60 / 1	NORTH KERN WATER STO	33380 CAWELO	AST	4477	0.848	NW
K61 / 1	NO. KERN WATER STORA	33380 CAWELO AVE	HAZNET	4477	0.848	NW
74 / 1	T-MOBILE WEST CORPOR	33320 CAWELO AVE	CERS	4629	0.877	NW

Focus Map - 2 - 5967931.2s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
National Priority List Sites
Areas of Concern
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Malibu Vineyards	CLIENT: McIntosh & Associates
ADDRESS: Malibu Vineyards	CONTACT: Julie Green
CITY/STATE: Bakersfield CA	INQUIRY #: 5967931.2s
ZIP: 93308	DATE: 02/12/20

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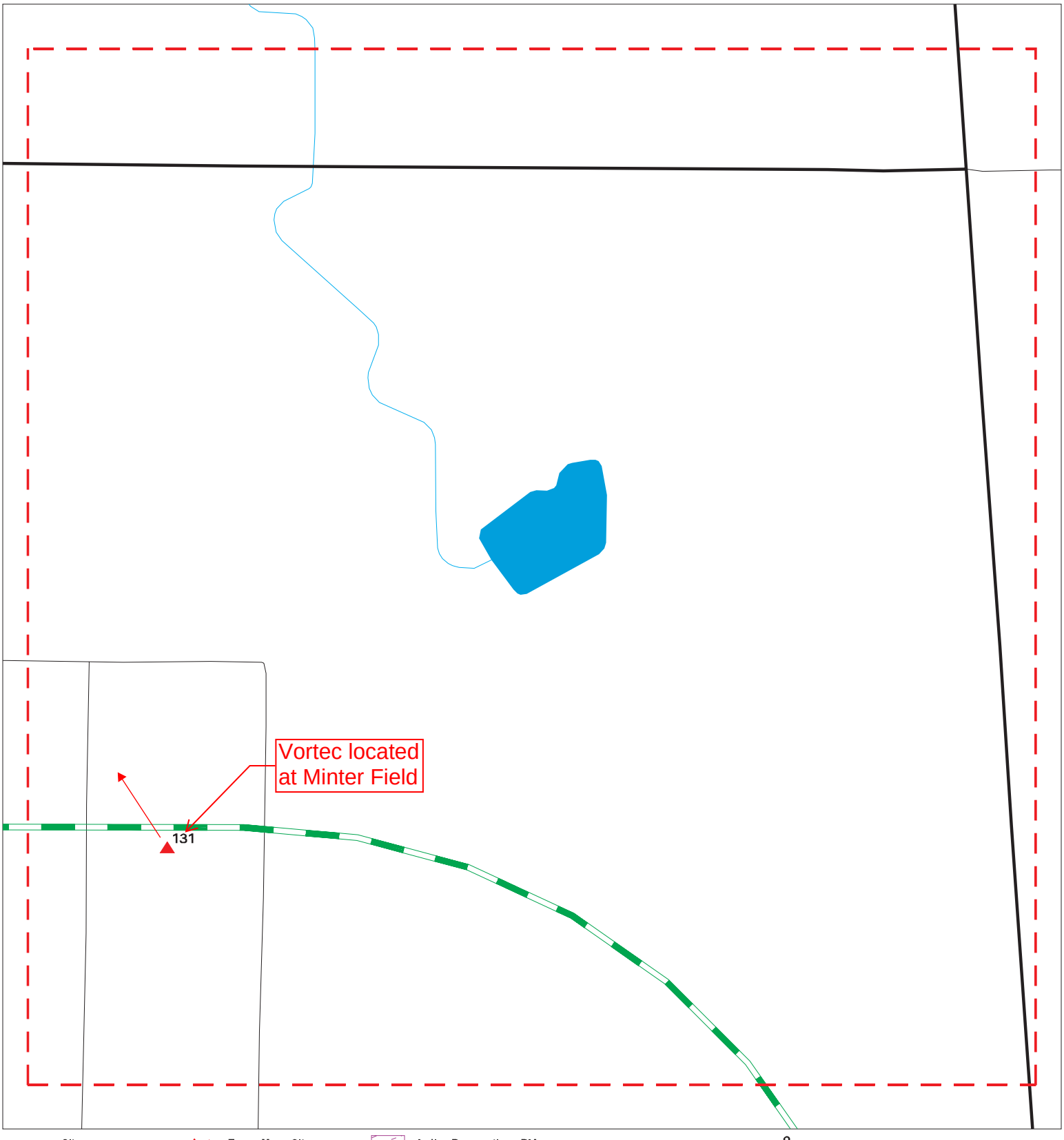
MAPPED SITES SUMMARY - FOCUS MAP 2

Target Property:
MALIBU VINEYARDS
BAKERSFIELD, CA 93308

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION
75 / 2	VINCENT B ZANINOVICH	33905 LERDO HWY	FINDS, ECHO	4636 0.878 North

Focus Map - 3 - 5967931.2s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
National Priority List Sites
Areas of Concern
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Malibu Vineyards ADDRESS: Malibu Vineyards CITY/STATE: Bakersfield CA ZIP: 93308	CLIENT: McIntosh & Associates CONTACT: Julie Green INQUIRY #: 5967931.2s DATE: 02/12/20

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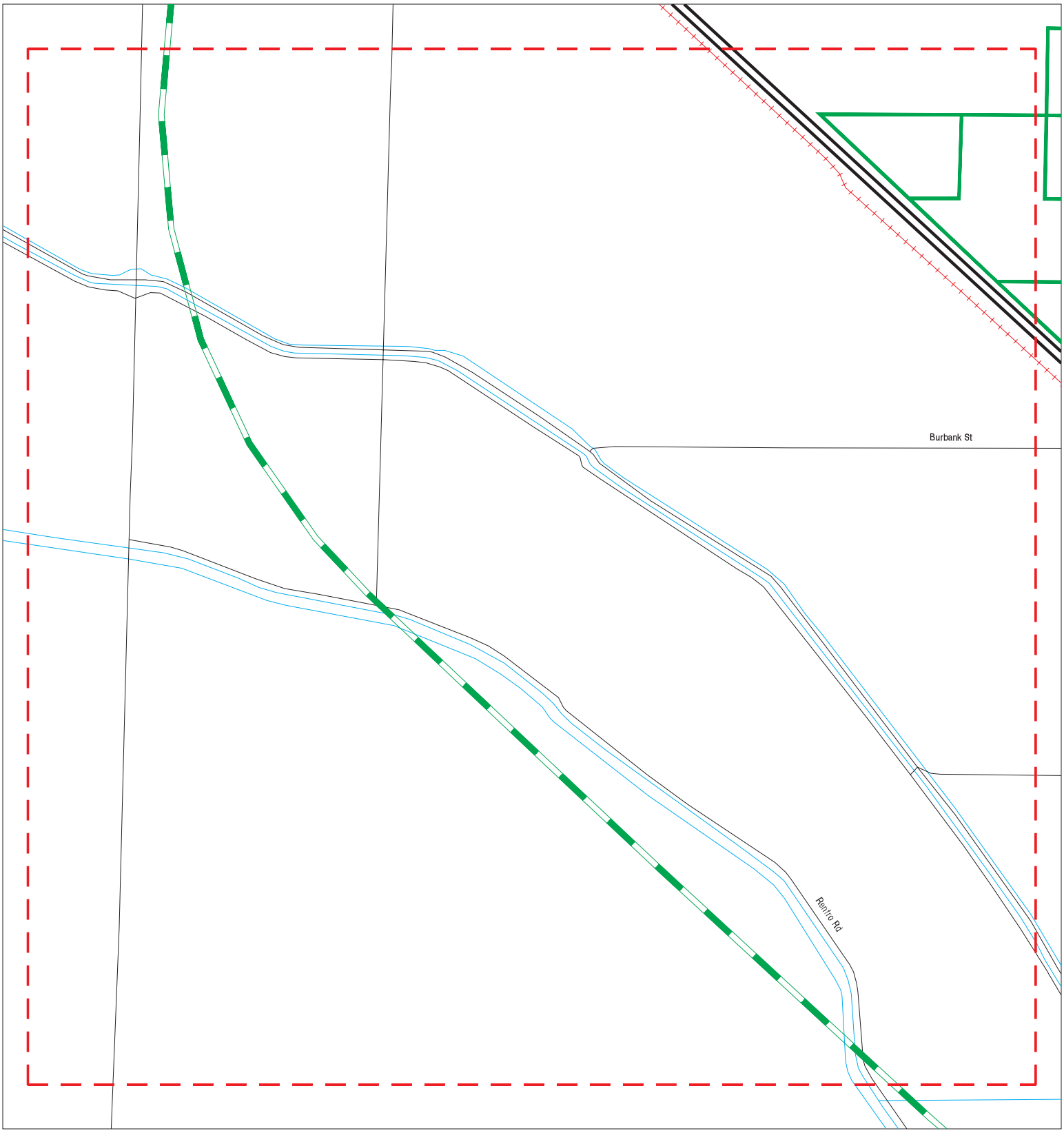
MAPPED SITES SUMMARY - FOCUS MAP 3

Target Property:
MALIBU VINEYARDS
BAKERSFIELD, CA 93308

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION
131 / 3	BAKERSFIELD VORTEC E	MINTER FIELD	LUST, HIST CORTESE, CERS	5121 0.970 North

Focus Map - 4 - 5967931.2s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
National Priority List Sites
Areas of Concern
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Malibu Vineyards ADDRESS: Malibu Vineyards CITY/STATE: Bakersfield CA ZIP: 93308	CLIENT: McIntosh & Associates CONTACT: Julie Green INQUIRY #: 5967931.2s DATE: 02/12/20

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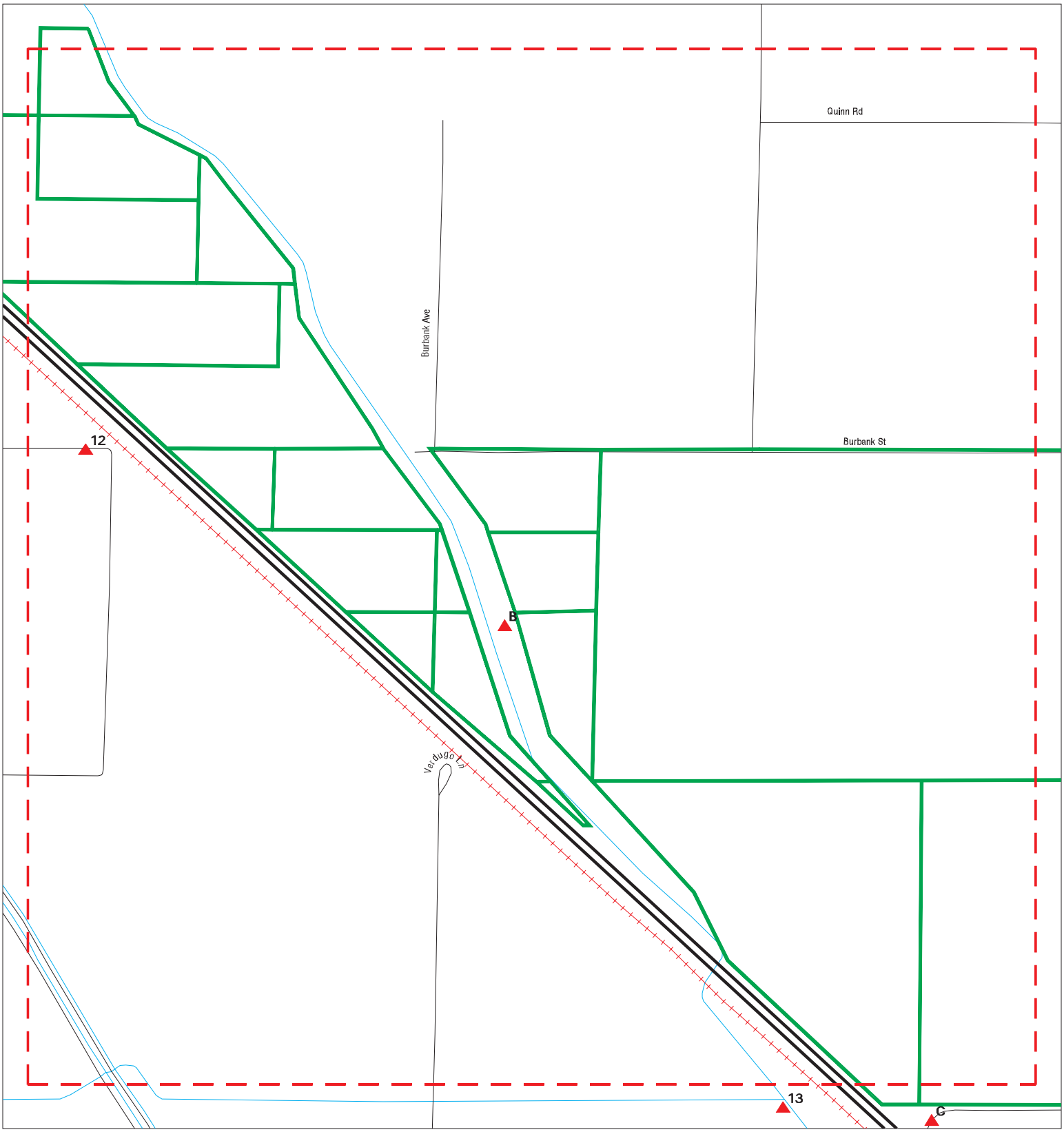
MAPPED SITES SUMMARY - FOCUS MAP 4

Target Property:
MALIBU VINEYARDS
BAKERSFIELD, CA 93308

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

Focus Map - 5 - 5967931.2s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
National Priority List Sites
Areas of Concern
Dept. Defense Sites
Indian Reservations BIA

SITE NAME: Malibu Vineyards	CLIENT: McIntosh & Associates
ADDRESS: Malibu Vineyards	CONTACT: Julie Green
CITY/STATE: Bakersfield CA	INQUIRY #: 5967931.2s
ZIP: 93308	DATE: 02/12/20

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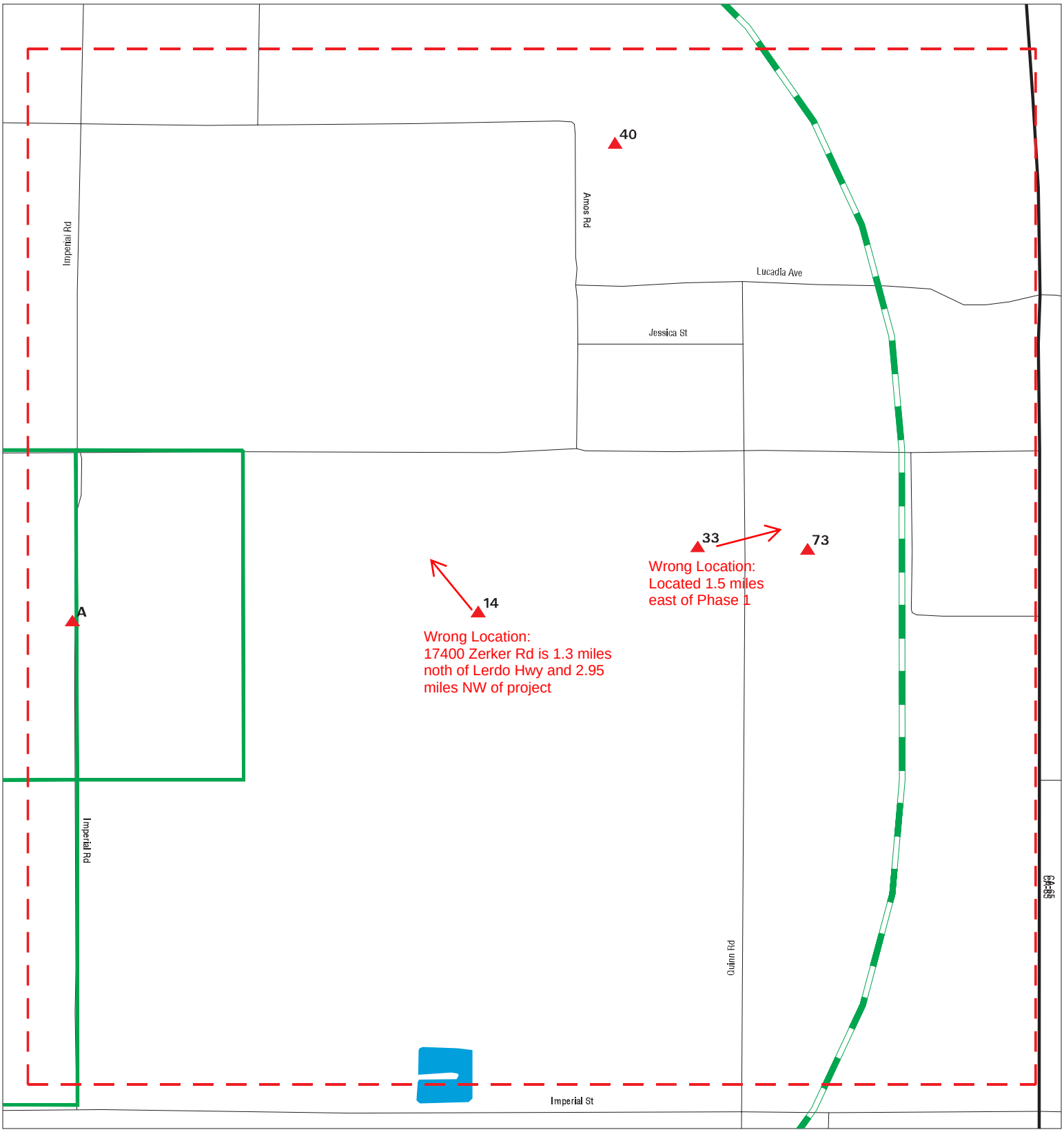
MAPPED SITES SUMMARY - FOCUS MAP 5

Target Property:
MALIBU VINEYARDS
BAKERSFIELD, CA 93308

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION		
B3 / 5	MALIBU VINEYARDS RAN	34344 IMPERIAL	AST	107	0.020	WSW
B4 / 5	MALIBU VINEYARDS	IMPERAL & SACO RD	HIST CORTESE	107	0.020	WSW
B5 / 5	MALIBU VINEYARDS	IMPERIAL & SACO RD	UST	107	0.020	WSW
12 / 5	SILL PROPERTIES FIEL	NE NE NE 30 28 25 BU	CERS	448	0.085	SW

Focus Map - 6 - 5967931.2s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
National Priority List Sites
Areas of Concern
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Malibu Vineyards	CLIENT: McIntosh & Associates
ADDRESS: Malibu Vineyards	CONTACT: Julie Green
CITY/STATE: Bakersfield CA	INQUIRY #: 5967931.2s
ZIP: 93308	DATE: 02/12/20

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MAPPED SITES SUMMARY - FOCUS MAP 6

Target Property:
MALIBU VINEYARDS
BAKERSFIELD, CA 93308

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION
A1 / 6	MALIBU VINEYARDS RAN	34344 IMPERIAL RD	CERS HAZ WASTE, CERS TANKS, CERS	TP
A2 / 6	MALIBU VINEYARDS RAN	34344 IMPERIAL RD	AST	TP
14 / 6	WESTERN OILFIELD SUP	17400 ZERKER RD	CERS HAZ WASTE, CERS	1882 0.356 East
33 / 6	KERN FRONT OIL FIELD	E OF HWY 65 N OF	SEMS-ARCHIVE	3643 0.690 East
40 / 6	DAVIS RESIDENCE	18212 GINA ELIZABETH	NPDES, CERS	3871 0.733 NE
73 / 6	KRAMER PIT		MINES MRDS	4524 0.857 East

Focus Map - 7 - 5967931.2s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
National Priority List Sites
Areas of Concern
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Malibu Vineyards	CLIENT: McIntosh & Associates
ADDRESS: Malibu Vineyards	CONTACT: Julie Green
CITY/STATE: Bakersfield CA	INQUIRY #: 5967931.2s
ZIP: 93308	DATE: 02/12/20

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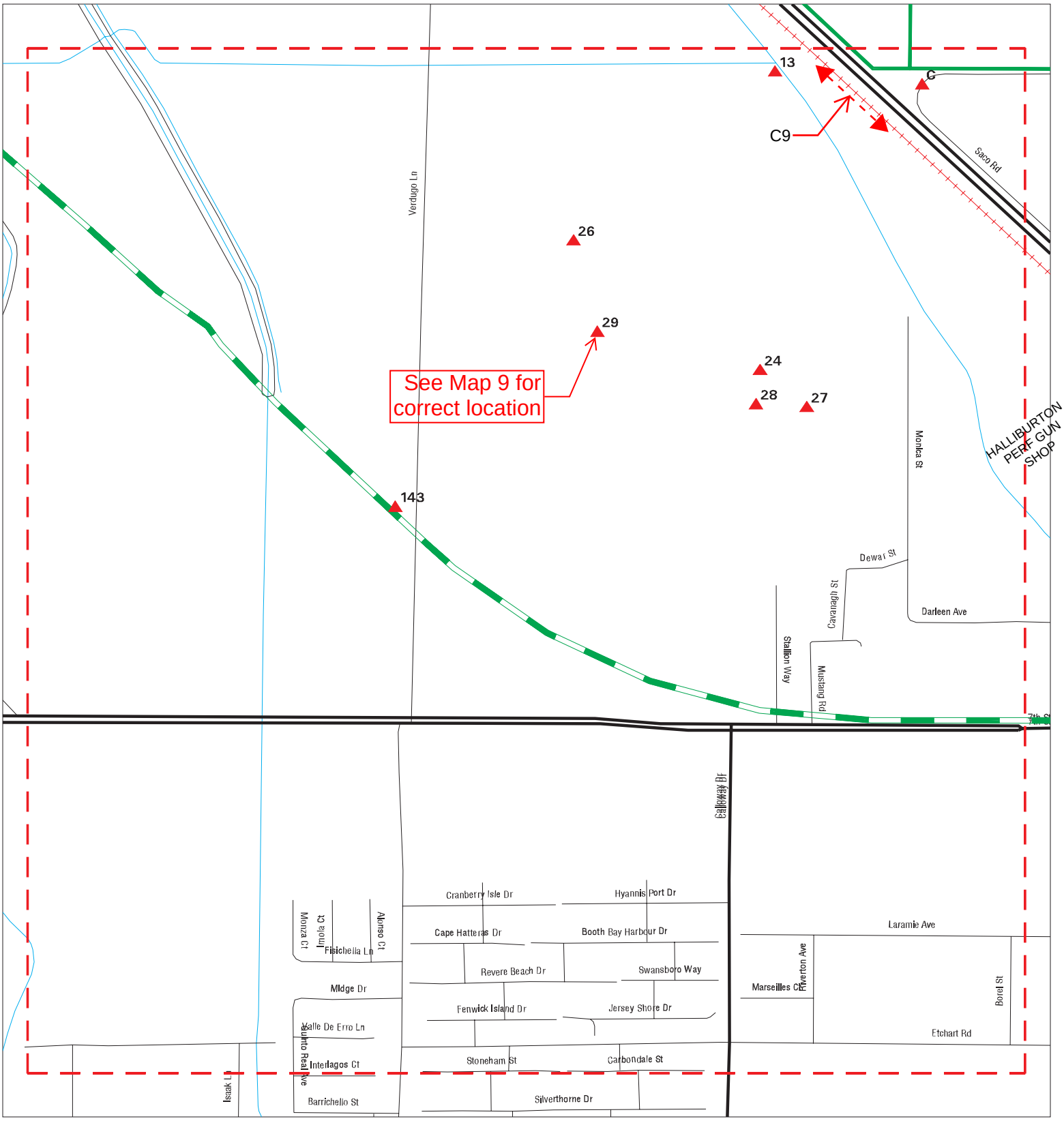
MAPPED SITES SUMMARY - FOCUS MAP 7

Target Property:
MALIBU VINEYARDS
BAKERSFIELD, CA 93308

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

Focus Map - 8 - 5967931.2s



Sites
Target Property
Search Buffer
Focus Map - No Sites
Focus Map - Sites
National Priority List Sites
Areas of Concern
Dept. Defense Sites
Indian Reservations BIA

0 1/8 1/4 Miles

SITE NAME: Malibu Vineyards	CLIENT: McIntosh & Associates
ADDRESS: Malibu Vineyards	CONTACT: Julie Green
CITY/STATE: Bakersfield CA	INQUIRY #: 5967931.2s
ZIP: 93308	DATE: 02/12/20

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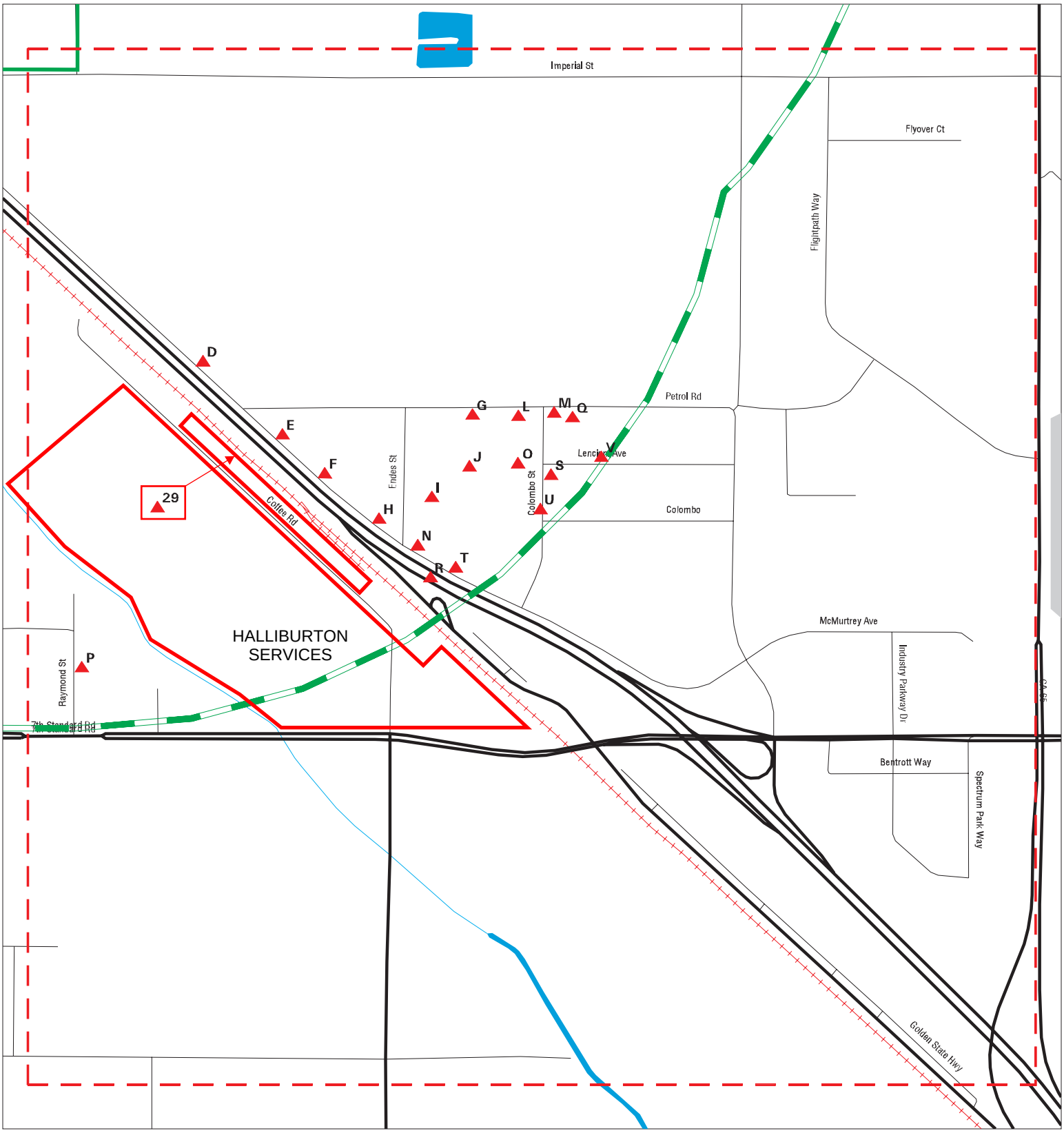
MAPPED SITES SUMMARY - FOCUS MAP 8

Target Property:
MALIBU VINEYARDS
BAKERSFIELD, CA 93308

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION
C6 / 8	MALIBU VINEYARDS	IMPERIAL & SACO RD	LUST, CERS	123 0.023 South
C7 / 8	MALIBU VINEYARDS	IMPERIAL & SACO RD	RGA LUST	123 0.023 South
C8 / 8	MALIBU VINEYARDS	IMPERIAL & SACO RD	RGA LUST	123 0.023 South
C9 / 8	UPRR	FRONTAGE RD AND IMPE	CHMIRS	123 0.023 South
C10 / 8	MALIBU VINEYARDS	IMPERIAL & SACO RD	LUST	123 0.023 South
C11 / 8	MALIBU VINYARD	IMPERIAL & SACO RD	RGA LUST	123 0.023 South
13 / 8	NKWSD RSP PIPELINE	ZERKER ROAD AND CALL	CIWQS	554 0.105 SW
24 / 8	TOWER EXPLORATION, L	UNNAMED ROAD	UIC GEO	2603 0.493 SSW
26 / 8	GOSSAMER GROVE TRACT	N OF COBBLE CRREK DR	NPDES, CIWQS, CERS	2668 0.505 SW
27 / 8	GOSSAMER GROVE TRACT	COMMUNITY DR AND COB	NPDES, CIWQS, CERS	2789 0.528 South
28 / 8	CAULAY PIT		MINES MRDS	2875 0.545 SSW
29 / 8	BAKERSFIELD AG CO IN	RTE. 11 BOX 858	FINDS, ECHO	3077 0.583 SW
143 / 8	GOSSAMER GROVE TRACT	SEC OF GOSSAMER GROV	NPDES, CIWQS, CERS	5231 0.991 SW

Located 226' west of west PL,
Located west of SR 99,

Focus Map - 9 - 5967931.2s



SITE NAME: Malibu Vineyards	CLIENT: McIntosh & Associates
ADDRESS: Malibu Vineyards	CONTACT: Julie Green
CITY/STATE: Bakersfield CA	INQUIRY #: 5967931.2s
ZIP: 93308	DATE: 02/12/20

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MAPPED SITES SUMMARY - FOCUS MAP 9

Target Property:
MALIBU VINEYARDS
BAKERSFIELD, CA 93308

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION		
D15 / 9	DOWNS EQUIPMENT RENT	4800 SACO RD	RCRA NonGen / NLR	2541	0.481	SSE
D16 / 9	DOWNS EQUIPMENT RENT	4800 SACO RD	EMI, CERS	2541	0.481	SSE
D17 / 9	DOWNS EQUIPMENT	4800 SACO RD	AST	2541	0.481	SSE
D18 / 9	RUSS ALLEN, AGRICULT	4800 SACO RD	UST	2541	0.481	SSE
D19 / 9	DOWNS EQUIPMENT RENT	4800 SACO RD	HAZNET	2541	0.481	SSE
D20 / 9	DOWNS EQUIPMENT	4800 SACO RD	CERS HAZ WASTE, CERS TANKS, CERS	2541	0.481	SSE
D21 / 9	DOWNS EQUIPMENT RENT	4800 SACO RD	FINDS	2541	0.481	SSE
D22 / 9	DOWNS EQUIPMENT RENT	4800 SACO RD	FINDS, ECHO	2541	0.481	SSE
D23 / 9	DOWNS EQUIPMENT	4800 SACO	AST	2541	0.481	SSE
D25 / 9	GRAY LIFT INC	4806 SACO RD	HAZNET s/b 4608 Saco Rd	2665	0.505	SSE
E30 / 9	BRADFORD AND SONS CO	4618 SACO	AST	3350	0.634	SSE
E31 / 9	DAVIES USED EQUIP CO	4618 SACO	UST Site vacant 10/09-04/11 to 7/14.	3350	0.634	SSE
E32 / 9	DAVIES USED EQUIPMEN	4618 SACO	HAZNET	3350	0.634	SSE
F34 / 9	EAST BAY CLARKLIFT D	4608 SACO RD	CERS HAZ WASTE, CERS TANKS, CERS	3791	0.718	SSE
F35 / 9	EAST BAY CLARK LIFT	4608 SACO RD	FINDS, ECHO	3791	0.718	SSE
F36 / 9	EAST BAY CLARK LIFT	4608 SACO RD	RCRA NonGen / NLR	3791	0.718	SSE
F37 / 9	GRAY LIFT INC	4608 SACO RD	FINDS	3791	0.718	SSE
F38 / 9	GRAY LIFT INC	4608 SACO RD	AST	3791	0.718	SSE
F39 / 9	EAST BAY CLARKLIFT,	4608 SACO ROAD	HAULERS	3791	0.718	SSE
G41 / 9	GRANA ENT DBA JPS &	3149 PETROL RD	ECHO	4201	0.796	SE
G42 / 9	GRANA ENT DBA JPS & CO TRANS	3149 PETROL RD	RCRA NonGen / NLR	4201	0.796	SE
G43 / 9	FRANCIA TRUCKING	3149 PETROL RD	RCRA NonGen / NLR	4201	0.796	SE
G44 / 9	FRANCIA TRUCKING	3149 PETROL RD	FINDS, ECHO	4201	0.796	SE
H45 / 9	T M COMPOSTINGNA INC	4322 SACO RD	FINDS	4332	0.820	SE
H46 / 9	T M TRANSPORTATION I	4322 N SACO RD	FINDS	4332	0.820	SE
I47 / 9	AMERIGAS/COAST GAS -	19428 ENDES ST	CERS	4447	0.842	SE
I48 / 9	COAST GAS - ENDES	19428 ENDES ST	FINDS	4447	0.842	SE
J49 / 9	GILLIAM & SONS INC	19420 ENDES ST	RCRA NonGen / NLR	4468	0.846	SE
J50 / 9	GILLIAM AND SONS INC	19420 ENDES ST	AST	4468	0.846	SE
J51 / 9	GILLIAM AND SONS INC	19420 ENDES ST	FINDS	4468	0.846	SE
J52 / 9	GILLIAM AND SONS INC	19420 ENDES	AST	4468	0.846	SE
J53 / 9	GILLIAM & SONS INC	19420 ENDES ST	FINDS, ECHO	4468	0.846	SE
J54 / 9	GILLIAM AND SONS INC	19420 ENDES ST	CERS HAZ WASTE, CERS TANKS, CERS	4468	0.846	SE
J55 / 9	GILLIAM & SONS INC	19420 ENDES ST	HAZNET	4468	0.846	SE
L62 / 9	WEST COAST CONSTRUCT	3143 PETROL RD	FINDS	4492	0.851	SE
L63 / 9	COS PETROLEUM	3143 PETROL RD	HAZNET	4492	0.851	SE
L64 / 9	TS TRANSPORTATION IN	3143 PETROL RD	FINDS, ECHO	4492	0.851	SE
L65 / 9	GIC CORPORATION	3143 PETROL RD	HAZNET	4492	0.851	SE
L66 / 9	DALE DWIGHT TRUCKING	3143 PETROL RD	HAZNET	4492	0.851	SE

MAPPED SITES SUMMARY - FOCUS MAP 9

Target Property:
MALIBU VINEYARDS
BAKERSFIELD, CA 93308

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION		
L67 / 9	LIBERTY LOGISTICS IN	3143 PETROL RD	HAZNET	4492	0.851	SE
L68 / 9	G.I.C. TRANSPORT	3143 PETROL RD	FINDS	4492	0.851	SE
L69 / 9	VETO TRANSPORTATION	3143 PETROL RD	HAZNET	4492	0.851	SE
L70 / 9	DALE DWIGHT	3143 PETROL RD	HAZNET	4492	0.851	SE
L71 / 9	TS TRANSPORTATION IN	3143 PETROL RD	RCRA NonGen / NLR	4492	0.851	SE
L72 / 9	LIBERTY LOGISTICS	3143 PETROL	AST	4492	0.851	SE
M76 / 9	CMS CUSTOM SPREADING	19400 COLUMBO	PEST LIC	4682	0.887	SE
N77 / 9	JTS TRUCK REPAIR	4300 SACO RD	RCRA NonGen / NLR	4685	0.887	SE
N78 / 9	JTS TRUCK REPAIR	4300 SACO RD	HAZNET	4685	0.887	SE
N79 / 9	JTS TRUCK REPAIR	4300 SACO RD	FINDS, ECHO	4685	0.887	SE
M80 / 9		SW CORNER OF COLOMBO	CHMIRS	4705	0.891	SE
O81 / 9	PROCESS FLOW TECHNOL	19417 COLOMBO STREET	HAZNET, NPDES, CIWQS, CERS	4734	0.897	SE
O82 / 9	National Oilfield-Varco (NOV)	19417 COLOMBO ST	RCRA NonGen / NLR	4734	0.897	SE
O83 / 9	NOV PROCESS & FLOW T	19417 COLOMBO ST	ECHO	4734	0.897	SE
O84 / 9	PROCESS FLOW TECHNOL	19417 COLOMBO STREET	FINDS, ECHO	4734	0.897	SE
M85 / 9	SEQUOIA EQUIPMENT CO	19404 COLOMBO ST	RCRA NonGen / NLR	4768	0.903	SE
M86 / 9	SEQUOIA EQUIPMENT CO	19404 COLOMBO ST	FINDS, ECHO	4768	0.903	SE
P87 / 9	RAY ETCHEVERRY	19461 RAYMOND ST	PEST LIC	4784	0.906	South
Q88 / 9	SMITH AND SONS RANCH	19400 COLOMBO ST	CERS HAZ WASTE, CERS TANKS, CERS	4846	0.918	SE
Q89 / 9	SMITH & SONS RANCH	19400 COLOMBO ST	EMI	4846	0.918	SE
Q90 / 9	SMITH AND SONS RANCH	19400 COLOMBO ST	FINDS, ECHO	4846	0.918	SE
Q91 / 9	SMITH & SONS RANCH	19400 COLOMBO ST	RCRA NonGen / NLR	4846	0.918	SE
Q92 / 9	SMITH AND SONS RANCH	19400 COLOMBO	AST	4846	0.918	SE
Q93 / 9	SMITH AND SONS RANCH	19400 COLOMBO ST	AST	4846	0.918	SE
O94 / 9	NATIONAL WATER WORKS	19421 COLOMBO ST	HAZNET	4917	0.931	SE
O95 / 9	CORE & MAIN, LP 177	19421 COLOMBO ST	CERS	4917	0.931	SE
O96 / 9	WTW BAKERSFIELD	19421 COLOMBO ST	FINDS	4917	0.931	SE
O97 / 9	HD SUPPLY WATERWORKS	19421 COLOMBO ST	RCRA NonGen / NLR	4917	0.931	SE
O98 / 9	HD SUPPLY WATERWORKS	19421 COLOMBO ST	FINDS, ECHO	4917	0.931	SE
P99 / 9	DERRELS MINI STORAGE	7TH STANDARD	NPDES, CERS	4919	0.932	South
P100 / 9	DERRELS MINI STORAGE	7TH STANDARD	CIWQS	4919	0.932	South
R101 / 9	CONTINENTAL GRAIN CO	HWY 99 NEAR 7TH STAN	CERS Air Emissions	4952	0.938	SE
R102 / 9	CONTINENTAL GRAIN CO	HWY 99 NEAR 7TH STAN	FINDS	4952	0.938	SE
S103 / 9	SPRINGS A-SPECIALTY	19420 COLOMBO ST	EDR Hist Auto	4994	0.946	SE
S104 / 9	CHESTER AVENUE BRAKE	19420 COLOMBO ST	FINDS	4994	0.946	SE
S105 / 9	CHESTER AVE BRAKE	19420 COLOMBO ST	RCRA NonGen / NLR	4994	0.946	SE
S106 / 9	CHESTER AVENUE BRAKE	19420 COLOMBO ST	CERS HAZ WASTE, CERS	4994	0.946	SE
S107 / 9	CHESTER AVE BRAKE	19420 COLOMBO ST	FINDS, ECHO	4994	0.946	SE
T108 / 9	COASTLINE EQUIPMENT	4252 SACO RD	RCRA NonGen / NLR	5007	0.948	SE

MAPPED SITES SUMMARY - FOCUS MAP 9

Target Property:
MALIBU VINEYARDS
BAKERSFIELD, CA 93308

MAP ID / FOCUS MAP	SITE NAME	ADDRESS	DATABASE ACRONYMS	DIST (ft. & mi.) DIRECTION
T109 / 9	LOUGEE-MICHAEL EQUIP	4252 SACO RD	SWEEPS UST	5007 0.948 SE
T110 / 9	COASTLINE EQUIPMENT	4252 SACO RD	HAZNET	5007 0.948 SE
T111 / 9	COASTLINE EQUIPMENT	4252 SACO RD	FINDS, ECHO	5007 0.948 SE
T112 / 9	COASTLINE EQUIPMENT	4252 SACO RD	CERS HAZ WASTE, CERS TANKS, CERS	5007 0.948 SE
T113 / 9	LOUGEE-MICHAEL EQUIP	4252 SACO RD	UST	5007 0.948 SE
U114 / 9	BJ Chemical Services Co (Baker Hughes)	19433 COLOMBO ST	ERNS	5022 0.951 SE
U115 / 9	BJ CHEMICAL SERVICES	19433 COLOMBO ST	EMI, HAZNET, CERS	5022 0.951 SE
U116 / 9	BAKERSFIELD UPSTREAM	19433 COLOMBO ST	HAZNET	5022 0.951 SE
U117 / 9	BJ UNICHEM CHEMICAL	19433 COLOMBO ST	RCRA-SQG	5022 0.951 SE
U118 / 9	BAKER PETROLITE LLC	19433 COLOMBO ST	CERS HAZ WASTE, CERS TANKS, CERS	5022 0.951 SE
U119 / 9	BAKER HUGHES	19433 COLOMBO ST	FINDS, ECHO	5022 0.951 SE
U120 / 9	BAKER HUGHES OILFIEL	19433 COLOMBO ST	HAZNET	5022 0.951 SE
U121 / 9	WESTERN UNICHEM	19433 COLOMBO	HAZNET	5022 0.951 SE
U122 / 9	BAKER HUGHES	19433 COLOMBO ST	AST	5022 0.951 SE
U123 / 9	BAKER PETROLITE	19433 COLOMBO ST	FINDS, ECHO	5022 0.951 SE
U124 / 9	BJ SERVICES CO, U.S.	19433 COLOMBO ST	SSTS	5022 0.951 SE
U125 / 9	BAKERSFIELD UPSTREAM	19433 COLOMBO STREET	RCRA-LQG, FINDS, ECHO	5022 0.951 SE
U126 / 9	BAKER PETROLITE	19433 COLOMBO ST	NPDES, CIWQS, CERS	5022 0.951 SE
U127 / 9	PALL WELL TECHNOLOGY	19433 COLOMBO ST	HAZNET	5022 0.951 SE
U128 / 9	UNICHEM, A DIV OF BJ	19433 COLOMBO	SSTS	5022 0.951 SE
U129 / 9	B J CHEMICAL SERVICE	19433 COLOMBO	AST	5022 0.951 SE
U130 / 9		19433 COLUMBO STREET	CHMIRS	5114 0.969 SE
R132 / 9	NKWSD FIELD OFFICE	13000 GOLDEN STATE H	HIST UST @ Cluster K, Map 1	5151 0.976 SE
R133 / 9	1X STEIN, HARRY	13000 GOLDEN STATE H	HAZNET	5151 0.976 SE
R134 / 9	N. KERN WATER STORAG	13000 GOLDEN STATE H	UST @ Cluster K, Map 1	5151 0.976 SE
V135 / 9	SWAIM AND SONS	34758 LENCIONI AVE	CERS HAZ WASTE, CERS TANKS, CERS	5221 0.989 SE
V136 / 9	SWAIM AND SONS	34758 LENCIONI AVE	AST	5221 0.989 SE
V137 / 9	SWAIMS MACHINE SHOP	34758 LENCIONI AVE	FINDS, ECHO	5221 0.989 SE
V138 / 9	SWAIMS MACHINE SHOP	34758 LENCIONI AVE	HAZNET	5221 0.989 SE
V139 / 9	SWAIMS MACHINE SHOP	34758 LENCIONI AVE	RCRA NonGen / NLR	5221 0.989 SE
V140 / 9	SWAIM & SONS	34758 LENCIONI AVE	HAZNET	5221 0.989 SE
V141 / 9	SWAIM AND SONS	34758 LENCIONI AVE	FINDS	5221 0.989 SE
V142 / 9	MODY PUMPS INC	34750 LENCIONI AVE	HAZNET	5230 0.991 SE

A1 **MALIBU VINEYARDS RANCH 20** **CERS HAZ WASTE** **S121774279**
Target **34344 IMPERIAL RD** **CERS TANKS** **N/A**
Property **BAKERSFIELD, CA 93308** **CERS**

Site 1 of 2 in cluster A

Actual: **478 ft.**

Focus Map: **6**

CERS HAZ WASTE:
Name: MALIBU VINEYARDS RANCH 20
Address: 34344 IMPERIAL RD
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 397028
CERS ID: 10233580
CERS Description: Hazardous Waste Generator

CERS TANKS:
Name: MALIBU VINEYARDS RANCH 20
Address: 34344 IMPERIAL RD
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 397028
CERS ID: 10233580
CERS Description: Aboveground Petroleum Storage

CERS:
Name: MALIBU VINEYARDS RANCH 20
Address: 34344 IMPERIAL RD
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 397028
CERS ID: 10233580
CERS Description: Chemical Storage Facilities

Violations:
Site ID: 397028
Site Name: MALIBU VINEYARDS RANCH 20
Violation Date: 03-11-2015
Citation: 22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description: Failure to properly label hazardous waste accumulation containers with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes: Returned to compliance on 04/08/2015. OBSERVATION: The steel drums containing "WASTE OIL" and "DRAINED USED OIL FILTERS" were not properly labeled at the time of inspection. The starting accumulation date has faded on both labels. CORRECTIVE ACTION: Contact an authorized hazardous waste hauler to pick up the "WASTE OIL" and "DRAINED USED OIL FILTERS." Take photos of the properly labeled hazardous waste containers with a starting accumulation date. Email the photos and manifest from your authorized hazardous waste hauler to: yimr@co.kern.ca.us.
Violation Division: Kern County Env Health Services Department
Violation Program: HW
Violation Source: CERS

Site ID: 397028
Site Name: MALIBU VINEYARDS RANCH 20
Violation Date: 03-11-2015
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description: Failure to complete and electronically submit hazardous material

MALIBU VINEYARDS RANCH 20 (Continued) **S121774279**

	inventory information for all reportable hazardous materials on site at or above reportable quantities.
Violation Notes:	Returned to compliance on 04/07/2015. OBSERVATION: The hazardous materials inventory on the California Environmental Reporting System (CERS) is inaccurate. CORRECTIVE ACTION: Please update your hazardous materials inventory on CERS. More specifically: a) change the Max Daily Amount of: 1) "PARAQUAT DICHLORIDE (GRAMOXONE)" from 50 pounds to 131 gallons 2) "POTASSIUM BICARBONATE (KALIGREEN)" from 50 pounds to 1150 pounds. b) Please add: 1) "ROUNDUP GLYPHOSATE" (150 gallons) 2) "ULTRA GRO CROPSHIELD 7-14-7" (3900 gallons) 3) "SULFURIC ACID" (3700 gallons) 4) "ULTRA GRO CROPSHIELD 2-17-17" (1000 gallons) 5) "GYPSUM" (6000 pounds) 6) "GYPSUM" (20000 pounds) 7) "OXYFERTIL" (2400 pounds) 8) "POTASSIUM MAGNESIUM SULFATE" (3000 pounds) 9) "OXONIUM" (700 gallons) 10) "CALCIUM SULFATE" 11) "GREENFIELD 27-0-0" 12) "LIQUID FERTILIZER 5-0-0" (300 gallons) 13) "NUTRICAL" 14) "DRIP RITE" (200 gallons) 15) "TOP CROP 3-5-7" (500 gallons) 15) "SULFURIC ACID 60 Be" (55 gallons). Quantities listed represent "Max Daily Amount."
Violation Division:	Kern County Env Health Services Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	397028
Site Name:	MALIBU VINEYARDS RANCH 20
Violation Date:	04-15-2019
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.
Violation Notes:	Returned to compliance on 05/24/2019. Observation: Some of the hazardous materials/hazardous waste observed on site are not properly reported and/or incorrectly reported to California Environmental Reporting System (CERS). Please make the following corrections to the Hazardous Materials Inventory: 1) YARA MILA 15-15-15 - missing "Type" and " Chemical Location"; 2) VENOM INSECTICIDE - missing "Days on Site"; 3) ROUNDUP - GLYPHOSATE - update "Maximum Daily Amount" = 250 gallons, "Average Daily Amount" = 150 gallons, "Largest Container Size" = 250 gallons, and "Storage Container" = Tote; 4) OXONIUM - missing "Type" and "Days on Site"; 5) Tech-Flo Canopy & Crop Sizing Blend - missing "Days on Site"; 6) SURROUND WP CROP PROTECTANT - missing "Days on Site; 7) TRELLIS HERBICIDE - missing "Days on Site"; 8) PHT TRI-ALTUM - missing "Storage Pressure" and "Storage Temperature"; 9) GOEMAR BM86 (5-0-0) W/MICRONITRIENTS0 - missing "Days on Site"; 10) AGRI-TEC (ACADIAN SEAWEED EXTRACT)- update "Maximum [Truncated]
Violation Division:	Kern County Env Health Services Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	397028
Site Name:	MALIBU VINEYARDS RANCH 20
Violation Date:	03-05-2018
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.

MALIBU VINEYARDS RANCH 20 (Continued) **S121774279**

Violation Notes:	Returned to compliance on 03/27/2018. Observation: Some of the hazardous materials observed on site are not properly reported and/or incorrectly reported to California Environmental Reporting System (CERS). Corrective Action: Properly and correctly report most of the hazardous materials on site to California Environmental Reporting System (CERS). Resubmit with all other elements once all corrections have been made within 30 days. Christian Iwuchukwu G 661-862-8767 G iwuchukwuc@kerncounty.com
Violation Division:	Kern County Env Health Services Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	397028
Site Name:	MALIBU VINEYARDS RANCH 20
Violation Date:	04-04-2016
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.
Violation Notes:	Returned to compliance on 04/18/2016. The following materials were on-site during the business plan inspection but not listed in the hazardous materials inventory: sulfate of potash, Tech Gro, and Cal oCHO. Add sulfate of potash, Tech Gro, and Cal oCHO to the hazardous materials inventory in CERS.
Violation Division:	Kern County Env Health Services Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	397028
Site Name:	MALIBU VINEYARDS RANCH 20
Violation Date:	03-11-2015
Citation:	HSC 6.67 25270.4.5(b)(1) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(b)(1)
Violation Description:	Failure to perform daily inspections at an exempt facility.
Violation Notes:	Returned to compliance on 04/08/2015. OBSERVATION: Facility is not performing daily inspections. Liquid was observed in the secondary containment of the "GASOLINE" tank at the Valpredo Yard. CORRECTIVE ACTION: Remove the liquid from the secondary containment of the "GASOLINE" tank. Take a photo of the dry secondary containment and email a copy to: yimr@co.kern.ca.us.
Violation Division:	Kern County Env Health Services Department
Violation Program:	APSA
Violation Source:	CERS
Site ID:	397028
Site Name:	MALIBU VINEYARDS RANCH 20
Violation Date:	04-04-2016
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.
Violation Notes:	Returned to compliance on 04/18/2016. The motor oil, hydraulic oil, and pump oil are stored in aboveground storage tanks not steel drums as listed on the hazardous materials inventory. Update the hazardous materials inventory in the California Environmental Reporting System

MALIBU VINEYARDS RANCH 20 (Continued) **S121774279**

(CERS) to that the oils are stored in aboveground tanks.
Violation Division: Kern County Env Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 397028
Site Name: MALIBU VINEYARDS RANCH 20
Violation Date: 03-11-2015
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description: Failure to complete and electronically submit a site map with all required content.
Violation Notes: Returned to compliance on 03/11/2015. OBSERVATION: There is no site map submitted onto CERS. CORRECTIVE ACTION: Upload a site map with the location of all hazardous materials onto CERS.
Violation Division: Kern County Env Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 397028
Site Name: MALIBU VINEYARDS RANCH 20
Violation Date: 03-11-2015
Citation: 19 CCR 6.95 25508(a)(1) - California Code of Regulations, Title 19, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description: Failure to complete and electronically submit the Business Activities Page and/or Business Owner Operator Identification Page.
Violation Notes: Returned to compliance on 04/07/2015. OBSERVATION: The Business Activities Page on the CERS is inaccurate for this facility. CORRECTIVE ACTION: Change the "Yes" to "No" under "consolidate hazardous waste generated at a remote site" on the Business Activities Page for this facility on CERS.
Violation Division: Kern County Env Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-11-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: All violations shall be abated within 30 days. Once violations are abated, please sign, date and submit the correction certificate at the end of this inspection report. This signed document may be submitted by FAX at: 661-862-8701 or email to: yimr@co.kern.ca.us. For any questions, please contact Raymond Yim at: 661-862-8766
Eval Division: Kern County Env Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-04-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HW
Eval Source: CERS

MALIBU VINEYARDS RANCH 20 (Continued) **S121774279**

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	04-15-2019
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Kern County Env Health Services Department
Eval Program:	HW
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	03-05-2018
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Kern County Env Health Services Department
Eval Program:	APSA
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	03-05-2018
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Kern County Env Health Services Department
Eval Program:	HW
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	03-11-2015
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	All violations shall be abated within 30 days. Once violations are abated, please sign, date and submit the correction certificate at the end of this inspection report. This signed document may be submitted by FAX at: 661-862-8701 or email to: yimr@co.kern.ca.us. For any questions, please contact Raymond Yim at: 661-862-8766
Eval Division:	Kern County Env Health Services Department
Eval Program:	HMRRP
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	04-04-2016
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Kern County Env Health Services Department
Eval Program:	HMRRP
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	04-15-2019
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Kern County Env Health Services Department
Eval Program:	APSA
Eval Source:	CERS

MALIBU VINEYARDS RANCH 20 (Continued) **S121774279**

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-05-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-11-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: All violations shall be abated within 30 days. Once violations are abated, please sign, date and submit the correction certificate at the end of this inspection report. This signed document may be submitted by FAX at: 661-862-8701 or email to: yimr@co.kern.ca.us. For any questions, please contact Raymond Yim at: 661-862-8766
Eval Division: Kern County Env Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-04-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: This facility is using the following aboveground storage tanks to store and dispense petroleum-based liquids: 1. 1,000 gallon diesel 2. 500 gallon diesel 3. 3,000 gallon empty 4. 200 gallon waste oil 5. 100 gallon, est. pump oil 6. 100 gallon, est. hydraulic oil 7. 100 gallon, est. motor oil 8. 1,000 gallon gasoline These tanks will be referred to the Kern County Fire Prevention Unit for compliance follow-up. Please contact Captain Tom Ellison or Engineer Anthony Romero at (661) 391-7080 for more information.
Eval Division: Kern County Env Health Services Department
Eval Program: APSA
Eval Source: CERS

Per WRRDA of 2014, farms don't require SPCC if aggregated capacity is between 2,500 and 6,000 gallons and no reportable discharge history, past 3 years. And Cal APSA, SB 612 Farm tank is second'l exempt from SPCC w/ <20,000 g tank, 100,000 g aggr tk cap, performs daily inspections, allows CUPA insp, and sec cont if req'd.

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-15-2019
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Enforcement Action:
Site ID: 397028
Site Name: MALIBU VINEYARDS RANCH 20
Site Address: 34344 IMPERIAL RD
Site City: BAKERSFIELD
Site Zip: 93308
Enf Action Date: 03-11-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported

MALIBU VINEYARDS RANCH 20 (Continued) **S121774279**

Enf Action Division:	Kern County Env Health Services Department
Enf Action Program:	APSA
Enf Action Source:	CERS
Site ID:	397028
Site Name:	MALIBU VINEYARDS RANCH 20
Site Address:	34344 IMPERIAL RD
Site City:	BAKERSFIELD
Site Zip:	93308
Enf Action Date:	03-11-2015
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported
Enf Action Division:	Kern County Env Health Services Department
Enf Action Program:	HMRRP
Enf Action Source:	CERS
Site ID:	397028
Site Name:	MALIBU VINEYARDS RANCH 20
Site Address:	34344 IMPERIAL RD
Site City:	BAKERSFIELD
Site Zip:	93308
Enf Action Date:	03-11-2015
Enf Action Type:	Notice of Violation (Unified Program)
Enf Action Description:	Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes:	Not reported
Enf Action Division:	Kern County Env Health Services Department
Enf Action Program:	HW
Enf Action Source:	CERS

Affiliation:

Affiliation Type Desc:	Environmental Contact
Entity Name:	Matt Carman
Entity Title:	Not reported
Affiliation Address:	17808 Zerker Rd.
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93308
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	17808 Zerker Rd
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93308
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	MATT CARMEN
Entity Title:	Grower
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported

MALIBU VINEYARDS RANCH 20 (Continued) **S121774279**

Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Grapeman Farms LP
Entity Title:	Not reported
Affiliation Address:	12100 Wilshire Blvd. Suite 220
Affiliation City:	Los Angeles
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	90025
Affiliation Phone:	(310) 273-9540
Affiliation Type Desc:	Document Preparer
Entity Name:	MATT CARMEN
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	Matt Carman
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(661) 375-5507
Affiliation Type Desc:	Parent Corporation
Entity Name:	MALIBU VINEYARDS
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Property Owner
Entity Name:	Malibu Vineyards LP
Entity Title:	Not reported
Affiliation Address:	12100 Wilshire Blvd. Suite 220
Affiliation City:	Los Angeles
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	90025
Affiliation Phone:	(310) 651-2591
Affiliation Type Desc:	CUPA District
Entity Name:	Kern County Environmental Health Services Departme
Entity Title:	Not reported

MALIBU VINEYARDS RANCH 20 (Continued) **S121774279**

Affiliation Address:	2700 M Street, Suite 300
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93301-2370
Affiliation Phone:	(661) 862-8740

A2 **MALIBU VINEYARDS RANCH 20** **AST** **A100422136**
Target **34344 IMPERIAL RD** **N/A**
Property **BAKERSFIELD, CA 93308**

Site 2 of 2 in cluster A

Actual: **478 ft.**
Focus Map: **6**

AST:

Name:	MALIBU VINEYARDS RANCH 20
Address:	34344 IMPERIAL RD
City/Zip:	BAKERSFIELD,93308
Certified Unified Program Agencies:	Not reported
Owner:	MALIBU VINEYARDS LP
Total Gallons:	Not reported
CERSID:	10233580
Facility ID:	Not reported
Business Name:	MALIBU VINEYARDS
Phone:	(661) 725-4550
Fax:	661-725-4779
Mailing Address:	PO BOX 1266
Mailing Address City:	DELANO
Mailing Address State:	CA
Mailing Address Zip Code:	93215
Operator Name:	MIKE AHUMADA
Operator Phone:	661-725-4550
Owner Phone:	310-651-2591
Owner Mail Address:	9777 Wilshire Blvd Ste 900
Owner State:	CA
Owner Zip Code:	90212
Owner Country:	United States
Property Owner Name:	Malibu Vineyards LP
Property Owner Phone:	310-651-2591
Property Owner Mailing Address:	9777 Wilshire Blvd Ste 900
Property Owner City:	Beverly Hills
Property Owner Stat :	CA
Property Owner Zip Code:	90212
Property Owner Country:	United States
EPAID:	CAD983629551

Section 3.1.1.2

B3 **MALIBU VINEYARDS RANCH #20** **AST** **A100338466**
WSW **34344 IMPERIAL** **N/A**
< 1/8 **BAKERSFIELD, CA**
0.020 mi.
107 ft. **Site 1 of 3 in cluster B**

Actual: **432 ft.**
Focus Map: **5**

AST:

Name:	MALIBU VINEYARDS RANCH #20
Address:	34344 IMPERIAL
City/Zip:	BAKERSFIELD,

MALIBU VINEYARDS RANCH #20 (Continued) **A100338466**

Certified Unified Program Agencies:	Kern
Owner:	LUCICH FARMS INC
Total Gallons:	4,640
CERSID:	Not reported
Facility ID:	Not reported
Business Name:	Not reported
Phone:	Not reported
Fax:	Not reported
Mailing Address:	Not reported
Mailing Address City:	Not reported
Mailing Address State:	Not reported
Mailing Address Zip Code:	Not reported
Operator Name:	Not reported
Operator Phone:	Not reported
Owner Phone:	Not reported
Owner Mail Address:	Not reported
Owner State:	Not reported
Owner Zip Code:	Not reported
Owner Country:	Not reported
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	Not reported

Qty from 4/16/2016 CUPA inspection, not all tanks are oils, Section 3.1.1.2

B4
WSW
< 1/8
0.020 mi.
107 ft.

MALIBU VINEYARDS
IMPERAL & SACO RD
BAKERSFIELD, CA 93308

Site 2 of 3 in cluster B

HIST CORTESE **S105022638**
N/A

Actual:
432 ft.

Focus Map:
5

HIST CORTESE:

edr_fname:	MALIBU VINEYARDS
edr_fadd1:	IMPERAL & SACO RD
City,State,Zip:	BAKERSFIELD, CA 93308
Region:	CORTESE
Facility County Code:	15
Reg By:	LTNKA
Reg Id:	5T15000257

Section 3.1.1.1

B5
WSW
< 1/8
0.020 mi.
107 ft.

MALIBU VINEYARDS
IMPERIAL & SACO RD
BAKERSFIELD, CA

Site 3 of 3 in cluster B

UST **U004112761**
N/A

Actual:
432 ft.

Focus Map:
5

KERN CO. UST:

Name:	MALIBU VINEYARDS
Address:	IMPERIAL & SACO RD
City:	BAKERSFIELD
Region:	Kern
Facility ID:	Not reported
CERSID:	Not reported

Section 3.1.1.1

MALIBU VINEYARDS (Continued) **U004112761**

Owner Id:	390044
Owner Name:	MALIBU VINEYARDS
Tank Num:	1
Tank Capacity:	0
Common Name:	Not reported
Description:	Not reported
Number of Compartments:	Not reported
Install Date:	Not reported
Date of Closure:	Not reported
Billing Status:	Not reported
Mailing Address:	Not reported
Mailing Address (care of):	Not reported
Mailing City/State/Zip:	Not reported

C6 **MALIBU VINEYARDS** **LUST U003992731**
South **IMPERIAL & SACO RD** **CERS N/A**
< 1/8 **BAKERSFIELD, CA 93308**
0.023 mi.
123 ft. **Site 1 of 6 in cluster C**

Actual:
444 ft.

Focus Map:
8

LUST REG 5:

Name:	MALIBU VINEYARDS
Address:	IMPERIAL & SACO RD
City:	BAKERSFIELD
Region:	5
Status:	Case Closed
Case Number:	5T15000257
Case Type:	Soil only
Substance:	GASOLINE
Staff Initials:	JDW
Lead Agency:	Local
Program:	LUST
MTBE Code:	N/A

Section 3.1.1.1

CERS:

Name:	MALIBU VINEYARDS
Address:	IMPERIAL & SACO RD
City,State,Zip:	BAKERSFIELD, CA 93308
Site ID:	228662
CERS ID:	T0602900256
CERS Description:	Leaking Underground Storage Tank Cleanup Site

Affiliation:

Affiliation Type Desc:	Local Agency Caseworker
Entity Name:	BRIAN PITTS - KERN COUNTY
Entity Title:	Not reported
Affiliation Address:	2700 M STREET, SUITE 300
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	6618628704
Affiliation Type Desc:	Regional Board Caseworker
Entity Name:	JOHN WHITING - CENTRAL VALLEY RWQCB (REGION 5F)
Entity Title:	Not reported
Affiliation Address:	1685 E STREET

MALIBU VINEYARDS (Continued) **U003992731**

Affiliation City: FRESNO
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

C7 **MALIBU VINEYARDS** **RGA LUST** **S114646992**
South **IMPERIAL & SACO RD** **N/A**
< 1/8 **BAKERSFIELD, CA**
0.023 mi.
123 ft. **Site 2 of 6 in cluster C**

Actual: RGA LUST:
444 ft.
Name: MALIBU VINEYARDS
Address: IMPERIAL & SACO RD
City: BAKERSFIELD
State: BAKERSFIELD
Focus Map: Section 3.1.1.1
8
2011 MALIBU VINEYARDS IMPERIAL & SACO RD
Name: MALIBU VINEYARDS
Address: IMPERIAL & SACO RD
City: BAKERSFIELD
State: BAKERSFIELD
2003 MALIBU VINEYARDS IMPERIAL & SACO RD
Name: MALIBU VINEYARDS
Address: IMPERIAL & SACO RD
City: BAKERSFIELD
State: BAKERSFIELD
2001 MALIBU VINEYARDS IMPERIAL & SACO RD
Name: MALIBU VINEYARDS
Address: IMPERIAL & SACO RD
City: BAKERSFIELD
State: BAKERSFIELD
2000 MALIBU VINEYARDS IMPERIAL & SACO RD

C8 **MALIBU VINEYARDS** **RGA LUST** **S114646996**
South **IMPERIAL & SACO RD** **N/A**
< 1/8 **BAKERSFIELD, CA**
0.023 mi.
123 ft. **Site 3 of 6 in cluster C**

Actual: RGA LUST:
444 ft.
Name: MALIBU VINEYARDS
Address: IMPERIAL & SACO RD
City: BAKERSFIELD
State: BAKERSFIELD
Focus Map: Section 3.1.1.1
8
2012 MALIBU VINEYARDS IMPERIAL & SACO RD
Name: MALIBU VINEYARDS
Address: IMPERIAL & SACO RD
City: BAKERSFIELD
State: BAKERSFIELD
2010 MALIBU VINEYARDS IMPERIAL & SACO RD
Name: MALIBU VINEYARDS
Address: IMPERIAL & SACO RD
City: BAKERSFIELD
State: BAKERSFIELD

MALIBU VINEYARDS (Continued) **S114646996**

2008 MALIBU VINEYARDS IMPERIAL & SACO RD
Name: MALIBU VINEYARDS
Address: IMPERIAL & SACO RD
City: BAKERSFIELD
State: BAKERSFIELD
2007 MALIBU VINEYARDS IMPERIAL & SACO RD
Name: MALIBU VINEYARDS
Address: IMPERIAL & SACO RD
City: BAKERSFIELD
State: BAKERSFIELD
2006 MALIBU VINEYARDS IMPERIAL & SACO RD
Name: MALIBU VINEYARDS
Address: IMPERIAL & SACO RD
City: BAKERSFIELD
State: BAKERSFIELD
2005 MALIBU VINEYARDS IMPERIAL & SACO RD

C9 **CHMIRS** **S108405993**
South **FRONTAGE RD AND IMPERIAL STREET** UPRR **N/A**
< 1/8 **BAKERSFIELD, CA** Located 226' west of west PL,
0.023 mi. Located west of SR 99,
123 ft. **Site 4 of 6 in cluster C**

Actual:
444 ft.

Focus Map:
8

CHMIRS:

Name:	Not reported
Address:	FRONTAGE RD AND IMPERIAL STREET
City,State,Zip:	BAKERSFIELD, CA
OES Incident Number:	5-6494
OES notification:	11/09/2005
OES Date:	Not reported
OES Time:	Not reported
Date Completed:	**Not reported**
Property Use:	Not reported
Agency Id Number:	Not reported
Agency Incident Number:	Not reported
Time Notified:	Not reported
Time Completed:	Not reported
Surrounding Area:	Not reported
Estimated Temperature:	Not reported
Property Management:	Not reported
More Than Two Substances Involved?:	Not reported
Resp Agncy Personel # Of Decontaminated:	Not reported
Responding Agency Personel # Of Injuries:	Not reported
Responding Agency Personel # Of Fatalities:	Not reported
Others Number Of Decontaminated:	Not reported
Others Number Of Injuries:	Not reported
Others Number Of Fatalities:	Not reported
Vehicle Make/year:	Not reported
Vehicle License Number:	Not reported
Vehicle State:	Not reported
Vehicle Id Number:	Not reported
CA DOT PUC/ICC Number:	Not reported
Company Name:	Not reported
Reporting Officer Name/ID:	Not reported
Report Date:	Not reported
Facility Telephone:	Not reported
Waterway Involved:	Not reported
Waterway:	Not reported

(Continued) **S108405993**

Spill Site:	Not reported
Cleanup By:	Unknown
Containment:	Not reported
What Happened:	Not reported
Type:	Not reported
Measure:	Not reported
Other:	Not reported
Date/Time:	Not reported
Year:	2005
Agency:	UPRR
Incident Date:	11/9/200512:00:00 AM
Admin Agency:	Bakersfield Fire Department
Amount:	Not reported
Contained:	Yes
Site Type:	Rail Road
E Date:	Not reported
Substance:	No release
Gallons:	0.000000
Unknown:	0
Substance #2:	Not reported
Substance #3:	Not reported
Evacuations:	0
Number of Injuries:	0
Number of Fatalities:	0
#1 Pipeline:	Not reported
#2 Pipeline:	Not reported
#3 Pipeline:	Not reported
#1 Vessel >= 300 Tons:	Not reported
#2 Vessel >= 300 Tons:	Not reported
#3 Vessel >= 300 Tons:	Not reported
Evacs:	Not reported
Injuries:	Not reported
Fatals:	Not reported
Comments:	Not reported
Description:	A lead locomotive on a work train derailed upright. Just the front trucks left the tracks.

C10 **MALIBU VINEYARDS** **LUST** **S110654306**
South **IMPERIAL & SACO RD** **N/A**
< 1/8 **BAKERSFIELD, CA 93308**
0.023 mi.
123 ft. **Site 5 of 6 in cluster C**

Actual:
444 ft.

Focus Map:
8

LUST:

Name:	MALIBU VINEYARDS
Address:	IMPERIAL & SACO RD
City,State,Zip:	BAKERSFIELD, CA 93308
Lead Agency:	KERN COUNTY
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0602900256
Global Id:	T0602900256
Latitude:	35.4497583243343
Longitude:	-119.096915089471
Status:	Completed - Case Closed
Status Date:	11/27/1996
Case Worker:	BRI
RB Case Number:	5T15000257
Local Agency:	KERN COUNTY

Section 3.1.1.1

MALIBU VINEYARDS (Continued) **S110654306**

File Location: Not reported
Local Case Number: 390044
Potential Media Affect: Soil
Potential Contaminants of Concern: Gasoline
Site History: Not reported

LUST:
Global Id: T0602900256
Contact Type: Local Agency Caseworker
Contact Name: BRIAN PITTS
Organization Name: KERN COUNTY
Address: 2700 M STREET, SUITE 300
City: BAKERSFIELD
Email: brianp@co.kern.ca.us
Phone Number: 6618628704

Global Id: T0602900256
Contact Type: Regional Board Caseworker
Contact Name: JOHN WHITING
Organization Name: CENTRAL VALLEY RWQCB (REGION 5F)
Address: 1685 E STREET
City: FRESNO
Email: john.whiting@waterboards.ca.gov
Phone Number: Not reported

LUST:
Global Id: T0602900256
Action Type: Other
Date: 01/09/1990
Action: Leak Reported

Global Id: T0602900256
Action Type: Other
Date: 12/04/1989
Action: Leak Discovery

LUST:
Global Id: T0602900256
Status: Open - Case Begin Date
Status Date: 12/04/1989

Global Id: T0602900256
Status: Open - Site Assessment
Status Date: 12/05/1989

Global Id: T0602900256
Status: Open - Site Assessment
Status Date: 12/08/1989

Global Id: T0602900256
Status: Open - Site Assessment
Status Date: 01/08/1990

Global Id: T0602900256
Status: Open - Site Assessment
Status Date: 08/16/1990

MALIBU VINEYARDS (Continued) **S110654306**

Global Id: T0602900256
Status: Open - Remediation
Status Date: 10/16/1991

Global Id: T0602900256
Status: Completed - Case Closed
Status Date: 11/27/1996

C11 **MALIBU VINYARD** **RGA LUST** **S114646999**
South **IMPERIAL & SACO RD** **N/A**
< 1/8 **BAKERSFIELD, CA**
0.023 mi.
123 ft. **Site 6 of 6 in cluster C**

Actual:
444 ft.

Focus Map:
8

RGA LUST:
Name: MALIBU VINYARD Section 3.1.1.1
Address: IMPERIAL & SACO RD
City: BAKERSFIELD
State: BAKERSFIELD
1993 MALIBU VINYARD IMPERIAL & SACO RD

---

12 **SILL PROPERTIES FIELD 36** **CERS** **S122491892**
SW **NE NE NE 30 28 25 BURBANK AVE** **N/A**
< 1/8 **SHAFTER, CA 93263**
0.085 mi.
448 ft.

N/A

Wrong Location:
Located 10.75 miles west at
Burbank & Scaroni, 28S/25E,
Sec. 30

Actual:
408 ft.

Focus Map:
5

CERS:
Name: SILL PROPERTIES FIELD 36
Address: NE NE NE 30 28 25 BURBANK AVE
City,State,Zip: SHAFTER, CA 93263
Site ID: 438600
CERS ID: 10763854
CERS Description: Chemical Storage Facilities

Affiliation:
Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 1508 18th Street #320
Affiliation City: Bkaersfield
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93301
Affiliation Phone: Not reported

Affiliation Type Desc: Identification Signer
Entity Name: NIKA MORSE
Entity Title: Controller
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

SILL PROPERTIES FIELD 36 (Continued) **S122491892**

Affiliation Type Desc:	Legal Owner
Entity Name:	Sill Properties
Entity Title:	Not reported
Affiliation Address:	1508 18th Street #320
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93301
Affiliation Phone:	(661) 323-1142

Affiliation Type Desc:	Property Owner
Entity Name:	Sill Properties
Entity Title:	Not reported
Affiliation Address:	1508 18th Street #320
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93301
Affiliation Phone:	(661) 323-1142

Affiliation Type Desc:	CUPA District
Entity Name:	Kern County Environmental Health Services Departme
Entity Title:	Not reported
Affiliation Address:	2700 M Street, Suite 300
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93301-2370
Affiliation Phone:	(661) 862-8740

Affiliation Type Desc:	Parent Corporation
Entity Name:	Sill Properties
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Document Preparer
Entity Name:	NIKA MORSE
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Environmental Contact
Entity Name:	Nika Morse
Entity Title:	Not reported
Affiliation Address:	1508 18th Street #320
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	Not reported

SILL PROPERTIES FIELD 36 (Continued) **S122491892**

Affiliation Zip:	93301
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	DUFFY SILL/NIKA MORSE
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(661) 323-1142

13
SW
< 1/8
0.105 mi.
554 ft.

NKWSD RSP PIPELINE **CIWQS** **S121658978**
ZERKER ROAD AND CALLOWAY CANAL FREEWAY 99 AND VERDUGO **N/A**
BAKERSFIELD, CA 93308

Actual:
430 ft.

Focus Map:
8

CIWQS:

Sections 2.3.1, 2.4.7 & 3.7.8

Name:	NKWSD RSP PIPELINE
Address:	ZERKER ROAD AND CALLOWAY CANAL FREEWAY 99 AND VERDUGO
City,State,Zip:	BAKERSFIELD, CA 93308
Agency:	North Kern Water Storage District
Agency Address:	33380 Cawelo Avenue, Bakersfield, CA 93308
Place/Project Type:	Construction - Above Ground, Below Ground
SIC/NAICS:	Not reported
Region:	5F
Program:	CONSTW
Regulatory Measure Status:	Terminated
Regulatory Measure Type:	Storm water construction
Order Number:	2009-0009-DWQ
WDID:	5F15C373932
NPDES Number:	CAS000002
Adoption Date:	Not reported
Effective Date:	09/04/2015
Termination Date:	02/29/2016
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	35.45599
Longitude:	-119.10871

14 East 1/4-1/2 0.356 mi. 1882 ft. **WESTERN OILFIELD SUPPLY CO**
17400 ZERKER RD
SHAFTER, CA 93263

CERS HAZ WASTE **S121777584**
CERS **N/A**

Actual: 522 ft.

Focus Map: 6

CERS HAZ WASTE:
Name: WESTERN OILFIELD SUPPLY CO
Address: 17400 ZERKER RD
City,State,Zip: SHAFTER, CA 93263
Site ID: 407603
CERS ID: 10234786
CERS Description: Hazardous Waste Generator

CERS:
Name: WESTERN OILFIELD SUPPLY CO
Address: 17400 ZERKER RD
City,State,Zip: SHAFTER, CA 93263
Site ID: 407603
CERS ID: 10234786
CERS Description: Chemical Storage Facilities

Violations:
Site ID: 407603
Site Name: WESTERN OILFIELD SUPPLY CO
Violation Date: 07-01-2015
Citation: HSC 6.5 25160.2 - California Health and Safety Code, Chapter 6.5, Section(s) 25160.2
Violation Description: Failure to meet any of the following consolidated manifest requirements: 1) Legible receipts for each quantity of hazardous waste that is received from a generator, 2) The generator's information (name, address, identification number, contact person, telephone number of the generator, the signature of the generator or the generator's representative), 3) Date of the shipment, 4) The manifest number, 5) The volume or quantity of each waste stream received, 6) The name, address, and identification number of the authorized facility to which the hazardous waste will be transported, 7) The transporter's information (name, address, and identification number, the driver's signature), 8) A statement, signed by the generator, certifying that the generator has established a program to reduce the volume or quantity and toxicity of the hazardous waste to the degree economically practicable. 9) The generator shall retain each receipt for at least three years.
Violation Notes: Returned to compliance on 05/19/2016. PROVIDE COPY OF MANIFESTS OF DISPOSAL OF HAZARDOUS WASTES FOR THE PAST 12 MONTHS.
Violation Division: Kern County Env Health Services Department
Violation Program: HW
Violation Source: CERS

Site ID: 407603
Site Name: WESTERN OILFIELD SUPPLY CO
Violation Date: 07-01-2015
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description: Failure to establish and electronically submit an adequate emergency response plan and procedures for a release or threatened release of a hazardous material.
Violation Notes: Returned to compliance on 09/03/2015. UPLOAD CONTINGENCY PLAN ON CERS.
Violation Division: Kern County Env Health Services Department

WESTERN OILFIELD SUPPLY CO (Continued) **S121777584**

Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	407603
Site Name:	WESTERN OILFIELD SUPPLY CO
Violation Date:	07-01-2015
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to establish and electronically submit an adequate training program in safety procedures in the event of a release or threatened release of a hazardous material.
Violation Notes:	Returned to compliance on 09/03/2015. UPLOAD TRAINING PLAN ON CERS.
Violation Division:	Kern County Env Health Services Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	407603
Site Name:	WESTERN OILFIELD SUPPLY CO
Violation Date:	07-01-2015
Citation:	22 CCR 23 66273.34 - California Code of Regulations, Title 22, Chapter 23, Section(s) 66273.34
Violation Description:	Failure to properly label the following categories of universal waste as: 1) Each batteries or the container in which the batteries are contained as "Universal Waste-Battery(ies)". 2) Each mercury-containing equipment or the container in which the mercury-containing equipment is contained as "Universal Waste -Mercury-Containing Equipment". 3) Each Florescent lamp or the container or package in which the lamps are contained as "Universal Waste-Lamp(s)". 4) Each electronic devices or the container or pallet in or on which the electronic devices are contained as "Universal Waste-Electronic Device(s)". 5) Each CRTs or the container or pallet in or on which the CRTs are contained as "Universal Waste-CRT(s)". 6) A container of CRT glass shall be labeled or marked clearly with the following phrase: "Universal Waste-CRT glass". 7) In lieu of labeling individual electronic devices, CRTs, and/or containers of CRT glass pursuant to subsections d) through f) of this section, a universal waste handler may combine, package, and accumulate those universal wastes in appropriate containers or within a designated area demarcated by boundaries that are clearly labeled with the applicable portion(s) of the following phrase: "Universal Waste-Electronic Device(s)/Universal Waste - CRT(s)/Universal Waste-CRT Glass".
Violation Notes:	Returned to compliance on 05/19/2016. LABEL THE CONTAINERS CONTAINING UNIVERSAL WASTES.
Violation Division:	Kern County Env Health Services Department
Violation Program:	HW
Violation Source:	CERS
Site ID:	407603
Site Name:	WESTERN OILFIELD SUPPLY CO
Violation Date:	07-01-2015
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit a site map with all required content.
Violation Notes:	Returned to compliance on 09/03/2015. IDENTIFY THE LOCATION OF HAZARDOUS MATERIALS ON THE SITE MAP.
Violation Division:	Kern County Env Health Services Department

WESTERN OILFIELD SUPPLY CO (Continued) **S121777584**

Violation Program: HMRRP
Violation Source: CERS

Site ID: 407603
Site Name: WESTERN OILFIELD SUPPLY CO
Violation Date: 07-01-2015
Citation: 22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description: Failure to properly label hazardous waste accumulation containers with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes: Returned to compliance on 05/19/2016. LABEL THE CONTAINER CONTAINING USED ABSORBANT.
Violation Division: Kern County Env Health Services Department
Violation Program: HW
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-31-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-01-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-31-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 07-01-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Enforcement Action:

WESTERN OILFIELD SUPPLY CO (Continued) **S121777584**

Site ID: 407603
Site Name: WESTERN OILFIELD SUPPLY CO
Site Address: 17400 ZERKER RD
Site City: SHAFTER
Site Zip: 93263
Enf Action Date: 07-01-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Kern County Env Health Services Department
Enf Action Program: HMRRP
Enf Action Source: CERS

Site ID: 407603
Site Name: WESTERN OILFIELD SUPPLY CO
Site Address: 17400 ZERKER RD
Site City: SHAFTER
Site Zip: 93263
Enf Action Date: 07-01-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Kern County Env Health Services Department
Enf Action Program: HW
Enf Action Source: CERS

Affiliation:
Affiliation Type Desc: Operator
Entity Name: Rain For Rent
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (661) 399-9128

Affiliation Type Desc: Property Owner
Entity Name: Robinson Property Holdings, LLC
Entity Title: Not reported
Affiliation Address: 5001 California Avenue #124
Affiliation City: Bakersfield
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 93309
Affiliation Phone: (661) 374-8064

Affiliation Type Desc: Document Preparer
Entity Name: MARK PISHINSKY
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

WESTERN OILFIELD SUPPLY CO (Continued) **S121777584**

Affiliation Type Desc:	Identification Signer
Entity Name:	MARK PISHINSKY
Entity Title:	ENVIRONMENTAL MANAGER
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Legal Owner
Entity Name:	WESTERN OILFIELD SUPPLY CO
Entity Title:	Not reported
Affiliation Address:	PO BOX 2248
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93308
Affiliation Phone:	(661) 399-9128

Affiliation Type Desc:	Parent Corporation
Entity Name:	WESTERN OILFIELD SUPPLY CO
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	CUPA District
Entity Name:	Kern County Environmental Health Services Departme
Entity Title:	Not reported
Affiliation Address:	2700 M Street, Suite 300
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93301-2370
Affiliation Phone:	(661) 862-8740

Affiliation Type Desc:	Environmental Contact
Entity Name:	MARK PISHINSKY
Entity Title:	Not reported
Affiliation Address:	5101 Office Park Drive, Suite 100
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93309
Affiliation Phone:	Not reported

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	PO BOX 2248
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	Not reported

WESTERN OILFIELD SUPPLY CO (Continued) **S121777584**

Affiliation Zip: 93308
Affiliation Phone: Not reported

D15 **DOWNS EQUIPMENT RENTAL INC** **RCRA NonGen / NLR** **1024795736**
SSE **4800 SACO RD** **CAL000170111**
1/4-1/2 **BAKERSFIELD, CA 93308**
0.481 mi.
2541 ft. **Site 1 of 10 in cluster D**

Actual:
456 ft.

Focus Map:
9

RCRA NonGen / NLR:
Date form received by agency: 1997-12-15 00:00:00.0
Facility name: DOWNS EQUIPMENT RENTAL INC
Facility address: 4800 SACO RD
BAKERSFIELD, CA 93308-0000
EPA ID: CAL000170111
Mailing address: PO BOX 80536
BAKERSFIELD, CA 93380-0536
Contact: BRANT AMBROSE
Contact address: P.O. BOX 80536
BAKERSFIELD, CA 93380-0536
Contact country: Not reported
Contact telephone: 661-834-5526
Contact email: BRANT@DOWNSEQUIP.COM
EPA Region: 09
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: BRANT AMBROSE
Owner/operator address: P.O. BOX 80536
BAKERSFIELD, CA 93380
Owner/operator country: Not reported
Owner/operator telephone: 661-834-5526
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: DOWNS EQUIPMENT RENATAL INC
Owner/operator address: 4800 SACO RD
BAKERSFIELD, CA 93308
Owner/operator country: Not reported
Owner/operator telephone: 661-834-5526
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No

DOWNS EQUIPMENT RENTAL INC (Continued) **1024795736**

Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	Yes
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

D16 **DOWNS EQUIPMENT RENTALS, INC** **EMI** **S113751400**
SSE **4800 SACO RD** **CERS** **N/A**
1/4-1/2 **BAKERSFIELD, CA 93308**
0.481 mi.
2541 ft. **Site 2 of 10 in cluster D**

Actual:
456 ft.

Focus Map:
9

EMI:

Name:	DOWNS EQUIPMENT RENTALS, INC
Address:	4800 SACO RD
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2009
County Code:	15
Air Basin:	SJV
Facility ID:	7172
Air District Name:	SJU
SIC Code:	7359
Air District Name:	SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.220125258264462
Reactive Organic Gases Tons/Yr:	0.21308125
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0.17703488372092999
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.15225

Name:	DOWNS EQUIPMENT RENTALS, INC
Address:	4800 SACO RD
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2010
County Code:	15
Air Basin:	SJV
Facility ID:	7172
Air District Name:	SJU
SIC Code:	7359
Air District Name:	SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.220125258264462
Reactive Organic Gases Tons/Yr:	0.21308125
Carbon Monoxide Emissions Tons/Yr:	0

DOWNS EQUIPMENT RENTALS, INC (Continued) **S113751400**

NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0.17703488372092999
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.15225

Name:	DOWNS EQUIPMENT RENTALS, INC
Address:	4800 SACO RD
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2011
County Code:	15
Air Basin:	SJV
Facility ID:	7172
Air District Name:	SJU
SIC Code:	7359
Air District Name:	SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.23010072314
Reactive Organic Gases Tons/Yr:	0.2227375
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0.70346187621
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.65171875

Name:	DOWNS EQUIPMENT RENTALS, INC
Address:	4800 SACO RD
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2012
County Code:	15
Air Basin:	SJV
Facility ID:	7172
Air District Name:	SJU
SIC Code:	7359
Air District Name:	SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.23228202804
Reactive Organic Gases Tons/Yr:	0.22484900314
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0.77533473286
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.71397250633

Name:	DOWNS EQUIPMENT RENTALS, INC
Address:	4800 SACO RD
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2013
County Code:	15
Air Basin:	SJV
Facility ID:	7172
Air District Name:	SJU
SIC Code:	7359
Air District Name:	SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported

DOWNS EQUIPMENT RENTALS, INC (Continued) **S113751400**

Total Organic Hydrocarbon Gases Tons/Yr:	0.26947055785
Reactive Organic Gases Tons/Yr:	0.2608475
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0.88122651943
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.812593739

Name:	DOWNS EQUIPMENT RENTALS, INC
Address:	4800 SACO RD
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2014
County Code:	15
Air Basin:	SJV
Facility ID:	7172
Air District Name:	SJU
SIC Code:	7359
Air District Name:	SAN JOAQUIN VALLEY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.20562758264
Reactive Organic Gases Tons/Yr:	0.1990475
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0.69057970832
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.61760186947

Name:	DOWNS EQUIPMENT RENTALS, INC
Address:	4800 SACO RD
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2015
County Code:	15
Air Basin:	SJV
Facility ID:	7172
Air District Name:	SJU
SIC Code:	7359
Air District Name:	SAN JOAQUIN VALLEY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.46539256198
Reactive Organic Gases Tons/Yr:	0.4505
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0.49884133917
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.456631872

Name:	DOWNS EQUIPMENT RENTALS, INC
Address:	4800 SACO RD
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2016
County Code:	15
Air Basin:	SJV
Facility ID:	7172
Air District Name:	SJU
SIC Code:	7359

DOWNS EQUIPMENT RENTALS, INC (Continued) **S113751400**

Air District Name:	SAN JOAQUIN VALLEY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.45299586777
Reactive Organic Gases Tons/Yr:	0.4385
Carbon Monoxide Emissions Tons/Yr:	Not reported
NOX - Oxides of Nitrogen Tons/Yr:	Not reported
SOX - Oxides of Sulphur Tons/Yr:	Not reported
Particulate Matter Tons/Yr:	0.50497033975
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.461166875

Name:	DOWNS EQUIPMENT RENTALS, INC
Address:	4800 SACO RD
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2017
County Code:	15
Air Basin:	SJV
Facility ID:	7172
Air District Name:	SJU
SIC Code:	7359
Air District Name:	SAN JOAQUIN VALLEY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.58534090909
Reactive Organic Gases Tons/Yr:	0.56661
Carbon Monoxide Emissions Tons/Yr:	Not reported
NOX - Oxides of Nitrogen Tons/Yr:	Not reported
SOX - Oxides of Sulphur Tons/Yr:	Not reported
Particulate Matter Tons/Yr:	0.49929748871
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.455720938

CERS:

Name:	DOWNS EQUIPMENT RENTALS, INC
Address:	4800 SACO RD
City,State,Zip:	BAKERSFIELD, CA 93308
Site ID:	465069
CERS ID:	110058320865
CERS Description:	US EPA Air Emission Inventory System (EIS)

Affiliation:

Affiliation Type Desc:	Environmental Contact
Entity Name:	Alex Ambrose
Entity Title:	Not reported
Affiliation Address:	POBOX 80536
Affiliation City:	BAKERSFIELD
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

D17 **DOWNS EQUIPMENT** **AST** **A100419524**
SSE **4800 SACO RD** **N/A**
1/4-1/2 **BAKERSFIELD, CA 93308**
0.481 mi.
2541 ft. **Site 3 of 10 in cluster D**

Actual: **456 ft.**
Focus Map: **9**

AST:

Name:	DOWNS EQUIPMENT
Address:	4800 SACO RD
City/Zip:	BAKERSFIELD,93308
Certified Unified Program Agencies:	Not reported
Owner:	DOWNS EQUIPMENT
Total Gallons:	Not reported
CERSID:	10234726
Facility ID:	Not reported
Business Name:	DOWNS EQUIPMENT
Phone:	(661) 834-5526
Fax:	Not reported
Mailing Address:	PO BOX 80536
Mailing Address City:	BAKERSFIELD
Mailing Address State:	CA
Mailing Address Zip Code:	Not reported
Operator Name:	SAFETY DEPT
Operator Phone:	661-834-5526
Owner Phone:	(661) 834-5526
Owner Mail Address:	PO BOX 80536
Owner State:	CA
Owner Zip Code:	Not reported
Owner Country:	United States
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	CAL000170111

D18 **RUSS ALLEN, AGRICULTURAL EQUIPMENT** **UST** **U004112757**
SSE **4800 SACO RD** **N/A**
1/4-1/2 **BAKERSFIELD, CA**
0.481 mi.
2541 ft. **Site 4 of 10 in cluster D**

Actual: **456 ft.**
Focus Map: **9**

KERN CO. UST:

Name:	RUSS ALLEN, AGRICULTURAL EQUIPMENT
Address:	4800 SACO RD
City:	BAKERSFIELD
Region:	Kern
Facility ID:	Not reported
CERSID:	Not reported
Owner Id:	390040
Owner Name:	ALLEN, RUSS
Tank Num:	1
Tank Capacity:	0
Common Name:	Not reported
Description:	Not reported
Number of Compartments:	Not reported
Install Date:	Not reported

RUSS ALLEN, AGRICULTURAL EQUIPMENT (Continued) **U004112757**

Date of Closure:	Not reported
Billing Status:	Not reported
Mailing Address:	Not reported
Mailing Address (care of):	Not reported
Mailing City/State/Zip:	Not reported

D19 **DOWNS EQUIPMENT RENTAL INC** **HAZNET** **S118230913**
SSE **4800 SACO RD** **N/A**
1/4-1/2 **BAKERSFIELD, CA 93308**
0.481 mi.
2541 ft. **Site 5 of 10 in cluster D**

Actual:
456 ft.

Focus Map:
9

HAZNET:

Name:	DOWNS EQUIPMENT RENTAL INC	
Address:	4800 SACO RD	
Address 2:	Not reported	
City,State,Zip:	BAKERSFIELD, CA 933080000	2017 Transfers
Year:	2017	11 manifested loads
Gepaid:	CAL000170111	3,140 #
Contact:	BRANT AMBROSE	55 gallon
Telephone:	6618345526	
Mailing Name:	Not reported	
Mailing Address:	PO BOX 80536	
Gen County:	15	
Waste Category:	Not reported	
TSD EPA ID:	CAL000282598	
TSD County:	15	
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)	
Tons:	0.15	

Additional Info:

Year:	2017
Shipment Date:	20171117
Creation Date:	6/13/2018 18:30:59
Receipt Date:	20171117
Manifest ID:	017846538JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.155
Waste Quantity:	310
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

DOWNS EQUIPMENT RENTAL INC (Continued) **S118230913**

Year:	2017
Shipment Date:	20171227
Creation Date:	8/7/2018 18:30:40
Receipt Date:	20171227
Manifest ID:	017846933JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	Not reported
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.15
Waste Quantity:	300
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2017
Shipment Date:	20170922
Creation Date:	5/30/2018 18:32:48
Receipt Date:	20170922
Manifest ID:	017847150JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.15
Waste Quantity:	300
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2017
Shipment Date:	20171020
Creation Date:	5/30/2018 18:32:07
Receipt Date:	20171020
Manifest ID:	017847198JJK

DOWNS EQUIPMENT RENTAL INC (Continued) **S118230913**

Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.11
Waste Quantity:	220
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2017
Shipment Date:	20170809
Creation Date:	5/30/2018 18:33:46
Receipt Date:	20170809
Manifest ID:	017146131JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.225
Waste Quantity:	450
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2017
Shipment Date:	20170822
Creation Date:	7/12/2018 18:30:34
Receipt Date:	20170831
Manifest ID:	017146260JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported

DOWNS EQUIPMENT RENTAL INC (Continued) **S118230913**

TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO / KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	291
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.22935
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2017
Shipment Date:	20170601
Creation Date:	5/17/2018 18:31:41
Receipt Date:	20170601
Manifest ID:	017148100JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.125
Waste Quantity:	250
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2017
Shipment Date:	20170706
Creation Date:	5/29/2018 18:30:34
Receipt Date:	20170706
Manifest ID:	017148316JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352

DOWNS EQUIPMENT RENTAL INC (Continued) **S118230913**

RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.175
Waste Quantity:	350
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2017
Shipment Date:	20170214
Creation Date:	5/24/2017 18:30:49
Receipt Date:	20170214
Manifest ID:	016288455JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI-COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BAKERSFIELD TRANSFER, INC.
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.11
Waste Quantity:	220
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2017
Shipment Date:	20170509
Creation Date:	5/17/2018 18:31:11
Receipt Date:	20170509
Manifest ID:	016881359JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.195
Waste Quantity:	390
Quantity Unit:	P

DOWNS EQUIPMENT RENTAL INC (Continued) **S118230913**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2017
Shipment Date:	20170328
Creation Date:	5/9/2018 18:32:18
Receipt Date:	20170328
Manifest ID:	016881789JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.175
Waste Quantity:	350
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Name:	DOWNS EQUIPMENT RENTAL INC
Address:	4800 SACO RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2017
Gepaid:	CAL000170111
Contact:	BRANT AMBROSE
Telephone:	6618345526
Mailing Name:	Not reported
Mailing Address:	PO BOX 80536
Gen County:	15
Waste Category:	Other organic solids
TSD EPA ID:	CAL000282598
TSD County:	15
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	1.42

Additional Info:

Year:	2017
Shipment Date:	20171117
Creation Date:	6/13/2018 18:30:59
Receipt Date:	20171117
Manifest ID:	017846538JJK
Gen EPA ID:	CAL000170111

DOWNS EQUIPMENT RENTAL INC (Continued) **S118230913**

Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.155
Waste Quantity:	310
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2017
Shipment Date:	20171227
Creation Date:	8/7/2018 18:30:40
Receipt Date:	20171227
Manifest ID:	017846933JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	Not reported
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.15
Waste Quantity:	300
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2017
Shipment Date:	20170922
Creation Date:	5/30/2018 18:32:48
Receipt Date:	20170922
Manifest ID:	017847150JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598

DOWNS EQUIPMENT RENTAL INC (Continued) **S118230913**

Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.15
Waste Quantity:	300
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2017
Shipment Date:	20171020
Creation Date:	5/30/2018 18:32:07
Receipt Date:	20171020
Manifest ID:	017847198JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.11
Waste Quantity:	220
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2017
Shipment Date:	20170809
Creation Date:	5/30/2018 18:33:46
Receipt Date:	20170809
Manifest ID:	017146131JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported

DOWNS EQUIPMENT RENTAL INC (Continued) **S118230913**

Meth Code:	H141
Quantity Tons:	0.225
Waste Quantity:	450
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2017
Shipment Date:	20170822
Creation Date:	7/12/2018 18:30:34
Receipt Date:	20170831
Manifest ID:	017146260JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO / KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	291
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.22935
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2017
Shipment Date:	20170601
Creation Date:	5/17/2018 18:31:41
Receipt Date:	20170601
Manifest ID:	017148100JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.125
Waste Quantity:	250
Quantity Unit:	P
Additional Code 1:	Not reported

DOWNS EQUIPMENT RENTAL INC (Continued) **S118230913**

Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2017
Shipment Date:	20170706
Creation Date:	5/29/2018 18:30:34
Receipt Date:	20170706
Manifest ID:	017148316JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.175
Waste Quantity:	350
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2017
Shipment Date:	20170214
Creation Date:	5/24/2017 18:30:49
Receipt Date:	20170214
Manifest ID:	016288455JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI-COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BAKERSFIELD TRANSFER, INC.
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.11
Waste Quantity:	220
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

DOWNS EQUIPMENT RENTAL INC (Continued) **S118230913**

Year:	2017
Shipment Date:	20170509
Creation Date:	5/17/2018 18:31:11
Receipt Date:	20170509
Manifest ID:	016881359JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.195
Waste Quantity:	390
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2017
Shipment Date:	20170328
Creation Date:	5/9/2018 18:32:18
Receipt Date:	20170328
Manifest ID:	016881789JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.175
Waste Quantity:	350
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	DOWNS EQUIPMENT RENTAL INC
Address:	4800 SACO RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000

DOWNS EQUIPMENT RENTAL INC (Continued) **S118230913**

Year:	2017
Gepaid:	CAL000170111
Contact:	BRANT AMBROSE
Telephone:	6618345526
Mailing Name:	Not reported
Mailing Address:	PO BOX 80536
Gen County:	15
Waste Category:	Latex waste
TSD EPA ID:	CAT080013352
TSD County:	19
Disposal Method:	Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons:	0.22935

Additional Info:

Year:	2017
Shipment Date:	20171117
Creation Date:	6/13/2018 18:30:59
Receipt Date:	20171117
Manifest ID:	017846538JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.155
Waste Quantity:	310
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2017
Shipment Date:	20171227
Creation Date:	8/7/2018 18:30:40
Receipt Date:	20171227
Manifest ID:	017846933JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	Not reported
RCRA Code:	Not reported
Meth Code:	H141

DOWNS EQUIPMENT RENTAL INC (Continued) **S118230913**

Quantity Tons:	0.15
Waste Quantity:	300
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2017
Shipment Date:	20170922
Creation Date:	5/30/2018 18:32:48
Receipt Date:	20170922
Manifest ID:	017847150JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.15
Waste Quantity:	300
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2017
Shipment Date:	20171020
Creation Date:	5/30/2018 18:32:07
Receipt Date:	20171020
Manifest ID:	017847198JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.11
Waste Quantity:	220
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported

DOWNS EQUIPMENT RENTAL INC (Continued) **S118230913**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2017
Shipment Date:	20170809
Creation Date:	5/30/2018 18:33:46
Receipt Date:	20170809
Manifest ID:	017146131JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.225
Waste Quantity:	450
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2017
Shipment Date:	20170822
Creation Date:	7/12/2018 18:30:34
Receipt Date:	20170831
Manifest ID:	017146260JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO / KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	291
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.22935
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2017

DOWNS EQUIPMENT RENTAL INC (Continued) **S118230913**

Shipment Date:	20170601
Creation Date:	5/17/2018 18:31:41
Receipt Date:	20170601
Manifest ID:	017148100JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.125
Waste Quantity:	250
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2017
Shipment Date:	20170706
Creation Date:	5/29/2018 18:30:34
Receipt Date:	20170706
Manifest ID:	017148316JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.175
Waste Quantity:	350
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2017
Shipment Date:	20170214
Creation Date:	5/24/2017 18:30:49
Receipt Date:	20170214
Manifest ID:	016288455JJK
Gen EPA ID:	CAL000170111

DOWNS EQUIPMENT RENTAL INC (Continued) **S118230913**

Trans EPA ID:	CAL000268462
Trans Name:	CSI-COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BAKERSFIELD TRANSFER, INC.
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.11
Waste Quantity:	220
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2017
Shipment Date:	20170509
Creation Date:	5/17/2018 18:31:11
Receipt Date:	20170509
Manifest ID:	016881359JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.195
Waste Quantity:	390
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2017
Shipment Date:	20170328
Creation Date:	5/9/2018 18:32:18
Receipt Date:	20170328
Manifest ID:	016881789JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598

DOWNS EQUIPMENT RENTAL INC (Continued) **S118230913**

Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.175
Waste Quantity:	350
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	DOWNS EQUIPMENT RENTAL INC
Address:	4800 SACO RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2014
Gepaid:	CAL000170111
Contact:	BRANT AMBROSE
Telephone:	6618345526
Mailing Name:	Not reported
Mailing Address:	PO BOX 80536
Gen County:	15
Waste Category:	Latex waste
TSD EPA ID:	CAT080013352
TSD County:	19
Disposal Method:	Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons:	0.4587

Additional Info:

Year:	2014
Shipment Date:	20141106
Creation Date:	1/15/2015 22:14:55
Receipt Date:	20141113
Manifest ID:	013306374JJK
Gen EPA ID:	CAL000170111
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO / KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	291
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.4587
Waste Quantity:	110
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported

DOWNS EQUIPMENT RENTAL INC (Continued) **S118230913**

Additional Code 4: Not reported
Additional Code 5: Not reported

D20 **DOWNS EQUIPMENT** **CERS HAZ WASTE** **S121772737**
SSE **4800 SACO RD** **CERS TANKS** **N/A**
1/4-1/2 **BAKERSFIELD, CA 93308** **CERS**
0.481 mi.
2541 ft. **Site 6 of 10 in cluster D**

Actual:
456 ft.

Focus Map:
9

CERS HAZ WASTE:
Name: DOWNS EQUIPMENT
Address: 4800 SACO RD
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 391745
CERS ID: 10234726
CERS Description: Hazardous Waste Generator

CERS TANKS:
Name: DOWNS EQUIPMENT
Address: 4800 SACO RD
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 391745
CERS ID: 10234726
CERS Description: Aboveground Petroleum Storage

CERS:
Name: DOWNS EQUIPMENT
Address: 4800 SACO RD
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 391745
CERS ID: 10234726
CERS Description: Chemical Storage Facilities

Violations:
Site ID: 391745
Site Name: DOWNS EQUIPMENT
Violation Date: 03-16-2016
Citation: HSC 6.95 25505(a)(4) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)(4)
Violation Description: Failure to provide initial and annual training to all employees in safety procedures in the event of a release or threatened release of a hazardous material or failure to document and maintain training records for a minimum of three years.
Violation Notes: Returned to compliance on 06/02/2016. An Employee Training Program must be developed which covers the hazards that employees may encounter at the work site. This includes but is not limited to: hazardous materials handling, physical safety, and emergency procedures. Employees must be trained within 90 days of hire and annually thereafter. All employee training must be documented and kept on file for the length of employment + 90 days. Prepare, implement, and upload into CERS an Employee Training Plan that covers general safety, hazardous materials/waste, aboveground tanks, etc. Information and assistance with the training program may be obtained from the Cal OSHA training program.
Violation Division: Kern County Env Health Services Department
Violation Program: HMRRP

DOWNS EQUIPMENT (Continued) **S121772737**

Violation Source:	CERS
Site ID:	391745
Site Name:	DOWNS EQUIPMENT
Violation Date:	03-16-2016
Citation:	HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description:	Failure to integrity test aboveground tanks by such methods as hydrostatic, nondestructive, etc.
Violation Notes:	Returned to compliance on 06/02/2016. The ASTs have not been regularly tested. The ASTs' integrity must be tested per industry standards. The used oil AST must be assessed by a professional engineer.
Violation Division:	Kern County Env Health Services Department
Violation Program:	APSA
Violation Source:	CERS
Site ID:	391745
Site Name:	DOWNS EQUIPMENT
Violation Date:	03-16-2016
Citation:	HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description:	Failure to adequately discuss procedures for reporting a discharge, or no information and procedures for reporting a discharge are included within the SPCC plan.
Violation Notes:	Returned to compliance on 06/02/2016. The SPCC plan fails to adequately discuss the reporting procedures for a petroleum discharge. Completing the SPCC Tier I template will assist with the correction of this violation.
Violation Division:	Kern County Env Health Services Department
Violation Program:	APSA
Violation Source:	CERS
Site ID:	391745
Site Name:	DOWNS EQUIPMENT
Violation Date:	03-16-2016
Citation:	HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description:	Failure to make SPCC plan amendment(s) when the facility has had a change in: design, construction, operation, or maintenance which affects the facilityG s discharge potential.
Violation Notes:	Returned to compliance on 06/02/2016. The sizes and capacities of the ASTs do not match those listed in the SPCC plan. The plan must be amended to accurately account for the sizes and capacities of the ASTs. Completing the SPCC Tier I template will assist with the correction of this violation.
Violation Division:	Kern County Env Health Services Department
Violation Program:	APSA
Violation Source:	CERS
Site ID:	391745
Site Name:	DOWNS EQUIPMENT
Violation Date:	03-16-2016
Citation:	HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description:	Failure to prepare and implement a Spill Prevention Control and Countermeasure (SPCC) Plan .
Violation Notes:	Returned to compliance on 06/02/2016.

DOWNS EQUIPMENT (Continued) **S121772737**

Violation Division:	Kern County Env Health Services Department
Violation Program:	APSA
Violation Source:	CERS
Site ID:	391745
Site Name:	DOWNS EQUIPMENT
Violation Date:	03-16-2016
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit a site map with all required content.
Violation Notes:	Returned to compliance on 06/02/2016. The locations of all of the hazardous materials must be indicated on the facility site map. This includes the compressed gases in the welding shop, the specialty oils outside of the shop, and the batteries in the seatrain. Make correction to the facility site map and re-submit to CERS.
Violation Division:	Kern County Env Health Services Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	391745
Site Name:	DOWNS EQUIPMENT
Violation Date:	05-01-2019
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.
Violation Notes:	Returned to compliance on 05/14/2019. Observation: Some of the hazardous materials/hazardous waste observed on site are not properly reported and/or incorrectly reported to California Environmental Reporting System (CERS). Please make the following corrections to the Hazardous Materials Inventory: 1) LEAD ACID BATTERIES - missing "Largest Container Size"; 2) MOTOR OIL - update "Maximum Daily Amount" = 860 gallons; and, 3) All inventory items will need to be updated by unchecking all Obsolete Federal Hazard Categories and checking the appropriate new Federal Hazard Categories. Information is in Section 2 of the updated Safety Data Sheets (SDS). Corrective Action: Properly and correctly update these hazardous materials/waste mentioned above in California Environmental Reporting System (CERS). Resubmit with all other elements once all corrections have been made within 30 days. Christian Iwuchukwu G 661-862-8767 G iwuchukwuc@kerncounty.com.
Violation Division:	Kern County Env Health Services Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	391745
Site Name:	DOWNS EQUIPMENT
Violation Date:	03-16-2016
Citation:	HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description:	Failure to schedule and conduct spill prevention briefings at least once a year.
Violation Notes:	Returned to compliance on 06/02/2016. Failure to hold spill prevention briefings. Spill prevention briefings may be incorporated with regularly scheduled safety trainings.
Violation Division:	Kern County Env Health Services Department

DOWNS EQUIPMENT (Continued) **S121772737**

Violation Program:	APSA
Violation Source:	CERS
Site ID:	391745
Site Name:	DOWNS EQUIPMENT
Violation Date:	03-16-2016
Citation:	HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description:	Failure to provide training regarding: 1. The operation and maintenance of equipment to prevent discharges. 2. Discharge procedure protocols. 3. Applicable pollution control laws, rules, and regulations. 4. General facility operations. AND 5. The contents of the SPCC Plan.
Violation Notes:	Returned to compliance on 06/02/2016. The SPCC plan does not address employee safety training with regards to the ASTs. The AST training may be incorporated with the training required by the hazardous materials business plan and the hazardous waste regulations.
Violation Division:	Kern County Env Health Services Department
Violation Program:	APSA
Violation Source:	CERS
Site ID:	391745
Site Name:	DOWNS EQUIPMENT
Violation Date:	05-01-2019
Citation:	22 CCR 11 66261.7 - California Code of Regulations, Title 22, Chapter 11, Section(s) 66261.7
Violation Description:	Failure to manage empty containers greater than 5 gallons in capacity that previously held a hazardous material/waste in accordance with 22 CCR 11 66261.7 including but not limited to the following: (e)(2)By reclaiming its scrap value onsite or shipping the container or inner liner to a person who reclaims its scrap value; or (3) By reconditioning or re manufacturing the container or inner liner onsite for subsequent reuse, or shipping the container or inner liner to a person who reconditions or re-manufactures the container or inner liner; or (4) By shipping the container or inner liner to a supplier or to another intermediate collection location for accumulation prior to managing the container or inner liner pursuant to subsections (e)(2) or (e)(3) of 22 CCR 11 66261.7; or (i) By shipping the container or inner liner back to the supplier for the purpose of being refilled. (f) A container or an inner liner removed from a container larger than five gallons in capacity which is managed pursuant to subsection (e) of 22 CCR 11 66261.7 shall be marked with the date it has been emptied and shall be managed within one year of being emptied.
Violation Notes:	Returned to compliance on 05/14/2019. Observation: Empty containers/tanks greater than 5 gallons were observed in different locations of the property. These containers/tanks were not marked with the word 'EMPTY' or 'OUT OF SERVICE' with date emptied. Corrective Action: Mark all empty containers/tanks identified at the time of inspection with the word,'EMPTY' or 'OUT OF SERVICE' with date emptied. Properly manage all empty containers within one year from the date emptied. Send pictures to me as evidence that all empty containers have been marked 'EMPTY' or 'OUT OF SERVICE' with date emptied.
Violation Division:	Kern County Env Health Services Department
Violation Program:	HW
Violation Source:	CERS

DOWNS EQUIPMENT (Continued) **S121772737**

Site ID: 391745
Site Name: DOWNS EQUIPMENT
Violation Date: 03-16-2016
Citation: HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description: Failure to design drainage from undiked areas to flow into catchment basins ponds, or lagoons, or failure to equip diversion systems to retain or return the final discharge to the facility.
Violation Notes: Returned to compliance on 06/02/2016. The SPCC plan fails to address drainage for the oil drum storage area. Table G-4 in the SPCC Tier I template will assist with the correction of this violation.
Violation Division: Kern County Env Health Services Department
Violation Program: APSA
Violation Source: CERS

Site ID: 391745
Site Name: DOWNS EQUIPMENT
Violation Date: 03-16-2016
Citation: HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description: Failure to perform a five-year review of the SPCC plan.
Violation Notes: Returned to compliance on 06/02/2016. Incorporate the Self-Certification Statement into the SPCC plan.
Violation Division: Kern County Env Health Services Department
Violation Program: APSA
Violation Source: CERS

Site ID: 391745
Site Name: DOWNS EQUIPMENT
Violation Date: 03-16-2016
Citation: HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description: Failure to have an adequate facility diagram, or no facility diagram included within the SPCC plan.
Violation Notes: Returned to compliance on 06/02/2016. The facility diagram is missing the location of the drum storage area. Add the location of the drum storage area to the existing site map and re-submit to CERS.
Violation Division: Kern County Env Health Services Department
Violation Program: APSA
Violation Source: CERS

Site ID: 391745
Site Name: DOWNS EQUIPMENT
Violation Date: 03-16-2016
Citation: HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description: 1. Failure to prepare a SPCC plan that follows a sequence of rule and/or cross-reference. 2. Failure of the owner or operator of a facility subject to this part to prepare a SPCC plan in accordance with good engineering practices. 3. Failure to have the full approval of management at a level of authority to commit the necessary resources to fully implement the SPCC plan. 4. Failure to prepare the Plan in writing. AND 5. Failure to prepare a SPCC plan that addresses additional procedures/methods/equipment not yet fully operational.
Violation Notes: Returned to compliance on 06/02/2016. The SPCC plan is missing and/or does not address required elements, such as: drainage control, inspection of diked area, periodic integrity testing of the ASTs, flow

DOWNS EQUIPMENT (Continued) **S121772737**

valves, spill control, etc. Completing the SPCC Tier I template will assist with the correction of this violation.
Violation Division: Kern County Env Health Services Department
Violation Program: APSA
Violation Source: CERS

Site ID: 391745
Site Name: DOWNS EQUIPMENT
Violation Date: 05-01-2019
Citation: HSC 6.95 25508.2 - California Health and Safety Code, Chapter 6.95, Section(s) 25508.2
Violation Description: Failure to annually review and electronically certify that the business plan is complete and accurate on or before the annual due date.
Violation Notes: Returned to compliance on 05/14/2019. Observation: Review of California Environmental Reporting System (CERS) indicates that the last submittal of the Hazardous Materials Inventory was done on June 2, 2016. The facility failed to annually review and electronically certify that the Hazardous Materials Business Plan (HMBP) was complete and accurate on or before June 1, 2017. Corrective Action: Immediately review the CERS and electronically certify that the Hazardous Materials Business Plan (HMBP) is complete and accurate.
Violation Division: Kern County Env Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 391745
Site Name: DOWNS EQUIPMENT
Violation Date: 03-16-2016
Citation: 22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description: Failure to properly label hazardous waste accumulation containers with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes: Returned to compliance on 06/02/2016. The waste antifreeze drum must have a hazardous waste label with the following information: hazardous waste; composition and physical state; statement of hazards; and name and address of generator. Properly label the waste antifreeze drum and email photographic proof of the correction to lydiav@co.kern.ca.us.
Violation Division: Kern County Env Health Services Department
Violation Program: HW
Violation Source: CERS

Site ID: 391745
Site Name: DOWNS EQUIPMENT
Violation Date: 03-16-2016
Citation: 22 CCR 15 66265.16 - California Code of Regulations, Title 22, Chapter 15, Section(s) 66265.16
Violation Description: Failure to provide employees within the first six months after the date of their employment, or assignment to the facility, or to work unsupervised, or to a new position at a facility with hazardous waste training to ensure employees are competent in the following areas: hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed, emergency response and emergency equipment, and procedures for using, inspecting, repairing, and replacing facility emergency and monitoring

DOWNS EQUIPMENT (Continued) **S121772737**

equipment. In addition, the owner/operator shall ensure facility personnel take part in an annual review of the initial training and training records training records on current personnel shall be kept until closure of the facility. Training records on former employees shall be kept for at least three years from the date the employee last worked at the facility. The records shall include the following: the job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job; a written job description for each position, duties of facility personnel assigned to each position, and a written description of the type and amount of both introductory and continuing training that will be given to each person filling a position.

Violation Notes: Returned to compliance on 06/02/2016. During the inspection, it was determined that the facility is a large quantity hazardous waste generator. The facility must comply with the following requirements: Each generator that generates 1000 kg/month or more of hazardous waste per month must comply with the requirements of Title 22, Cal. Code Regs., division 4.5, chapter 15, article 4. These requirements include: (a) The generator must prepare and retain a written contingency plan and emergency procedures for dealing with emergencies. The contingency plan shall be designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water. (Section 66265.51.) (b) The provisions of the plan must be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents that could threaten human health or the environment. [Truncated]

Violation Division: Kern County Env Health Services Department
Violation Program: HW
Violation Source: CERS

Site ID: 391745
Site Name: DOWNS EQUIPMENT
Violation Date: 03-16-2016
Citation: HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description: Failure to adequately describe the procedures to use when a discharge occurs, or no description and procedures to use for when a discharge may occur within the SPCC plan. This is not required if the facility has a facility response plan.
Violation Notes: Returned to compliance on 06/02/2016. The SPCC plan fails to adequately address the facility's procedures for responding to a petroleum discharge. Completing 5. Emergency Procedures and Notifications in the SPCC Tier I template will assist with the correction of this violation.
Violation Division: Kern County Env Health Services Department
Violation Program: APSA
Violation Source: CERS

Site ID: 391745
Site Name: DOWNS EQUIPMENT
Violation Date: 03-16-2016
Citation: 22 CCR 15 66265.192(h) - California Code of Regulations, Title 22, Chapter 15, Section(s) 66265.192(h)
Violation Description: Failure to obtain and maintain a written assessment reviewed and certified by an independent, qualified, professional engineer stating

DOWNS EQUIPMENT (Continued) **S121772737**

the new hazardous waste tank system has sufficient structural integrity, is acceptable for the transferring, storing and treating of hazardous waste, and that the tanks and containment system including the foundation, structural support, seams, connections, and pressure controls (if applicable) are suitably designed and that the tank system has sufficient structural strength, compatibility with the waste(s) to be transferred, stored or treated, and corrosion protection so that it will not collapse, rupture, or fail. This assessment shall be obtained prior to placing the tank system in service, and shall be kept on file at the facility. The tank assessment shall be good for five years. This assessment shall also include, at a minimum, the following information: (1) Design standard(s) according to which the tank(s) and ancillary equipment are or will be constructed; (2) Hazardous characteristics of the waste(s) to be handled; (3) For new tank systems or components in which the external shell of a metal tank or any external metal component of the tank system is or will be in contact with the soil or with water, a determination by a corrosion expert of: (A) Factors affecting the potential for corrosion, including but not limited to: 1. Soil moisture content; 2. Soil pH; 3. Soil sulfides level; 4. Soil resistivity; 5. Structure to soil potential; 6. Influence of nearby underground metal structures (e.g., piping); 7. Stray electric current; and 8. Existing corrosion-protection measures (e.g., coating, cathodic protection), and (B) The type and degree of external corrosion protection that are needed to ensure the integrity of the tank system during the use of the tank system or component, consisting of one or more of the following: 1. Corrosion-resistant materials of construction such as special alloys or fiberglass-reinforced plastic; 2. Corrosion-resistant coating (such as epoxy or fi

Violation Notes: Returned to compliance on 07/15/2016. California hazardous waste regulations require that a hazardous waste tank system operated by a large quantity generator have a written assessment certified by a professional engineer. A PE certified assessment of the waste oil tank must be prepared and submitted to this department.
Violation Division: Kern County Env Health Services Department
Violation Program: HW
Violation Source: CERS

Site ID: 391745
Site Name: DOWNS EQUIPMENT
Violation Date: 03-16-2016
Citation: HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description: Failure to describe in your SPCC Plan how you secure and control access to the oil handling, processing and storage areas; secure master flow and drain valves; prevent unauthorized access to starter controls on oil pumps; secure out-of-service and loading/unloading connections of oil pipelines; and address the appropriateness of security lighting to both prevent acts of vandalism and assist in the discovery of oil discharges.
Violation Notes: Returned to compliance on 06/02/2016. The SPCC plan does not completely describe the facility's security measures. Review the facility's security and complete 4. Security in the SPCC Tier I template.
Violation Division: Kern County Env Health Services Department
Violation Program: APSA
Violation Source: CERS

DOWNS EQUIPMENT (Continued) **S121772737**

Site ID:	391745
Site Name:	DOWNS EQUIPMENT
Violation Date:	03-16-2016
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.
Violation Notes:	Returned to compliance on 06/02/2016. The equipment batteries stored in the seatrain were not listed on the facility's hazardous materials inventory. List the batteries on the facilities hazardous materials inventory in CERS and submit the update.
Violation Division:	Kern County Env Health Services Department
Violation Program:	HMRRP
Violation Source:	CERS

Site ID:	391745
Site Name:	DOWNS EQUIPMENT
Violation Date:	05-01-2019
Citation:	22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description:	Failure to properly label hazardous waste accumulation containers and portable tanks with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes:	Returned to compliance on 05/14/2019. Observation: Two 55-gallon drums and Four 5-gallon containers of hazardous waste oil were not properly labeled according to hazardous waste regulations. Corrective Action: Properly label all hazardous waste containers according to hazardous waste regulation. Provide these information on all the containers used in storing hazardous waste such as "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and accumulation start date. Take photos of properly labeled containers and send photos to Kern County Environmental Health Division. Attn: Christian Iwuchukwu (Email: iwuchukwuc@kerncounty.com; fax: 661-862-8701).
Violation Division:	Kern County Env Health Services Department
Violation Program:	HW
Violation Source:	CERS

Site ID:	391745
Site Name:	DOWNS EQUIPMENT
Violation Date:	05-01-2019
Citation:	40 CFR 1 265.173 - U.S. Code of Federal Regulations, Title 40, Chapter 1, Section(s) 265.173
Violation Description:	Failure to meet the following container management requirements: (a) A container holding hazardous waste must always be closed during storage, except when it is necessary to add or remove waste. (b) A container holding hazardous waste must not be opened, handled, or stored in a manner which may rupture the container or cause it to leak.
Violation Notes:	Returned to compliance on 05/14/2019. Observation: Observed several 5-gallon containers with mixture of hazardous waste oil and filters. The containers were not properly covered with their lids at the time of inspection. Corrective Action: Properly and always cover all the hazardous wastes containers, except when in active use. Manage the

DOWNS EQUIPMENT (Continued) **S121772737**

containers according to hazardous waste regulation. Send photos of properly covered and marked hazardous waste containers to Kern County Environmental Health Division. Attn: Christian Iwuchukwu (Email: iwuchukwuc@kerncounty.com; fax: 661-862-8701).

Violation Division: Kern County Env Health Services Department
Violation Program: HW
Violation Source: CERS

Site ID: 391745
Site Name: DOWNS EQUIPMENT
Violation Date: 03-16-2016
Citation: HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description: Failure to designate a person accountable for discharge prevention and who reports to facility management.
Violation Notes: Returned to compliance on 06/02/2016. The SPCC plan does not indicate the person that has been designated for discharge prevention. Completing 3. Inspections, Testing, Recordkeeping, and Personel Training in the SPCC Tier I template will assist with the correction of this violation.
Violation Division: Kern County Env Health Services Department
Violation Program: APSA
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-16-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-01-2019
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-01-2019
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-16-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported

DOWNS EQUIPMENT (Continued) **S121772737**

Eval Division: Kern County Env Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 03-18-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-16-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: This facility is a qualified Tier I SPCC facility. This site will be referred to the Kern County Fire Department for evaluation and documentation of the aboveground storage tanks.
Eval Division: Kern County Env Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 03-18-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-01-2019
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Coordinates:
Site ID: 391745
Facility Name: DOWNS EQUIPMENT
Env Int Type Code: APSA
Program ID: 10234726
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 35.449590
Longitude: -119.096790

Affiliation:
Affiliation Type Desc: Identification Signer
Entity Name: BRANT AMBROSE
Entity Title: GENERAL MANAGER

DOWNS EQUIPMENT (Continued) **S121772737**

Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	DOWNS EQUIPMENT
Entity Title:	Not reported
Affiliation Address:	PO BOX 80536
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93380-0536
Affiliation Phone:	(661) 834-5526
Affiliation Type Desc:	Document Preparer
Entity Name:	Alex Ambrose
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Environmental Contact
Entity Name:	ALEX AMBROSE
Entity Title:	Not reported
Affiliation Address:	PO BOX 80536
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93380
Affiliation Phone:	Not reported
Affiliation Type Desc:	Property Owner
Entity Name:	Downs
Entity Title:	Not reported
Affiliation Address:	7500 Calle Nobleza
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93309
Affiliation Phone:	(661) 834-5526
Affiliation Type Desc:	Operator
Entity Name:	SAFETY DEPT
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(661) 834-5526

DOWNS EQUIPMENT (Continued) **S121772737**

Affiliation Type Desc:	Parent Corporation
Entity Name:	DOWNS EQUIPMENT
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	CUPA District
Entity Name:	Kern County Environmental Health Services Departme
Entity Title:	Not reported
Affiliation Address:	2700 M Street, Suite 300
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93301-2370
Affiliation Phone:	(661) 862-8740

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	PO BOX 80536
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93380-0536
Affiliation Phone:	Not reported

D21 **DOWNS EQUIPMENT RENTALS, INC** **FINDS** **1016788708**
SSE **4800 SACO RD** **N/A**
1/4-1/2 **BAKERSFIELD, CA 93308**
0.481 mi.
2541 ft. **Site 7 of 10 in cluster D**

Actual:
456 ft.

Focus Map:
9

FINDS:

Registry ID: 110058320865

Environmental Interest/Information System
AIR EMISSIONS CLASSIFICATION UNKNOWN
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

D22 **DOWNS EQUIPMENT RENTAL INC** **FINDS** **1024658136**
SSE **4800 SACO RD** **ECHO** **N/A**
1/4-1/2 **BAKERSFIELD, CA 93308**
0.481 mi.
2541 ft. **Site 8 of 10 in cluster D**

Actual:
456 ft.

Focus Map:
9

FINDS:

Registry ID: 110070446524

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1024658136
Registry ID:	110070446524
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110070446524

D23 **DOWNS EQUIPMENT** **AST** **A100339149**
SSE **4800 SACO** **N/A**
1/4-1/2 **BAKERSFIELD, CA**
0.481 mi.
2541 ft. **Site 9 of 10 in cluster D**

Actual:
456 ft.

Focus Map:
9

AST:

Name:	DOWNS EQUIPMENT
Address:	4800 SACO
City/Zip:	BAKERSFIELD,
Certified Unified Program Agencies:	Kern
Owner:	DOWNS EQUIPMENT
Total Gallons:	3,400
CERSID:	Not reported
Facility ID:	Not reported
Business Name:	Not reported
Phone:	Not reported
Fax:	Not reported
Mailing Address:	Not reported
Mailing Address City:	Not reported
Mailing Address State:	Not reported
Mailing Address Zip Code:	Not reported
Operator Name:	Not reported
Operator Phone:	Not reported
Owner Phone:	Not reported
Owner Mail Address:	Not reported
Owner State:	Not reported
Owner Zip Code:	Not reported
Owner Country:	Not reported
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported

DOWNS EQUIPMENT (Continued) **A100339149**

Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	Not reported

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24 **TOWER EXPLORATION, LLC - API # 02985041** **UIC GEO** **S120048393**
SSW **UNNAMED ROAD** **N/A**
1/4-1/2 **BAKERSFIELD, CA 93314**
0.493 mi.
2603 ft.

Actual:
416 ft.

Focus Map:
8

UIC GEO:

Name:	TOWER EXPLORATION, LLC - API # 02985041
Address:	UNNAMED ROAD
City,State,Zip:	BAKERSFIELD, CA 93314
Global ID:	T10000007630
Case Type:	Underground Injection Control (UIC)
Status:	Open
Status Date:	09/01/2015
Lead Agency:	CENTRAL VALLEY RWQCB (REGION 5F)
Case Worker:	Not reported
Local Agency:	Not reported
RB Case Number:	02985041
Loc Case Number:	Not reported
File Location:	Not reported
Potential Contaminants of Concern:	Not reported
Potential Media Affected:	Not reported
Site History:	Not reported
Begin Date:	2015-09-01 00:00:00
How Discovered:	Not reported
How Discovered Description:	Not reported
Stop Method:	Not reported
Stop Description:	Not reported
Latitude:	35.449344
Longitude:	-119.109114
Geotracker:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T10000007630

D25 **GRAY LIFT INC** **HAZNET** **S112968304**
SSE **4806 SACO RD** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.505 mi.
2665 ft. **Site 10 of 10 in cluster D**

Actual:
457 ft.

Focus Map:
9

HAZNET:

Name:	GRAY LIFT INC
Address:	4806 SACO RD s/b 4608 Saco Rd
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2008
Gepaid:	CAC002627382
Contact:	NICK VELAHOS
Telephone:	8053932460
Mailing Name:	Not reported
Mailing Address:	4806 SACO RD
Gen County:	15
Waste Category:	Other organic solids

GRAY LIFT INC (Continued) **S112968304**

TSD EPA ID: CAD982444481
TSD County: 36
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 16.856

Additional Info:
Year: 2008
Shipment Date: 20080305
Creation Date: 6/4/2008 18:30:08
Receipt Date: 20080305
Manifest ID: 004055657JJK
Gen EPA ID: CAC002627382
Trans EPA ID: CAR000172460
Trans Name: ENVIRONMENTAL LOGISTICS INC
Trans 2 EPA ID: Not reported
Trans 2 Name: Not reported
TSDF EPA ID: CAD982444481
Trans Name: FILTER RECYCLING SERVICES INC
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code: 352
RCRA Code: Not reported
Meth Code: H141
Quantity Tons: 16.856
Waste Quantity: 20
Quantity Unit: Y
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

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26 **GOSSAMER GROVE TRACT 7332** **NPDES** **S122829868**
SW **N OF COBBLE CRREK DR BTWN GOSSAMER GROVE BLVD & COMMUNITY DR** **CIWQS** **N/A**
1/2-1 **SHAFTER, CA 93263** **CERS**
0.505 mi.
2668 ft.

Actual:
411 ft.

Focus Map:
8

NPDES:
Name: GOSSAMER GROVE TRACT 7332
Address: N OF COBBLE CRREK DR BTWN GOSSAMER GROVE BLVD & COMMUNITY DR
City,State,Zip: SHAFTER, CA 93263
Facility Status: Not reported
NPDES Number: Not reported
Region: Not reported
Agency Number: Not reported
Regulatory Measure ID: Not reported
Place ID: Not reported
Order Number: Not reported
WDID: 5F15C384441
Regulatory Measure Type: Construction
Program Type: Not reported
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: Not reported
Termination Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported

GOSSAMER GROVE TRACT 7332 (Continued) **S122829868**

Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Active
Status Date:	08/29/2018
Operator Name:	Lennar Fresno Inc
Operator Address:	8080 North Palm Suite #110
Operator City:	Fresno
Operator State:	California
Operator Zip:	93711

Name:	GOSSAMER GROVE TRACT 7332
Address:	N OF COBBLE CRREK DR BTWN GOSSAMER GROVE BLVD & COMMUNITY DR
City,State,Zip:	SHAFTER, CA 93263
Facility Status:	Active
NPDES Number:	CAS000002
Region:	5F
Agency Number:	0
Regulatory Measure ID:	500774
Place ID:	Not reported
Order Number:	2009-0009-DWQ
WDID:	5F15C384441
Regulatory Measure Type:	Enrollee
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	08/29/2018
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	8080 North Palm Suite #110
Discharge Name:	Lennar Fresno Inc
Discharge City:	Fresno
Discharge State:	California
Discharge Zip:	93711
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

CIWQS:

Name:	GOSSAMER GROVE TRACT 7332
Address:	N OF COBBLE CRREK DR BTWN GOSSAMER GROVE BLVD & COMMUNITY DR
City,State,Zip:	SHAFTER, CA 93263
Agency:	Lennar Fresno Inc
Agency Address:	8080 North Palm Suite #110, Fresno, CA 93711
Place/Project Type:	Construction - Residential
SIC/NAICS:	Not reported
Region:	5F
Program:	CONSTW
Regulatory Measure Status:	Active
Regulatory Measure Type:	Storm water construction
Order Number:	2009-0009-DWQ
WDID:	5F15C384441

GOSSAMER GROVE TRACT 7332 (Continued) **S122829868**

NPDES Number:	CAS000002
Adoption Date:	Not reported
Effective Date:	08/29/2018
Termination Date:	Not reported
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	35.45223
Longitude:	-119.11419

CERS:

Name:	GOSSAMER GROVE TRACT 7332
Address:	N OF COBBLE CRREK DR BTWN GOSSAMER GROVE BLVD & COMMUNITY DR
City,State,Zip:	SHAFTER, CA 93263
Site ID:	533019
CERS ID:	866389
CERS Description:	Construction Storm Water

Affiliation:

Affiliation Type Desc:	Owner/Operator
Entity Name:	Lennar Fresno Inc
Entity Title:	Operator
Affiliation Address:	8080 North Palm Suite #110
Affiliation City:	Fresno
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93711
Affiliation Phone:	Not reported

27
South
1/2-1
0.528 mi.
2789 ft.

Actual:
416 ft.

Focus Map:
8

GOSSAMER GROVE TRACTS 7314 AND 7319
COMMUNITY DR AND COBBLE CREEK DR
SHAFTER, CA 93263

NPDES **S121451821**
CIWQS **N/A**
CERS

NPDES:

Name:	GOSSAMER GROVE TRACTS 7314 AND 7319
Address:	COMMUNITY DR AND COBBLE CREEK DR
City,State,Zip:	SHAFTER, CA 93263
Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	5F15C382546
Regulatory Measure Type:	Construction
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported

GOSSAMER GROVE TRACTS 7314 AND 7319 (Continued) **S121451821**

Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Active
Status Date:	02/21/2018
Operator Name:	Lennar Fresno Inc
Operator Address:	8080 N Palm Ave Ste 110
Operator City:	Fresno
Operator State:	California
Operator Zip:	93711

NPDES as of 03/2018:

NPDES Number:	CAS000002
Status:	Active
Agency Number:	0
Region:	5F
Regulatory Measure ID:	490482
Order Number:	2009-0009-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	5F15C382546
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	02/21/2018
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Lennar Fresno Inc
Discharge Address:	8080 N Palm Ave Ste 110
Discharge City:	Fresno
Discharge State:	California
Discharge Zip:	93711
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported

GOSSAMER GROVE TRACTS 7314 AND 7319 (Continued) **S121451821**

Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Name:	GOSSAMER GROVE TRACTS 7314 AND 7319
Address:	COMMUNITY DR AND COBBLE CREEK DR
City,State,Zip:	SHAFTER, CA 93263
Facility Status:	Active
NPDES Number:	CAS000002
Region:	5F
Agency Number:	0
Regulatory Measure ID:	490482
Place ID:	Not reported
Order Number:	2009-0009-DWQ
WDID:	5F15C382546
Regulatory Measure Type:	Enrollee
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	02/21/2018
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	8080 N Palm Ave Ste 110
Discharge Name:	Lennar Fresno Inc
Discharge City:	Fresno
Discharge State:	California
Discharge Zip:	93711
Status:	Not reported
Status Date:	Not reported

GOSSAMER GROVE TRACTS 7314 AND 7319 (Continued) **S121451821**

Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

NPDES as of 03/2018:

NPDES Number:	CAS000002
Status:	Active
Agency Number:	0
Region:	5F
Regulatory Measure ID:	490482
Order Number:	2009-0009-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	5F15C382546
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	02/21/2018
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Lennar Fresno Inc
Discharge Address:	8080 N Palm Ave Ste 110
Discharge City:	Fresno
Discharge State:	California
Discharge Zip:	93711
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported

GOSSAMER GROVE TRACTS 7314 AND 7319 (Continued) **S121451821**

Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

CIWQS:

Name:	GOSSAMER GROVE TRACTS 7314 AND 7319
Address:	COMMUNITY DR AND COBBLE CREEK DR
City,State,Zip:	SHAFTER, CA 93263
Agency:	Lennar Fresno Inc
Agency Address:	8080 N Palm Ave Ste 110, Fresno, CA 93711
Place/Project Type:	Construction - Residential
SIC/NAICS:	Not reported
Region:	5F
Program:	CONSTW
Regulatory Measure Status:	Active
Regulatory Measure Type:	Storm water construction
Order Number:	2009-0009-DWQ
WDID:	5F15C382546
NPDES Number:	CAS000002
Adoption Date:	Not reported
Effective Date:	02/21/2018
Termination Date:	Not reported
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	35.44852
Longitude:	-119.10785

CERS:

Name:	GOSSAMER GROVE TRACTS 7314 AND 7319

GOSSAMER GROVE TRACTS 7314 AND 7319 (Continued) **S121451821**

Address:	COMMUNITY DR AND COBBLE CREEK DR
City,State,Zip:	SHAFTER, CA 93263
Site ID:	533020
CERS ID:	858423
CERS Description:	Construction Storm Water

Affiliation:

Affiliation Type Desc:	Owner/Operator
Entity Name:	Lennar Fresno Inc
Entity Title:	Operator
Affiliation Address:	8080 N Palm Ave Ste 110
Affiliation City:	Fresno
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93711
Affiliation Phone:	Not reported

28
SSW
1/2-1
0.545 mi.
2875 ft.

Actual:
414 ft.

Focus Map:
8

CAULAY PIT **MINES MRDS** **1025644791**
N/A

BAKERSFIELD, CA 93314

MINES MRDS:

Name:	CAULAY PIT
Address:	Not reported
Deposit identification Number:	10163317
City,State,Zip:	BAKERSFIELD, CALIFORNIA 93314
URL:	https://mrdata.usgs.gov/mrds/show-mrds.php?dep_id=10163317
MRDS Identification Number:	Not reported
MAS/MILS Identification Number:	0060291101
Region:	NA
Country:	United States
Primary Commodities:	Sand and Gravel, Construction
Secondary Commodities:	Not reported
Tertiary Commodities:	Not reported
Operation Type:	Surface
Deposit Type:	Not reported
Production Size:	Not reported
Development Status:	Past Producer
Ore Minerals or Materials:	Not reported
Gangue Minerals or Materials:	Not reported
Other Minerals or Materials:	Not reported
Ore Body Form:	Not reported
Workings Type:	Not reported
Mineral Deposit Model:	Not reported
Alteration Processes:	Not reported
Concentration Processes:	Not reported
Previous Names:	Not reported
Ore Controls:	Not reported
Reporter:	Ridenour, James
Host Rock Unit Name:	Not reported
Host Rock Type:	Not reported
Associated Rock Unit Name:	Not reported
Associated Rock Type Code:	Not reported
Structural Characteristics:	Not reported
Tectonic Setting:	Not reported

CAULAY PIT (Continued) **1025644791**

References:	Not reported
First Production Year:	Not reported
Began Before/After FPY:	Not reported
Last Production Year:	Not reported
Ended Before/After LPY:	Not reported
Year Discovered:	Not reported
Found Before/After YD:	Not reported
Production History:	Not reported
Discovery Information:	Not reported
Latitude:	35.44858
Longitude:	-119.10923

---

29 SW 1/2-1 0.583 mi. 3077 ft. **BAKERSFIELD AG CO INC** **FINDS 1004439120**
RTE. 11 BOX 858 **ECHO N/A**
BAKERSFIELD, CA 93314

Actual: 407 ft.

Focus Map: 8

Bakersfield Ag Chem. Per EPA, site was assessed, and the location is no longer judged to be a potential National Priorities List (NPL) candidate, doesn't need Superfund attention (SEMS-Archive).

FINDS:

Registry ID: 110002145937

Environmental Interest/Information System

NCDB (National Compliance Data Base) supports implementation of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Toxic Substances Control Act (TSCA). The system tracks inspections in regions and states with cooperative agreements, enforcement actions, and settlements.
US EPA TRIS (Toxics Release Inventory System) contains information from facilities on the amounts of over 300 listed toxic chemicals that these facilities release directly to air, water, land, or that are transported off-site.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1004439120
Registry ID:	110002145937
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110002145937

E30 SSE 1/2-1 0.634 mi. 3350 ft. **BRADFORD AND SONS CONSTRUCTION** **AST A100323203**
4618 SACO **N/A**
BAKERSFIELD, CA

Site 1 of 3 in cluster E

Actual: 460 ft.

Focus Map: 9

AST:

Name:	BRADFORD AND SONS CONSTRUCTION
Address:	4618 SACO
City/Zip:	BAKERSFIELD,
Certified Unified Program Agencies:	Kern
Owner:	JABRACO INC
Total Gallons:	13,000
CERSID:	Not reported
Facility ID:	Not reported

Site vacant 10/09-04/11 to 7/14. Bradford & Sons never operated out of this location. Office: 13061 Rosedale Hwy, Suite G-218. may be registered as contractor

BRADFORD AND SONS CONSTRUCTION (Continued) **A100323203**

Business Name:	Not reported
Phone:	Not reported
Fax:	Not reported
Mailing Address:	Not reported
Mailing Address City:	Not reported
Mailing Address State:	Not reported
Mailing Address Zip Code:	Not reported
Operator Name:	Not reported
Operator Phone:	Not reported
Owner Phone:	Not reported
Owner Mail Address:	Not reported
Owner State:	Not reported
Owner Zip Code:	Not reported
Owner Country:	Not reported
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	Not reported

E31 **DAVIES USED EQUIP CO** **UST** **U004112668**
SSE **4618 SACO** **N/A**
1/2-1 **BAKERSFIELD, CA**
0.634 mi.
3350 ft. **Site 2 of 3 in cluster E**

Actual:
460 ft.

Focus Map:
9

KERN CO. UST:

Name:	DAVIES USED EQUIP CO
Address:	4618 SACO
City:	BAKERSFIELD
Region:	Kern
Facility ID:	Not reported
CERSID:	Not reported
Owner Id:	390021
Owner Name:	DAVIES, BURTON
Tank Num:	1
Tank Capacity:	0
Common Name:	Not reported
Description:	Not reported
Number of Compartments:	Not reported
Install Date:	Not reported
Date of Closure:	Not reported
Billing Status:	Not reported
Mailing Address:	Not reported
Mailing Address (care of):	Not reported
Mailing City/State/Zip:	Not reported

Site vacant 10/09-04/11 to 7/14.

E32 **DAVIES USED EQUIPMENT COMPANY** **HAZNET** **S113169067**
SSE **4618 SACO** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.634 mi.
3350 ft. **Site 3 of 3 in cluster E**

Actual:
460 ft.

Focus Map:
9

HAZNET:

Name:	DAVIES USED EQUIPMENT COMPANY
Address:	4618 SACO
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	1995
Gepaid:	CAL930294350
Contact:	MARY CANDACE DAVIES
Telephone:	6618327907
Mailing Name:	Not reported
Mailing Address:	PO BOX 21227
Gen County:	15
Waste Category:	Waste oil and mixed oil
TSD EPA ID:	CAD980883177
TSD County:	15
Disposal Method:	Recycler
Tons:	3.42

Site vacant 10/29-04/11 to 7/14.

Additional Info:

Year:	1995
Shipment Date:	19950510
Creation Date:	4/2/1996 0:00:00
Receipt Date:	19950510
Manifest ID:	93269782
Gen EPA ID:	CAL930294350
Trans EPA ID:	CAD980818702
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980883177
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD980883177
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	3.42
Waste Quantity:	900
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

33
East
1/2-1
0.690 mi.
3643 ft.

KERN FRONT OIL FIELD
E OF HWY 65 N OF
BAKERSFIELD, CA 93308

SEMS-ARCHIVE

1003878600
CAD980695258

Actual:
552 ft.

Focus Map:
6

SEMS Archive:

Site ID:	0901971
EPA ID:	CAD980695258
Cong District:	18
FIPS Code:	06029
FF:	N
NPL:	Not on the NPL
Non NPL Status:	NFRAP-Site does not qualify for the NPL based on existing information

SEMS Archive Detail:

Region:	09
Site ID:	0901971
EPA ID:	CAD980695258
Site Name:	KERN FRONT OIL FIELD
NPL:	N
FF:	N
OU:	00
Action Code:	PA
Action Name:	PA
SEQ:	1
Start Date:	1984-03-01 05:00:00
Finish Date:	1985-05-01 05:00:00
Qual:	N
Current Action Lead:	St Perf

Region:	09
Site ID:	0901971
EPA ID:	CAD980695258
Site Name:	KERN FRONT OIL FIELD
NPL:	N
FF:	N
OU:	00
Action Code:	DS
Action Name:	DISCVRY
SEQ:	1
Start Date:	1979-09-01 04:00:00
Finish Date:	1979-09-01 04:00:00
Qual:	Not reported
Current Action Lead:	EPA Perf

Region:	09
Site ID:	0901971
EPA ID:	CAD980695258
Site Name:	KERN FRONT OIL FIELD
NPL:	N
FF:	N
OU:	00
Action Code:	VS
Action Name:	ARCH SITE
SEQ:	1
Start Date:	Not reported
Finish Date:	1985-05-01 05:00:00
Qual:	Not reported
Current Action Lead:	EPA Perf In-Hse

F34 **EAST BAY CLARKLIFT DBA GRAY LIFT** **CERS HAZ WASTE** **S121773357**
SSE **4608 SACO RD** **CERS TANKS** **N/A**
1/2-1 **BAKERSFIELD, CA 93308** **CERS**
0.718 mi.
3791 ft. **Site 1 of 6 in cluster F**

Actual:
460 ft.

Focus Map:
9

CERS HAZ WASTE:
Name: EAST BAY CLARKLIFT DBA GRAY LIFT
Address: 4608 SACO RD
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 394097
CERS ID: 10230880
CERS Description: Hazardous Waste Generator

CERS TANKS:
Name: EAST BAY CLARKLIFT DBA GRAY LIFT
Address: 4608 SACO RD
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 394097
CERS ID: 10230880
CERS Description: Aboveground Petroleum Storage

CERS:
Name: EAST BAY CLARKLIFT DBA GRAY LIFT
Address: 4608 SACO RD
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 394097
CERS ID: 10230880
CERS Description: Chemical Storage Facilities

Violations:
Site ID: 394097
Site Name: EAST BAY CLARKLIFT dba GRAY LIFT
Violation Date: 05-18-2015
Citation: HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description: Failure to provide and maintain adequate secondary containment.
Violation Notes: Returned to compliance on 08/07/2015. The secondary containment for the diesel tank is not being properly maintained. There is a lot of build up of trash and debris in the containment (photos attached). Please clean out the containment and be sure to include the inspection of this in your monthly inspections. Please send pictures via email showing the containment has been cleaned out and is free of trash and debris to abate this violation.
Violation Division: Kern County Env Health Services Department
Violation Program: APSA
Violation Source: CERS

Site ID: 394097
Site Name: EAST BAY CLARKLIFT dba GRAY LIFT
Violation Date: 05-23-2018
Citation: 22 CCR 12 66262.12 - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.12
Violation Description: Failure to obtain an Identification Number prior to treating, storing, disposing of, transporting or offering for transportation any hazardous waste.
Violation Notes: Returned to compliance on 10/08/2018. Observation: Review of Department of Toxic Substance Control (DTSC) website indicates that the EPA number, CAL000419767, submitted to California Environmental

EAST BAY CLARKLIFT DBA GRAY LIFT (Continued) **S121773357**

Reporting System (CERS) website is INACTIVE. Corrective Action: Provide current and active EPA number. Update the facility business activity page in CERS to reflect ACTIVE EPA ID number
Violation Division: Kern County Env Health Services Department
Violation Program: HW
Violation Source: CERS

Site ID: 394097
Site Name: EAST BAY CLARKLIFT dba GRAY LIFT
Violation Date: 02-25-2014
Citation: HSC 6.95 25505(a) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)
Violation Description: Owner/Operator failed to complete and/or submit a Hazardous Materials Business Plan when storing hazardous materials at or above the thresholds quantities of 55 gallons/500 lbs/200 cubic feet.
Violation Notes: Returned to compliance on 03/18/2014. Failure to submit in CERS
Violation Division: Kern County Env Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 394097
Site Name: EAST BAY CLARKLIFT dba GRAY LIFT
Violation Date: 05-18-2015
Citation: 19 CCR 6.95 25508(a)(1) - California Code of Regulations, Title 19, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description: Failure to complete and electronically submit the Business Activities Page and/or Business Owner Operator Identification Page.
Violation Notes: Returned to compliance on 08/21/2015. The certification in Business Owner/Operator Identification regarding Name/Title of Document Preparer/Signer needs to be completed. Complete this section and resubmit with all other elements at the same time once all corrections have been made.
Violation Division: Kern County Env Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 394097
Site Name: EAST BAY CLARKLIFT dba GRAY LIFT
Violation Date: 05-18-2015
Citation: 22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description: Failure to properly label hazardous waste accumulation containers with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes: Returned to compliance on 08/06/2015. The hazardous waste label on the Used Antifreeze drum needs to be replaced (photo attached). Please send a picture of this drum with a new label on it to abate this violation. Hazardous waste labels can be issued by your registered waste hauler.
Violation Division: Kern County Env Health Services Department
Violation Program: HW
Violation Source: CERS

Site ID: 394097
Site Name: EAST BAY CLARKLIFT dba GRAY LIFT
Violation Date: 05-18-2015

EAST BAY CLARKLIFT DBA GRAY LIFT (Continued) **S121773357**

Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to establish and electronically submit an adequate emergency response plan and procedures for a release or threatened release of a hazardous material.
Violation Notes:	Returned to compliance on 12/18/2015. The contingency plan that was submitted in CERS is an older version and has inaccurate information. You may use the template, should you choose, to correct this violation: http://psbweb.co.kern.ca.us/EH_Internet/pdfs/hazmat/col2/2ContingencyPlan.pdf . Discard the old plan, upload the new plan, and resubmit with all other elements once all corrections have been made.
Violation Division:	Kern County Env Health Services Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	394097
Site Name:	EAST BAY CLARKLIFT dba GRAY LIFT
Violation Date:	05-18-2015
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to establish and electronically submit an adequate training program in safety procedures in the event of a release or threatened release of a hazardous material.
Violation Notes:	Returned to compliance on 08/21/2015. The document that was uploaded into the Employee Training section in CERS was just the Emergency Response Procedures. An actual training plan needs to be uploaded and submitted. You may utilize this template, should you choose, to abate the violation: http://psbweb.co.kern.ca.us/EH_Internet/pdfs/hazmat/col2/3EMPLOYEETRAINGPLANREQUIREMENTSANDTEMPLATE.pdf . Discard the old document in CERS, upload the new one, and resubmit with all other elements once all corrections have been made.
Violation Division:	Kern County Env Health Services Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	394097
Site Name:	EAST BAY CLARKLIFT dba GRAY LIFT
Violation Date:	05-18-2015
Citation:	40 CFR 1 265.174 - U.S. Code of Federal Regulations, Title 40, Chapter 1, Section(s) 265.174
Violation Description:	Failure to inspect hazardous waste storage areas at least weekly.
Violation Notes:	Returned to compliance on 08/27/2015. There needs to be a procedure set in place with workers to inspect all hazardous waste storage areas at least weekly. Documentation is not necessarily required, but due to the large amount of spillage in the hazardous waste storage area, it would be highly recommended until better management is established. Please submit documentation of the protocol that is to be implemented and two weeks of inspection logs to abate this violation.
Violation Division:	Kern County Env Health Services Department
Violation Program:	HW
Violation Source:	CERS
Site ID:	394097
Site Name:	EAST BAY CLARKLIFT dba GRAY LIFT
Violation Date:	05-18-2015

EAST BAY CLARKLIFT DBA GRAY LIFT (Continued) **S121773357**

Citation:	40 CFR 1 265.173 - U.S. Code of Federal Regulations, Title 40, Chapter 1, Section(s) 265.173
Violation Description:	Failure to properly close hazardous waste containers when not in active use.
Violation Notes:	Returned to compliance on 08/06/2015. The blue 55-gallon drum in the shop/bulk oil storage area had the top cut and was open to the air (photos attached). All containers that store hazardous waste for any reason need to be closed at all times except for when adding or removing waste. This drum was said to be used to drain filters. Please acquire a drain top that can be used during business hours and then have the drum properly closed when not in use. Please take a picture of the drum once it has been replaced/has new topper and email to me to abate the violation.
Violation Division:	Kern County Env Health Services Department
Violation Program:	HW
Violation Source:	CERS
Site ID:	394097
Site Name:	EAST BAY CLARKLIFT dba GRAY LIFT
Violation Date:	05-18-2015
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit a site map with all required content.
Violation Notes:	Returned to compliance on 08/07/2015. The Site Map that was uploaded in CERS does not have the empty propane tank storage listed. Please update the site map, discard the old one in CERS, upload the new one, and resubmit with all other elements once all corrections have been made.
Violation Division:	Kern County Env Health Services Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	394097
Site Name:	EAST BAY CLARKLIFT dba GRAY LIFT
Violation Date:	05-18-2015
Citation:	HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description:	Failure to comply with all of the following requirements: 1. Failure to conduct inspections and tests in accordance with written procedures that you or a certifying engineer have developed for the facility. 2. Failure to sign written procedures and/or a record of inspections and/or customary business records by the appropriate supervisor or inspector. 3. Failure to keep written procedures and/or a record of inspections and/or customary business records with the plan. AND 4. Failure to maintain written procedures and/or a record of inspections and/or customary business records for three years.
Violation Notes:	Returned to compliance on 08/06/2015. Inspections are not being done at the facility. Please follow the inspection process that will be laid out in your SPCC plan. Submit a copy of an inspection form and protocol to me via email to abate this violation.
Violation Division:	Kern County Env Health Services Department
Violation Program:	APSA
Violation Source:	CERS
Site ID:	394097
Site Name:	EAST BAY CLARKLIFT dba GRAY LIFT

EAST BAY CLARKLIFT DBA GRAY LIFT (Continued) **S121773357**

Violation Date:	05-18-2015
Citation:	22 CCR 16 66266.130 - California Code of Regulations, Title 22, Chapter 16, Section(s) 66266.130
Violation Description:	Failure to properly handle, manage, label, and recycle used oil and fuel filters.
Violation Notes:	Returned to compliance on 08/06/2015. Used oil filters are currently being drained in an unmarked drum that is being left open. Please submit a picture of a proper drainage system for the used oil filters to abate this violation.
Violation Division:	Kern County Env Health Services Department
Violation Program:	HW
Violation Source:	CERS
Site ID:	394097
Site Name:	EAST BAY CLARKLIFT dba GRAY LIFT
Violation Date:	05-18-2015
Citation:	HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description:	Failure to prepare and implement a Spill Prevention Control and Countermeasure (SPCC) Plan .
Violation Notes:	Returned to compliance on 08/05/2015. An SPCC plan was not established or implemented at the facility. Your facility is a qualified tier I facility and can self-certify the plan. You may find a template at http://www.epa.gov/OEM/content/spcc/tier1temp.htm to assist you. Please submit this in the Aboveground Petroleum Storage section in CERS to abate this violation once it has been completed.
Violation Division:	Kern County Env Health Services Department
Violation Program:	APSA
Violation Source:	CERS
Site ID:	394097
Site Name:	EAST BAY CLARKLIFT dba GRAY LIFT
Violation Date:	05-18-2015
Citation:	HSC 6.5 Multiple Sections - California Health and Safety Code, Chapter 6.5, Section(s) Multiple Sections
Violation Description:	Haz Waste Generator Program - Operations/Maintenance - General
Violation Notes:	Returned to compliance on 08/06/2015. There was an area against the property line that has empty propane tanks from forklifts. This area needs to be labeled as "EMPTY PROPANE TANKS" from the front and the side of the wall, included on the facility site map, and need to be disposed of. You can contact Kern County Special Waste Facility at 661-862-8900 and arrangements can be made to dispose of them there, or you can contact a scrap metaling facility. Please submit a picture of the area with proper signage and submit a compliance plan on how and where you are going to be disposing of the propane tanks. Once you have taken them somewhere, please submit a manifest to me via email showing me where they have been disposed of.
Violation Division:	Kern County Env Health Services Department
Violation Program:	HW
Violation Source:	CERS
Site ID:	394097
Site Name:	EAST BAY CLARKLIFT dba GRAY LIFT
Violation Date:	05-18-2015
Citation:	HSC 6.5 25186.2 - California Health and Safety Code, Chapter 6.5, Section(s) 25186.2
Violation Description:	Failure to properly handle, store, or treat hazardous waste or

EAST BAY CLARKLIFT DBA GRAY LIFT (Continued) **S121773357**

provided false information submitted on the permit application and other documents.

Violation Notes: Returned to compliance on 08/06/2015. There was a significant amount of waste oil that was on the ground in the hazardous waste storage area (picture attached). Any spillage of hazardous waste needs to be properly cleaned up and disposed of immediately. An actual containment pallet needs to be acquired or a containment area built. Please submit a photo of the hazardous waste area that shows all spillage has been cleaned up and a proper containment has been put in place to abate this violation.
Violation Division: Kern County Env Health Services Department
Violation Program: HW
Violation Source: CERS

Site ID: 394097
Site Name: EAST BAY CLARKLIFT dba GRAY LIFT
Violation Date: 05-18-2015
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description: Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.
Violation Notes: Returned to compliance on 12/18/2015. The following corrections need to be made to the Hazardous Materials Inventory in CERS: -Add Used Antifreeze (had one 55-gallon drum on-site) -Adjust the "Largest Container Size" from 250 gallons to 100 gallons on Hydraulic Oil -The LPG amount needs to be increased to include the propane tanks for all forklifts -Discard Spent Lead Acid Batteries, for they are no longer stored on site -Adjust the "Largest Container Size" from 250 gallons to 100 gallons of Motor Oil -For Used Oil Filters the "Largest Container Size" needs to be changed to 350 pounds, "Maximum Daily Amount" needs to be increased (there was 1050 pounds on site at time of inspection), "Average Daily Amount" needs to be increased and converted to pounds, add "Days on Site", and change the "Units of Measure" to pounds -Discard Sulfuric Acid, for it is no longer stored on site -Add "Days on Site" to Diesel Resubmit with all other elements once all corrections have been made.
Violation Division: Kern County Env Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Evaluation:
Eval General Type: Other/Unknown
Eval Date: 02-25-2014
Violations Found: Yes
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-23-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department

EAST BAY CLARKLIFT DBA GRAY LIFT (Continued) **S121773357**

Eval Program:	APSA
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	05-18-2015
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	In "Business Activities" please select "NO" to Remote Hazardous Waste Generator. Also in "Business Owner/Operator Identification" please change the Billing Contact to the name of the company name, not individuals. You will have thirty (30) days from the date the violation was cited to come into full compliance. Once all violations have been completed, sign the last page of this inspection report to confirm full compliance has been met and send it to me via email at LeeSh@co.kern.ca.us. Should you have any questions, please don't hesitate to contact me.
Eval Division:	Kern County Env Health Services Department
Eval Program:	HMRRP
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	05-18-2015
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	You will have thirty (30) days from the date the violation was cited to come into full compliance. Once all violations have been completed, sign the last page of this inspection report to confirm full compliance has been met and send it to me via email at LeeSh@co.kern.ca.us. Should you have any questions, please don't hesitate to contact me.
Eval Division:	Kern County Env Health Services Department
Eval Program:	APSA
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	05-18-2015
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	You will have thirty (30) days from the date the violation was cited to come into full compliance. Once all violations have been completed, sign the last page of this inspection report to confirm full compliance has been met and send it to me via email at LeeSh@co.kern.ca.us. Should you have any questions, please don't hesitate to contact me.
Eval Division:	Kern County Env Health Services Department
Eval Program:	HW
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	05-23-2018
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Kern County Env Health Services Department
Eval Program:	HMRRP
Eval Source:	CERS

EAST BAY CLARKLIFT DBA GRAY LIFT (Continued) **S121773357**

Eval General Type: Compliance Evaluation Inspection
Eval Date: 05-23-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HW
Eval Source: CERS

Enforcement Action:
Site ID: 394097
Site Name: EAST BAY CLARKLIFT dba GRAY LIFT
Site Address: 4608 SACO RD
Site City: BAKERSFIELD
Site Zip: 93308
Enf Action Date: 02-25-2014
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Kern County Env Health Services Department
Enf Action Program: HMRRP
Enf Action Source: CERS

Site ID: 394097
Site Name: EAST BAY CLARKLIFT dba GRAY LIFT
Site Address: 4608 SACO RD
Site City: BAKERSFIELD
Site Zip: 93308
Enf Action Date: 05-18-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Kern County Env Health Services Department
Enf Action Program: APSA
Enf Action Source: CERS

Site ID: 394097
Site Name: EAST BAY CLARKLIFT dba GRAY LIFT
Site Address: 4608 SACO RD
Site City: BAKERSFIELD
Site Zip: 93308
Enf Action Date: 05-18-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Kern County Env Health Services Department
Enf Action Program: HMRRP
Enf Action Source: CERS

Site ID: 394097
Site Name: EAST BAY CLARKLIFT dba GRAY LIFT
Site Address: 4608 SACO RD
Site City: BAKERSFIELD
Site Zip: 93308
Enf Action Date: 05-18-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection

EAST BAY CLARKLIFT DBA GRAY LIFT (Continued) **S121773357**

Enf Action Notes: Not reported
Enf Action Division: Kern County Env Health Services Department
Enf Action Program: HW
Enf Action Source: CERS

Site ID: 394097
Site Name: EAST BAY CLARKLIFT dba GRAY LIFT
Site Address: 4608 SACO RD
Site City: BAKERSFIELD
Site Zip: 93308
Enf Action Date: 12-04-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Kern County Env Health Services Department
Enf Action Program: HMRRP
Enf Action Source: CERS

Coordinates:
Site ID: 394097
Facility Name: EAST BAY CLARKLIFT dba GRAY LIFT
Env Int Type Code: APSA
Program ID: 10230880
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 35.447540
Longitude: -119.093480

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Kern County Environmental Health Services Departme
Entity Title: Not reported
Affiliation Address: 2700 M Street, Suite 300
Affiliation City: Bakersfield
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93301-2370
Affiliation Phone: (661) 862-8740

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: PO BOX 2808
Affiliation City: FRESNO
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93725
Affiliation Phone: Not reported

Affiliation Type Desc: Identification Signer
Entity Name: Bill Stromer
Entity Title: Director of Safety
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported

EAST BAY CLARKLIFT DBA GRAY LIFT (Continued) **S121773357**

Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Parent Corporation
Entity Name:	GRAY LIFT INC
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Document Preparer
Entity Name:	Bill Stromer
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Environmental Contact
Entity Name:	BILL STROMER
Entity Title:	Not reported
Affiliation Address:	4646 E. JENSEN
Affiliation City:	FRESNO
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93725
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	BILL STROMER
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(559) 268-6621
Affiliation Type Desc:	Legal Owner
Entity Name:	marshall cromer
Entity Title:	Not reported
Affiliation Address:	4701 Oakport Street
Affiliation City:	Oakland
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	94601
Affiliation Phone:	(510) 534-6566

F35 **EAST BAY CLARK LIFT DBA GRAYLIFT** **FINDS** **1024722569**
SSE **4608 SACO RD** **ECHO** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.718 mi.
3791 ft. **Site 2 of 6 in cluster F**

Actual:
460 ft.

Focus Map:
9

FINDS:

Registry ID: 110070511510

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1024722569
Registry ID:	110070511510
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110070511510

F36 **EAST BAY CLARK LIFT DBA GRAYLIFT** **RCRA NonGen / NLR** **1024856169**
SSE **4608 SACO RD** **CAL000419767**
1/2-1 **BAKERSFIELD, CA 93308**
0.718 mi.
3791 ft. **Site 3 of 6 in cluster F**

Actual:
460 ft.

Focus Map:
9

RCRA NonGen / NLR:

Date form received by agency:	2016-08-22 00:00:00.0
Facility name:	EAST BAY CLARK LIFT DBA GRAYLIFT
Facility address:	4608 SACO RD BAKERSFIELD, CA 93308
EPA ID:	CAL000419767
Mailing address:	4701 OAKPORT ST OAKLAND, CA 94601-4906
Contact:	ABRAHAM SHEWAREGED - VP
Contact address:	4701 OAKPORT ST OAKLAND, CA 94601
Contact country:	Not reported
Contact telephone:	510-534-6566
Contact email:	ASHEWAREGED@CROMER.COM
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	ABRAHAM SHEWAREGED - VP
Owner/operator address:	4701 OAKPORT ST OAKLAND, CA 94601
Owner/operator country:	Not reported
Owner/operator telephone:	510-534-6566
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported

EAST BAY CLARK LIFT DBA GRAYLIFT (Continued) **1024856169**

Legal status:	Other
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported
Owner/operator name:	MARSHALL T. CROMER
Owner/operator address:	EAST BAY CLARKLIFT, INC OAKLAND, CA 94601
Owner/operator country:	Not reported
Owner/operator telephone:	510-534-6566
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	Yes
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

F37 **GRAY LIFT INC** **FINDS** **1023262737**
SSE **4608 SACO RD** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.718 mi.
3791 ft. **Site 4 of 6 in cluster F**

Actual:
460 ft.

FINDS:

Focus Map:
9

Registry ID: 110065521705

Environmental Interest/Information System
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

F38 **GRAY LIFT INC** **AST** **A100420503**
SSE **4608 SACO RD** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.718 mi.
3791 ft. **Site 5 of 6 in cluster F**

Actual:
460 ft.

Focus Map:
9

AST:

Name:	GRAY LIFT INC
Address:	4608 SACO RD
City/Zip:	BAKERSFIELD,93308
Certified Unified Program Agencies:	Not reported
Owner:	Graylift Inc
Total Gallons:	Not reported
CERSID:	10230880
Facility ID:	Not reported
Business Name:	GRAY LIFT INC
Phone:	(661) 393-2460
Fax:	559-485-0110
Mailing Address:	PO BOX 2808
Mailing Address City:	FRESNO
Mailing Address State:	CA
Mailing Address Zip Code:	93725
Operator Name:	BILL STROMER
Operator Phone:	559-268-6621
Owner Phone:	(559) 268-6621
Owner Mail Address:	PO BOX 2808
Owner State:	CA
Owner Zip Code:	93725
Owner Country:	United States
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	CAL000346419

F39 **EAST BAY CLARKLIFT, INC.** **HAULERS** **S120064946**
SSE **4608 SACO ROAD** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.718 mi.
3791 ft. **Site 6 of 6 in cluster F**

Actual:
460 ft.

Focus Map:
9

HAULERS:

Name:	EAST BAY CLARKLIFT, INC.
Address:	4608 SACO ROAD
City,State,Zip:	BAKERSFIELD, CA 93308
Facility ID:	1872406
Facility Phone:	(661) 393-2460
Business Email Address:	dmcgee@cromer.com
Contact Person:	Dennis McGee
Mailing Address:	4608 Saco Road
Mailing City:	Bakersfield
Mailing State:	CA
Mailing Zip:	93308
Mailing County:	Not reported
Mailing Phone:	(661) 393-2460
Current Status:	Active Business
Current Hauler Status:	Hauler - Registered

EAST BAY CLARKLIFT, INC. (Continued) **S120064946**

Accepting Tires From Public: No
Regulatory Status Last Changed: 12/8/2016
Business Types: Other: Forklift Sales

40
NE
1/2-1
0.733 mi.
3871 ft.

DAVIS RESIDENCE
18212 GINA ELIZABETH CT
BAKERSFIELD, CA 93314

NPDES **S125343186**
CERS **N/A**

Actual:
573 ft.

Focus Map:
6

NPDES:

Name:	DAVIS RESIDENCE
Address:	18212 GINA ELIZABETH CT
City,State,Zip:	BAKERSFIELD, CA 93314
Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	5F15W004297
Regulatory Measure Type:	Construction
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Active
Status Date:	08/27/2019
Operator Name:	Tim Davis
Operator Address:	13061 Rosedale Highway
Operator City:	Bakersfield
Operator State:	California
Operator Zip:	93314

Name:	DAVIS RESIDENCE
Address:	18212 GINA ELIZABETH CT
City,State,Zip:	BAKERSFIELD, CA 93314
Facility Status:	Active
NPDES Number:	CAS000002
Region:	5F
Agency Number:	0
Regulatory Measure ID:	512135
Place ID:	Not reported
Order Number:	2009-0009-DWQ
WDID:	5F15W004297
Regulatory Measure Type:	Enrollee
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	08/27/2019
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported

DAVIS RESIDENCE (Continued) **S125343186**

Discharge Address:	13061 Rosedale Highway
Discharge Name:	Tim Davis
Discharge City:	Bakersfield
Discharge State:	California
Discharge Zip:	93314
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

CERS:

Name:	DAVIS RESIDENCE
Address:	18212 GINA ELIZABETH CT
City,State,Zip:	BAKERSFIELD, CA 93314
Site ID:	555963
CERS ID:	875190
CERS Description:	Construction Storm Water

Affiliation:

Affiliation Type Desc:	Owner/Operator
Entity Name:	Tim Davis
Entity Title:	Operator
Affiliation Address:	13061 Rosedale Highway
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93314
Affiliation Phone:	Not reported

G41 **GRANA ENT DBA JPS & CO TRANSPORTATION** **ECHO** **1025910699**
SE **3149 PETROL RD** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.796 mi.
4201 ft. **Site 1 of 4 in cluster G**

Actual:
478 ft.

Focus Map:
9

ECHO:

Envid:	1025910699
Registry ID:	110070591181
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110070591181

G42 **RCRA NonGen / NLR** **1025871243**
SE **3149 PETROL RD** GRANA ENT DBA JPS & CO TRANSPORTATION **CAL000444355**
1/2-1 **BAKERSFIELD, CA 93308** w/ EPA ID CAL000444355 per ECHO
0.796 mi.
4201 ft. **Site 2 of 4 in cluster G**

Actual:
478 ft.

Focus Map:
9

RCRA NonGen / NLR:

Date form received by agency:	2019-03-15 00:00:00.0
Facility name:	Not reported
Facility address:	3149 PETROL RD BAKERSFIELD, CA 93308
EPA ID:	CAL000444355

(Continued) **1025871243**

Mailing address:	1159 IRONWOOD ST PALMDALE, CA 93551
Contact:	PAUL GRANA
Contact address:	1159 IRONWOOD ST PALMDALE, CA 93551
Contact country:	Not reported
Contact telephone:	661-433-2443
Contact email:	JPSCOTR@AOL.COM
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	GRANA ENTERPRISES DBA JPS TRASPORTA
Owner/operator address:	1159 IRONWOOD ST PALMDALE, CA 93551
Owner/operator country:	Not reported
Owner/operator telephone:	661-433-2443
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	PAUL GRANA
Owner/operator address:	1159 IRONWOOD ST PALMDALE, CA 93551
Owner/operator country:	Not reported
Owner/operator telephone:	661-433-2443
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	Yes
Transporter of hazardous waste:	Yes
Treater, storer or disposer of HW:	Yes
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

(Continued) **1025871243**

Violation Status: No violations found

G43 **FRANCIA TRUCKING** **RCRA NonGen / NLR** **1024829613**
SE **3149 PETROL RD** **CAL000363115**
1/2-1 **BAKERSFIELD, CA 93308**
0.796 mi.
4201 ft. **Site 3 of 4 in cluster G**

Actual:
478 ft.

Focus Map:
9

RCRA NonGen / NLR:

Date form received by agency:	2011-04-20 00:00:00.0
Facility name:	FRANCIA TRUCKING
Facility address:	3149 PETROL RD BAKERSFIELD, CA 93308
EPA ID:	CAL000363115
Contact:	RAFAEL MENJIVAR
Contact address:	3149 PETROL RD BAKERSFIELD, CA 93308
Contact country:	Not reported
Contact telephone:	909-938-3766
Contact email:	FRANCIATRUCKING1@NETZERO.NET
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	NELSON FRANCIA
Owner/operator address:	3149 PETROL RD BAKERSFIELD, CA 93308
Owner/operator country:	Not reported
Owner/operator telephone:	661-899-9926
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	RAFAEL MENJIVAR
Owner/operator address:	3149 PETROL RD BAKERSFIELD, CA 93308
Owner/operator country:	Not reported
Owner/operator telephone:	909-938-3766
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	Yes
Treater, storer or disposer of HW:	No
Underground injection activity:	No

FRANCIA TRUCKING (Continued) **1024829613**

On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

G44 **FRANCIA TRUCKING** **FINDS** **1024687518**
SE **3149 PETROL RD** **ECHO** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.796 mi.
4201 ft. **Site 4 of 4 in cluster G**

Actual:
478 ft.

FINDS:

Focus Map:
9

Registry ID: 110070475912

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1024687518
Registry ID:	110070475912
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110070475912

H45 **T M COMPOSTINGNA INC** **FINDS** **1023316725**
SE **4322 SACO RD** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.820 mi.
4332 ft. **Site 1 of 2 in cluster H**

Actual:
460 ft.

FINDS:

Focus Map:
9

Registry ID: 110066100025

Environmental Interest/Information System
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

H46 **T M TRANSPORTATION INC** **FINDS** **1023305223**
SE **4322 N SACO RD** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.820 mi.
4332 ft. **Site 2 of 2 in cluster H**

Actual: FINDS:
460 ft.

Focus Map: Registry ID: 110065976527
9

Environmental Interest/Information System
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

I47 **AMERIGAS/COAST GAS - ENDES** **CERS** **S121770995**
SE **19428 ENDES ST** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.842 mi.
4447 ft. **Site 1 of 2 in cluster I**

Actual: CERS:
466 ft.

Focus Map: Name: AMERIGAS/COAST GAS - ENDES
9 Address: 19428 ENDES ST
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 385137
CERS ID: 10231729
CERS Description: Chemical Storage Facilities

Violations:
Site ID: 385137
Site Name: AMERIGAS/COAST GAS - ENDES
Violation Date: 03-22-2017
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description: Failure to establish and electronically submit an adequate training program in safety procedures in the event of a release or threatened release of a hazardous material.
Violation Notes: Returned to compliance on 03/27/2017.
Violation Division: Kern County Env Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 02-15-2017
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-22-2017
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department

AMERIGAS/COAST GAS - ENDES (Continued) **S121770995**

Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 02-20-2019
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 03-18-2015
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: For any questions, please contact Raymond Yim at: 661-862-8766
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Coordinates:
Site ID: 385137
Facility Name: AMERIGAS/COAST GAS - ENDES
Env Int Type Code: HMBP
Program ID: 10231729
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 35.446630
Longitude: -119.091040

Affiliation:
Affiliation Type Desc: Operator
Entity Name: Kevin Silvis
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (803) 605-9965

Affiliation Type Desc: Parent Corporation
Entity Name: amerigas
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: CUPA District
Entity Name: Kern County Environmental Health Services Departme
Entity Title: Not reported
Affiliation Address: 2700 M Street, Suite 300

AMERIGAS/COAST GAS - ENDES (Continued) **S121770995**

Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93301-2370
Affiliation Phone:	(661) 862-8740
Affiliation Type Desc:	Environmental Contact
Entity Name:	Kevin Silvis
Entity Title:	Not reported
Affiliation Address:	9750 S. Union Ave
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93307
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	9750 S. Union Ave
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93307
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Kevin Silvis
Entity Title:	District Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	AmeriGas/COAST GAS - ENDES
Entity Title:	Not reported
Affiliation Address:	9750 S. Union Ave
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93307
Affiliation Phone:	(661) 832-5331
Affiliation Type Desc:	Document Preparer
Entity Name:	Kevin Silvis
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Property Owner

AMERIGAS/COAST GAS - ENDES (Continued) **S121770995**

Entity Name:	Amerigas Inc.
Entity Title:	Not reported
Affiliation Address:	9750 S. Union Ave.
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93307
Affiliation Phone:	(661) 832-5331

I48 **COAST GAS - ENDES** **FINDS** **1023303896**
SE **19428 ENDES ST** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.842 mi.
4447 ft. **Site 2 of 2 in cluster I**

Actual: FINDS:
466 ft.

Focus Map: Registry ID: 110065962319
9

Environmental Interest/Information System
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

J49 **GILLIAM & SONS INC** **RCRA NonGen / NLR** **1024824202**
SE **19420 ENDES ST** **CAL000346727**
1/2-1 **BAKERSFIELD, CA 93308**
0.846 mi.
4468 ft. **Site 1 of 7 in cluster J**

Actual: RCRA NonGen / NLR:
473 ft.

Date form received by agency:	2009-09-25 00:00:00.0
Facility name:	GILLIAM & SONS INC
Facility address:	19420 ENDES ST BAKERSFIELD, CA 93308
EPA ID:	CAL000346727
Mailing address:	9831 ROSEDALE HWY BAKERSFIELD, CA 93312-2604
Contact:	DEVON MONTOYA
Contact address:	19420 ENDES ST BAKERSFIELD, CA 93308
Contact country:	Not reported
Contact telephone:	661-301-3811
Contact email:	JOANN@GILLIAMANDSONS.COM
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Focus Map:
9

Owner/Operator Summary:

Owner/operator name:	GILLIAM & SONS INC
Owner/operator address:	9831 ROSEDALE HWY BAKERSFIELD, CA 93312
Owner/operator country:	Not reported
Owner/operator telephone:	661-589-0913

GILLIAM & SONS INC (Continued) **1024824202**

Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported
Owner/operator name:	DEVON MONTOYA
Owner/operator address:	19420 ENDES ST BAKERSFIELD, CA 93308
Owner/operator country:	Not reported
Owner/operator telephone:	661-301-3811
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	Yes
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

J50 **GILLIAM AND SONS INC (YARD)** **AST** **A100420376**
SE **19420 ENDES ST** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.846 mi.
4468 ft. **Site 2 of 7 in cluster J**

Actual:
473 ft.

Focus Map:
9

AST:

Name:	GILLIAM AND SONS INC (YARD)
Address:	19420 ENDES ST
City/Zip:	BAKERSFIELD,93308
Certified Unified Program Agencies:	Not reported
Owner:	BILL GILLIAM
Total Gallons:	Not reported
CERSID:	10234222
Facility ID:	Not reported
Business Name:	GILLIAM AND SONS INC (YARD)
Phone:	(661) 589-0913
Fax:	(661) 589-6334

GILLIAM AND SONS INC (YARD) (Continued) **A100420376**

Mailing Address:	9831 ROSEDALE HWY
Mailing Address City:	BAKERSFIELD
Mailing Address State:	CA
Mailing Address Zip Code:	93312
Operator Name:	GILLIAM AND SONS INC
Operator Phone:	(661) 378-2433
Owner Phone:	(661) 589-0913
Owner Mail Address:	9831 ROSEDALE HWY
Owner State:	CA
Owner Zip Code:	93312
Owner Country:	United States
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	CAL000346727

J51 **GILLIAM AND SONS INC (YARD)** **FINDS** **1023210388**
SE **19420 ENDES ST** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.846 mi.
4468 ft. **Site 3 of 7 in cluster J**

Actual:
473 ft.

FINDS:

Focus Map:
9

Registry ID: 110064958050

Environmental Interest/Information System
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

J52 **GILLIAM AND SONS INC (YARD)** **AST** **A100323864**
SE **19420 ENDES** **N/A**
1/2-1 **BAKERSFIELD, CA**
0.846 mi.
4468 ft. **Site 4 of 7 in cluster J**

Actual:
473 ft.

AST:

Focus Map:
9

Name:	GILLIAM AND SONS INC (YARD)
Address:	19420 ENDES
City/Zip:	BAKERSFIELD,
Certified Unified Program Agencies:	Kern
Owner:	BILL GILLIAM
Total Gallons:	12,800
CERSID:	Not reported
Facility ID:	Not reported
Business Name:	Not reported
Phone:	Not reported
Fax:	Not reported
Mailing Address:	Not reported
Mailing Address City:	Not reported

GILLIAM AND SONS INC (YARD) (Continued) **A100323864**

Mailing Address State:	Not reported
Mailing Address Zip Code:	Not reported
Operator Name:	Not reported
Operator Phone:	Not reported
Owner Phone:	Not reported
Owner Mail Address:	Not reported
Owner State:	Not reported
Owner Zip Code:	Not reported
Owner Country:	Not reported
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	Not reported

J53 **GILLIAM & SONS INC** **FINDS** **1024685783**
SE **19420 ENDES ST** **ECHO** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.846 mi.
4468 ft. **Site 5 of 7 in cluster J**

Actual:
473 ft.

Focus Map:
9

FINDS:

Registry ID: 110070474177

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1024685783
Registry ID:	110070474177
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110070474177

J54 **GILLIAM AND SONS INC (YARD)** **CERS HAZ WASTE** **S121740543**
SE **19420 ENDES ST** **CERS TANKS** **N/A**
1/2-1 **BAKERSFIELD, CA 93308** **CERS**
0.846 mi.
4468 ft. **Site 6 of 7 in cluster J**

Actual:
473 ft.

Focus Map:
9

CERS HAZ WASTE:

Name:	GILLIAM AND SONS INC (YARD)
Address:	19420 ENDES ST
City,State,Zip:	BAKERSFIELD, CA 93308
Site ID:	119510
CERS ID:	10234222

GILLIAM AND SONS INC (YARD) (Continued) **S121740543**

CERS Description: Hazardous Waste Generator

CERS TANKS:
Name: GILLIAM AND SONS INC (YARD)
Address: 19420 ENDES ST
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 119510
CERS ID: 10234222
CERS Description: Aboveground Petroleum Storage

CERS:
Name: GILLIAM AND SONS INC (YARD)
Address: 19420 ENDES ST
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 119510
CERS ID: 10234222
CERS Description: Chemical Storage Facilities

Violations:
Site ID: 119510
Site Name: GILLIAM AND SONS INC (YARD)
Violation Date: 04-15-2019
Citation: HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description: Failure to prepare a Spill Prevention, Control, and Countermeasures (SPCC) Plan.
Violation Notes: Observation: Spill Prevention Control and Counter-measure (SPCC) plan was not available for review at the time of inspection. Corrective Action: Provide Tier I Qualified Facility SPCC plan for review. Email or fax the SPCC plan to Kern County Environmental Health Division. Attn: Christian Iwuchukwu (Email: iwuchukwuc@kerncounty.com; Fax: 661-862-8701).
Violation Division: Kern County Env Health Services Department
Violation Program: APSA
Violation Source: CERS

Site ID: 119510
Site Name: GILLIAM AND SONS INC (YARD)
Violation Date: 02-01-2016
Citation: HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description: Failure to perform a five-year review of the SPCC plan.
Violation Notes: Returned to compliance on 05/02/2016. THe SPCC plan must be reviewed every five years and certifiied off by the business owner or designated personnel. The last certification was in March, 2010.
Violation Division: Kern County Env Health Services Department
Violation Program: APSA
Violation Source: CERS

Site ID: 119510
Site Name: GILLIAM AND SONS INC (YARD)
Violation Date: 04-15-2019
Citation: 22 CCR 11 66261.7 - California Code of Regulations, Title 22, Chapter 11, Section(s) 66261.7
Violation Description: Failure to manage empty containers greater than 5 gallons in capacity that previously held a hazardous material/waste in accordance with 22 CCR 11 66261.7 including but not limited to the following: (e)(2)By

GILLIAM AND SONS INC (YARD) (Continued) **S121740543**

reclaiming its scrap value onsite or shipping the container or inner liner to a person who reclaims its scrap value; or (3) By reconditioning or re manufacturing the container or inner liner onsite for subsequent reuse, or shipping the container or inner liner to a person who reconditions or re-manufactures the container or inner liner; or (4) By shipping the container or inner liner to a supplier or to another intermediate collection location for accumulation prior to managing the container or inner liner pursuant to subsections (e)(2) or (e)(3) of 22 CCR 11 66261.7; or (i) By shipping the container or inner liner back to the supplier for the purpose of being refilled. (f) A container or an inner liner removed from a container larger than five gallons in capacity which is managed pursuant to subsection (e) of 22 CCR 11 66261.7 shall be marked with the date it has been emptied and shall be managed within one year of being emptied.

Violation Notes: Observation: Empty containers greater than 5 gallons were observed. The empty containers were not marked with the word "EMPTY" or "OUT OF SERVICE" and date emptied. Empty containers were not managed within the time limit of one year from the date emptied. Corrective Action: Mark all empty containers identified at the time of inspection with the word 'EMPTY' or 'OUT OF SERVICE' and date emptied. Manage the empty containers within one year from the date emptied. Send photos of properly marked empty containers around the facility to Kern County Environmental Health Division. Attn: Christian Iwuchukwu (Email: iwuchukwuc@kerncounty.com; fax: 661-862-8701).
Violation Division: Kern County Env Health Services Department
Violation Program: HW
Violation Source: CERS

Site ID: 119510
Site Name: GILLIAM AND SONS INC (YARD)
Violation Date: 02-25-2014
Citation: HSC 6.95 25505(a) - California Health and Safety Code, Chapter 6.95, Section(s) 25505(a)
Violation Description: Owner/Operator failed to complete and/or submit a Hazardous Materials Business Plan when storing hazardous materials at or above the thresholds quantities of 55 gallons/500 lbs/200 cubic feet.
Violation Notes: Returned to compliance on 04/01/2014. Failure to submit in CERS
Violation Division: Kern County Env Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 119510
Site Name: GILLIAM AND SONS INC (YARD)
Violation Date: 04-15-2019
Citation: 22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description: Failure to properly label hazardous waste accumulation containers and portable tanks with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes: Observation: Two 55-gallon waste oil drums were observed not labeled according to hazardous waste regulation such as "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and accumulation start date. Corrective Action: Properly label all hazardous waste containers

GILLIAM AND SONS INC (YARD) (Continued) **S121740543**

according to hazardous waste regulation. Provide these information on all the containers used in storing hazardous waste: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and accumulation start date. Take photos of properly labeled containers and send photos to Kern County Environmental Health Division. Attn: Christian Iwuchukwu (Email: iwuchukwuc@kerncounty.com; fax: 661-862-8701).

Violation Division: Kern County Env Health Services Department
Violation Program: HW
Violation Source: CERS

Site ID: 119510
Site Name: GILLIAM AND SONS INC (YARD)
Violation Date: 04-15-2019
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description: Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.
Violation Notes: Returned to compliance on 05/15/2019. Observation: Some of the hazardous materials/hazardous waste observed on site are not properly reported and/or incorrectly reported to California Environmental Reporting System (CERS). Please make the following corrections to the Hazardous Materials Inventory: 1) Automatic Transmission Fluid - update "Average Daily Amount" = 30 gallons; 2) Moly Grease - update "Maximum Daily Amount" = 1200 pounds, "Average Daily Amount" = 600 pounds, "Largest Container Size" = 400 pounds, and change "Unit of Measurement" from Gallons to Pounds; 3) Engine Oil - update "Average Daily Amount" = 375 gallons; 4) WASTE OIL FILTERS - update "Maximum Daily Amount" = 1750 pounds, "Average Daily Amount" = 875 pounds, "Largest Container Size" = 350 pounds, "Annual Waste Amount" 1400 pounds, "Waste Code" = 223, and change "Unit of Measurement" from Gallons to Pounds; 5) OILY SOLID DEBRIS - update "Maximum Daily Amount" = 400 pounds, "Average Daily Amount" = 200 pounds, "Largest Container Size" = 400 [Truncated]
Violation Division: Kern County Env Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Evaluation:
Eval General Type: Other/Unknown
Eval Date: 02-25-2014
Violations Found: Yes
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-15-2019
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

GILLIAM AND SONS INC (YARD) (Continued) **S121740543**

Eval General Type: Compliance Evaluation Inspection
Eval Date: 02-01-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 02-01-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 02-01-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-15-2019
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-15-2019
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HW
Eval Source: CERS

Enforcement Action:
Site ID: 119510
Site Name: GILLIAM AND SONS INC (YARD)
Site Address: 19420 ENDES ST
Site City: BAKERSFIELD
Site Zip: 93308
Enf Action Date: 02-25-2014
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Kern County Env Health Services Department
Enf Action Program: HMRRP

GILLIAM AND SONS INC (YARD) (Continued) **S121740543**

Enf Action Source: CERS

Coordinates:
Site ID: 119510
Facility Name: GILLIAM AND SONS INC (YARD)
Env Int Type Code: HWG
Program ID: 10234222
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 35.447310
Longitude: -119.090030

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Kern County Environmental Health Services Departme
Entity Title: Not reported
Affiliation Address: 2700 M Street, Suite 300
Affiliation City: Bakersfield
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93301-2370
Affiliation Phone: (661) 862-8740

Affiliation Type Desc: Environmental Contact
Entity Name: KEN OWEN
Entity Title: Not reported
Affiliation Address: 9831 ROSEDALE HWY.
Affiliation City: BAKERSFIELD
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93312
Affiliation Phone: Not reported

Affiliation Type Desc: Identification Signer
Entity Name: Joann Arjarun
Entity Title: Administrative Assistant
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Parent Corporation
Entity Name: GILLIAM AND SONS INC (YARD)
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Property Owner
Entity Name: BILL GILLIAM
Entity Title: Not reported

GILLIAM AND SONS INC (YARD) (Continued) **S121740543**

Affiliation Address:	9831 ROSEDALE HWY
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93312
Affiliation Phone:	(661) 589-0913
Affiliation Type Desc:	Operator
Entity Name:	GILLIAM AND SONS INC
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(661) 301-3811
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	9831 ROSEDALE HWY
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93312
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	BILL GILLIAM
Entity Title:	Not reported
Affiliation Address:	9831 ROSEDALE HWY
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93312
Affiliation Phone:	(661) 589-0913

J55 **GILLIAM & SONS INC** **HAZNET** **S113157172**
SE **19420 ENDES ST** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.846 mi.
4468 ft. **Site 7 of 7 in cluster J**

Actual:
473 ft.

Focus Map:
9

HAZNET:

Name:	GILLIAM & SONS INC
Address:	19420 ENDES ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2010
Gepaid:	CAL000346727
Contact:	OTTO FIEBRANTZ
Telephone:	6614316847
Mailing Name:	Not reported
Mailing Address:	9831 ROSEDALE HWY
Gen County:	15
Waste Category:	Other organic solids
TSD EPA ID:	CAT000646117

GILLIAM & SONS INC (Continued) **S113157172**

TSD County: 16
Disposal Method: Landfill Or Surface Impoundment That Will Be Closed As Landfill(To Include On-Site Treatment And/Or Stabilization)
Tons: 0.4

Additional Info:
Year: 2010
Shipment Date: 20100126
Creation Date: 4/12/2010 18:30:47
Receipt Date: 20100204
Manifest ID: 005922297JJK
Gen EPA ID: CAL000346727
Trans EPA ID: CAD028277036
Trans Name: ASBURY ENVIRONMENTAL SERVICES
Trans 2 EPA ID: Not reported
Trans 2 Name: Not reported
TSDF EPA ID: CAT000646117
Trans Name: CHEMICAL WASTE MANAGEMENT
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code: 352
RCRA Code: Not reported
Meth Code: H132
Quantity Tons: 0.4
Waste Quantity: 800
Quantity Unit: P
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Year: 2010
Shipment Date: 20100119
Creation Date: 4/12/2010 18:31:10
Receipt Date: 20100119
Manifest ID: 005922415JJK
Gen EPA ID: CAL000346727
Trans EPA ID: CAD028277036
Trans Name: ASBURY ENVIRONMENTAL SERVICES
Trans 2 EPA ID: Not reported
Trans 2 Name: Not reported
TSDF EPA ID: CAT080013352
Trans Name: DEMENNO / KERDOON
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code: 223
RCRA Code: Not reported
Meth Code: H039
Quantity Tons: 0.61299
Waste Quantity: 147
Quantity Unit: G
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

GILLIAM & SONS INC (Continued) **S113157172**

Name:	GILLIAM & SONS INC
Address:	19420 ENDES ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2010
Gepaid:	CAL000346727
Contact:	OTTO FIEBRANTZ
Telephone:	6614316847
Mailing Name:	Not reported
Mailing Address:	9831 ROSEDALE HWY
Gen County:	15
Waste Category:	Unspecified oil-containing waste
TSD EPA ID:	CAT080013352
TSD County:	19
Disposal Method:	Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons:	0.61299

Additional Info:

Year:	2010
Shipment Date:	20100126
Creation Date:	4/12/2010 18:30:47
Receipt Date:	20100204
Manifest ID:	005922297JJK
Gen EPA ID:	CAL000346727
Trans EPA ID:	CAD028277036
Trans Name:	ASBURY ENVIRONMENTAL SERVICES
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	CHEMICAL WASTE MANAGEMENT
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H132
Quantity Tons:	0.4
Waste Quantity:	800
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2010
Shipment Date:	20100119
Creation Date:	4/12/2010 18:31:10
Receipt Date:	20100119
Manifest ID:	005922415JJK
Gen EPA ID:	CAL000346727
Trans EPA ID:	CAD028277036
Trans Name:	ASBURY ENVIRONMENTAL SERVICES
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO / KERDOON
TSDF Alt EPA ID:	Not reported

GILLIAM & SONS INC (Continued) **S113157172**

TSDF Alt Name:	Not reported
Waste Code:	223
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.61299
Waste Quantity:	147
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	GILLIAM & SONS INC
Address:	19420 ENDES ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2009
Gepaid:	CAL000346727
Contact:	OTTO FIEBRANTZ
Telephone:	6614316847
Mailing Name:	Not reported
Mailing Address:	9831 ROSEDALE HWY
Gen County:	15
Waste Category:	Unspecified aqueous solution
TSD EPA ID:	CAL000282598
TSD County:	15
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.945

Additional Info:

Year:	2009
Shipment Date:	20091231
Creation Date:	3/5/2010 18:30:31
Receipt Date:	20100104
Manifest ID:	005679810JJK
Gen EPA ID:	CAL000346727
Trans EPA ID:	CAD028277036
Trans Name:	ASBURY ENVIRONMENTAL SERVICES
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BAKERSFIELD TRANSFER INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	135
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.945
Waste Quantity:	225
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

GILLIAM & SONS INC (Continued) **S113157172**

Name:	GILLIAM & SONS INC
Address:	19420 ENDES ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2013
Gepaid:	CAL000346727
Contact:	OTTO FIEBRANTZ
Telephone:	6614316847
Mailing Name:	Not reported
Mailing Address:	9831 ROSEDALE HWY
Gen County:	15
Waste Category:	Other organic solids
TSD EPA ID:	CAL000282598
TSD County:	15
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.2

Additional Info:

Year:	2013
Shipment Date:	20130307
Creation Date:	4/29/2013 22:15:20
Receipt Date:	20130313
Manifest ID:	010557329JJK
Gen EPA ID:	CAL000346727
Trans EPA ID:	CAL000268462
Trans Name:	CSI (COLES SERVICES INC-DBA: COLES ENVIRONMENTAL)
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.2
Waste Quantity:	400
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	GILLIAM & SONS INC
Address:	19420 ENDES ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2011
Gepaid:	CAL000346727
Contact:	OTTO FIEBRANTZ
Telephone:	6614316847
Mailing Name:	Not reported
Mailing Address:	9831 ROSEDALE HWY
Gen County:	15
Waste Category:	Other organic solids

GILLIAM & SONS INC (Continued) **S113157172**

TSD EPA ID:	CAD097030993
TSD County:	19
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.15

Additional Info:

Year:	2011
Shipment Date:	20110112
Creation Date:	3/28/2011 18:30:20
Receipt Date:	20110124
Manifest ID:	007425731JJK
Gen EPA ID:	CAL000346727
Trans EPA ID:	CAD028277036
Trans Name:	ASBURY ENVIRONMENTAL SERVICES
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	SIEMENS WATER TECHNOLOGIES CORP
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.05
Waste Quantity:	100
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2011
Shipment Date:	20110712
Creation Date:	10/1/2011 18:30:25
Receipt Date:	20110725
Manifest ID:	008156422JJK
Gen EPA ID:	CAL000346727
Trans EPA ID:	CAD028277036
Trans Name:	ASBURY ENVIRONMENTAL SERVICES
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	SIEMENS INDUSTRY INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.1
Waste Quantity:	200
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

K56 **NORTH KERN WATER STORAGE DIST** **AST** **S109282118**
NW **33380 CAWELO AVE** **CERS HAZ WASTE** **N/A**
1/2-1 **BAKERSFIELD, CA 93308** **CERS TANKS**
0.848 mi. **CHMIRS**
4477 ft. **Site 1 of 6 in cluster K** **EMI**
CERS

Actual:
413 ft.

Focus Map:
1

AST:

Name:	NORTH KERN WATER STORAGE DIST
Address:	33380 CAWELO AVE
City/Zip:	BAKERSFIELD,
Certified Unified Program Agencies:	Not reported
Owner:	NORTH KERN WATER STORAGE DIST
Total Gallons:	Not reported
CERSID:	10231633
Facility ID:	10231633
Business Name:	NORTH KERN WATER STORAGE DIST
Phone:	(661) 393-2696
Fax:	661-393-6884
Mailing Address:	PO BOX 81435
Mailing Address City:	BAKERSFIELD
Mailing Address State:	CA
Mailing Address Zip Code:	Not reported
Operator Name:	Richard Diamond
Operator Phone:	661-393-3361
Owner Phone:	(661) 393-2696
Owner Mail Address:	PO BOX 81435
Owner State:	CA
Owner Zip Code:	Not reported
Owner Country:	United States
Property Owner Name:	North Kern Water Storage
Property Owner Phone:	661-393-2696
Property Owner Mailing Address:	PO Box 81435
Property Owner City:	BAKERSFIELD
Property Owner Stat :	CA
Property Owner Zip Code:	Not reported
Property Owner Country:	United States
EPAID:	cal000124225

CERS HAZ WASTE:

Name:	NORTH KERN WATER STORAGE DIST
Address:	33380 CAWELO AVE
City,State,Zip:	BAKERSFIELD, CA 93308-9575
Site ID:	398342
CERS ID:	10231633
CERS Description:	Hazardous Chemical Management

Name:	NORTH KERN WATER STORAGE DIST
Address:	33380 CAWELO AVE
City,State,Zip:	BAKERSFIELD, CA 93308-9575
Site ID:	398342
CERS ID:	10231633
CERS Description:	Hazardous Waste Generator

CERS TANKS:

Name:	NORTH KERN WATER STORAGE DIST
Address:	33380 CAWELO AVE
City,State,Zip:	BAKERSFIELD, CA 93308-9575

NORTH KERN WATER STORAGE DIST (Continued) **S109282118**

Site ID:	398342
CERS ID:	10231633
CERS Description:	Aboveground Petroleum Storage

CHMIRS:

Name:	Not reported
Address:	33380 CAWELO AVE
City,State,Zip:	BAKERSFIELD, CA 93308
OES Incident Number:	15-1344
OES notification:	03/09/2015
OES Date:	Not reported
OES Time:	Not reported
Date Completed:	**Not reported**
Property Use:	Not reported
Agency Id Number:	Not reported
Agency Incident Number:	Not reported
Time Notified:	Not reported
Time Completed:	Not reported
Surrounding Area:	Not reported
Estimated Temperature:	Not reported
Property Management:	Not reported
More Than Two Substances Involved?:	Not reported
Resp Agncy Personel # Of Decontaminated:	Not reported
Responding Agency Personel # Of Injuries:	Not reported
Responding Agency Personel # Of Fatalities:	Not reported
Others Number Of Decontaminated:	Not reported
Others Number Of Injuries:	Not reported
Others Number Of Fatalities:	Not reported
Vehicle Make/year:	Not reported
Vehicle License Number:	Not reported
Vehicle State:	Not reported
Vehicle Id Number:	Not reported
CA DOT PUC/ICC Number:	Not reported
Company Name:	Not reported
Reporting Officer Name/ID:	Not reported
Report Date:	Not reported
Facility Telephone:	Not reported
Waterway Involved:	No
Waterway:	Not reported
Spill Site:	Utilities/Substation
Cleanup By:	Contractor
Containment:	Not reported
What Happened:	Not reported
Type:	Not reported
Measure:	Not reported
Other:	Not reported
Type:	PETROLEUM
Measure:	Gal(s)
Other:	Not reported
Date/Time:	945
Year:	2015
Agency:	Wholesale Fuels Inc
Incident Date:	03/09/2015
Admin Agency:	Bakersfield Fire Department
Amount:	Not reported
Contained:	Yes
Site Type:	Not reported

NORTH KERN WATER STORAGE DIST (Continued) **S109282118**

E Date:	Not reported
Substance:	Diesel
Quantity Released:	15
Unknown:	Not reported
Substance #2:	Not reported
Substance #3:	Not reported
Evacuations:	Not reported
Number of Injuries:	Not reported
Number of Fatalities:	Not reported
#1 Pipeline:	No
#2 Pipeline:	No
#3 Pipeline:	No
#1 Vessel >= 300 Tons:	No
#2 Vessel >= 300 Tons:	No
#3 Vessel >= 300 Tons:	No
Evacs:	No
Injuries:	No
Fatals:	No
Comments:	Not reported
Description:	RP states that a gasket failed on a truck pump resulting in the release of 15 gallons of diesel onto gravel dirt. The release is contained and cleanup has been coordinated. No waterways have been impacted.

EMI:

Name:	NORTH KERN WATER STORAGE DIST
Address:	33380 CAWELO AVE
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2006
County Code:	15
Air Basin:	SJV
Facility ID:	3481
Air District Name:	SJU
SIC Code:	5541
Air District Name:	SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.1890748313386390755
Reactive Organic Gases Tons/Yr:	.18832764689254762
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	NORTH KERN WATER STORAGE DIST
Address:	33380 CAWELO AVE
City,State,Zip:	BAKERSFIELD, CA 91801
Year:	2007
County Code:	15
Air Basin:	SJV
Facility ID:	3481
Air District Name:	SJU
SIC Code:	5541
Air District Name:	SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System:	Not reported

NORTH KERN WATER STORAGE DIST (Continued) **S109282118**

Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.2054978923935136240
Reactive Organic Gases Tons/Yr:	.2046858074226377
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	NORTH KERN WATER STORAGE DIST
Address:	33380 CAWELO AVE
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2008
County Code:	15
Air Basin:	SJV
Facility ID:	3481
Air District Name:	SJU
SIC Code:	5541
Air District Name:	SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	.1955726467259490506
Reactive Organic Gases Tons/Yr:	.19479978426361081
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	NORTH KERN WATER STORAGE DIST
Address:	33380 CAWELO AVE
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2009
County Code:	15
Air Basin:	SJV
Facility ID:	3481
Air District Name:	SJU
SIC Code:	4941
Air District Name:	SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.20166108227475801
Reactive Organic Gases Tons/Yr:	0.20086415958022999
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	NORTH KERN WATER STORAGE DIST
Address:	33380 CAWELO AVE
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2010
County Code:	15
Air Basin:	SJV
Facility ID:	3481
Air District Name:	SJU

NORTH KERN WATER STORAGE DIST (Continued) **S109282118**

SIC Code:	4941
Air District Name:	SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.20164136433218799
Reactive Organic Gases Tons/Yr:	0.20084459599999999
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	NORTH KERN WATER STORAGE DIST
Address:	33380 CAWELO AVE
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2011
County Code:	15
Air Basin:	SJV
Facility ID:	3481
Air District Name:	SJU
SIC Code:	4941
Air District Name:	SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0
Reactive Organic Gases Tons/Yr:	0
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	NORTH KERN WATER STORAGE DIST
Address:	33380 CAWELO AVE
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2012
County Code:	15
Air Basin:	SJV
Facility ID:	3481
Air District Name:	SJU
SIC Code:	4941
Air District Name:	SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.031135037798
Reactive Organic Gases Tons/Yr:	0.030980892742
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	NORTH KERN WATER STORAGE DIST
Address:	33380 CAWELO AVE
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2013
County Code:	15

NORTH KERN WATER STORAGE DIST (Continued) **S109282118**

Air Basin:	SJV
Facility ID:	3481
Air District Name:	SJU
SIC Code:	4941
Air District Name:	SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.03098
Reactive Organic Gases Tons/Yr:	0.03098
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	NORTH KERN WATER STORAGE DIST
Address:	33380 CAWELO AVE
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2014
County Code:	15
Air Basin:	SJV
Facility ID:	3481
Air District Name:	SJU
SIC Code:	4941
Air District Name:	SAN JOAQUIN VALLEY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.018086413143
Reactive Organic Gases Tons/Yr:	0.018086413143
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	NORTH KERN WATER STORAGE DIST
Address:	33380 CAWELO AVE
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2015
County Code:	15
Air Basin:	SJV
Facility ID:	3481
Air District Name:	SJU
SIC Code:	4941
Air District Name:	SAN JOAQUIN VALLEY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.017692
Reactive Organic Gases Tons/Yr:	0.017692
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	NORTH KERN WATER STORAGE DIST
Address:	33380 CAWELO AVE

NORTH KERN WATER STORAGE DIST (Continued) **S109282118**

City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2016
County Code:	15
Air Basin:	SJV
Facility ID:	3481
Air District Name:	SJU
SIC Code:	4941
Air District Name:	SAN JOAQUIN VALLEY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.016934
Reactive Organic Gases Tons/Yr:	0.016934
Carbon Monoxide Emissions Tons/Yr:	Not reported
NOX - Oxides of Nitrogen Tons/Yr:	Not reported
SOX - Oxides of Sulphur Tons/Yr:	Not reported
Particulate Matter Tons/Yr:	Not reported
Part. Matter 10 Micrometers and Smllr Tons/Yr:	Not reported

Name:	NORTH KERN WATER STORAGE DIST
Address:	33380 CAWELO AVE
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2017
County Code:	15
Air Basin:	SJV
Facility ID:	3481
Air District Name:	SJU
SIC Code:	4941
Air District Name:	SAN JOAQUIN VALLEY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.016934
Reactive Organic Gases Tons/Yr:	0.016934
Carbon Monoxide Emissions Tons/Yr:	Not reported
NOX - Oxides of Nitrogen Tons/Yr:	Not reported
SOX - Oxides of Sulphur Tons/Yr:	Not reported
Particulate Matter Tons/Yr:	Not reported
Part. Matter 10 Micrometers and Smllr Tons/Yr:	Not reported

CERS:

Name:	NORTH KERN WATER STORAGE DIST
Address:	33380 CAWELO AVE
City,State,Zip:	BAKERSFIELD, CA 93308-9575
Site ID:	398342
CERS ID:	10231633
CERS Description:	Chemical Storage Facilities

Violations:

Site ID:	398342
Site Name:	NORTH KERN WATER STORAGE DIST
Violation Date:	09-08-2016
Citation:	19 CCR 4.5 2755.5(a) - California Code of Regulations, Title 19, Chapter 4.5, Section(s) 2755.5(a)
Violation Description:	Failure to prepare and implement written procedures to maintain the on-going mechanical integrity of the process equipment.
Violation Notes:	Returned to compliance on 06/19/2018. Written procedures for the maintenance of the acrolein equipment has not been developed. Develop maintenance schedule for the equipment and document work performed.

NORTH KERN WATER STORAGE DIST (Continued) **S109282118**

Violation Division: Kern County Env Health Services Department
Violation Program: CalARP
Violation Source: CERS

Site ID: 398342
Site Name: NORTH KERN WATER STORAGE DIST
Violation Date: 09-08-2016
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description: Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.
Violation Notes: Returned to compliance on 06/19/2018. Hydraulic oil and pump oil are not listed in hazardous materials inventory. Add to CERS inventory data base.
Violation Division: Kern County Env Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 398342
Site Name: NORTH KERN WATER STORAGE DIST
Violation Date: 09-08-2016
Citation: 19 CCR 4.5 2755.2(e) - California Code of Regulations, Title 19, Chapter 4.5, Section(s) 2755.2(e)
Violation Description: Failure to address the following in the hazard review: 1. Document the results of the hazard review and ensure problems identitifed are resolved; 2. Complete these actions on a timetable agreed upon with the AA, or within two and one-half (2.5) years of performing the hazard review, or the next planned turnaround, for those items that require a turnaround; 3. Document the final resolution taken to address each recommendation and actual completion date.
Violation Notes: Returned to compliance on 06/19/2018. Problems identified in the hazard review have not been addressed. Document the issues are resolved and the actions taken to resolve them.
Violation Division: Kern County Env Health Services Department
Violation Program: CalARP
Violation Source: CERS

Site ID: 398342
Site Name: NORTH KERN WATER STORAGE DIST
Violation Date: 12-10-2014
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description: Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.
Violation Notes: Returned to compliance on 12/19/2014. Items in the inventory were listed as having largest containers as zero and average daily amount as zero please correct.
Violation Division: Kern County Env Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 398342
Site Name: NORTH KERN WATER STORAGE DIST
Violation Date: 08-03-2015
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter

NORTH KERN WATER STORAGE DIST (Continued) **S109282118**

6.95, Section(s) 25508(a)(1)
Violation Description: Failure to establish and electronically submit an adequate emergency response plan and procedures for a release or threatened release of a hazardous material.
Violation Notes: Returned to compliance on 10/12/2015. Contingency plan submitted in CERS is insufficient. Refer to contingency plan template in KCEHS web page. Review contingency plan in facility binder as possible complete document. Update contingency plan and resubmit into CERS.
Violation Division: Kern County Env Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 398342
Site Name: NORTH KERN WATER STORAGE DIST
Violation Date: 08-03-2015
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description: Failure to establish and electronically submit an adequate training program in safety procedures in the event of a release or threatened release of a hazardous material.
Violation Notes: Returned to compliance on 10/12/2015. Training plan submitted in CERS is insufficient. Refer to training plan template in KCEHS web page. Update training plan and resubmit into CERS.
Violation Division: Kern County Env Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 398342
Site Name: NORTH KERN WATER STORAGE DIST
Violation Date: 12-10-2014
Citation: 19 CCR 4.5 2755.2(e) - California Code of Regulations, Title 19, Chapter 4.5, Section(s) 2755.2(e)
Violation Description: Failure to document the results of the hazard review and ensure that problems identified are resolved in a timely manner.
Violation Notes: Returned to compliance on 01/21/2015. Hazard review findings must be assigned to an employee and provide a date the recommendations were completed.
Violation Division: Kern County Env Health Services Department
Violation Program: CalARP
Violation Source: CERS

Site ID: 398342
Site Name: NORTH KERN WATER STORAGE DIST
Violation Date: 09-08-2016
Citation: HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description: Failure to prepare and implement a Spill Prevention Control and Countermeasure (SPCC) Plan.
Violation Notes: Returned to compliance on 11/18/2016. SPCC plan has not been developed and implemented. Refer to the Tier 1 template available in KCEH web page.
Violation Division: Kern County Env Health Services Department
Violation Program: APSA
Violation Source: CERS

Site ID: 398342
Site Name: NORTH KERN WATER STORAGE DIST

NORTH KERN WATER STORAGE DIST (Continued) **S109282118**

Violation Date:	09-08-2016
Citation:	19 CCR 4.5 2755.6(a) - California Code of Regulations, Title 19, Chapter 4.5, Section(s) 2755.6(a)
Violation Description:	Failure to certify that they have evaluated compliance with the provisions of this article at least every three years to verify that the procedures and practices developed under this chapter are adequate and are being followed.
Violation Notes:	Returned to compliance on 06/19/2018. A compliance audit has not been completed every three years. Evaluate the facility's performance in compliance with CalARP regulations. Correct any deficiencies noted in the compliance audit.
Violation Division:	Kern County Env Health Services Department
Violation Program:	CalARP
Violation Source:	CERS
Site ID:	398342
Site Name:	NORTH KERN WATER STORAGE DIST
Violation Date:	08-03-2015
Citation:	HSC 6.5 Multiple Sections - California Health and Safety Code, Chapter 6.5, Section(s) Multiple Sections
Violation Description:	Haz Waste Generator Program - Operations/Maintenance - General
Violation Notes:	Returned to compliance on 10/12/2015. Empty containers lack the label "EMPTY" with the date when emptied. Properly mark the containers/tanks when empty.
Violation Division:	Kern County Env Health Services Department
Violation Program:	HW
Violation Source:	CERS
Site ID:	398342
Site Name:	NORTH KERN WATER STORAGE DIST
Violation Date:	09-08-2016
Citation:	19 CCR 4.5 2755.4(a) - California Code of Regulations, Title 19, Chapter 4.5, Section(s) 2755.4(a)
Violation Description:	Failure to ensure that each employee presently operating a process, and each employee newly assigned to a covered process has been trained or tested competent in the operating procedures provided in Section 2755.3 that pertain to their duties.
Violation Notes:	Returned to compliance on 06/19/2018. Documentation of training is lacking verification of competence. Document initial and refresher training.
Violation Division:	Kern County Env Health Services Department
Violation Program:	CalARP
Violation Source:	CERS
Site ID:	398342
Site Name:	NORTH KERN WATER STORAGE DIST
Violation Date:	12-17-2018
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to establish and electronically submit an adequate emergency response plan and procedures for a release or threatened release of a hazardous material.
Violation Notes:	Returned to compliance on 12/19/2018. THE SUBMITTED CONTINGENCY PLAN IS INCOMPLETE. THE FOLLOWING LINK PROVIDES A TEMPLATE THAT CAN BE UTILIZED TO MEET THE REQUIREMENT OF THIS VIOLATION: https://kernpublichealth.com/wp-content/uploads/2015/01/2ContingencyPlan.pdf

NORTH KERN WATER STORAGE DIST (Continued) **S109282118**

Violation Division: Kern County Env Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 398342
Site Name: NORTH KERN WATER STORAGE DIST
Violation Date: 12-17-2018
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description: Failure to complete and electronically submit a site map with all required content.
Violation Notes: Returned to compliance on 12/19/2018. THE CURRENT SITE MAP DOES NOT CONTAIN THE REQUIRED ELEMENTS SUCH AS THE FOLLOWING -ACCESS AND EXITS - EVACUATION AND STAGING AREAS PLEASE UPDATE SITE MAP TO CONTAIN THESE ELEMENTS.
Violation Division: Kern County Env Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 08-03-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Review site map requirements in KCEH web page. Consider including a satellite photo of facility in site map. Include secondary containment for drums and tanks of petroleum products. Replace faded labeling on tanks/containers.
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 12-10-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 12-10-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 12-17-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: REVIEW CURRENT PHA AND ENSURE ALL RECOMMENDATIONS HAVE BEEN ADDRESSED.
Eval Division: Kern County Env Health Services Department
Eval Program: CalARP

NORTH KERN WATER STORAGE DIST (Continued) **S109282118**

Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 12-10-2014
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 09-08-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Review site map. Add compressed gases and propane tank. Ensure wording is easily readable.
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 09-08-2016
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: RMP Submission dated 07/09/2013 lists two acrolein processes with 1100 lbs each. North Kern Water Storage District has one acrolein process with 1100 lbs. Correct the information on the next RMP Submission due 07/09/2018. Ensure there are SOPs for the loading and unloading of the acrolein cylinders during delivery and transfer.
Eval Division: Kern County Env Health Services Department
Eval Program: CalARP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 12-17-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 02-19-2014
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 08-10-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported

NORTH KERN WATER STORAGE DIST (Continued) **S109282118**

Eval Division:	Kern County Env Health Services Department
Eval Program:	CalARP
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	09-08-2016
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Kern County Env Health Services Department
Eval Program:	APSA
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	12-10-2014
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Kern County Env Health Services Department
Eval Program:	CalARP
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	12-11-2017
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Kern County Env Health Services Department
Eval Program:	HMRRP
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	12-17-2018
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Kern County Env Health Services Department
Eval Program:	APSA
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	12-17-2018
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Kern County Env Health Services Department
Eval Program:	HMRRP
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	02-19-2014
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Kern County Env Health Services Department
Eval Program:	HW
Eval Source:	CERS

NORTH KERN WATER STORAGE DIST (Continued) **S109282118**

Eval General Type: Compliance Evaluation Inspection
Eval Date: 08-03-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 08-10-2016
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 09-08-2016
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Ensure date when emptied is listed on empty containers.
Eval Division: Kern County Env Health Services Department
Eval Program: HW
Eval Source: CERS

Enforcement Action:
Site ID: 398342
Site Name: NORTH KERN WATER STORAGE DIST
Site Address: 33380 CAWELO AVE
Site City: BAKERSFIELD
Site Zip: 93308-9575
Enf Action Date: 08-03-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Kern County Env Health Services Department
Enf Action Program: HMRRP
Enf Action Source: CERS

Site ID: 398342
Site Name: NORTH KERN WATER STORAGE DIST
Site Address: 33380 CAWELO AVE
Site City: BAKERSFIELD
Site Zip: 93308-9575
Enf Action Date: 08-03-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Kern County Env Health Services Department
Enf Action Program: HW
Enf Action Source: CERS

Site ID: 398342
Site Name: NORTH KERN WATER STORAGE DIST
Site Address: 33380 CAWELO AVE

NORTH KERN WATER STORAGE DIST (Continued) **S109282118**

Site City: BAKERSFIELD
Site Zip: 93308-9575
Enf Action Date: 10-28-2016
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Kern County Env Health Services Department
Enf Action Program: APSA
Enf Action Source: CERS

Site ID: 398342
Site Name: NORTH KERN WATER STORAGE DIST
Site Address: 33380 CAWELO AVE
Site City: BAKERSFIELD
Site Zip: 93308-9575
Enf Action Date: 12-10-2014
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Kern County Env Health Services Department
Enf Action Program: CalARP
Enf Action Source: CERS

Site ID: 398342
Site Name: NORTH KERN WATER STORAGE DIST
Site Address: 33380 CAWELO AVE
Site City: BAKERSFIELD
Site Zip: 93308-9575
Enf Action Date: 12-10-2014
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Kern County Env Health Services Department
Enf Action Program: HMRRP
Enf Action Source: CERS

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Kern County Environmental Health Services Departme
Entity Title: Not reported
Affiliation Address: 2700 M Street, Suite 300
Affiliation City: Bakersfield
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93301-2370
Affiliation Phone: (661) 862-8740

Affiliation Type Desc: Environmental Contact
Entity Name: Richie Lawrence
Entity Title: Not reported
Affiliation Address: PO BOX 81435
Affiliation City: BAKERSFIELD
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93380-1435
Affiliation Phone: Not reported

NORTH KERN WATER STORAGE DIST (Continued) **S109282118**

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	PO BOX 81435
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93380-1435
Affiliation Phone:	Not reported

Affiliation Type Desc:	Identification Signer
Entity Name:	Richard Diamond
Entity Title:	General manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Parent Corporation
Entity Name:	NORTH KERN WATER STORAGE DIST
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Property Owner
Entity Name:	North Kern Water Storage
Entity Title:	Not reported
Affiliation Address:	PO Box 81435
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93308-9575
Affiliation Phone:	(661) 393-2696

Affiliation Type Desc:	Document Preparer
Entity Name:	Richie Lawrence
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Legal Owner
Entity Name:	NORTH KERN WATER STORAGE DIST
Entity Title:	Not reported
Affiliation Address:	PO BOX 81435
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	United States

NORTH KERN WATER STORAGE DIST (Continued) **S109282118**

Affiliation Zip: 93380-1435
Affiliation Phone: (661) 393-2696

Affiliation Type Desc: Operator
Entity Name: Richard Diamond
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (661) 393-3361

Name: NORTH KERN WATER STORAGE DIST
Address: 33380 CAWELO AVE
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 483447
CERS ID: 110054315683
CERS Description: US EPA Air Emission Inventory System (EIS)

Affiliation:
Affiliation Type Desc: Property Owner
Entity Name: NORTH KERN WTR STGE
Entity Title: Not reported
Affiliation Address: POBOX 81435
Affiliation City: BAKERSFIELD
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Environmental Contact
Entity Name: ARTURO ROCHA
Entity Title: Not reported
Affiliation Address: POBOX 81435
Affiliation City: BAKERSFIELD
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

K57 **NORTH KERN WATER STORAGE DIST** **FINDS** **1015971322**
NW **33380 CAWELO AVE** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.848 mi.
4477 ft. **Site 2 of 6 in cluster K**

Actual:
413 ft.

FINDS:

Focus Map:
1

Registry ID: 110054315683

Environmental Interest/Information System
AIR EMISSIONS CLASSIFICATION UNKNOWN
STATE MASTER

NORTH KERN WATER STORAGE DIST (Continued) **1015971322**

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

K58 **NO. KERN WATER STORAGE DISTRICT** **RCRA NonGen / NLR** **1024792613**
NW **33380 CAWELO AVE** **CAL000124225**
1/2-1 **BAKERSFIELD, CA 93308**
0.848 mi.
4477 ft. **Site 3 of 6 in cluster K**

Actual:
413 ft.

Focus Map:
1

RCRA NonGen / NLR:

Date form received by agency:	1995-03-14 00:00:00.0
Facility name:	NO. KERN WATER STORAGE DISTRICT
Facility address:	33380 CAWELO AVE BAKERSFIELD, CA 93308-0000
EPA ID:	CAL000124225
Mailing address:	P.O. BOX 81435 BAKERSFIELD, CA 93380-1435
Contact:	RICHARD LAWRENCE/SUPERVISOR
Contact address:	P.O. BOX 81435 33380 CAWELO AVE BAKERSFIELD, CA 93380-1435
Contact country:	Not reported
Contact telephone:	661-393-3361
Contact email:	RLAWRENCE@NORTHKERNWSD.COM
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	RICHARD LAWRENCE/SUPERVISOR
Owner/operator address:	P.O. BOX 81435 33380 CAWELO AVE BAKERSFIELD, CA 93380
Owner/operator country:	Not reported
Owner/operator telephone:	661-393-3361
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	NORTH KERN WATER STORAGE DISTRICT
Owner/operator address:	33380 CAWELO AVE BAKERSFIELD, CA 93308
Owner/operator country:	Not reported
Owner/operator telephone:	661-393-3361
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No

NO. KERN WATER STORAGE DISTRICT (Continued) **1024792613**

Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: Yes
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

K59 **NO. KERN WATER STORAGE DISTRICT** **FINDS** **1024660405**
NW **33380 CAWELO AVE** **ECHO** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.848 mi.
4477 ft. **Site 4 of 6 in cluster K**

Actual:
413 ft.

FINDS:

Focus Map:
1

Registry ID: 110070448799

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1024660405
Registry ID: 110070448799
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110070448799

K60 **NORTH KERN WATER STORAGE DIST** **AST** **A100215723**
NW **33380 CAWELO** **N/A**
1/2-1 **BAKERSFIELD, CA**
0.848 mi.
4477 ft. **Site 5 of 6 in cluster K**

Actual:
413 ft.

AST:

Focus Map:
1

Name: NORTH KERN WATER STORAGE DIST
Address: 33380 CAWELO
City/Zip: BAKERSFIELD,
Certified Unified Program Agencies: Kern
Owner: NORTH KERN WATER STORAGE DIST
Total Gallons: 3,340
CERSID: Not reported

NORTH KERN WATER STORAGE DIST (Continued) **A100215723**

Facility ID:	Not reported
Business Name:	Not reported
Phone:	Not reported
Fax:	Not reported
Mailing Address:	Not reported
Mailing Address City:	Not reported
Mailing Address State:	Not reported
Mailing Address Zip Code:	Not reported
Operator Name:	Not reported
Operator Phone:	Not reported
Owner Phone:	Not reported
Owner Mail Address:	Not reported
Owner State:	Not reported
Owner Zip Code:	Not reported
Owner Country:	Not reported
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	Not reported

K61 **NO. KERN WATER STORAGE DISTRICT** **HAZNET** **S113070083**
NW **33380 CAWELO AVE** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.848 mi.
4477 ft. **Site 6 of 6 in cluster K**

Actual:
413 ft.

Focus Map:
1

HAZNET:

Name:	NO. KERN WATER STORAGE DISTRICT
Address:	33380 CAWELO AVE
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2011
Gepaid:	CAL000124225
Contact:	RICHARD LAWRENCE/SUPERVISOR
Telephone:	6613933361
Mailing Name:	Not reported
Mailing Address:	33380 CAWELO AVE
Gen County:	15
Waste Category:	Other organic solids
TSD EPA ID:	CAL000282598
TSD County:	15
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	11

Additional Info:

Year:	2011
Shipment Date:	20110829
Creation Date:	10/19/2011 18:30:46
Receipt Date:	20110831
Manifest ID:	008899534JJK
Gen EPA ID:	CAL000124225
Trans EPA ID:	CAL000268462
Trans Name:	CSI (COLES SERVICES INC)

NO. KERN WATER STORAGE DISTRICT (Continued) **S113070083**

Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	10
Waste Quantity:	20000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2011
Shipment Date:	20111014
Creation Date:	12/27/2011 18:30:22
Receipt Date:	20111019
Manifest ID:	008900318JJK
Gen EPA ID:	CAL000124225
Trans EPA ID:	CAL000268462
Trans Name:	CSI (COLES SERVICES INC)
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	1
Waste Quantity:	2000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	NO. KERN WATER STORAGE DISTRICT
Address:	33380 CAWELO AVE
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2012
Gepaid:	CAL000124225
Contact:	RICHARD LAWRENCE/SUPERVISOR
Telephone:	6613933361
Mailing Name:	Not reported
Mailing Address:	33380 CAWELO AVE
Gen County:	15
Waste Category:	Hydrocarbon solvents (benzene, hexane, Stoddard, Etc.)

NO. KERN WATER STORAGE DISTRICT (Continued) **S113070083**

TSD EPA ID: CAT080013352
TSD County: 19
Disposal Method: Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons: 0.22935

Additional Info:
Year: 2012
Shipment Date: 20120209
Creation Date: 4/20/2012 20:30:22
Receipt Date: 20120221
Manifest ID: 009594050JJK
Gen EPA ID: CAL000124225
Trans EPA ID: CAL000268462
Trans Name: CSI (COLES SERVICES INC)
Trans 2 EPA ID: Not reported
Trans 2 Name: Not reported
TSDF EPA ID: CAT080013352
Trans Name: DEMENNO / KERDOON
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code: 213
RCRA Code: D018
Meth Code: H039
Quantity Tons: 0.22935
Waste Quantity: 55
Quantity Unit: G
Additional Code 1: D001
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Name: NO. KERN WATER STORAGE DISTRICT
Address: 33380 CAWELO AVE
Address 2: Not reported
City,State,Zip: BAKERSFIELD, CA 933080000
Year: 2017
Gepaid: CAL000124225
Contact: RICHARD LAWRENCE/SUPERVISOR
Telephone: 6613933361
Mailing Name: Not reported
Mailing Address: P.O. BOX 81435
Gen County: 15
Waste Category: Other organic solids
TSD EPA ID: CAL000282598
TSD County: 15
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.2

Additional Info:
Year: 2017
Shipment Date: 20171215
Creation Date: 6/13/2018 18:30:59
Receipt Date: 20171221
Manifest ID: 003453214GBF

NO. KERN WATER STORAGE DISTRICT (Continued) **S113070083**

Gen EPA ID:	CAL000124225
Trans EPA ID:	CAL000327867
Trans Name:	KERN OIL FILTER RECYCLING
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BAKERSFIELD TRANSFER INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.2
Waste Quantity:	400
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

L62 **WEST COAST CONSTRUCTION AND MECHANICAL** **FINDS** **1017364410**
SE **3143 PETROL RD** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.851 mi.
4492 ft. **Site 1 of 11 in cluster L**

Actual:
480 ft.

FINDS:

Focus Map:
9

Registry ID: 110060285418

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

L63 **COS PETROLEUM** **HAZNET** **S113781413**
SE **3143 PETROL RD** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.851 mi.
4492 ft. **Site 2 of 11 in cluster L**

Actual:
480 ft.

HAZNET:

Focus Map:
9

Name:	COS PETROLEUM
Address:	3143 PETROL RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2012
Gepaid:	CAC002695678

COS PETROLEUM (Continued) **S113781413**

Contact:	TOM DAVIS
Telephone:	6613712409
Mailing Name:	Not reported
Mailing Address:	7641 EDISON HWY
Gen County:	15
Waste Category:	Contaminated soil from site clean-up
TSD EPA ID:	CAT080013352
TSD County:	19
Disposal Method:	Sludge Treatment And/Or Dewatering
Tons:	1.5

Additional Info:

Year:	2012
Shipment Date:	20120612
Creation Date:	10/3/2012 22:15:09
Receipt Date:	20120615
Manifest ID:	009714821JJK
Gen EPA ID:	CAC002695678
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	611
RCRA Code:	Not reported
Meth Code:	H101
Quantity Tons:	1.5
Waste Quantity:	3000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Filed Ch 7 Bankruptcy 3/15/2019, Case No. 1:2019bk10973

World Oil Recycling, Compton

L64 **TS TRANSPORTATION INC** **FINDS 1024638248**
SE **3143 PETROL RD** **ECHO N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.851 mi.
4492 ft. **Site 3 of 11 in cluster L**

Actual:
480 ft.

FINDS:

Focus Map:
9

Registry ID: 110070426635

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

TS TRANSPORTATION INC (Continued) **1024638248**

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1024638248
Registry ID:	110070426635
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110070426635

L65 **GIC CORPORATION** **HAZNET** **S123628578**
SE **3143 PETROL RD** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.851 mi.
4492 ft. **Site 4 of 11 in cluster L**

Actual:
480 ft.

Focus Map:
9

HAZNET:

Name:	GIC CORPORATION
Address:	3143 PETROL RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933089798
Year:	2013
Gepaid:	CAL000373532
Contact:	GABRIEL CRUZ
Telephone:	6613970605
Mailing Name:	Not reported
Mailing Address:	2055 MCKEE RD
Gen County:	15
Waste Category:	Contaminated soil from site clean-up
TSD EPA ID:	CAD982444481
TSD County:	36
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	42.48

Additional Info:

Year:	2013
Shipment Date:	20130515
Creation Date:	7/9/2013 22:15:12
Receipt Date:	20130516
Manifest ID:	006487675FLE
Gen EPA ID:	CAL000373532
Trans EPA ID:	CAR000215988
Trans Name:	WEST COAST ENVIRONMENTAL SOLUTIONS
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	FILTER RECYCLING SERVICES, INC.
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	611
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	42.48
Waste Quantity:	36
Quantity Unit:	Y
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported

GIC CORPORATION (Continued) **S123628578**

Additional Code 4: Not reported
Additional Code 5: Not reported

L66 **DALE DWIGHT TRUCKING** **HAZNET** **S123592818**
SE **3143 PETROL RD** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.851 mi.
4492 ft. **Site 5 of 11 in cluster L**

Actual:
480 ft.

Focus Map:
9

HAZNET:
Name: DALE DWIGHT TRUCKING
Address: 3143 PETROL RD
Address 2: Not reported
City,State,Zip: BAKERSFIELD, CA 933089798
Year: 2013
Gepaid: CAC002743475
Contact: DALE DWIGHT
Telephone: 6613994723
Mailing Name: Not reported
Mailing Address: PO BOX 5493
Gen County: 15
Waste Category: Unspecified oil-containing waste
TSD EPA ID: CAL000282598
TSD County: 15
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 5.004

Additional Info:
Year: 2013
Shipment Date: 20130912
Creation Date: 10/25/2013 22:15:23
Receipt Date: 20130912
Manifest ID: 011813027JJK
Gen EPA ID: CAC002743475
Trans EPA ID: CAL000268462
Trans Name: CSI (COLES SERVICES INC-DBA: COLES ENVIRONMENTAL)
Trans 2 EPA ID: Not reported
Trans 2 Name: Not reported
TSDF EPA ID: CAL000282598
Trans Name: BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code: 223
RCRA Code: Not reported
Meth Code: H141
Quantity Tons: 5.004
Waste Quantity: 1200
Quantity Unit: G
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

L67 **LIBERTY LOGISTICS INC** **HAZNET** **S113141883**
SE **3143 PETROL RD** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.851 mi.
4492 ft. **Site 6 of 11 in cluster L**

Actual:
480 ft.

Focus Map:
9

HAZNET:

Name:	LIBERTY LOGISTICS INC
Address:	3143 PETROL RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2006
Gepaid:	CAL000305414
Contact:	ROY WATERHOUSE
Telephone:	6613870104
Mailing Name:	Not reported
Mailing Address:	PO BOX 80722
Gen County:	15
Waste Category:	Oil/water separation sludge
TSD EPA ID:	CAD982444481
TSD County:	36
Disposal Method:	Recycler
Tons:	7.923

Additional Info:

Year:	2006
Shipment Date:	20060719
Creation Date:	9/28/2006 18:30:56
Receipt Date:	20060721
Manifest ID:	25166678
Gen EPA ID:	CAL000305414
Trans EPA ID:	CAL000268462
Trans Name:	COLES SERVICES INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	FILTER RECYCLING SERVICES
TSDF Alt EPA ID:	CAD982444481
TSDF Alt Name:	Not reported
Waste Code:	222
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	7.923
Waste Quantity:	1900
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	LIBERTY LOGISTICS INC
Address:	3143 PETROL RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2008
Gepaid:	CAL000305414
Contact:	ROY WATERHOUSE
Telephone:	6613870104

LIBERTY LOGISTICS INC (Continued) **S113141883**

Mailing Name:	Not reported
Mailing Address:	PO BOX 80722
Gen County:	15
Waste Category:	Hydrocarbon solvents (benzene, hexane, Stoddard, Etc.)
TSD EPA ID:	CAD093459485
TSD County:	10
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.2502

Additional Info:

Year:	2008
Shipment Date:	20080923
Creation Date:	11/3/2008 18:30:08
Receipt Date:	20080929
Manifest ID:	001226700SKS
Gen EPA ID:	CAL000305414
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD093459485
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	213
RCRA Code:	D001
Meth Code:	Not reported
Quantity Tons:	0.07506
Waste Quantity:	18
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2008
Shipment Date:	20080605
Creation Date:	8/4/2008 18:30:49
Receipt Date:	20080612
Manifest ID:	001036675SKS
Gen EPA ID:	CAL000305414
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD093459485
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	213
RCRA Code:	D001
Meth Code:	Not reported
Quantity Tons:	0.07089
Waste Quantity:	17
Quantity Unit:	G
Additional Code 1:	Not reported

LIBERTY LOGISTICS INC (Continued) **S113141883**

Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2008
Shipment Date:	20080211
Creation Date:	4/3/2008 18:30:34
Receipt Date:	20080218
Manifest ID:	000694781SKS
Gen EPA ID:	CAL000305414
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD093459485
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	213
RCRA Code:	D001
Meth Code:	H141
Quantity Tons:	0.2502
Waste Quantity:	60
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Name:	LIBERTY LOGISTICS INC
Address:	3143 PETROL RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2008
Gepaid:	CAL000305414
Contact:	ROY WATERHOUSE
Telephone:	6613870104
Mailing Name:	Not reported
Mailing Address:	PO BOX 80722
Gen County:	15
Waste Category:	Hydrocarbon solvents (benzene, hexane, Stoddard, Etc.)
TSD EPA ID:	CAD093459485
TSD County:	10
Disposal Method:	Not reported
Tons:	0.14595

Additional Info:

Year:	2008
Shipment Date:	20080923
Creation Date:	11/3/2008 18:30:08
Receipt Date:	20080929
Manifest ID:	001226700SKS
Gen EPA ID:	CAL000305414
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC

LIBERTY LOGISTICS INC (Continued) **S113141883**

Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD093459485
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	213
RCRA Code:	D001
Meth Code:	Not reported
Quantity Tons:	0.07506
Waste Quantity:	18
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2008
Shipment Date:	20080605
Creation Date:	8/4/2008 18:30:49
Receipt Date:	20080612
Manifest ID:	001036675SKS
Gen EPA ID:	CAL000305414
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD093459485
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	213
RCRA Code:	D001
Meth Code:	Not reported
Quantity Tons:	0.07089
Waste Quantity:	17
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2008
Shipment Date:	20080211
Creation Date:	4/3/2008 18:30:34
Receipt Date:	20080218
Manifest ID:	000694781SKS
Gen EPA ID:	CAL000305414
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD093459485
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	Not reported

LIBERTY LOGISTICS INC (Continued) **S113141883**

TSDF Alt Name:	Not reported
Waste Code:	213
RCRA Code:	D001
Meth Code:	H141
Quantity Tons:	0.2502
Waste Quantity:	60
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	LIBERTY LOGISTICS INC
Address:	3143 PETROL RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2007
Gepaid:	CAL000305414
Contact:	ROY WATERHOUSE
Telephone:	6613870104
Mailing Name:	Not reported
Mailing Address:	PO BOX 80722
Gen County:	15
Waste Category:	Hydrocarbon solvents (benzene, hexane, Stoddard, Etc.)
TSD EPA ID:	CAD093459485
TSD County:	10
Disposal Method:	Solvents Recovery
Tons:	0.0417

Additional Info:

Year:	2007
Shipment Date:	20070628
Creation Date:	11/3/2007 18:30:21
Receipt Date:	20070709
Manifest ID:	000061569SKS
Gen EPA ID:	CAL000305414
Trans EPA ID:	TXR000050930
Trans Name:	SAFETY-KLEEN SYSTEMS INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD093459485
Trans Name:	SAFETY-KLEEN SYSTEMS INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	213
RCRA Code:	D001
Meth Code:	H020
Quantity Tons:	0.0417
Waste Quantity:	10
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

L68
SE
1/2-1
0.851 mi.
4492 ft.

G.I.C. TRANSPORT
3143 PETROL RD
BAKERSFIELD, CA 93308
Site 7 of 11 in cluster L

FINDS **1023263558**
N/A

Actual:
480 ft.

Focus Map:
9

FINDS:

Registry ID: 110065530303 No Info in ECHO, other than FRS #

Environmental Interest/Information System
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

L69
SE
1/2-1
0.851 mi.
4492 ft.

VETO TRANSPORTATION
3143 PETROL RD
BAKERSFIELD, CA 93308
Site 8 of 11 in cluster L

HAZNET **S113060428**
N/A

Actual:
480 ft.

Focus Map:
9

HAZNET:

Name:	VETO TRANSPORTATION
Address:	3143 PETROL RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2005
Gepaid:	CAL000102570
Contact:	DALE DWIGHT
Telephone:	6613994723
Mailing Name:	Not reported
Mailing Address:	3143 PETROL RD
Gen County:	15
Waste Category:	Other organic solids
TSD EPA ID:	CAD982444481
TSD County:	36
Disposal Method:	Recycler
Tons:	0.175

Additional Info:

Year:	2005
Shipment Date:	20051128
Creation Date:	3/22/2006 18:30:36
Receipt Date:	20051209
Manifest ID:	24483551
Gen EPA ID:	CAL000102570
Trans EPA ID:	CAL000268462
Trans Name:	COLES SERVICES INC
Trans 2 EPA ID:	CAD982444481
Trans 2 Name:	FILTER RECYLING SERVICES
TSDF EPA ID:	CAD982444481
Trans Name:	FILTER RECYCLING SERVICES
TSDF Alt EPA ID:	CAD982444481
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.175
Waste Quantity:	350

VETO TRANSPORTATION (Continued) **S113060428**

Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

L70 **DALE DWIGHT** **HAZNET** **S123582174**
SE **3143 PETROL RD** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.851 mi.
4492 ft. **Site 9 of 11 in cluster L**

Actual:
480 ft.

Focus Map:
9

HAZNET:

Name:	DALE DWIGHT
Address:	3143 PETROL RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2005
Gepaid:	CAC002593416
Contact:	DALE DWIGHT
Telephone:	6613994723
Mailing Name:	Not reported
Mailing Address:	PO BOX 5493
Gen County:	15
Waste Category:	Oil/water separation sludge
TSD EPA ID:	CAD982444481
TSD County:	36
Disposal Method:	Recycler
Tons:	4.17

Additional Info:

Year:	2005
Shipment Date:	20051128
Creation Date:	4/4/2006 18:30:51
Receipt Date:	Not reported
Manifest ID:	24483552
Gen EPA ID:	CAC002593416
Trans EPA ID:	CAL000268462
Trans Name:	COLES SERVICES INC
Trans 2 EPA ID:	CAD982444481
Trans 2 Name:	FILTER RECYLING SERVICES
TSDF EPA ID:	AZD009015389
Trans Name:	ROMIC SOUTHWEST
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	U122
Meth Code:	Not reported
Quantity Tons:	0.165
Waste Quantity:	50
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

DALE DWIGHT (Continued) **S123582174**

Year:	2005
Shipment Date:	20050822
Creation Date:	4/13/2006 18:47:49
Receipt Date:	20050823
Manifest ID:	24745422
Gen EPA ID:	CAC002593416
Trans EPA ID:	CAD982444481
Trans Name:	FILTER RECYCLING SERVICES INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	FILTER RECYCLING SERVICES INC
TSDF Alt EPA ID:	CAD982444481
TSDF Alt Name:	Not reported
Waste Code:	222
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	4.17
Waste Quantity:	1000
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	DALE DWIGHT
Address:	3143 PETROL RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2005
Gepaid:	CAC002593416
Contact:	DALE DWIGHT
Telephone:	6613994723
Mailing Name:	Not reported
Mailing Address:	PO BOX 5493
Gen County:	15
Waste Category:	Off-specification, aged or surplus organics
TSD EPA ID:	AZD009015389
TSD County:	99
Disposal Method:	Not reported
Tons:	0.165

Additional Info:

Year:	2005
Shipment Date:	20051128
Creation Date:	4/4/2006 18:30:51
Receipt Date:	Not reported
Manifest ID:	24483552
Gen EPA ID:	CAC002593416
Trans EPA ID:	CAL000268462
Trans Name:	COLES SERVICES INC
Trans 2 EPA ID:	CAD982444481
Trans 2 Name:	FILTER RECYLING SERVICES
TSDF EPA ID:	AZD009015389
Trans Name:	ROMIC SOUTHWEST
TSDF Alt EPA ID:	Not reported

DALE DWIGHT (Continued) **S123582174**

TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	U122
Meth Code:	Not reported
Quantity Tons:	0.165
Waste Quantity:	50
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2005
Shipment Date:	20050822
Creation Date:	4/13/2006 18:47:49
Receipt Date:	20050823
Manifest ID:	24745422
Gen EPA ID:	CAC002593416
Trans EPA ID:	CAD982444481
Trans Name:	FILTER RECYCLING SERVICES INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	FILTER RECYCLING SERVICES INC
TSDF Alt EPA ID:	CAD982444481
TSDF Alt Name:	Not reported
Waste Code:	222
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	4.17
Waste Quantity:	1000
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

L71 **TS TRANSPORTATION INC** **RCRA NonGen / NLR** **1024862891**
SE **3143 PETROL RD** **CAL000431425**
1/2-1 **BAKERSFIELD, CA 93308**
0.851 mi.
4492 ft. **Site 10 of 11 in cluster L**

Actual:
480 ft.

Focus Map:
9

RCRA NonGen / NLR:

Date form received by agency:	2017-10-12 00:00:00.0
Facility name:	TS TRANSPORTATION INC
Facility address:	3143 PETROL RD BAKERSFIELD, CA 93308
EPA ID:	CAL000431425
Mailing address:	7014 LYRIC AVE LANCASTER, CA 93536
Contact:	TRAVIS SMITH
Contact address:	7014 LYRIC AVE LANCASTER, CA 93536
Contact country:	Not reported

TS TRANSPORTATION INC (Continued) **1024862891**

Contact telephone: 661-609-8667
Contact email: TSTRANSPORTING@GMAIL.COM
EPA Region: 09
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: TRAVIS SMITH
Owner/operator address: 7014 LYRIC AVE
LANCASTER, CA 93536
Owner/operator country: Not reported
Owner/operator telephone: 661-609-8667
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: TRAVIS SMITH
Owner/operator address: 7014 LYRIC AVE
LANCASTER, CA 93536
Owner/operator country: Not reported
Owner/operator telephone: 661-609-8667
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: Yes
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

L72 **LIBERTY LOGISTICS** **AST** **S108750262**
SE **3143 PETROL** **N/A**
1/2-1 **BAKERSFIELD, CA**
0.851 mi.
4492 ft. **Site 11 of 11 in cluster L**

Actual: **480 ft.**
Focus Map: **9**

AST:

Name:	LIBERTY LOGISTICS
Address:	3143 PETROL
City/Zip:	BAKERSFIELD,
Certified Unified Program Agencies:	Kern
Owner:	LIBERTY LOGISTICS INC
Total Gallons:	11,700
CERSID:	Not reported
Facility ID:	Not reported
Business Name:	Not reported
Phone:	Not reported
Fax:	Not reported
Mailing Address:	Not reported
Mailing Address City:	Not reported
Mailing Address State:	Not reported
Mailing Address Zip Code:	Not reported
Operator Name:	Not reported
Operator Phone:	Not reported
Owner Phone:	Not reported
Owner Mail Address:	Not reported
Owner State:	Not reported
Owner Zip Code:	Not reported
Owner Country:	Not reported
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	Not reported

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73 **KRAMER PIT** **MINES MRDS** **1025757172**
East **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.857 mi.
4524 ft.

Actual: **563 ft.**
Focus Map: **6**

MINES MRDS:

Name:	KRAMER PIT
Address:	Not reported
Deposit identification Number:	10285177
City,State,Zip:	BAKERSFIELD, CALIFORNIA 93308
URL:	https://mrdata.usgs.gov/mrds/show-mrds.php?dep_id=10285177
MRDS Identification Number:	Not reported
MAS/MILS Identification Number:	0060290688
Region:	NA
Country:	United States
Primary Commodities:	Sand and Gravel, Construction
Secondary Commodities:	Not reported
Tertiary Commodities:	Not reported
Operation Type:	Surface
Deposit Type:	Not reported
Production Size:	Not reported

KRAMER PIT (Continued) **1025757172**

Development Status:	Past Producer
Ore Minerals or Materials:	Not reported
Gangue Minerals or Materials:	Not reported
Other Minerals or Materials:	Not reported
Ore Body Form:	Not reported
Workings Type:	Not reported
Mineral Deposit Model:	Not reported
Alteration Processes:	Not reported
Concentration Processes:	Not reported
Previous Names:	Dicco Inc,James Road Pit and MillJames Road Pit
Ore Controls:	Not reported
Reporter:	Raney, Russell G.
Host Rock Unit Name:	Not reported
Host Rock Type:	Not reported
Associated Rock Unit Name:	Not reported
Associated Rock Type Code:	Not reported
Structural Characteristics:	Not reported
Tectonic Setting:	Not reported
References:	Not reported
First Production Year:	Not reported
Began Before/After FPY:	Not reported
Last Production Year:	Not reported
Ended Before/After LPY:	Not reported
Year Discovered:	Not reported
Found Before/After YD:	Not reported
Production History:	Not reported
Discovery Information:	Not reported
Latitude:	35.46828
Longitude:	-119.08093

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74 **T-MOBILE WEST CORPORATION SV00258A** **CERS** **S121785598**
NW **33320 CAWELO AVE** **N/A**
1/2-1 **SHAFTER, CA 93263**
0.877 mi.
4629 ft.

Actual:
412 ft.

Focus Map:
1

CERS:

Name:	T-MOBILE WEST CORPORATION SV00258A
Address:	33320 CAWELO AVE
City,State,Zip:	SHAFTER, CA 93263
Site ID:	436914
CERS ID:	10730035
CERS Description:	Chemical Storage Facilities

Affiliation:

Affiliation Type Desc:	Parent Corporation
Entity Name:	T-MOBILE WEST, LLC
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	CUPA District
Entity Name:	Kern County Environmental Health Services Departme
Entity Title:	Not reported

T-MOBILE WEST CORPORATION SV00258A (Continued) **S121785598**

Affiliation Address:	2700 M Street, Suite 300
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93301-2370
Affiliation Phone:	(661) 862-8740
Affiliation Type Desc:	Document Preparer
Entity Name:	Kelly Michaels
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	T-MOBILE WEST, LLC
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(805) 584-5723
Affiliation Type Desc:	Environmental Contact
Entity Name:	Hilary Sullivan
Entity Title:	Not reported
Affiliation Address:	4100 Guardian St., Ste 101
Affiliation City:	Simi Valley
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93063
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	4100 Guardian St., Ste 101
Affiliation City:	Simi Valley
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93063
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Kelly Michaels
Entity Title:	Project Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

T-MOBILE WEST CORPORATION SV00258A (Continued) **S121785598**

Affiliation Type Desc:	Legal Owner
Entity Name:	T-MOBILE WEST, LLC
Entity Title:	Not reported
Affiliation Address:	12920 SE 38th Street
Affiliation City:	Bellevue
Affiliation State:	WA
Affiliation Country:	United States
Affiliation Zip:	98006
Affiliation Phone:	(425) 383-4000

75
North
1/2-1
0.878 mi.
4636 ft.

VINCENT B ZANINOVICH AND SONS INC **FINDS** **1023251157**
33905 LERDO HWY **ECHO** **N/A**
SHAFTER, CA 93263

N/A

Located 1,100 N of 1-mile buffer

Actual:
460 ft.

Focus Map:
2

FINDS:

Registry ID: 110065397671

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1023251157
Registry ID:	110065397671
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110065397671

M76
SE
1/2-1
0.887 mi.
4682 ft.

CMS CUSTOM SPREADING INC. (E) **PEST LIC** **S117638789**
19400 COLUMBO **N/A**
BAKERSFIELD, CA 93308

Site 1 of 4 in cluster M

Actual:
481 ft.

Focus Map:
9

PEST LIC:

Name:	CMS CUSTOM SPREADING INC. (E)
Address:	19400 COLUMBO
City,State,Zip:	BAKERSFIELD, CA 93308
Facility Type:	PCM
Categories:	Not reported
License No:	30066
Issued or Renewed Date:	01/01/2019
Expiration Date:	12/31/2020

N77 **JTS TRUCK REPAIR** **RCRA NonGen / NLR** **1024807900**
SE **4300 SACO RD** **CAL000276925**
1/2-1 **BAKERSFIELD, CA 93308**
0.887 mi.
4685 ft. **Site 1 of 3 in cluster N**

Actual:
461 ft.

Focus Map:
9

RCRA NonGen / NLR:

Date form received by agency:	2003-12-09 00:00:00.0
Facility name:	JTS TRUCK REPAIR
Facility address:	4300 SACO RD BAKERSFIELD, CA 93308
EPA ID:	CAL000276925
Mailing address:	PO BOX 40970 BAKERSFIELD, CA 93384-0970
Contact:	TYLER HARDEN
Contact address:	300 TERRACE WAY BAKERSFIELD, CA 93304
Contact country:	Not reported
Contact telephone:	661-832-7080
Contact email:	BSOTO@JIMSTOWINGSERVICE.COM
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	JIMS TOWING SERVICES INC
Owner/operator address:	PO BOX 40970 BAKERSFIELD, CA 93384
Owner/operator country:	Not reported
Owner/operator telephone:	661-832-7080
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	TYLER HARDEN
Owner/operator address:	300 TERRACE WAY BAKERSFIELD, CA 93304
Owner/operator country:	Not reported
Owner/operator telephone:	661-832-7080
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	Yes
Treater, storer or disposer of HW:	No
Underground injection activity:	No

JTS TRUCK REPAIR (Continued) **1024807900**

On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

N78 **JTS TRUCK REPAIR** **HAZNET** **S113129387**
SE **4300 SACO RD** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.887 mi.
4685 ft. **Site 2 of 3 in cluster N**

Actual:
461 ft.

Focus Map:
9

HAZNET:

Name:	JTS TRUCK REPAIR
Address:	4300 SACO RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2004
Gepaid:	CAL000276925
Contact:	CHRIS POTTS
Telephone:	6618327080
Mailing Name:	Not reported
Mailing Address:	300 TERRACE WAY
Gen County:	15
Waste Category:	Waste oil and mixed oil
TSD EPA ID:	CAT080013352
TSD County:	19
Disposal Method:	Not reported
Tons:	0.95

Additional Info:

Year:	2004
Shipment Date:	20040729
Creation Date:	11/5/2004 18:32:00
Receipt Date:	20040729
Manifest ID:	23493836
Gen EPA ID:	CAL000276925
Trans EPA ID:	CAD982413262
Trans Name:	EVERGREEN ENVIRONMENTAL SERVICES
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982446882
Trans Name:	EVERGREEN ENVIRONMENTAL SERVICES
TSDF Alt EPA ID:	CAD982446882
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	NONE
Meth Code:	H01
Quantity Tons:	0.57
Waste Quantity:	150
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported

JTS TRUCK REPAIR (Continued) **S113129387**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2004
Shipment Date:	20040324
Creation Date:	10/14/2004 7:35:58
Receipt Date:	20040326
Manifest ID:	22393174
Gen EPA ID:	CAL000276925
Trans EPA ID:	CAL000268462
Trans Name:	COLE'S SERVICES
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	CAT080013352
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.95
Waste Quantity:	250
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Name:	JTS TRUCK REPAIR
Address:	4300 SACO RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2004
Gepaid:	CAL000276925
Contact:	CHRIS POTTS
Telephone:	6618327080
Mailing Name:	Not reported
Mailing Address:	300 TERRACE WAY
Gen County:	15
Waste Category:	Waste oil and mixed oil
TSD EPA ID:	CAD982446882
TSD County:	10
Disposal Method:	Transfer Station
Tons:	0.57

Additional Info:

Year:	2004
Shipment Date:	20040729
Creation Date:	11/5/2004 18:32:00
Receipt Date:	20040729
Manifest ID:	23493836
Gen EPA ID:	CAL000276925
Trans EPA ID:	CAD982413262
Trans Name:	EVERGREEN ENVIRONMENTAL SERVICES
Trans 2 EPA ID:	Not reported

JTS TRUCK REPAIR (Continued) **S113129387**

Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982446882
Trans Name:	EVERGREEN ENVIRONMENTAL SERVICES
TSDF Alt EPA ID:	CAD982446882
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	NONE
Meth Code:	H01
Quantity Tons:	0.57
Waste Quantity:	150
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2004
Shipment Date:	20040324
Creation Date:	10/14/2004 7:35:58
Receipt Date:	20040326
Manifest ID:	22393174
Gen EPA ID:	CAL000276925
Trans EPA ID:	CAL000268462
Trans Name:	COLE'S SERVICES
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	CAT080013352
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.95
Waste Quantity:	250
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	JTS TRUCK REPAIR
Address:	4300 SACO RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2017
Gepaid:	CAL000276925
Contact:	TYLER HARDEN
Telephone:	6618327080
Mailing Name:	Not reported
Mailing Address:	PO BOX 40970
Gen County:	15
Waste Category:	Other organic solids
TSD EPA ID:	CAD097030993

JTS TRUCK REPAIR (Continued) **S113129387**

TSD County:	19
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.75

Additional Info:

Year:	2017
Shipment Date:	20170222
Creation Date:	5/18/2017 18:32:20
Receipt Date:	20170228
Manifest ID:	016864391JJK
Gen EPA ID:	CAL000276925
Trans EPA ID:	CAD028277036
Trans Name:	ASBURY ENVIRONMENTAL SERVICES
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	US ECOLOGY VERNON, INC.
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.3
Waste Quantity:	600
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2017
Shipment Date:	20170725
Creation Date:	5/18/2018 18:30:34
Receipt Date:	20170802
Manifest ID:	017785574JJK
Gen EPA ID:	CAL000276925
Trans EPA ID:	CAD028277036
Trans Name:	ASBURY ENVIRONMENTAL SERVICES
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	US ECOLOGY VERNON INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.2
Waste Quantity:	400
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

JTS TRUCK REPAIR (Continued) **S113129387**

Year:	2017
Shipment Date:	20171204
Creation Date:	6/13/2018 18:31:23
Receipt Date:	20171212
Manifest ID:	017786387JJK
Gen EPA ID:	CAL000276925
Trans EPA ID:	CAD028277036
Trans Name:	ASBURY ENVIRONMENTAL SERVICES
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	US ECOLOGY VERNON INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.25
Waste Quantity:	500
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

N79 **JTS TRUCK REPAIR** **FINDS 1023251702**
SE **4300 SACO RD** **ECHO N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.887 mi.
4685 ft. **Site 3 of 3 in cluster N**

Actual:
461 ft.

Focus Map:
9

FINDS:

Registry ID: 110065403842

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1023251702
Registry ID:	110065403842
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110065403842

M80
SE
1/2-1
0.891 mi.
4705 ft.

SW CORNER OF COLOMBO AND PETROL ROAD
BAKERSFIELD, CA 93380

Site 2 of 4 in cluster M

CHMIRS **S100276347**
N/A

Actual:
481 ft.

Focus Map:
9

CHMIRS:

Name:	Not reported
Address:	SW CORNER OF COLOMBO AND PETROL ROAD
City,State,Zip:	BAKERSFIELD, CA 93380
OES Incident Number:	099281
OES notification:	Not reported
OES Date:	Not reported
OES Time:	Not reported
Date Completed:	**16-JUN-90**
Property Use:	600
Agency Id Number:	15702
Agency Incident Number:	JGL 102
Time Notified:	830
Time Completed:	1045
Surrounding Area:	600
Estimated Temperature:	95
Property Management:	P
More Than Two Substances Involved?:	N
Resp Agncy Personel # Of Decontaminated:	0
Responding Agency Personel # Of Injuries:	0
Responding Agency Personel # Of Fatalities:	0
Others Number Of Decontaminated:	0
Others Number Of Injuries:	0
Others Number Of Fatalities:	0
Vehicle Make/year:	Not reported
Vehicle License Number:	Not reported
Vehicle State:	Not reported
Vehicle Id Number:	Not reported
CA DOT PUC/ICC Number:	Not reported
Company Name:	Not reported
Reporting Officer Name/ID:	J. LEHMAN
Report Date:	18-JUN-90
Facility Telephone:	805 861-3636
Waterway Involved:	Not reported
Waterway:	Not reported
Spill Site:	Not reported
Cleanup By:	Not reported
Containment:	Not reported
What Happened:	Not reported
Type:	Not reported
Measure:	Not reported
Other:	Not reported
Date/Time:	Not reported
Year:	88-92
Agency:	Not reported
Incident Date:	16-JUN-90
Admin Agency:	Not reported
Amount:	Not reported
Contained:	Not reported
Site Type:	Not reported
E Date:	21-MAY-91
Substance:	Not reported
Unknown:	Not reported

(Continued) **S100276347**

Substance #2:	Not reported
Substance #3:	Not reported
Evacuations:	Not reported
Number of Injuries:	Not reported
Number of Fatalities:	Not reported
#1 Pipeline:	Not reported
#2 Pipeline:	Not reported
#3 Pipeline:	Not reported
#1 Vessel >= 300 Tons:	Not reported
#2 Vessel >= 300 Tons:	Not reported
#3 Vessel >= 300 Tons:	Not reported
Evacs:	Not reported
Injuries:	Not reported
Fatals:	Not reported
Comments:	Y
Description:	Not reported

O81 **PROCESS FLOW TECHNOLOGY** **HAZNET** **S113136821**
SE **19417 COLOMBO STREET** **NPDES** **N/A**
1/2-1 **BAKERSFIELD, CA 93308** **CIWQS**
0.897 mi. **CERS**
4734 ft. **Site 1 of 9 in cluster O**

Actual:
475 ft.

Focus Map:
9

HAZNET:

Name:	NOV PFT
Address:	19417 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2016
Gepaid:	CAL000293199
Contact:	MICHAEL FONTES
Telephone:	6613879316
Mailing Name:	Not reported
Mailing Address:	19417 COLOMBO STREET
Gen County:	15
Waste Category:	Unspecified oil-containing waste
TSD EPA ID:	CAL000282598
TSD County:	15
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.68805

Additional Info:

Year:	2016
Shipment Date:	20150730
Creation Date:	10/5/2015 22:15:27
Receipt Date:	20150730
Manifest ID:	014672014JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	223

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.14595
Waste Quantity:	35
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150326
Creation Date:	6/24/2015 22:15:41
Receipt Date:	20150330
Manifest ID:	013914469JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	223
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.52125
Waste Quantity:	125
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20151028
Creation Date:	1/11/2016 22:16:05
Receipt Date:	20151028
Manifest ID:	015000157JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	223
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	1.9599
Waste Quantity:	470
Quantity Unit:	G

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20151104
Creation Date:	1/23/2016 22:15:12
Receipt Date:	20151104
Manifest ID:	015000158JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.125
Waste Quantity:	250
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150527
Creation Date:	9/8/2015 22:15:08
Receipt Date:	20150604
Manifest ID:	014314973JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.025
Waste Quantity:	50
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Year:	2016
Shipment Date:	20150527
Creation Date:	8/28/2015 22:15:17
Receipt Date:	20150527
Manifest ID:	014314974JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.25
Waste Quantity:	500
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	NOV PFT
Address:	19417 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2017
Gepaid:	CAL000293199
Contact:	MICHAEL FONTES
Telephone:	6613879316
Mailing Name:	Not reported
Mailing Address:	19417 COLOMBO STREET
Gen County:	15
Waste Category:	Unspecified oil-containing waste
TSD EPA ID:	CAL000282598
TSD County:	15
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	7.506

Additional Info:

Year:	2017
Shipment Date:	20171104
Creation Date:	5/30/2018 18:32:07
Receipt Date:	20171104
Manifest ID:	017847445JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	223
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	1.251
Waste Quantity:	300
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2017
Shipment Date:	20170711
Creation Date:	5/29/2018 18:30:34
Receipt Date:	20170712
Manifest ID:	017148452JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	223
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	6.255
Waste Quantity:	1500
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	R&M ENERGY SYSTEMS
Address:	19417 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2008
Gepaid:	CAL000293199
Contact:	DARRYLL E. MAY-OPERATIONS MGR
Telephone:	6613879316
Mailing Name:	Not reported
Mailing Address:	10586 N HIGHWAY 75
Gen County:	15
Waste Category:	Oil/water separation sludge
TSD EPA ID:	CAD982444481
TSD County:	36
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Tons:	0.1668
Additional Info:	
Year:	2008
Shipment Date:	20080423
Creation Date:	6/25/2008 18:30:21
Receipt Date:	20080501
Manifest ID:	003004542JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	COLES SERVICES INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	ENVIRONMENTAL LOGISTICS INC
TSDF EPA ID:	CAD982444481
Trans Name:	FILTER RECYCLING SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	222
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.1668
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Name:	NOV PFT
Address:	19417 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2015
Gepaid:	CAL000293199
Contact:	MICHAEL FONTES
Telephone:	6613879316
Mailing Name:	Not reported
Mailing Address:	19417 COLOMBO STREET
Gen County:	15
Waste Category:	Other organic solids
TSD EPA ID:	CAD028409019
TSD County:	19
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.025
Additional Info:	
Year:	2015
Shipment Date:	20150527
Creation Date:	9/8/2015 22:15:08
Receipt Date:	20150604
Manifest ID:	014314973JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.025
Waste Quantity:	50
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150527
Creation Date:	8/28/2015 22:15:17
Receipt Date:	20150527
Manifest ID:	014314974JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.25
Waste Quantity:	500
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150326
Creation Date:	6/24/2015 22:15:41
Receipt Date:	20150330
Manifest ID:	013914469JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Waste Code:	223
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.52125
Waste Quantity:	125
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150730
Creation Date:	10/5/2015 22:15:27
Receipt Date:	20150730
Manifest ID:	014672014JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	223
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.14595
Waste Quantity:	35
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20151028
Creation Date:	1/11/2016 22:16:05
Receipt Date:	20151028
Manifest ID:	015000157JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	223
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	1.9599
Waste Quantity:	470

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20151104
Creation Date:	1/23/2016 22:15:12
Receipt Date:	20151104
Manifest ID:	015000158JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.125
Waste Quantity:	250
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Name:	NOV PFT
Address:	19417 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2015
Gepaid:	CAL000293199
Contact:	MICHAEL FONTES
Telephone:	6613879316
Mailing Name:	Not reported
Mailing Address:	19417 COLOMBO STREET
Gen County:	15
Waste Category:	Unspecified oil-containing waste
TSD EPA ID:	CAL000282598
TSD County:	15
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	2.6271

Additional Info:

Year:	2015
Shipment Date:	20150527
Creation Date:	9/8/2015 22:15:08
Receipt Date:	20150604
Manifest ID:	014314973JJK

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.025
Waste Quantity:	50
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150527
Creation Date:	8/28/2015 22:15:17
Receipt Date:	20150527
Manifest ID:	014314974JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.25
Waste Quantity:	500
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150326
Creation Date:	6/24/2015 22:15:41
Receipt Date:	20150330
Manifest ID:	013914469JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	223
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.52125
Waste Quantity:	125
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150730
Creation Date:	10/5/2015 22:15:27
Receipt Date:	20150730
Manifest ID:	014672014JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	223
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.14595
Waste Quantity:	35
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20151028
Creation Date:	1/11/2016 22:16:05
Receipt Date:	20151028
Manifest ID:	015000157JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	223

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	1.9599
Waste Quantity:	470
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20151104
Creation Date:	1/23/2016 22:15:12
Receipt Date:	20151104
Manifest ID:	015000158JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.125
Waste Quantity:	250
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Name:	NOV PFT
Address:	19417 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2015
Gepaid:	CAL000293199
Contact:	MICHAEL FONTES
Telephone:	6613879316
Mailing Name:	Not reported
Mailing Address:	19417 COLOMBO STREET
Gen County:	15
Waste Category:	Other organic solids
TSD EPA ID:	CAL000282598
TSD County:	15
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.375

Additional Info:

Year:	2015

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Shipment Date:	20150527
Creation Date:	9/8/2015 22:15:08
Receipt Date:	20150604
Manifest ID:	014314973JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.025
Waste Quantity:	50
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150527
Creation Date:	8/28/2015 22:15:17
Receipt Date:	20150527
Manifest ID:	014314974JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.25
Waste Quantity:	500
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150326
Creation Date:	6/24/2015 22:15:41
Receipt Date:	20150330
Manifest ID:	013914469JJK
Gen EPA ID:	CAL000293199

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	223
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.52125
Waste Quantity:	125
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150730
Creation Date:	10/5/2015 22:15:27
Receipt Date:	20150730
Manifest ID:	014672014JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	223
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.14595
Waste Quantity:	35
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20151028
Creation Date:	1/11/2016 22:16:05
Receipt Date:	20151028
Manifest ID:	015000157JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	223
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	1.9599
Waste Quantity:	470
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20151104
Creation Date:	1/23/2016 22:15:12
Receipt Date:	20151104
Manifest ID:	015000158JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.125
Waste Quantity:	250
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	R&M ENERGY SYSTEMS
Address:	19417 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2014
Gepaid:	CAL000293199
Contact:	DARRYLL E. MAY-OPERATIONS MGR
Telephone:	6613879316
Mailing Name:	Not reported
Mailing Address:	10586 N HIGHWAY 75
Gen County:	15
Waste Category:	Unspecified oil-containing waste
TSD EPA ID:	CAL000282598
TSD County:	15
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

(H010-H129) Or (H131-H135)
Tons: 3.71964

Additional Info:
Year: 2014
Shipment Date: 20141114
Creation Date: 1/15/2015 22:15:01
Receipt Date: 20141114
Manifest ID: 013306409JJK
Gen EPA ID: CAL000293199
Trans EPA ID: CAL000268462
Trans Name: CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID: Not reported
Trans 2 Name: Not reported
TSDF EPA ID: CAL000282598
Trans Name: BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code: 223
RCRA Code: Not reported
Meth Code: H141
Quantity Tons: 2.21844
Waste Quantity: 532
Quantity Unit: G
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Year: 2014
Shipment Date: 20141216
Creation Date: 3/20/2015 22:14:48
Receipt Date: 20151216
Manifest ID: 013449617JJK
Gen EPA ID: CAL000293199
Trans EPA ID: CAL000268462
Trans Name: CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID: Not reported
Trans 2 Name: Not reported
TSDF EPA ID: CAL000282598
Trans Name: BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code: 223
RCRA Code: Not reported
Meth Code: H141
Quantity Tons: 0.4587
Waste Quantity: 110
Quantity Unit: G
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Year: 2014
Shipment Date: 20141216

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Creation Date:	3/20/2015 22:14:48
Receipt Date:	20151216
Manifest ID:	013449617JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.05
Waste Quantity:	100
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2014
Shipment Date:	20140204
Creation Date:	3/12/2014 22:15:20
Receipt Date:	20140204
Manifest ID:	011815399JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI (COLES SERVICES INC-DBA: COLES ENVIRONMENTAL)
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	223
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	1.0425
Waste Quantity:	250
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	R&M ENERGY SYSTEMS
Address:	19417 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2014
Gepaid:	CAL000293199

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Contact:	DARRYLL E. MAY-OPERATIONS MGR
Telephone:	6613879316
Mailing Name:	Not reported
Mailing Address:	10586 N HIGHWAY 75
Gen County:	15
Waste Category:	Other organic solids
TSD EPA ID:	CAL000282598
TSD County:	15
Disposal Method:	Not reported
Tons:	0.05

Additional Info:

Year:	2014
Shipment Date:	20141114
Creation Date:	1/15/2015 22:15:01
Receipt Date:	20141114
Manifest ID:	013306409JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	223
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	2.21844
Waste Quantity:	532
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2014
Shipment Date:	20141216
Creation Date:	3/20/2015 22:14:48
Receipt Date:	20151216
Manifest ID:	013449617JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	223
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.4587
Waste Quantity:	110
Quantity Unit:	G

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2014
Shipment Date:	20141216
Creation Date:	3/20/2015 22:14:48
Receipt Date:	20151216
Manifest ID:	013449617JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI - COLES ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.05
Waste Quantity:	100
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2014
Shipment Date:	20140204
Creation Date:	3/12/2014 22:15:20
Receipt Date:	20140204
Manifest ID:	011815399JJK
Gen EPA ID:	CAL000293199
Trans EPA ID:	CAL000268462
Trans Name:	CSI (COLES SERVICES INC-DBA: COLES ENVIRONMENTAL)
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	223
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	1.0425
Waste Quantity:	250
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

NPDES:

Name:	PROCESS FLOW TECHNOLOGY
Address:	19417 COLOMBO STREET
City,State,Zip:	BAKERSFIELD, CA 93308
Facility Status:	Active
NPDES Number:	CAS000001
Region:	5F
Agency Number:	0
Regulatory Measure ID:	455799
Place ID:	Not reported
Order Number:	97-03-DWQ
WDID:	5F15I025523
Regulatory Measure Type:	Enrollee
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	06/03/2015
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	7909 Parkwood Circle
Discharge Name:	National Oilwell Varco LP
Discharge City:	Houston
Discharge State:	Texas
Discharge Zip:	77036
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

NPDES as of 03/2018:

NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	5F
Regulatory Measure ID:	455799
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	5F15I025523
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	06/03/2015
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	National Oilwell Varco LP
Discharge Address:	7909 Parkwood Circle
Discharge City:	Houston
Discharge State:	Texas
Discharge Zip:	77036
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	5F
Regulatory Measure ID:	455799
Order Number:	Not reported

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	5F15I025523
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	06/03/2015
Processed Date:	06/03/2015
Status:	Active
Status Date:	10/26/2015
Place Size:	1.3
Place Size Unit:	Acres
Contact:	Michael Fontes
Contact Title:	Operations Manager
Contact Phone:	661-387-9316
Contact Phone Ext:	Not reported
Contact Email:	Michael.Fontes@nov.com
Operator Name:	National Oilwell Varco LP
Operator Address:	7909 Parkwood Circle
Operator City:	Houston
Operator State:	Texas
Operator Zip:	77036
Operator Contact:	Shaun Payne
Operator Contact Title:	Global HSE Officer
Operator Contact Phone:	713-375-3373
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	shaun.payne@nov.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Texas
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Beardsley Canal
Certifier:	Shaun Payne
Certifier Title:	Global HSE Officer
Certification Date:	29-JUN-15
Primary Sic:	1389-Oil and Gas Field Services, NEC
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Name:	PROCESS FLOW TECHNOLOGY
Address:	19417 COLOMBO STREET
City,State,Zip:	BAKERSFIELD, CA 93308
Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	5F15I025523
Regulatory Measure Type:	Industrial
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Active
Status Date:	10/26/2015
Operator Name:	National Oilwell Varco LP
Operator Address:	7909 Parkwood Circle
Operator City:	Houston
Operator State:	Texas
Operator Zip:	77036

NPDES as of 03/2018:

NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	5F
Regulatory Measure ID:	455799
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	5F15I025523
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	06/03/2015
Expiration Date Of Regulatory Measure:	Not reported

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	National Oilwell Varco LP
Discharge Address:	7909 Parkwood Circle
Discharge City:	Houston
Discharge State:	Texas
Discharge Zip:	77036
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	5F
Regulatory Measure ID:	455799
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	5F15I025523
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	06/03/2015
Processed Date:	06/03/2015
Status:	Active
Status Date:	10/26/2015
Place Size:	1.3
Place Size Unit:	Acres
Contact:	Michael Fontes
Contact Title:	Operations Manager
Contact Phone:	661-387-9316
Contact Phone Ext:	Not reported
Contact Email:	Michael.Fontes@nov.com
Operator Name:	National Oilwell Varco LP
Operator Address:	7909 Parkwood Circle
Operator City:	Houston
Operator State:	Texas
Operator Zip:	77036
Operator Contact:	Shaun Payne
Operator Contact Title:	Global HSE Officer
Operator Contact Phone:	713-375-3373
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	shaun.payne@nov.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Texas
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Beardsley Canal
Certifier:	Shaun Payne
Certifier Title:	Global HSE Officer
Certification Date:	29-JUN-15
Primary Sic:	1389-Oil and Gas Field Services, NEC
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

CIWQS:

Name:	PROCESS FLOW TECHNOLOGY
Address:	19417 COLOMBO STREET
City,State,Zip:	BAKERSFIELD, CA 93308
Agency:	National Oilwell Varco LP
Agency Address:	7909 Parkwood Circle, Houston, TX 77036
Place/Project Type:	Industrial - Oil and Gas Field Services, NEC
SIC/NAICS:	1389
Region:	5F
Program:	INDSTW
Regulatory Measure Status:	Active
Regulatory Measure Type:	Storm water industrial
Order Number:	2014-0057-DWQ
WDID:	5F15I025523
NPDES Number:	CAS000001
Adoption Date:	Not reported
Effective Date:	06/03/2015
Termination Date:	Not reported
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	1
Violations within 5 years:	1
Latitude:	35.44738
Longitude:	-119.08872

CERS:

Name:	NOV-PFT, BAKERSFIELD

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Address:	19417 COLOMBO ST
City,State,Zip:	BAKERSFIELD, CA 93308
Site ID:	517275
CERS ID:	10782559
CERS Description:	Chemical Storage Facilities

Coordinates:

Site ID:	517275
Facility Name:	NOV-PFT, Bakersfield
Env Int Type Code:	HMBP
Program ID:	10782559
Coord Name:	Not reported
Ref Point Type Desc:	Center of a facility or station.
Latitude:	35.447380
Longitude:	-119.088720

Affiliation:

Affiliation Type Desc:	Document Preparer
Entity Name:	Trevor Schendel
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	19417 Colombo Street
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93308
Affiliation Phone:	Not reported

Affiliation Type Desc:	CUPA District
Entity Name:	Kern County Environmental Health Services Departme
Entity Title:	Not reported
Affiliation Address:	2700 M Street, Suite 300
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93301-2370
Affiliation Phone:	(661) 862-8740

Affiliation Type Desc:	Environmental Contact
Entity Name:	Anthony Bravos
Entity Title:	Not reported
Affiliation Address:	19417 Colombo St
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93308
Affiliation Phone:	Not reported

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Affiliation Type Desc:	Legal Owner
Entity Name:	NATIONAL OILWELL VARCO
Entity Title:	Not reported
Affiliation Address:	7900 Parkwood Circle Drive
Affiliation City:	Houston
Affiliation State:	TX
Affiliation Country:	United States
Affiliation Zip:	77036
Affiliation Phone:	(713) 634-3292

Affiliation Type Desc:	Operator
Entity Name:	Anthony Bravos
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(661) 334-0295

Affiliation Type Desc:	Parent Corporation
Entity Name:	NOV-PFT, Bakersfield
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Identification Signer
Entity Name:	Anthony Bravos
Entity Title:	Service Supervisor
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Name:	PROCESS FLOW TECHNOLOGY
Address:	19417 COLOMBO STREET
City,State,Zip:	BAKERSFIELD, CA 93308
Site ID:	539988
CERS ID:	835795
CERS Description:	Industrial Facility Storm Water

Violations:

Site ID:	539988
Site Name:	Process Flow Technology
Violation Date:	07-15-2017
Citation:	2014-0057-DWQ - Industrial General Permit
Violation Description:	SW - Late Report
Violation Notes:	Late 16-17 Annual Report
Violation Division:	Water Boards
Violation Program:	INDSTW
Violation Source:	SMARTS

PROCESS FLOW TECHNOLOGY (Continued) **S113136821**

Enforcement Action:

Site ID:	539988
Site Name:	Process Flow Technology
Site Address:	19417 COLOMBO STREET
Site City:	BAKERSFIELD
Site Zip:	93308
Enf Action Date:	09-27-2017
Enf Action Type:	Industrial Storm Water Enforcement
Enf Action Description:	Industrial Storm Water Enforcement
Enf Action Notes:	1st NNC for Late 16-17 Annual Report
Enf Action Division:	Water Boards
Enf Action Program:	INDSTW
Enf Action Source:	SMARTS

Affiliation:

Affiliation Type Desc:	Owner/Operator
Entity Name:	National Oilwell Varco LP
Entity Title:	Operator
Affiliation Address:	7909 Parkwood Circle
Affiliation City:	Houston
Affiliation State:	TX
Affiliation Country:	Not reported
Affiliation Zip:	77036
Affiliation Phone:	Not reported

O82 **RCRA NonGen / NLR** **1025867098**
SE **19417 COLOMBO ST** **CAL000293199**
1/2-1 **BAKERSFIELD, CA 93308**
0.897 mi.
4734 ft. **Site 2 of 9 in cluster O** NATIONAL OILWELL VARCO

Actual:
475 ft.

Focus Map:
9

RCRA NonGen / NLR:

Date form received by agency:	2005-04-13 00:00:00.0
Facility name:	Not reported
Facility address:	19417 COLOMBO ST BAKERSFIELD, CA 93308
EPA ID:	CAL000293199
Mailing address:	19417 COLOMBO STREET BAKERSFIELD, CA 93308-0000
Contact:	SHELLEY TAYLOR
Contact address:	19417 COLOMBO ST BAKERSFIELD, CA 93308
Contact country:	Not reported
Contact telephone:	661-387-9316
Contact email:	SHELLEY.TAYLOR@NOV.COM
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	NATIONAL OILWELL VARCO
Owner/operator address:	7909 PARKWOOD HOUSTON, TX 77036
Owner/operator country:	Not reported
Owner/operator telephone:	713-375-3700

(Continued) **1025867098**

Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported
Owner/operator name:	SHELLEY TAYLOR
Owner/operator address:	19417 COLOMBO ST BAKERSFIELD, CA 93308
Owner/operator country:	Not reported
Owner/operator telephone:	661-387-9316
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	Yes
Transporter of hazardous waste:	Yes
Treater, storer or disposer of HW:	Yes
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

O83 **NOV PROCESS & FLOW TECHNOLOGIES** **ECHO** **1025493889**
SE **19417 COLOMBO ST** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.897 mi.
4734 ft. **Site 3 of 9 in cluster O**

Actual:
475 ft.

Focus Map:
9

ECHO:

Envid:	1025493889
Registry ID:	110070589440
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110070589440

O84 **PROCESS FLOW TECHNOLOGY** **FINDS** **1023697190**
SE **19417 COLOMBO STREET** **ECHO** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.897 mi.
4734 ft. **Site 4 of 9 in cluster O**

Actual:
475 ft.

Focus Map:
9

FINDS:

Registry ID: 110070094270

Environmental Interest/Information System

US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1023697190
Registry ID:	110070094270
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110070094270

M85 **SEQUOIA EQUIPMENT COMPANY INC** **RCRA NonGen / NLR** **1024856049**
SE **19404 COLOMBO ST** **CAL000419433**
1/2-1 **BAKERSFIELD, CA 93308**
0.903 mi.
4768 ft. **Site 3 of 4 in cluster M**

Actual:
480 ft.

Focus Map:
9

RCRA NonGen / NLR:

Date form received by agency:	2016-08-12 00:00:00.0
Facility name:	SEQUOIA EQUIPMENT COMPANY INC
Facility address:	19404 COLOMBO ST BAKERSFIELD, CA 93308
EPA ID:	CAL000419433
Contact:	DEANN KNIGHT
Contact address:	19404 COLOMBO ST BAKERSFIELD, CA 93308
Contact country:	Not reported
Contact telephone:	661-679-1470
Contact email:	LBOORTZ@SEQUOIAEQUIPMENT.COM
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	SEQUOIA EQUIPMENT COMPANY INC
Owner/operator address:	3400 E AMERICAN AVE FRESNO, CA 93725
Owner/operator country:	Not reported
Owner/operator telephone:	559-441-1122
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported

SEQUOIA EQUIPMENT COMPANY INC (Continued) **1024856049**

Legal status: Other
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: DEANN KNIGHT
Owner/operator address: 19404 COLOMBO ST
BAKERSFIELD, CA 93308
Owner/operator country: Not reported
Owner/operator telephone: 661-679-1470
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: Yes
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

M86 **SEQUOIA EQUIPMENT COMPANY INC** **FINDS** **1024632925**
SE **19404 COLOMBO ST** **ECHO** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.903 mi.
4768 ft. **Site 4 of 4 in cluster M**

Actual:
480 ft.

FINDS:

Focus Map:
9

Registry ID: 110070421312

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

SEQUOIA EQUIPMENT COMPANY INC (Continued) **1024632925**

ECHO:
Envid: 1024632925
Registry ID: 110070421312
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110070421312

P87 **RAY ETCHEVERRY** **PEST LIC** **S117651590**
South **19461 RAYMOND ST** **N/A**
1/2-1 **BAKERSFIELD, CA 93314**
0.906 mi.
4784 ft. **Site 1 of 3 in cluster P**

Actual:
424 ft.

Focus Map:
9

PEST LIC:
Name: RAY ETCHEVERRY
Address: 19461 RAYMOND ST
City,State,Zip: BAKERSFIELD, CA 93314
Facility Type: QAL
Categories: D
License No: 96154
Issued or Renewed Date: 01/01/2019
Expiration Date: 12/31/2020

Q88 **SMITH AND SONS RANCH** **CERS HAZ WASTE** **S121790486**
SE **19400 COLOMBO ST** **CERS TANKS** **N/A**
1/2-1 **BAKERSFIELD, CA 93308** **CERS**
0.918 mi.
4846 ft. **Site 1 of 6 in cluster Q**

Actual:
482 ft.

Focus Map:
9

CERS HAZ WASTE:
Name: SMITH AND SONS RANCH
Address: 19400 COLOMBO ST
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 68554
CERS ID: 10231687
CERS Description: Hazardous Waste Generator

CERS TANKS:
Name: SMITH AND SONS RANCH
Address: 19400 COLOMBO ST
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 68554
CERS ID: 10231687
CERS Description: Aboveground Petroleum Storage

CERS:
Name: SMITH AND SONS RANCH
Address: 19400 COLOMBO ST
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 68554
CERS ID: 10231687
CERS Description: Chemical Storage Facilities

Violations:
Site ID: 68554
Site Name: SMITH AND SONS RANCH
Violation Date: 09-13-2018

SMITH AND SONS RANCH (Continued) **S121790486**

Citation:	HSC 6.95 25508.2 - California Health and Safety Code, Chapter 6.95, Section(s) 25508.2
Violation Description:	Failure to annually review and electronically certify that the business plan is complete and accurate on or before the annual due date.
Violation Notes:	Returned to compliance on 09/13/2018. Observation: Review of California Environmental Reporting System (CERS) indicates that the last submittal of the Hazardous Materials Inventory was done on April 28, 2016. The facility failed to annually review and electronically certify that the Hazardous Materials Business Plan (HMBP) was complete and accurate on or before April 27, 2017. Violation was corrected on site. No further action is required. Corrective Action: Immediately review the CERS and electronically certify that the Hazardous Materials Business Plan (HMBP) is complete and accurate. Violation was corrected on site. No further action is required.
Violation Division:	Kern County Env Health Services Department
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	68554
Site Name:	SMITH AND SONS RANCH
Violation Date:	10-21-2015
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.
Violation Notes:	Returned to compliance on 10/28/2015. Add the diesel treatment and DEF to the hazardous materials inventory.
Violation Division:	Kern County Env Health Services Department
Violation Program:	HMRRP
Violation Source:	CERS

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	09-13-2018
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Kern County Env Health Services Department
Eval Program:	HW
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	09-13-2018
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Kern County Env Health Services Department
Eval Program:	HMRRP
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	10-21-2015
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported

SMITH AND SONS RANCH (Continued) **S121790486**

Eval Division: Kern County Env Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-21-2015
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Farm exemption
Eval Division: Kern County Env Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 09-13-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 10-21-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Coordinates:
Site ID: 68554
Facility Name: SMITH AND SONS RANCH
Env Int Type Code: HWG
Program ID: 10231687
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 35.448390
Longitude: -119.087260

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Kern County Environmental Health Services Departme
Entity Title: Not reported
Affiliation Address: 2700 M Street, Suite 300
Affiliation City: Bakersfield
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93301-2370
Affiliation Phone: (661) 862-8740

Affiliation Type Desc: Environmental Contact
Entity Name: KEVIN HUDIBURG
Entity Title: Not reported
Affiliation Address: 19400 COLOMBO ST

SMITH AND SONS RANCH (Continued) **S121790486**

Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93308
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	19400 COLOMBO ST
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93308
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	KEVIN HUDIBURG
Entity Title:	CONTROLLER
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Legal Owner
Entity Name:	Larry Smith
Entity Title:	Not reported
Affiliation Address:	7804 TERRY JOHN
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93308
Affiliation Phone:	(661) 399-4946
Affiliation Type Desc:	Operator
Entity Name:	Larry Smith
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(661) 399-4946
Affiliation Type Desc:	Document Preparer
Entity Name:	KEVIN HUDIBURG
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Parent Corporation

SMITH AND SONS RANCH (Continued) **S121790486**

Entity Name:	SMITH AND SONS RANCH
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Property Owner
Entity Name:	LARRY SMITH
Entity Title:	Not reported
Affiliation Address:	19400 COLOMBO ST
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93308
Affiliation Phone:	(661) 619-9156

Q89 **SMITH & SONS RANCH** **EMI** **S116289425**
SE **19400 COLOMBO ST** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.918 mi.
4846 ft. **Site 2 of 6 in cluster Q**

Actual:
482 ft.

Focus Map:
9

EMI:

Name:	SMITH & SONS RANCH
Address:	19400 COLOMBO ST
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2012
County Code:	15
Air Basin:	SJV
Facility ID:	7999
Air District Name:	SJU
SIC Code:	723
Air District Name:	SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.019597821132
Reactive Organic Gases Tons/Yr:	0.0082742000818
Carbon Monoxide Emissions Tons/Yr:	0.12636960125
NOX - Oxides of Nitrogen Tons/Yr:	0.12486520123
SOX - Oxides of Sulphur Tons/Yr:	0.0042875400424
Particulate Matter Tons/Yr:	0.062647725827
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.047283440113

Name:	SMITH & SONS RANCH
Address:	19400 COLOMBO ST
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2013
County Code:	15
Air Basin:	SJV
Facility ID:	7999
Air District Name:	SJU
SIC Code:	723
Air District Name:	SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System:	Not reported

SMITH & SONS RANCH (Continued) **S116289425**

Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.014295454545
Reactive Organic Gases Tons/Yr:	0.00629
Carbon Monoxide Emissions Tons/Yr:	0.096
NOX - Oxides of Nitrogen Tons/Yr:	0.0949
SOX - Oxides of Sulphur Tons/Yr:	0.00326
Particulate Matter Tons/Yr:	0.046475714286
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.03514

Name:	SMITH & SONS RANCH
Address:	19400 COLOMBO ST
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2014
County Code:	15
Air Basin:	SJV
Facility ID:	7999
Air District Name:	SJU
SIC Code:	723
Air District Name:	SAN JOAQUIN VALLEY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.009442500025
Reactive Organic Gases Tons/Yr:	0.004154700011
Carbon Monoxide Emissions Tons/Yr:	0.063453600168
NOX - Oxides of Nitrogen Tons/Yr:	0.062698200166
SOX - Oxides of Sulphur Tons/Yr:	0.0021528900057
Particulate Matter Tons/Yr:	0.043526754301
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.032191040015

Name:	SMITH & SONS RANCH
Address:	19400 COLOMBO ST
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2015
County Code:	15
Air Basin:	SJV
Facility ID:	7999
Air District Name:	SJU
SIC Code:	723
Air District Name:	SAN JOAQUIN VALLEY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.0040909090909
Reactive Organic Gases Tons/Yr:	0.0018
Carbon Monoxide Emissions Tons/Yr:	0.0275
NOX - Oxides of Nitrogen Tons/Yr:	0.0272
SOX - Oxides of Sulphur Tons/Yr:	0.000934
Particulate Matter Tons/Yr:	0.0061328571429
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.00504

Name:	SMITH & SONS RANCH
Address:	19400 COLOMBO ST
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2016
County Code:	15
Air Basin:	SJV
Facility ID:	7999
Air District Name:	SJU

SMITH & SONS RANCH (Continued) **S116289425**

SIC Code:	723
Air District Name:	SAN JOAQUIN VALLEY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.023181818182
Reactive Organic Gases Tons/Yr:	0.0102
Carbon Monoxide Emissions Tons/Yr:	0.155568
NOX - Oxides of Nitrogen Tons/Yr:	0.153716
SOX - Oxides of Sulphur Tons/Yr:	0.00528
Particulate Matter Tons/Yr:	0.037314285714
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.03035

Name:	SMITH & SONS RANCH
Address:	19400 COLOMBO ST
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2017
County Code:	15
Air Basin:	SJV
Facility ID:	7999
Air District Name:	SJU
SIC Code:	723
Air District Name:	SAN JOAQUIN VALLEY APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.011590909091
Reactive Organic Gases Tons/Yr:	0.0051
Carbon Monoxide Emissions Tons/Yr:	0.0779
NOX - Oxides of Nitrogen Tons/Yr:	0.077
SOX - Oxides of Sulphur Tons/Yr:	0.00264
Particulate Matter Tons/Yr:	0.038157142857
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0.028825

Q90 **SMITH AND SONS RANCH** **FINDS 1023358547**
SE **19400 COLOMBO ST** **ECHO N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.918 mi.
4846 ft. **Site 3 of 6 in cluster Q**

Actual:
482 ft.

Focus Map:
9

FINDS:

Registry ID: 110066555267

Environmental Interest/Information System
AIR EMISSIONS CLASSIFICATION UNKNOWN
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid: 1023358547

SMITH AND SONS RANCH (Continued) **1023358547**

Registry ID: 110066555267
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110066555267

Q91 **SMITH & SONS RANCH** **RCRA NonGen / NLR** **1024802316**
SE **19400 COLOMBO ST** **CAL000240342**
1/2-1 **BAKERSFIELD, CA 93308**
0.918 mi.
4846 ft. **Site 4 of 6 in cluster Q**

Actual:
482 ft.

Focus Map:
9

RCRA NonGen / NLR:
Date form received by agency: 2002-02-01 00:00:00.0
Facility name: SMITH & SONS RANCH
Facility address: 19400 COLOMBO ST
BAKERSFIELD, CA 93308-0000
EPA ID: CAL000240342
Contact: LARRY SMITH - PRTNR
Contact address: 19400 COLOMBO ST
BAKERSFIELD, CA 93308
Contact country: Not reported
Contact telephone: 661-399-4946
Contact email: CAPISTACHIOS@GMAIL.COM
EPA Region: 09
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: LARRY SMITH / GERALD SMITH JR
Owner/operator address: 19400 COLOMBO ST
BAKERSFIELD, CA 93308
Owner/operator country: Not reported
Owner/operator telephone: 661-399-4946
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: LARRY SMITH - PRTNR
Owner/operator address: 19400 COLOMBO ST
BAKERSFIELD, CA 93308
Owner/operator country: Not reported
Owner/operator telephone: 661-399-4946
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: Yes

SMITH & SONS RANCH (Continued) **1024802316**

Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

Q92 **SMITH AND SONS RANCH** **AST** **A100337315**
SE **19400 COLOMBO** **N/A**
1/2-1 **BAKERSFIELD, CA**
0.918 mi.
4846 ft. **Site 5 of 6 in cluster Q**

Actual:
482 ft.

Focus Map:
9

AST:

Name:	SMITH AND SONS RANCH
Address:	19400 COLOMBO
City/Zip:	BAKERSFIELD,
Certified Unified Program Agencies:	Kern
Owner:	LARRY SMITH
Total Gallons:	1,500
CERSID:	Not reported
Facility ID:	Not reported
Business Name:	Not reported
Phone:	Not reported
Fax:	Not reported
Mailing Address:	Not reported
Mailing Address City:	Not reported
Mailing Address State:	Not reported
Mailing Address Zip Code:	Not reported
Operator Name:	Not reported
Operator Phone:	Not reported
Owner Phone:	Not reported
Owner Mail Address:	Not reported
Owner State:	Not reported
Owner Zip Code:	Not reported
Owner Country:	Not reported
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	Not reported

Q93
SE
1/2-1
0.918 mi.
4846 ft.

SMITH AND SONS RANCH
19400 COLOMBO ST
BAKERSFIELD, CA 93308

Site 6 of 6 in cluster Q

AST **A100424589**
N/A

Actual:
482 ft.

Focus Map:
9

AST:

Name:	SMITH AND SONS RANCH
Address:	19400 COLOMBO ST
City/Zip:	BAKERSFIELD,93308
Certified Unified Program Agencies:	Not reported
Owner:	LARRY SMITH
Total Gallons:	Not reported
CERSID:	10231687
Facility ID:	Not reported
Business Name:	SMITH AND SONS RANCH
Phone:	(661) 399-4946
Fax:	(661) 399-6748
Mailing Address:	19400 COLOMBO ST
Mailing Address City:	BAKERSFIELD
Mailing Address State:	CA
Mailing Address Zip Code:	93308
Operator Name:	LARRY SMITH
Operator Phone:	(661) 399-4946
Owner Phone:	(661) 399-4946
Owner Mail Address:	7804 TERRY JOHN
Owner State:	CA
Owner Zip Code:	93308
Owner Country:	United States
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	CAL000240342

O94
SE
1/2-1
0.931 mi.
4917 ft.

NATIONAL WATER WORKS HDWW1770
19421 COLOMBO ST
BAKERSFIELD, CA 93308

Site 5 of 9 in cluster O

Now Core & Main

HAZNET **S113178042**
N/A

Actual:
474 ft.

Focus Map:
9

HAZNET:

Name:	NATIONAL WATER WORKS HDWW1770
Address:	19421 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2006
Gepaid:	CAR000170787
Contact:	MELANIE KOSKE - HRT SPECIALIST
Telephone:	7606028700
Mailing Name:	Not reported
Mailing Address:	19421 COLOMBO ST
Gen County:	15
Waste Category:	Off-specification, aged or surplus organics
TSD EPA ID:	CAD008 4432
TSD County:	Not reported
Disposal Method:	Transfer Station

Same as O97

NATIONAL WATER WORKS HDWW1770 (Continued) **S113178042**

Tons:	0.0075
Additional Info:	
Year:	2006
Shipment Date:	20060317
Creation Date:	8/11/2006 18:33:03
Receipt Date:	20060320
Manifest ID:	24580524
Gen EPA ID:	CAR000170787
Trans EPA ID:	CAD008364432
Trans Name:	RHO CHEM
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008364432
Trans Name:	RHO CHEM CORPORATION
TSDF Alt EPA ID:	CAD008 4432
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H01
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2006
Shipment Date:	20060317
Creation Date:	8/11/2006 18:33:03
Receipt Date:	20060320
Manifest ID:	24580524
Gen EPA ID:	CAR000170787
Trans EPA ID:	CAD008364432
Trans Name:	RHO CHEM
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008364432
Trans Name:	RHO CHEM CORPORATION
TSDF Alt EPA ID:	CAD008 4432
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	T01
Quantity Tons:	0.04
Waste Quantity:	80
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Name:	NATIONAL WATER WORKS HDWW1770
Address:	19421 COLOMBO ST

NATIONAL WATER WORKS HDWW1770 (Continued) **S113178042**

Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2006
Gepaid:	CAR000170787
Contact:	MELANIE KOSKE - HRT SPECIALIST
Telephone:	7606028700
Mailing Name:	Not reported
Mailing Address:	19421 COLOMBO ST
Gen County:	15
Waste Category:	Off-specification, aged or surplus organics
TSD EPA ID:	CAD008 4432
TSD County:	Not reported
Disposal Method:	Treatment, Tank
Tons:	0.04

Additional Info:

Year:	2006
Shipment Date:	20060317
Creation Date:	8/11/2006 18:33:03
Receipt Date:	20060320
Manifest ID:	24580524
Gen EPA ID:	CAR000170787
Trans EPA ID:	CAD008364432
Trans Name:	RHO CHEM
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008364432
Trans Name:	RHO CHEM CORPORATION
TSDF Alt EPA ID:	CAD008 4432
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H01
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2006
Shipment Date:	20060317
Creation Date:	8/11/2006 18:33:03
Receipt Date:	20060320
Manifest ID:	24580524
Gen EPA ID:	CAR000170787
Trans EPA ID:	CAD008364432
Trans Name:	RHO CHEM
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008364432
Trans Name:	RHO CHEM CORPORATION
TSDF Alt EPA ID:	CAD008 4432
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001

NATIONAL WATER WORKS HDWW1770 (Continued) **S113178042**

Meth Code:	T01
Quantity Tons:	0.04
Waste Quantity:	80
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

O95 **CORE & MAIN, LP 177** **CERS** **S121777694**
SE **19421 COLOMBO ST** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.931 mi.
4917 ft. **Site 6 of 9 in cluster O**

Actual:
474 ft.

Focus Map:
9

CERS:

Name:	CORE & MAIN, LP 177
Address:	19421 COLOMBO ST
City,State,Zip:	BAKERSFIELD, CA 93308
Site ID:	407937
CERS ID:	10145897
CERS Description:	Chemical Storage Facilities

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	09-13-2018
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Kern County Env Health Services Department
Eval Program:	HMRRP
Eval Source:	CERS

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	08-24-2015
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Kern County Env Health Services Department
Eval Program:	HMRRP
Eval Source:	CERS

Coordinates:

Site ID:	407937
Facility Name:	Core & Main, LP 177
Env Int Type Code:	HMBP
Program ID:	10145897
Coord Name:	Not reported
Ref Point Type Desc:	Center of a facility or station.
Latitude:	35.447040
Longitude:	-119.088720

Affiliation:

Affiliation Type Desc:	Document Preparer
Entity Name:	Justine Wolverton

CORE & MAIN, LP 177 (Continued) **S121777694**

Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Environmental Contact
Entity Name:	Karen Kern
Entity Title:	Not reported
Affiliation Address:	1830 Craig Park Court
Affiliation City:	St. Louis
Affiliation State:	MO
Affiliation Country:	Not reported
Affiliation Zip:	63146
Affiliation Phone:	Not reported
Affiliation Type Desc:	Parent Corporation
Entity Name:	Core & Main, LP
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	Justine Wolverton
Entity Title:	Administrative Assistant
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	19421 Colombo St
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93308
Affiliation Phone:	Not reported
Affiliation Type Desc:	Property Owner
Entity Name:	Core & Main, LP
Entity Title:	Not reported
Affiliation Address:	1830 Craig Park Court
Affiliation City:	St. Louis
Affiliation State:	MO
Affiliation Country:	United States
Affiliation Zip:	63146
Affiliation Phone:	(314) 995-9100

CORE & MAIN, LP 177 (Continued) **S121777694**

Affiliation Type Desc:	CUPA District
Entity Name:	Kern County Environmental Health Services Departme
Entity Title:	Not reported
Affiliation Address:	2700 M Street, Suite 300
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93301-2370
Affiliation Phone:	(661) 862-8740

Affiliation Type Desc:	Legal Owner
Entity Name:	Core & Main, LP
Entity Title:	Not reported
Affiliation Address:	1830 Craig Park Court
Affiliation City:	St. Louis
Affiliation State:	MO
Affiliation Country:	United States
Affiliation Zip:	63146
Affiliation Phone:	(314) 432-4700

Affiliation Type Desc:	Operator
Entity Name:	Core & Main, LP
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(314) 995-9100

O96 **WTW BAKERSFIELD** **FINDS** **1023212184**
SE **19421 COLOMBO ST** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.931 mi.
4917 ft. **Site 7 of 9 in cluster O**

Actual:
474 ft.

FINDS: No reported US EPA data

Focus Map:
9

Registry ID: 110064978056

Environmental Interest/Information System
STATE MASTER CERS, Core & Main

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

O97 **HD SUPPLY WATERWORKS LTD WW1770** **RCRA NonGen / NLR** **1009216669**
SE **19421 COLOMBO ST** **CAR000170787**
1/2-1 **BAKERSFIELD, CA 93308**
0.931 mi.
4917 ft. **Site 8 of 9 in cluster O**

Now Core & Main

Actual:
474 ft.

Focus Map:
9

RCRA NonGen / NLR:

Date form received by agency:	2007-07-18 00:00:00.0
Facility name:	HD SUPPLY WATERWORKS LTD WW1770
Facility address:	19421 COLOMBO ST BAKERSFIELD, CA 93308
EPA ID:	CAR000170787 ← Same as O94
Mailing address:	2455 PACES FERRY RD D15 ATLANTA, GA 30339
Contact:	MARTY J LASKEY
Contact address:	2455 PACES FERRY RD D15 ATLANTA, GA 30339
Contact country:	US
Contact telephone:	770-384-5666
Contact email:	MARTY.LASKEY@HDSUPPLY.COM
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	HOME DEPOT USA INC
Owner/operator address:	Not reported Not reported
Owner/operator country:	US
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	2005-08-31 00:00:00.
Owner/Op end date:	Not reported

Owner/operator name:	HOME DEPOT USA INC
Owner/operator address:	2455 PACES FERRY RD ATLANTA, GA 30339
Owner/operator country:	US
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	2005-08-31 00:00:00.
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No

HD SUPPLY WATERWORKS LTD WW1770 (Continued) **1009216669**

Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 2006-01-23 00:00:00.0
Site name: NATIONAL WATER WORKS HDWW1770
Classification: Small Quantity Generator

Hazardous Waste Summary:

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D006
. Waste name: CADMIUM

. Waste code: D009
. Waste name: MERCURY

. Waste code: D016
. Waste name: 2,4-D (2,4-DICHLOROPHENOXYACETIC ACID)

. Waste code: D018
. Waste name: BENZENE

. Waste code: D035
. Waste name: METHYL ETHYL KETONE

. Waste code: F003
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NONHALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS, AND A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

. Waste code: F005
. Waste name: THE FOLLOWING SPENT NONHALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF

HD SUPPLY WATERWORKS LTD WW1770 (Continued) **1009216669**

ONE OR MORE OF THE ABOVE NONHALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Violation Status: No violations found

O98 **HD SUPPLY WATERWORKS LTD WW1770** **FINDS 1009314161**
SE **19421 COLOMBO ST** **ECHO N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.931 mi.
4917 ft. **Site 9 of 9 in cluster O**

Actual:
474 ft.

Focus Map:
9

FINDS:

Registry ID: 110024435191 Inactive RCRA
Now Core & Main

Environmental Interest/Information System

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1009314161
Registry ID:	110024435191
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110024435191

P99 **DERRELS MINI STORAGE FACILITY 80** **NPDES S123142915**
South **7TH STANDARD** **CERS N/A**
1/2-1 **SHAFTER, CA 93313**
0.932 mi.
4919 ft. **Site 2 of 3 in cluster P**

Actual:
424 ft.

Focus Map:
9

NPDES:

Name:	DERRELS MINI STORAGE FACILITY 80
Address:	7TH STANDARD
City,State,Zip:	SHAFTER, CA 93313
Facility Status:	Active
NPDES Number:	CAS000002
Region:	5F
Agency Number:	0
Regulatory Measure ID:	502449
Place ID:	Not reported
Order Number:	2009-0009-DWQ
WDID:	5F15C385055
Regulatory Measure Type:	Enrollee
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	10/29/2018
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	3265 W Ashlan Ave

DERRELS MINI STORAGE FACILITY 80 (Continued) **S123142915**

Discharge Name:	Derrels Mini Storage Inc
Discharge City:	Fresno
Discharge State:	California
Discharge Zip:	93722
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

Name:	DERRELS MINI STORAGE FACILITY 80
Address:	7TH STANDARD
City,State,Zip:	SHAFTER, CA 93313
Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	5F15C385055
Regulatory Measure Type:	Construction
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Active
Status Date:	10/29/2018
Operator Name:	Derrels Mini Storage Inc
Operator Address:	3265 W Ashlan Ave
Operator City:	Fresno
Operator State:	California
Operator Zip:	93722

CERS:

Name:	DERRELS MINI STORAGE FACILITY 80
Address:	7TH STANDARD
City,State,Zip:	SHAFTER, CA 93313
Site ID:	530483
CERS ID:	867682
CERS Description:	Construction Storm Water

Affiliation:

Affiliation Type Desc:	Owner/Operator
Entity Name:	Derrels Mini Storage Inc
Entity Title:	Operator
Affiliation Address:	3265 W Ashlan Ave
Affiliation City:	Fresno
Affiliation State:	CA

DERRELS MINI STORAGE FACILITY 80 (Continued) **S123142915**

Affiliation Country:	Not reported
Affiliation Zip:	93722
Affiliation Phone:	Not reported

P100 **DERRELS MINI STORAGE FACILITY 80** **CIWQS** **S123167361**
South **7TH STANDARD** **N/A**
1/2-1 **SHAFTER, CA 93313**
0.932 mi.
4919 ft. **Site 3 of 3 in cluster P**

Actual: **424 ft.**
Focus Map: **9**

CIWQS:

Name:	DERRELS MINI STORAGE FACILITY 80
Address:	7TH STANDARD
City,State,Zip:	SHAFTER, CA 93313
Agency:	Derrels Mini Storage Inc
Agency Address:	3265 W Ashlan Ave, Fresno, CA 93722
Place/Project Type:	Construction - Commercial
SIC/NAICS:	Not reported
Region:	5F
Program:	CONSTW
Regulatory Measure Status:	Active
Regulatory Measure Type:	Storm water construction
Order Number:	2009-0009-DWQ
WDID:	5F15C385055
NPDES Number:	CAS000002
Adoption Date:	Not reported
Effective Date:	10/29/2018
Termination Date:	Not reported
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	35.44252
Longitude:	-119.10016

R101 **CONTINENTAL GRAIN COMPANY** **CERS** **S123525011**
SE **HWY 99 NEAR 7TH STANDARD RD** **N/A**
1/2-1 **BAKERSFIELD, CA 93302**
0.938 mi.
4952 ft. **Site 1 of 5 in cluster R**

Actual: **459 ft.**
Focus Map: **9**

CERS:

Name:	CONTINENTAL GRAIN COMPANY
Address:	HWY 99 NEAR 7TH STANDARD RD
City,State,Zip:	BAKERSFIELD, CA 93302-0000
Site ID:	462212
CERS ID:	110006836424
CERS Description:	US EPA Air Emission Inventory System (EIS)

Air Emissions

R102
SE
1/2-1
0.938 mi.
4952 ft.

CONTINENTAL GRAIN COMPANY
HWY 99 NEAR 7TH STANDARD RD
BAKERSFIELD, CA 93302
Site 2 of 5 in cluster R

FINDS **1006382730**
N/A

Actual:
459 ft.

FINDS:

Focus Map:
9

Registry ID: 110006836424

Environmental Interest/Information System
AIR EMISSIONS CLASSIFICATION UNKNOWN Air Emissions
HAZARDOUS AIR POLLUTANT MAJOR

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

S103
SE
1/2-1
0.946 mi.
4994 ft.

SPRINGS A-SPECIALTY PHIL DIEBEL OWNER
19420 COLOMBO ST
BAKERSFIELD, CA
Site 1 of 5 in cluster S

EDR Hist Auto **1009119994**
N/A

Actual:
475 ft.

EDR Hist Auto

Focus Map:
9

Year:	Name:	Type:
1995	CHESTER AVENUE BRAKE	BRAKE SERVICE
2002	SPRINGS A-SPECIALTY PHIL DIEBEL	AUTOMOBILE REPAIRING & SERVICE
2002	CHESTER AVENUE BRAKE & SUPPLY P	BRAKE SERVICE

S104
SE
1/2-1
0.946 mi.
4994 ft.

CHESTER AVENUE BRAKE AND SUPPLY LLC
19420 COLOMBO ST
BAKERSFIELD, CA 93308
Site 2 of 5 in cluster S

FINDS **1023326993**
N/A

Actual:
475 ft.

FINDS:

Focus Map:
9

Registry ID: 110066212734

Environmental Interest/Information System
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

S105
SE
1/2-1
0.946 mi.
4994 ft.

CHESTER AVE BRAKE
19420 COLOMBO ST
BAKERSFIELD, CA 93308
Site 3 of 5 in cluster S

RCRA NonGen / NLR **1024783143**
CAD981613425

Actual:
475 ft.

RCRA NonGen / NLR:
Date form received by agency: 1987-04-10 00:00:00.0
Facility name: CHESTER AVE BRAKE
Facility address: 19420 COLOMBO ST
BAKERSFIELD, CA 93308-9717

Focus Map:
9

CHESTER AVE BRAKE (Continued) **1024783143**

EPA ID: CAD981613425
Contact: PAUL DIEBEL
Contact address: 19420 COLOMBO ST
BAKERSFIELD, CA 93308
Contact country: Not reported
Contact telephone: 661-392-9292
Contact email: PAUL@CABRAKE.COM
EPA Region: 09
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: CHESTER AVE BRAKE
Owner/operator address: PO BOX 80355
BAKERSFIELD, CA 93380
Owner/operator country: Not reported
Owner/operator telephone: 661-392-9292
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: PAUL DIEBEL
Owner/operator address: 19420 COLOMBO ST
BAKERSFIELD, CA 93308
Owner/operator country: Not reported
Owner/operator telephone: 661-392-9292
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: Yes
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Violation Status: No violations found

S106 **CHESTER AVENUE BRAKE AND SUPPLY LLC** **CERS HAZ WASTE** **S121737736**
SE **19420 COLOMBO ST** **CERS** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.946 mi.
4994 ft. **Site 4 of 5 in cluster S**

Actual:
475 ft.

Focus Map:
9

CERS HAZ WASTE:
Name: CHESTER AVENUE BRAKE AND SUPPLY LLC
Address: 19420 COLOMBO ST
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 104721
CERS ID: 10231195
CERS Description: Hazardous Waste Generator

CERS:
Name: CHESTER AVENUE BRAKE AND SUPPLY LLC
Address: 19420 COLOMBO ST
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 104721
CERS ID: 10231195
CERS Description: Chemical Storage Facilities

Violations:
Site ID: 104721
Site Name: CHESTER AVENUE BRAKE AND SUPPLY LLC
Violation Date: 08-24-2015
Citation: HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description: Failure to establish and electronically submit an adequate training program in safety procedures in the event of a release or threatened release of a hazardous material.
Violation Notes: Returned to compliance on 01/20/2016. Submit a copy of the facility's training plan to the California Environmental Reporting Training System (CERS).
Violation Division: Kern County Env Health Services Department
Violation Program: HMRRP
Violation Source: CERS

Site ID: 104721
Site Name: CHESTER AVENUE BRAKE AND SUPPLY LLC
Violation Date: 08-24-2015
Citation: 22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description: Failure to properly label hazardous waste accumulation containers with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes: Returned to compliance on 01/20/2016. The used oil must be labeled with the following: 'Used Oil, Hazardous Waste', the name and address of the generator, the accumulation start date, the composition and physical state of the waste, and the particular hazard of the waste (toxic, ignitable, reactive, etc).
Violation Division: Kern County Env Health Services Department
Violation Program: HW
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 08-24-2015

CHESTER AVENUE BRAKE AND SUPPLY LLC (Continued) **S121737736**

Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 08-24-2015
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 09-14-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 09-14-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HW
Eval Source: CERS

Enforcement Action:
Site ID: 104721
Site Name: CHESTER AVENUE BRAKE AND SUPPLY LLC
Site Address: 19420 COLOMBO ST
Site City: BAKERSFIELD
Site Zip: 93308
Enf Action Date: 08-24-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported
Enf Action Division: Kern County Env Health Services Department
Enf Action Program: HMRRP
Enf Action Source: CERS

Site ID: 104721
Site Name: CHESTER AVENUE BRAKE AND SUPPLY LLC
Site Address: 19420 COLOMBO ST
Site City: BAKERSFIELD
Site Zip: 93308
Enf Action Date: 08-24-2015
Enf Action Type: Notice of Violation (Unified Program)
Enf Action Description: Notice of Violation Issued by the Inspector at the Time of Inspection
Enf Action Notes: Not reported

CHESTER AVENUE BRAKE AND SUPPLY LLC (Continued) **S121737736**

Enf Action Division: Kern County Env Health Services Department
Enf Action Program: HW
Enf Action Source: CERS

Coordinates:
Site ID: 104721
Facility Name: CHESTER AVENUE BRAKE AND SUPPLY LLC
Env Int Type Code: HWG
Program ID: 10231195
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 35.447120
Longitude: -119.087260

Affiliation:
Affiliation Type Desc: Legal Owner
Entity Name: PAUL AND PHIL DIEBEL
Entity Title: Not reported
Affiliation Address: PO BOX 80355
Affiliation City: BAKERSFIELD
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 93380
Affiliation Phone: (661) 392-9292

Affiliation Type Desc: Document Preparer
Entity Name: PAUL DIEBEL
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: PO BOX 80355
Affiliation City: BAKERSFIELD
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93380
Affiliation Phone: Not reported

Affiliation Type Desc: CUPA District
Entity Name: Kern County Environmental Health Services Departme
Entity Title: Not reported
Affiliation Address: 2700 M Street, Suite 300
Affiliation City: Bakersfield
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93301-2370
Affiliation Phone: (661) 862-8740

Affiliation Type Desc: Environmental Contact

CHESTER AVENUE BRAKE AND SUPPLY LLC (Continued) **S121737736**

Entity Name:	PAUL OR PHIL DIEBEL
Entity Title:	Not reported
Affiliation Address:	PO BOX 80355
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93380
Affiliation Phone:	Not reported
Affiliation Type Desc:	Identification Signer
Entity Name:	PAUL DIEBEL
Entity Title:	OWNER/MANAGER
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	PAUL OR PHIL DIEBELL
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(661) 392-9292
Affiliation Type Desc:	Parent Corporation
Entity Name:	CHESTER AVENUE BRAKE AND SUPPLY LLC
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Property Owner
Entity Name:	PAUL & PHIL DIEBEL
Entity Title:	Not reported
Affiliation Address:	PO BOX 80355
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93380
Affiliation Phone:	(661) 392-9292

S107 **CHESTER AVE BRAKE** **FINDS** **1024653897**
SE **19420 COLOMBO ST** **ECHO** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.946 mi.
4994 ft. **Site 5 of 5 in cluster S**

Actual:
475 ft.

Focus Map:
9

FINDS:

Registry ID: 110070442285

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid: 1024653897
Registry ID: 110070442285
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110070442285

T108 **COASTLINE EQUIPMENT** **RCRA NonGen / NLR** **1000818609**
SE **4252 SACO RD** **CAD983645102**
1/2-1 **BAKERSFIELD, CA 93308**
0.948 mi.
5007 ft. **Site 1 of 6 in cluster T**

Actual:
461 ft.

Focus Map:
9

RCRA NonGen / NLR:

Date form received by agency: 1992-07-17 00:00:00.0
Facility name: COASTLINE EQUIPMENT
Site name: LOUGEE MICHAEL EQUIP INC
Facility address: 4252 SACO RD
BAKERSFIELD, CA 93308
EPA ID: CAD983645102
Contact: AUDIE ROGERS
Contact address: P O BOX 6125
OXNARD, CA 93031
Contact country: US
Contact telephone: 805-485-2106
Contact email: Not reported
EPA Region: 09
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

FRS: 110019004218
(Lougee-Michael Equip, Inc)
Still considered active with
CAD983645102

Owner/Operator Summary:

Owner/operator name: BRAGG INVESTMENT CO INC
Owner/operator address: PO BOX 727
LONG BEACH, CA 90801
Owner/operator country: Not reported
Owner/operator telephone: 213-220-1200
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Private

COASTLINE EQUIPMENT (Continued) **1000818609**

Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: BRAGG INVESTMENT COMPANY INC
Owner/operator address: 6242 N PARAMOUNT BLVD
LONG BEACH, CA 90805
Owner/operator country: Not reported
Owner/operator telephone: 562-984-2480
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: OWEN KUPFER
Owner/operator address: 6251 N PARAMOUNT BLVD
LONG BEACH, CA 90805
Owner/operator country: Not reported
Owner/operator telephone: 562-208-5251
Owner/operator email: Not reported
Owner/operator fax: Not reported
Owner/operator extension: Not reported
Legal status: Other
Owner/Operator Type: Operator
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Historical Generators:
Date form received by agency: 1992-07-17 00:00:00.0
Site name: COASTLINE EQUIPMENT
Classification: Not a generator, verified

Violation Status: No violations found

T109
SE
1/2-1
0.948 mi.
5007 ft.

LOUGEE-MICHAEL EQUIPMENT, INC.
4252 SACO RD
BAKERFIELD, CA 93308
Site 2 of 6 in cluster T

SWEEPS UST **S106928861**
N/A

Actual:
461 ft.

Focus Map:
9

SWEEPS UST: 06/01/1994 List

Name:	LOUGEE-MICHAEL EQUIPMENT, INC.
Address:	4252 SACO RD
City:	BAKERFIELD
Status:	Not reported
Comp Number:	19176
Number:	Not reported
Board Of Equalization:	Not reported
Referral Date:	Not reported
Action Date:	Not reported
Created Date:	Not reported
Owner Tank Id:	Not reported
SWRCB Tank Id:	15-000-019176-000001
Tank Status:	Not reported
Capacity:	5000
Active Date:	Not reported
Tank Use:	M.V. FUEL
STG:	PRODUCT
Content:	DIESEL
Number Of Tanks:	1

5,000 gallon Diesel installed 1982.
SWRCB Historical UST Facilities database,
but not on current SWRCB UST/LUST website

T110
SE
1/2-1
0.948 mi.
5007 ft.

COASTLINE EQUIPMENT
4252 SACO RD
BAKERSFIELD, CA 93308
Site 3 of 6 in cluster T

HAZNET **S113018738**
N/A

Actual:
461 ft.

Focus Map:
9

HAZNET:

Name:	COASTLINE EQUIPMENT
Address:	4252 SACO RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2004
Gepaid:	CAD983645102
Contact:	JOE HARRISON
Telephone:	6613993600
Mailing Name:	Not reported
Mailing Address:	4252 SACO RD
Gen County:	15
Waste Category:	Waste oil and mixed oil
TSD EPA ID:	CAT080013352
TSD County:	19
Disposal Method:	Not reported
Tons:	1.52

Additional Info:

Year:	2004
Shipment Date:	20040325
Creation Date:	10/14/2004 7:35:58
Receipt Date:	20040326
Manifest ID:	22393137
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAL000268462
Trans Name:	COLE'S SERVICES

COASTLINE EQUIPMENT (Continued) **S113018738**

Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	CAT080013352
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	1.52
Waste Quantity:	400
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	COASTLINE EQUIPMENT
Address:	4252 SACO RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2008
Gepaid:	CAD983645102
Contact:	JOE HARRISON
Telephone:	6613993600
Mailing Name:	Not reported
Mailing Address:	4252 SACO RD
Gen County:	15
Waste Category:	Other organic solids
TSD EPA ID:	CAD982444481
TSD County:	36
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.65

Additional Info:

Year:	2008
Shipment Date:	20080211
Creation Date:	4/22/2008 18:30:23
Receipt Date:	20080221
Manifest ID:	003006265JJK
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAL000268462
Trans Name:	COLES SERVICES INC
Trans 2 EPA ID:	CAR000172460
Trans 2 Name:	ENVIRONMENTAL LOGISTICS INC
TSDF EPA ID:	CAD982444481
Trans Name:	FILTER RECYCLING SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.25
Waste Quantity:	500
Quantity Unit:	P

COASTLINE EQUIPMENT (Continued) **S113018738**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2008
Shipment Date:	20080428
Creation Date:	6/25/2008 18:30:21
Receipt Date:	20080501
Manifest ID:	003004552JJK
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAL000268462
Trans Name:	COLES SERVICES INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	ENVIRONMENTAL LOGISTICS INC
TSDF EPA ID:	CAD982444481
Trans Name:	FILTER RECYCLING SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.15
Waste Quantity:	300
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2008
Shipment Date:	20080917
Creation Date:	11/3/2008 18:30:18
Receipt Date:	20080919
Manifest ID:	004497533JJK
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAL000268462
Trans Name:	COLES SERVICES INC
Trans 2 EPA ID:	CAR000172460
Trans 2 Name:	ENVIRONMENTAL LOGISTICS INC
TSDF EPA ID:	CAD982444481
Trans Name:	FILTER RECYCLING SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.25
Waste Quantity:	500
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

COASTLINE EQUIPMENT (Continued) **S113018738**

Name:	COASTLINE EQUIPMENT
Address:	4252 SACO RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2001
Gepaid:	CAD983645102
Contact:	JOE HARRISON
Telephone:	6613993600
Mailing Name:	Not reported
Mailing Address:	4252 SACO RD
Gen County:	15
Waste Category:	Other organic solids
TSD EPA ID:	CAD982444481
TSD County:	36
Disposal Method:	Transfer Station
Tons:	1.15

Additional Info:

Year:	2001
Shipment Date:	20010131
Creation Date:	4/30/2001 0:00:00
Receipt Date:	20010212
Manifest ID:	20429286
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAL931545554
Trans Name:	Not reported
Trans 2 EPA ID:	CAD982444481
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD982444481
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H01
Quantity Tons:	0.25
Waste Quantity:	500
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2001
Shipment Date:	20010301
Creation Date:	5/31/2001 0:00:00
Receipt Date:	20010312
Manifest ID:	20429330
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAL931545554
Trans Name:	Not reported
Trans 2 EPA ID:	CAD982444481
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD982444481
TSDF Alt Name:	Not reported

COASTLINE EQUIPMENT (Continued) **S113018738**

Waste Code: 352
RCRA Code: Not reported
Meth Code: H01
Quantity Tons: 0.5
Waste Quantity: 1000
Quantity Unit: P
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Year: 2001
Shipment Date: 20010427
Creation Date: 7/20/2001 0:00:00
Receipt Date: 20010507
Manifest ID: 20429423
Gen EPA ID: CAD983645102
Trans EPA ID: CAL931545554
Trans Name: Not reported
Trans 2 EPA ID: CAD982444481
Trans 2 Name: Not reported
TSDF EPA ID: CAD982444481
Trans Name: Not reported
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code: 352
RCRA Code: Not reported
Meth Code: H01
Quantity Tons: 0.4
Waste Quantity: 800
Quantity Unit: P
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Name: COASTLINE EQUIPMENT
Address: 4252 SACO RD
Address 2: Not reported
City,State,Zip: BAKERSFIELD, CA 933080000
Year: 1998
Gepaid: CAD983645102
Contact: JOE HARRISON
Telephone: 6613993600
Mailing Name: Not reported
Mailing Address: 4252 SACO RD
Gen County: 15
Waste Category: Other organic solids
TSD EPA ID: CAD982444481
TSD County: 36
Disposal Method: Recycler
Tons: 0.65

Additional Info:
Year: 1998

COASTLINE EQUIPMENT (Continued) **S113018738**

Shipment Date:	19980210
Creation Date:	4/16/1998 0:00:00
Receipt Date:	19980212
Manifest ID:	96765368
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAL931545554
Trans Name:	Not reported
Trans 2 EPA ID:	CAD982444481
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD982444481
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H01
Quantity Tons:	0.45
Waste Quantity:	900
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1998
Shipment Date:	19980519
Creation Date:	8/3/1998 0:00:00
Receipt Date:	19980526
Manifest ID:	96765473
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAL931545554
Trans Name:	Not reported
Trans 2 EPA ID:	CAD982444481
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD982444481
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H01
Quantity Tons:	0.45
Waste Quantity:	900
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1998
Shipment Date:	19980921
Creation Date:	12/7/1998 0:00:00
Receipt Date:	19980929
Manifest ID:	96765587
Gen EPA ID:	CAD983645102

COASTLINE EQUIPMENT (Continued) **S113018738**

Trans EPA ID:	CAL931545554
Trans Name:	Not reported
Trans 2 EPA ID:	CAD982444481
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD982444481
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.2
Waste Quantity:	400
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1998
Shipment Date:	19981110
Creation Date:	1/21/1999 0:00:00
Receipt Date:	19981123
Manifest ID:	98597236
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAL931545554
Trans Name:	Not reported
Trans 2 EPA ID:	CAD982444481
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD982444481
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.2
Waste Quantity:	400
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1998
Shipment Date:	19981125
Creation Date:	1/28/1999 0:00:00
Receipt Date:	19981204
Manifest ID:	98597252
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAL931545554
Trans Name:	Not reported
Trans 2 EPA ID:	CAD982444481
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481

COASTLINE EQUIPMENT (Continued) **S113018738**

Trans Name:	Not reported
TSDF Alt EPA ID:	CAD982444481
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.25
Waste Quantity:	500
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	COASTLINE EQUIPMENT
Address:	4252 SACO RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	1998
Gepaid:	CAD983645102
Contact:	JOE HARRISON
Telephone:	6613993600
Mailing Name:	Not reported
Mailing Address:	4252 SACO RD
Gen County:	15
Waste Category:	Other organic solids
TSD EPA ID:	CAD982444481
TSD County:	36
Disposal Method:	Transfer Station
Tons:	0.9

Additional Info:

Year:	1998
Shipment Date:	19980210
Creation Date:	4/16/1998 0:00:00
Receipt Date:	19980212
Manifest ID:	96765368
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAL931545554
Trans Name:	Not reported
Trans 2 EPA ID:	CAD982444481
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD982444481
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H01
Quantity Tons:	0.45
Waste Quantity:	900
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported

COASTLINE EQUIPMENT (Continued) **S113018738**

Additional Code 5:	Not reported
Year:	1998
Shipment Date:	19980519
Creation Date:	8/3/1998 0:00:00
Receipt Date:	19980526
Manifest ID:	96765473
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAL931545554
Trans Name:	Not reported
Trans 2 EPA ID:	CAD982444481
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD982444481
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H01
Quantity Tons:	0.45
Waste Quantity:	900
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1998
Shipment Date:	19980921
Creation Date:	12/7/1998 0:00:00
Receipt Date:	19980929
Manifest ID:	96765587
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAL931545554
Trans Name:	Not reported
Trans 2 EPA ID:	CAD982444481
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD982444481
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.2
Waste Quantity:	400
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1998
Shipment Date:	19981110
Creation Date:	1/21/1999 0:00:00

COASTLINE EQUIPMENT (Continued) **S113018738**

Receipt Date:	19981123
Manifest ID:	98597236
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAL931545554
Trans Name:	Not reported
Trans 2 EPA ID:	CAD982444481
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD982444481
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.2
Waste Quantity:	400
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1998
Shipment Date:	19981125
Creation Date:	1/28/1999 0:00:00
Receipt Date:	19981204
Manifest ID:	98597252
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAL931545554
Trans Name:	Not reported
Trans 2 EPA ID:	CAD982444481
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD982444481
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.25
Waste Quantity:	500
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	COASTLINE EQUIPMENT
Address:	4252 SACO RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2007
Gepaid:	CAD983645102
Contact:	JOE HARRISON

COASTLINE EQUIPMENT (Continued) **S113018738**

Telephone: 6613993600
Mailing Name: Not reported
Mailing Address: 4252 SACO RD
Gen County: 15
Waste Category: Other organic solids
TSD EPA ID: CAD982444481
TSD County: 36
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 0.4

Additional Info:
Year: 2007
Shipment Date: 20070723
Creation Date: 2/5/2008 18:30:26
Receipt Date: 20070731
Manifest ID: 003004045JJK
Gen EPA ID: CAD983645102
Trans EPA ID: CAL000268462
Trans Name: COLES SERVICES INC
Trans 2 EPA ID: CAD982444481
Trans 2 Name: FILTER RECYCLING SERVICES
TSDF EPA ID: CAD982444481
Trans Name: FILTER RECYCLING SERVICES
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code: 352
RCRA Code: Not reported
Meth Code: H141
Quantity Tons: 0.4
Waste Quantity: 800
Quantity Unit: P
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Name: COASTLINE EQUIPMENT
Address: 4252 SACO RD
Address 2: Not reported
City,State,Zip: BAKERSFIELD, CA 933080000
Year: 2011
Gepaid: CAD983645102
Contact: JOE HARRISON
Telephone: 6613993600
Mailing Name: Not reported
Mailing Address: 4252 SACO RD
Gen County: 15
Waste Category: Other organic solids
TSD EPA ID: CAD982444481
TSD County: 36
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 2

Additional Info:

COASTLINE EQUIPMENT (Continued) **S113018738**

Year:	2011
Shipment Date:	20111102
Creation Date:	1/6/2012 18:30:18
Receipt Date:	20111107
Manifest ID:	002804327JJK
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAD980813950
Trans Name:	CRANE'S WASTE OIL INC
Trans 2 EPA ID:	CAR000217513
Trans 2 Name:	ENVIRONMENTAL LOGISTICS INC
TSDF EPA ID:	CAD982444481
Trans Name:	FILTER RECYCLING
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.75
Waste Quantity:	1500
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2011
Shipment Date:	20110926
Creation Date:	12/9/2011 18:30:51
Receipt Date:	20111003
Manifest ID:	008409938JJK
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAD980813950
Trans Name:	CRANE'S WASTE OIL INC
Trans 2 EPA ID:	CAR000172478
Trans 2 Name:	ENVIRONMENTAL LOGISTICS INC
TSDF EPA ID:	CAD982444481
Trans Name:	FILTER RECYCLING
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.75
Waste Quantity:	1500
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2011
Shipment Date:	20110128
Creation Date:	3/30/2011 18:30:55
Receipt Date:	20110203
Manifest ID:	007828480JJK

COASTLINE EQUIPMENT (Continued) **S113018738**

Gen EPA ID:	CAD983645102
Trans EPA ID:	CAD980813950
Trans Name:	CRANE'S WASTE OIL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	FILTER RECYCLING
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.5
Waste Quantity:	1000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	COASTLINE EQUIPMENT
Address:	4252 SACO RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2012
Gepaid:	CAD983645102
Contact:	JOE HARRISON
Telephone:	6613993600
Mailing Name:	Not reported
Mailing Address:	4252 SACO RD
Gen County:	15
Waste Category:	Other organic solids
TSD EPA ID:	CAD982444481
TSD County:	36
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	2.6

Additional Info:

Year:	2012
Shipment Date:	20120213
Creation Date:	4/16/2012 20:30:25
Receipt Date:	20120222
Manifest ID:	009462053JJK
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAD980813950
Trans Name:	CRANE'S WASTE OIL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	ENVIRONMENTAL LOGISTICS INC
TSDF EPA ID:	CAD982444481
Trans Name:	FILTER RECYCLING
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141

COASTLINE EQUIPMENT (Continued) **S113018738**

Quantity Tons:	0.7
Waste Quantity:	1400
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2012
Shipment Date:	20120515
Creation Date:	8/22/2012 22:15:08
Receipt Date:	20120606
Manifest ID:	002804359JJK
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAD980813950
Trans Name:	CRANE'S WASTE OIL INC
Trans 2 EPA ID:	CAR000172460
Trans 2 Name:	ENVIRONMENTAL LOGISTICS INC
TSDF EPA ID:	CAD982444481
Trans Name:	FILTER RECYCLING
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.65
Waste Quantity:	1300
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2012
Shipment Date:	20120710
Creation Date:	10/19/2012 22:15:36
Receipt Date:	20120724
Manifest ID:	002804386JJK
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAD980813950
Trans Name:	CRANE'S WASTE OIL INC
Trans 2 EPA ID:	CAR000172460
Trans 2 Name:	ENVIRONMENTAL LOGISTICS INC
TSDF EPA ID:	CAD982444481
Trans Name:	FILTER RECYCLING
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.6
Waste Quantity:	1200
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported

COASTLINE EQUIPMENT (Continued) **S113018738**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2012
Shipment Date:	20120105
Creation Date:	3/16/2012 20:30:38
Receipt Date:	20120112
Manifest ID:	008409343JJK
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAD980813950
Trans Name:	CRANE'S WASTE OIL INC
Trans 2 EPA ID:	CAR000172460
Trans 2 Name:	ENVIRONMENTAL LOGISTICS INC
TSDF EPA ID:	CAD982444481
Trans Name:	FILTER RECYCLING
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.65
Waste Quantity:	1300
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Name:	COASTLINE EQUIPMENT
Address:	4252 SACO RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	1992
Gepaid:	CAD983645102
Contact:	OWEN KUPFER
Telephone:	5622085251
Mailing Name:	Not reported
Mailing Address:	6242 N PARAMOUNT BLVD
Gen County:	15
Waste Category:	Tank bottom waste
TSD EPA ID:	CAD980883177
TSD County:	15
Disposal Method:	Recycler
Tons:	4.17
Name:	COASTLINE EQUIPMENT
Address:	4252 SACO RD
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2016
Gepaid:	CAD983645102
Contact:	OWEN KUPFER
Telephone:	5622085251
Mailing Name:	Not reported

COASTLINE EQUIPMENT (Continued) **S113018738**

Mailing Address: 6242 N PARAMOUNT BLVD
Gen County: 15
Waste Category: Other organic solids
TSD EPA ID: CAD982444481
TSD County: 36
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 2.25

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19 additional CA HAZNET: record(s) in the EDR Site Report.

Name: COASTLINE EQUIPMENT
Address: 4252 SACO RD
Address 2: Not reported
City,State,Zip: BAKERSFIELD, CA 933080000
Year: 1997
Gepaid: CAD983645102
Contact: JOE HARRISON
Telephone: 6613993600
Mailing Name: Not reported
Mailing Address: 4252 SACO RD
Gen County: 15
Waste Category: Other organic solids
TSD EPA ID: CAD982444481
TSD County: 36
Disposal Method: Transfer Station
Tons: 1.45

Additional Info:
Year: 1997
Shipment Date: 19970304
Creation Date: 6/26/1997 0:00:00
Receipt Date: 19970305
Manifest ID: 96192597
Gen EPA ID: CAD983645102
Trans EPA ID: CAL931545554
Trans Name: Not reported
Trans 2 EPA ID: CAD982444481
Trans 2 Name: Not reported
TSDF EPA ID: CAD982444481
Trans Name: Not reported
TSDF Alt EPA ID: CAD982444481
TSDF Alt Name: Not reported
Waste Code: 352
RCRA Code: D001
Meth Code: H01
Quantity Tons: 0.55
Waste Quantity: 1100
Quantity Unit: P
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Year: 1997
Shipment Date: 19970627

COASTLINE EQUIPMENT (Continued) **S113018738**

Creation Date:	12/4/1997 0:00:00
Receipt Date:	19970701
Manifest ID:	96192707
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAL931545554
Trans Name:	Not reported
Trans 2 EPA ID:	CAD982444481
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H01
Quantity Tons:	0.25
Waste Quantity:	500
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1997
Shipment Date:	19970903
Creation Date:	3/18/1998 0:00:00
Receipt Date:	19970905
Manifest ID:	96192741
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAL931545554
Trans Name:	Not reported
Trans 2 EPA ID:	CAD982444481
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H01
Quantity Tons:	0.2
Waste Quantity:	400
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1997
Shipment Date:	19971125
Creation Date:	7/23/1998 0:00:00
Receipt Date:	19971128
Manifest ID:	96765286
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAL931545554

COASTLINE EQUIPMENT (Continued) **S113018738**

Trans Name:	Not reported
Trans 2 EPA ID:	CAD982444481
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD982444481
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H01
Quantity Tons:	0.15
Waste Quantity:	300
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1997
Shipment Date:	19970413
Creation Date:	6/16/1998 0:00:00
Receipt Date:	19980417
Manifest ID:	96765426
Gen EPA ID:	CAD983645102
Trans EPA ID:	CAL931545554
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD982444481
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD982444481
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H01
Quantity Tons:	0.3
Waste Quantity:	600
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Click this hyperlink while viewing on your computer to access
19 additional CA HAZNET: record(s) in the EDR Site Report.

T111 **COASTLINE EQUIPMENT** **FINDS** **1007739435**
SE **4252 SACO RD** **ECHO** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.948 mi.
5007 ft. **Site 4 of 6 in cluster T**

Actual:
461 ft.

Focus Map:
9

FINDS:

Registry ID: 110019004218 # also used for Lougee-Michael Equip

Environmental Interest/Information System
California Hazardous Waste Tracking System - Datamart (HWTS-DATAMART) provides California with information on hazardous waste shipments for generators, transporters, and treatment, storage, and disposal facilities.
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1007739435
Registry ID: 110019004218 # also used for Lougee-Michael Equip, ECHO
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110019004218

T112 **COASTLINE EQUIPMENT - BAKERSFIELD** **CERS HAZ WASTE** **S121784120**
SE **4252 SACO RD** **CERS TANKS** **N/A**
1/2-1 **BAKERSFIELD, CA 93308** **CERS**
0.948 mi.
5007 ft. **Site 5 of 6 in cluster T**

Actual:
461 ft.

Focus Map:
9

CERS HAZ WASTE:
Name: COASTLINE EQUIPMENT - BAKERSFIELD
Address: 4252 SACO RD
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 432907
CERS ID: 10754977
CERS Description: Hazardous Waste Generator

CERS TANKS:
Name: COASTLINE EQUIPMENT - BAKERSFIELD
Address: 4252 SACO RD
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 432907
CERS ID: 10754977
CERS Description: Aboveground Petroleum Storage

CERS:
Name: COASTLINE EQUIPMENT - BAKERSFIELD
Address: 4252 SACO RD
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 432907
CERS ID: 10754977

COASTLINE EQUIPMENT - BAKERSFIELD (Continued) **S121784120**

CERS Description: Chemical Storage Facilities

Coordinates:
Site ID: 432907
Facility Name: Coastline Equipment - Bakersfield
Env Int Type Code: HMBP
Program ID: 10754977
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 35.445530
Longitude: -119.090100

Affiliation:
Affiliation Type Desc: Document Preparer
Entity Name: Klayton Tang
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: 4252 Saco Rd.
Affiliation City: Bakersfield
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93308
Affiliation Phone: Not reported

Affiliation Type Desc: Legal Owner
Entity Name: Bragg Investment Company, Inc.
Entity Title: Not reported
Affiliation Address: 6251 Paramount Blvd.
Affiliation City: Long Beach
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 90805
Affiliation Phone: (562) 220-1200

Affiliation Type Desc: Parent Corporation
Entity Name: Coastline Equipment - Bakersfield
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Identification Signer
Entity Name: Klayton Tang
Entity Title: Consultant
Affiliation Address: Not reported

COASTLINE EQUIPMENT - BAKERSFIELD (Continued) **S121784120**

Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	CUPA District
Entity Name:	Kern County Environmental Health Services Departme
Entity Title:	Not reported
Affiliation Address:	2700 M Street, Suite 300
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93301-2370
Affiliation Phone:	(661) 862-8740
Affiliation Type Desc:	Environmental Contact
Entity Name:	OWEN KUPFER
Entity Title:	Not reported
Affiliation Address:	6251 Paramount Blvd.
Affiliation City:	Long Beach
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	90805
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	Joe Harrison
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(661) 399-3600

T113 **LOUGEE-MICHAEL EQUIP., INC.** **UST** **U004112082**
SE **4252 SACO RD** **N/A**
1/2-1 **BAKERSFIELD, CA**
0.948 mi.
5007 ft. **Site 6 of 6 in cluster T**

Actual:
461 ft.

Focus Map:
9

KERN CO. UST:

Name:	LOUGEE-MICHAEL EQUIP., INC.
Address:	4252 SACO RD
City:	BAKERSFIELD
Region:	Kern
Facility ID:	Not reported
CERSID:	Not reported
Owner Id:	390006
Owner Name:	BRAGG INVESTMENT CO., INC.
Tank Num:	1
Tank Capacity:	0
Common Name:	Not reported
Description:	Not reported
Number of Compartments:	Not reported

LOUGEE-MICHAEL EQUIP., INC. (Continued) **U004112082**

Install Date:	Not reported
Date of Closure:	Not reported
Billing Status:	Not reported
Mailing Address:	Not reported
Mailing Address (care of):	Not reported
Mailing City/State/Zip:	Not reported

U114
SE
1/2-1
0.951 mi.
5022 ft.

BJ Chemical Services Co (Baker Hughes)
19433 COLOMBO ST
BAKERSFIELD, CA

Site 1 of 17 in cluster U

Actual:
470 ft.

Focus Map:
9

Click this hyperlink while viewing on your computer to access additional ERNS detail in the EDR Site Report.

ERNS **2009896841**
N/A

U115
SE
1/2-1
0.951 mi.
5022 ft.

BJ CHEMICAL SERVICES CO
19433 COLOMBO ST
BAKERSFIELD, CA 93308

Site 2 of 17 in cluster U

Actual:
470 ft.

Focus Map:
9

EMI **S113074299**
HAZNET **N/A**
CERS

EMI:

Name:	BJ CHEMICAL SERVICES
Address:	19433 COLOMBO ST
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2012
County Code:	15
Air Basin:	SJV
Facility ID:	2789
Air District Name:	SJU
SIC Code:	1389
Air District Name:	SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.87954803323
Reactive Organic Gases Tons/Yr:	0.61445225601
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

Name:	BJ CHEMICAL SERVICES
Address:	19433 COLOMBO ST
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2013
County Code:	15
Air Basin:	SJV
Facility ID:	2789
Air District Name:	SJU
SIC Code:	1389

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Air District Name:	SAN JOAQUIN VALLEY UNIFIED APCD
Community Health Air Pollution Info System:	Not reported
Consolidated Emission Reporting Rule:	Not reported
Total Organic Hydrocarbon Gases Tons/Yr:	0.87965216147
Reactive Organic Gases Tons/Yr:	0.614525
Carbon Monoxide Emissions Tons/Yr:	0
NOX - Oxides of Nitrogen Tons/Yr:	0
SOX - Oxides of Sulphur Tons/Yr:	0
Particulate Matter Tons/Yr:	0
Part. Matter 10 Micrometers and Smllr Tons/Yr:	0

HAZNET:

Name:	BJ CHEMICAL SERVICES CO
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933089517
Year:	2008
Gepaid:	CAL000130960
Contact:	J MORRISSETTE, HSE SPECIALIST
Telephone:	2813572573
Mailing Name:	Not reported
Mailing Address:	11211 FM 2920 RD
Gen County:	15
Waste Category:	Unspecified solvent mixture
TSD EPA ID:	TND000772186
TSD County:	99
Disposal Method:	Fuel Blending Prior To Energy Recovery At Another Site
Tons:	0.594

Additional Info:

Year:	2008
Shipment Date:	20080805
Creation Date:	1/7/2009 18:30:08
Receipt Date:	20080814
Manifest ID:	002302651FLE
Gen EPA ID:	CAL000130960
Trans EPA ID:	OHD042311209
Trans Name:	ASHLAND INC
Trans 2 EPA ID:	KS0000336891
Trans 2 Name:	SAVANNAH TRANSPORT INC
TSDF EPA ID:	TND000772186
Trans Name:	POLLUTION CONTROL INDUSTRIES INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	214
RCRA Code:	F003
Meth Code:	H061
Quantity Tons:	0.594
Waste Quantity:	165
Quantity Unit:	G
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year: 2008

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Shipment Date:	20080401
Creation Date:	9/12/2008 18:30:16
Receipt Date:	20080411
Manifest ID:	002082843FLE
Gen EPA ID:	CAL000130960
Trans EPA ID:	OHD042311209
Trans Name:	ASHLAND INC
Trans 2 EPA ID:	KS0000336891
Trans 2 Name:	SAVANNAH TRANSPORT INC
TSDF EPA ID:	TND000772186
Trans Name:	POLLUTION CONTROL INDUSTRIES INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	1.6263
Waste Quantity:	390
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	BJ CHEMICAL SERVICES CO
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933089517
Year:	2008
Gepaid:	CAL000130960
Contact:	J MORRISSETTE, HSE SPECIALIST
Telephone:	2813572573
Mailing Name:	Not reported
Mailing Address:	11211 FM 2920 RD
Gen County:	15
Waste Category:	Off-specification, aged or surplus inorganics
TSD EPA ID:	TND000772186
TSD County:	99
Disposal Method:	Not reported
Tons:	1.6263

Additional Info:

Year:	2008
Shipment Date:	20080805
Creation Date:	1/7/2009 18:30:08
Receipt Date:	20080814
Manifest ID:	002302651FLE
Gen EPA ID:	CAL000130960
Trans EPA ID:	OHD042311209
Trans Name:	ASHLAND INC
Trans 2 EPA ID:	KS0000336891
Trans 2 Name:	SAVANNAH TRANSPORT INC
TSDF EPA ID:	TND000772186
Trans Name:	POLLUTION CONTROL INDUSTRIES INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Waste Code:	214
RCRA Code:	F003
Meth Code:	H061
Quantity Tons:	0.594
Waste Quantity:	165
Quantity Unit:	G
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2008
Shipment Date:	20080401
Creation Date:	9/12/2008 18:30:16
Receipt Date:	20080411
Manifest ID:	002082843FLE
Gen EPA ID:	CAL000130960
Trans EPA ID:	OHD042311209
Trans Name:	ASHLAND INC
Trans 2 EPA ID:	KS0000336891
Trans 2 Name:	SAVANNAH TRANSPORT INC
TSDF EPA ID:	TND000772186
Trans Name:	POLLUTION CONTROL INDUSTRIES INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	1.6263
Waste Quantity:	390
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Name:	BJ CHEMICAL SERVICES CO
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933089517
Year:	2011
Gepaid:	CAL000130960
Contact:	J MORRISSETTE, HSE SPECIALIST
Telephone:	2813572573
Mailing Name:	Not reported
Mailing Address:	11211 FM 2920 RD
Gen County:	15
Waste Category:	Other organic solids
TSD EPA ID:	WIR000108720
TSD County:	Not reported
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.075

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Additional Info:

Year:	2011
Shipment Date:	20110302
Creation Date:	4/27/2011 18:30:07
Receipt Date:	20110308
Manifest ID:	001528878GBF
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	SIEMENS WATER TECHNOLOGIES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	135
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	1.932
Waste Quantity:	460
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2011
Shipment Date:	20110201
Creation Date:	7/5/2011 18:30:12
Receipt Date:	20110224
Manifest ID:	004421014FLE
Gen EPA ID:	CAL000130960
Trans EPA ID:	OHD042311209
Trans Name:	ASHLAND INC
Trans 2 EPA ID:	KS0000336891
Trans 2 Name:	SAVANNAH TRANSPORT INC
TSDF EPA ID:	WIR000108720
Trans Name:	EMCO WASTE SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.075
Waste Quantity:	150
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2011
Shipment Date:	20110617
Creation Date:	8/26/2011 18:30:51
Receipt Date:	20110623

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Manifest ID:	001151159GBF
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.209
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2011
Shipment Date:	20110617
Creation Date:	8/26/2011 18:30:51
Receipt Date:	20110623
Manifest ID:	001151159GBF
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.627
Waste Quantity:	165
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2011
Shipment Date:	20110617
Creation Date:	8/26/2011 18:30:51
Receipt Date:	20110623
Manifest ID:	001151159GBF
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	611
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.08
Waste Quantity:	160
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	BJ CHEMICAL SERVICES CO
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933089517
Year:	2011
Gepaid:	CAL000130960
Contact:	J MORRISSETTE, HSE SPECIALIST
Telephone:	2813572573
Mailing Name:	Not reported
Mailing Address:	11211 FM 2920 RD
Gen County:	15
Waste Category:	Waste oil and mixed oil
TSD EPA ID:	CAT080013352
TSD County:	19
Disposal Method:	Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons:	0.836

Additional Info:

Year:	2011
Shipment Date:	20110302
Creation Date:	4/27/2011 18:30:07
Receipt Date:	20110308
Manifest ID:	001528878GBF
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	SIEMENS WATER TECHNOLOGIES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	135
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	1.932
Waste Quantity:	460
Quantity Unit:	G
Additional Code 1:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2011
Shipment Date:	20110201
Creation Date:	7/5/2011 18:30:12
Receipt Date:	20110224
Manifest ID:	004421014FLE
Gen EPA ID:	CAL000130960
Trans EPA ID:	OHD042311209
Trans Name:	ASHLAND INC
Trans 2 EPA ID:	KS0000336891
Trans 2 Name:	SAVANNAH TRANSPORT INC
TSDF EPA ID:	WIR000108720
Trans Name:	EMCO WASTE SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.075
Waste Quantity:	150
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2011
Shipment Date:	20110617
Creation Date:	8/26/2011 18:30:51
Receipt Date:	20110623
Manifest ID:	001151159GBF
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.209
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Year:	2011
Shipment Date:	20110617
Creation Date:	8/26/2011 18:30:51
Receipt Date:	20110623
Manifest ID:	001151159GBF
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.627
Waste Quantity:	165
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2011
Shipment Date:	20110617
Creation Date:	8/26/2011 18:30:51
Receipt Date:	20110623
Manifest ID:	001151159GBF
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	611
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.08
Waste Quantity:	160
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	BJ CHEMICAL SERVICES CO
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933089517

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Year:	2011
Gepaid:	CAL000130960
Contact:	J MORRISSETTE, HSE SPECIALIST
Telephone:	2813572573
Mailing Name:	Not reported
Mailing Address:	11211 FM 2920 RD
Gen County:	15
Waste Category:	Contaminated soil from site clean-up
TSD EPA ID:	CAT080013352
TSD County:	19
Disposal Method:	Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons:	0.08

Additional Info:

Year:	2011
Shipment Date:	20110302
Creation Date:	4/27/2011 18:30:07
Receipt Date:	20110308
Manifest ID:	001528878GBF
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	SIEMENS WATER TECHNOLOGIES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	135
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	1.932
Waste Quantity:	460
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2011
Shipment Date:	20110201
Creation Date:	7/5/2011 18:30:12
Receipt Date:	20110224
Manifest ID:	004421014FLE
Gen EPA ID:	CAL000130960
Trans EPA ID:	OHD042311209
Trans Name:	ASHLAND INC
Trans 2 EPA ID:	KS0000336891
Trans 2 Name:	SAVANNAH TRANSPORT INC
TSDF EPA ID:	WIR000108720
Trans Name:	EMCO WASTE SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Quantity Tons:	0.075
Waste Quantity:	150
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2011
Shipment Date:	20110617
Creation Date:	8/26/2011 18:30:51
Receipt Date:	20110623
Manifest ID:	001151159GBF
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.209
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2011
Shipment Date:	20110617
Creation Date:	8/26/2011 18:30:51
Receipt Date:	20110623
Manifest ID:	001151159GBF
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.627
Waste Quantity:	165
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Year: 2011
Shipment Date: 20110617
Creation Date: 8/26/2011 18:30:51
Receipt Date: 20110623
Manifest ID: 001151159GBF
Gen EPA ID: CAL000130960
Trans EPA ID: CAR000051169
Trans Name: CVC ENVIRONMENTAL INC
Trans 2 EPA ID: Not reported
Trans 2 Name: Not reported
TSDF EPA ID: CAT080013352
Trans Name: DEMENNO KERDOON
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code: 611
RCRA Code: Not reported
Meth Code: H039
Quantity Tons: 0.08
Waste Quantity: 160
Quantity Unit: P
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Name: BJ CHEMICAL SERVICES CO
Address: 19433 COLOMBO ST
Address 2: Not reported
City,State,Zip: BAKERSFIELD, CA 933089517
Year: 2011
Gepaid: CAL000130960
Contact: J MORRISSETTE, HSE SPECIALIST
Telephone: 2813572573
Mailing Name: Not reported
Mailing Address: 11211 FM 2920 RD
Gen County: 15
Waste Category: Unspecified aqueous solution
TSD EPA ID: CAD097030993
TSD County: 19
Disposal Method: Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons: 1.932

Additional Info:
Year: 2011
Shipment Date: 20110302
Creation Date: 4/27/2011 18:30:07
Receipt Date: 20110308
Manifest ID: 001528878GBF
Gen EPA ID: CAL000130960
Trans EPA ID: CAR000051169
Trans Name: CVC ENVIRONMENTAL INC

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	SIEMENS WATER TECHNOLOGIES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	135
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	1.932
Waste Quantity:	460
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2011
Shipment Date:	20110201
Creation Date:	7/5/2011 18:30:12
Receipt Date:	20110224
Manifest ID:	004421014FLE
Gen EPA ID:	CAL000130960
Trans EPA ID:	OHD042311209
Trans Name:	ASHLAND INC
Trans 2 EPA ID:	KS0000336891
Trans 2 Name:	SAVANNAH TRANSPORT INC
TSDF EPA ID:	WIR000108720
Trans Name:	EMCO WASTE SERVICES
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.075
Waste Quantity:	150
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2011
Shipment Date:	20110617
Creation Date:	8/26/2011 18:30:51
Receipt Date:	20110623
Manifest ID:	001151159GBF
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.209
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2011
Shipment Date:	20110617
Creation Date:	8/26/2011 18:30:51
Receipt Date:	20110623
Manifest ID:	001151159GBF
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.627
Waste Quantity:	165
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2011
Shipment Date:	20110617
Creation Date:	8/26/2011 18:30:51
Receipt Date:	20110623
Manifest ID:	001151159GBF
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	611
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.08

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Waste Quantity:	160
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	BJ CHEMICAL SERVICES CO
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933089517
Year:	1999
Gepaid:	CAL000130960
Contact:	J MORRISSETTE, HSE SPECIALIST
Telephone:	2813572573
Mailing Name:	Not reported
Mailing Address:	11211 FM 2920 RD
Gen County:	15
Waste Category:	Off-specification, aged or surplus organics
TSD EPA ID:	IND000646943
TSD County:	99
Disposal Method:	Invalid Code
Tons:	1.6335

Additional Info:

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586147
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	IND000646943
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	***
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586147

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	IND000646943
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	***
Quantity Tons:	1.452
Waste Quantity:	440
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991011
Manifest ID:	99586148
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D002
Meth Code:	T03
Quantity Tons:	1.9965
Waste Quantity:	605
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	12/17/1999 0:00:00
Receipt Date:	19991008
Manifest ID:	99586149
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	132
RCRA Code:	D002
Meth Code:	R01
Quantity Tons:	0.2293
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	12/17/1999 0:00:00
Receipt Date:	19991008
Manifest ID:	99586149
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	132
RCRA Code:	D002
Meth Code:	R01
Quantity Tons:	0.4587
Waste Quantity:	110
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	12/17/1999 0:00:00
Receipt Date:	19991008
Manifest ID:	99586149
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.5421
Waste Quantity:	130
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586150
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.1155
Waste Quantity:	35
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586150
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586150
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	214
RCRA Code:	D001
Meth Code:	R01
Quantity Tons:	0.198
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586150
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	1.9965
Waste Quantity:	605
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991004
Manifest ID:	99586151
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	T01
Quantity Tons:	2.2275
Waste Quantity:	675
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991004
Manifest ID:	99586151
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	T01
Quantity Tons:	0.5445
Waste Quantity:	165
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990921
Creation Date:	11/16/1999 0:00:00
Receipt Date:	19990921
Manifest ID:	99586469

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Gen EPA ID:	CAL000130960
Trans EPA ID:	CAT000624247
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	214
RCRA Code:	D001
Meth Code:	R01
Quantity Tons:	17.82
Waste Quantity:	4950
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990702
Creation Date:	9/21/1999 0:00:00
Receipt Date:	19990709
Manifest ID:	98466203
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD097030993
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	R01
Quantity Tons:	0.2293
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990702
Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D001
Meth Code:	T03
Quantity Tons:	1.1467
Waste Quantity:	275
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990702
Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	T01
Quantity Tons:	5.0457
Waste Quantity:	1210
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990702
Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

RCRA Code:	Not reported
Meth Code:	T03
Quantity Tons:	0.363
Waste Quantity:	110
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990702
Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	T01
Quantity Tons:	0.9174
Waste Quantity:	220
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990630
Creation Date:	8/16/1999 0:00:00
Receipt Date:	19990630
Manifest ID:	99173930
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAT000624247
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD008302903
TSDF Alt Name:	Not reported
Waste Code:	214
RCRA Code:	D001
Meth Code:	R01
Quantity Tons:	9.72
Waste Quantity:	2700
Quantity Unit:	G

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990630
Creation Date:	9/1/1999 0:00:00
Receipt Date:	19990630
Manifest ID:	99173931
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAT000624247
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD097030993
TSDF Alt Name:	Not reported
Waste Code:	132
RCRA Code:	D002
Meth Code:	R01
Quantity Tons:	2.7522
Waste Quantity:	660
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Name:	BJ CHEMICAL SERVICES CO
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933089517
Year:	1999
Gepaid:	CAL000130960
Contact:	J MORRISSETTE, HSE SPECIALIST
Telephone:	2813572573
Mailing Name:	Not reported
Mailing Address:	11211 FM 2920 RD
Gen County:	15
Waste Category:	Off-specification, aged or surplus organics
TSD EPA ID:	CAT000646117
TSD County:	16
Disposal Method:	Treatment, Tank
Tons:	2.772

Additional Info:

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586147
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	IND000646943
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	***
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586147
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	IND000646943
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	***
Quantity Tons:	1.452
Waste Quantity:	440
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991011
Manifest ID:	99586148
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D002
Meth Code:	T03
Quantity Tons:	1.9965
Waste Quantity:	605
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	12/17/1999 0:00:00
Receipt Date:	19991008
Manifest ID:	99586149
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	132
RCRA Code:	D002
Meth Code:	R01
Quantity Tons:	0.2293
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	12/17/1999 0:00:00
Receipt Date:	19991008
Manifest ID:	99586149
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	132
RCRA Code:	D002
Meth Code:	R01

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Quantity Tons:	0.4587
Waste Quantity:	110
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	12/17/1999 0:00:00
Receipt Date:	19991008
Manifest ID:	99586149
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.5421
Waste Quantity:	130
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586150
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.1155
Waste Quantity:	35
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586150
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586150
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	214
RCRA Code:	D001
Meth Code:	R01
Quantity Tons:	0.198
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586150
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	1.9965
Waste Quantity:	605
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991004
Manifest ID:	99586151
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	T01
Quantity Tons:	2.2275
Waste Quantity:	675
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991004
Manifest ID:	99586151
Gen EPA ID:	CAL000130960

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	T01
Quantity Tons:	0.5445
Waste Quantity:	165
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990921
Creation Date:	11/16/1999 0:00:00
Receipt Date:	19990921
Manifest ID:	99586469
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAT000624247
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	214
RCRA Code:	D001
Meth Code:	R01
Quantity Tons:	17.82
Waste Quantity:	4950
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990702
Creation Date:	9/21/1999 0:00:00
Receipt Date:	19990709
Manifest ID:	98466203
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Trans Name:	Not reported
TSDF Alt EPA ID:	CAD097030993
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	R01
Quantity Tons:	0.2293
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990702
Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D001
Meth Code:	T03
Quantity Tons:	1.1467
Waste Quantity:	275
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990702
Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Meth Code:	T01
Quantity Tons:	5.0457
Waste Quantity:	1210
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990702
Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	T03
Quantity Tons:	0.363
Waste Quantity:	110
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990702
Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	T01
Quantity Tons:	0.9174
Waste Quantity:	220
Quantity Unit:	G
Additional Code 1:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990630
Creation Date:	8/16/1999 0:00:00
Receipt Date:	19990630
Manifest ID:	99173930
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAT000624247
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD008302903
TSDF Alt Name:	Not reported
Waste Code:	214
RCRA Code:	D001
Meth Code:	R01
Quantity Tons:	9.72
Waste Quantity:	2700
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990630
Creation Date:	9/1/1999 0:00:00
Receipt Date:	19990630
Manifest ID:	99173931
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAT000624247
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD097030993
TSDF Alt Name:	Not reported
Waste Code:	132
RCRA Code:	D002
Meth Code:	R01
Quantity Tons:	2.7522
Waste Quantity:	660
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Name:	BJ CHEMICAL SERVICES CO
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933089517
Year:	1999
Gepaid:	CAL000130960
Contact:	J MORRISSETTE, HSE SPECIALIST
Telephone:	2813572573
Mailing Name:	Not reported
Mailing Address:	11211 FM 2920 RD
Gen County:	15
Waste Category:	Liquids with pH <= 2
TSD EPA ID:	CAD097030993
TSD County:	19
Disposal Method:	Recycler
Tons:	0.2293

Additional Info:

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586147
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	IND000646943
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	***
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586147
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	IND000646943
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Waste Code:	331
RCRA Code:	Not reported
Meth Code:	***
Quantity Tons:	1.452
Waste Quantity:	440
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991011
Manifest ID:	99586148
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D002
Meth Code:	T03
Quantity Tons:	1.9965
Waste Quantity:	605
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	12/17/1999 0:00:00
Receipt Date:	19991008
Manifest ID:	99586149
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	132
RCRA Code:	D002
Meth Code:	R01
Quantity Tons:	0.2293
Waste Quantity:	55

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	12/17/1999 0:00:00
Receipt Date:	19991008
Manifest ID:	99586149
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	132
RCRA Code:	D002
Meth Code:	R01
Quantity Tons:	0.4587
Waste Quantity:	110
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	12/17/1999 0:00:00
Receipt Date:	19991008
Manifest ID:	99586149
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.5421
Waste Quantity:	130
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586150
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.1155
Waste Quantity:	35
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586150
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Receipt Date:	19991007
Manifest ID:	99586150
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	214
RCRA Code:	D001
Meth Code:	R01
Quantity Tons:	0.198
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586150
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	1.9965
Waste Quantity:	605
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991004
Manifest ID:	99586151
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	T01
Quantity Tons:	2.2275
Waste Quantity:	675
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991004
Manifest ID:	99586151
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	T01
Quantity Tons:	0.5445
Waste Quantity:	165
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990921
Creation Date:	11/16/1999 0:00:00
Receipt Date:	19990921
Manifest ID:	99586469
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAT000624247
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

TSDF Alt Name:	Not reported
Waste Code:	214
RCRA Code:	D001
Meth Code:	R01
Quantity Tons:	17.82
Waste Quantity:	4950
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990702
Creation Date:	9/21/1999 0:00:00
Receipt Date:	19990709
Manifest ID:	98466203
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD097030993
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	R01
Quantity Tons:	0.2293
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990702
Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D001
Meth Code:	T03
Quantity Tons:	1.1467

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Waste Quantity:	275
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990702
Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	T01
Quantity Tons:	5.0457
Waste Quantity:	1210
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990702
Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	T03
Quantity Tons:	0.363
Waste Quantity:	110
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990702
Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	T01
Quantity Tons:	0.9174
Waste Quantity:	220
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990630
Creation Date:	8/16/1999 0:00:00
Receipt Date:	19990630
Manifest ID:	99173930
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAT000624247
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD008302903
TSDF Alt Name:	Not reported
Waste Code:	214
RCRA Code:	D001
Meth Code:	R01
Quantity Tons:	9.72
Waste Quantity:	2700
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990630

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Creation Date:	9/1/1999 0:00:00
Receipt Date:	19990630
Manifest ID:	99173931
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAT000624247
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD097030993
TSDF Alt Name:	Not reported
Waste Code:	132
RCRA Code:	D002
Meth Code:	R01
Quantity Tons:	2.7522
Waste Quantity:	660
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	BJ CHEMICAL SERVICES CO
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933089517
Year:	1999
Gepaid:	CAL000130960
Contact:	J MORRISSETTE, HSE SPECIALIST
Telephone:	2813572573
Mailing Name:	Not reported
Mailing Address:	11211 FM 2920 RD
Gen County:	15
Waste Category:	Off-specification, aged or surplus inorganics
TSD EPA ID:	CAD097030993
TSD County:	19
Disposal Method:	Recycler
Tons:	0.5421

Additional Info:

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586147
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	IND000646943
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

RCRA Code:	Not reported
Meth Code:	***
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586147
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	IND000646943
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	***
Quantity Tons:	1.452
Waste Quantity:	440
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991011
Manifest ID:	99586148
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D002
Meth Code:	T03
Quantity Tons:	1.9965
Waste Quantity:	605
Quantity Unit:	G

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	12/17/1999 0:00:00
Receipt Date:	19991008
Manifest ID:	99586149
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	132
RCRA Code:	D002
Meth Code:	R01
Quantity Tons:	0.2293
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	12/17/1999 0:00:00
Receipt Date:	19991008
Manifest ID:	99586149
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	132
RCRA Code:	D002
Meth Code:	R01
Quantity Tons:	0.4587
Waste Quantity:	110
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Year:	1999
Shipment Date:	19990929
Creation Date:	12/17/1999 0:00:00
Receipt Date:	19991008
Manifest ID:	99586149
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.5421
Waste Quantity:	130
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586150
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.1155
Waste Quantity:	35
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586150

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586150
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	214
RCRA Code:	D001
Meth Code:	R01
Quantity Tons:	0.198
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586150
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	1.9965
Waste Quantity:	605
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991004
Manifest ID:	99586151
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	T01
Quantity Tons:	2.2275
Waste Quantity:	675
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991004
Manifest ID:	99586151
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

RCRA Code:	Not reported
Meth Code:	T01
Quantity Tons:	0.5445
Waste Quantity:	165
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990921
Creation Date:	11/16/1999 0:00:00
Receipt Date:	19990921
Manifest ID:	99586469
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAT000624247
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	214
RCRA Code:	D001
Meth Code:	R01
Quantity Tons:	17.82
Waste Quantity:	4950
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990702
Creation Date:	9/21/1999 0:00:00
Receipt Date:	19990709
Manifest ID:	98466203
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD097030993
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	R01
Quantity Tons:	0.2293
Waste Quantity:	55
Quantity Unit:	G

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990702
Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D001
Meth Code:	T03
Quantity Tons:	1.1467
Waste Quantity:	275
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990702
Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	T01
Quantity Tons:	5.0457
Waste Quantity:	1210
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Year:	1999
Shipment Date:	19990702
Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	T03
Quantity Tons:	0.363
Waste Quantity:	110
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990702
Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	T01
Quantity Tons:	0.9174
Waste Quantity:	220
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990630
Creation Date:	8/16/1999 0:00:00
Receipt Date:	19990630
Manifest ID:	99173930

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Gen EPA ID:	CAL000130960
Trans EPA ID:	CAT000624247
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD008302903
TSDF Alt Name:	Not reported
Waste Code:	214
RCRA Code:	D001
Meth Code:	R01
Quantity Tons:	9.72
Waste Quantity:	2700
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990630
Creation Date:	9/1/1999 0:00:00
Receipt Date:	19990630
Manifest ID:	99173931
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAT000624247
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD097030993
TSDF Alt Name:	Not reported
Waste Code:	132
RCRA Code:	D002
Meth Code:	R01
Quantity Tons:	2.7522
Waste Quantity:	660
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Click this hyperlink while viewing on your computer to access
44 additional CA HAZNET: record(s) in the EDR Site Report.

Name:	BJ CHEMICAL SERVICES CO
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933089517
Year:	1999
Gepaid:	CAL000130960

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Contact:	J MORRISSETTE, HSE SPECIALIST
Telephone:	2813572573
Mailing Name:	Not reported
Mailing Address:	11211 FM 2920 RD
Gen County:	15
Waste Category:	Aqueous solution with metals (< restricted levels and (Alkaline solution (pH >= 12.5) with metals))
TSD EPA ID:	CAD097030993
TSD County:	19
Disposal Method:	Recycler
Tons:	3.4402

Additional Info:

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586147
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	IND000646943
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	***
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586147
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	IND000646943
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	***
Quantity Tons:	1.452
Waste Quantity:	440

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991011
Manifest ID:	99586148
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D002
Meth Code:	T03
Quantity Tons:	1.9965
Waste Quantity:	605
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	12/17/1999 0:00:00
Receipt Date:	19991008
Manifest ID:	99586149
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	132
RCRA Code:	D002
Meth Code:	R01
Quantity Tons:	0.2293
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	12/17/1999 0:00:00
Receipt Date:	19991008
Manifest ID:	99586149
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	132
RCRA Code:	D002
Meth Code:	R01
Quantity Tons:	0.4587
Waste Quantity:	110
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	12/17/1999 0:00:00
Receipt Date:	19991008
Manifest ID:	99586149
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.5421
Waste Quantity:	130
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Receipt Date:	19991007
Manifest ID:	99586150
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.1155
Waste Quantity:	35
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586150
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586150
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	214
RCRA Code:	D001
Meth Code:	R01
Quantity Tons:	0.198
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991007
Manifest ID:	99586150
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	1.9965
Waste Quantity:	605
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991004
Manifest ID:	99586151
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	T01
Quantity Tons:	2.2275
Waste Quantity:	675
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990929
Creation Date:	11/19/1999 0:00:00
Receipt Date:	19991004
Manifest ID:	99586151
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT000646117
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	T01
Quantity Tons:	0.5445
Waste Quantity:	165
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990921
Creation Date:	11/16/1999 0:00:00
Receipt Date:	19990921
Manifest ID:	99586469
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAT000624247
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	214
RCRA Code:	D001
Meth Code:	R01
Quantity Tons:	17.82

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Waste Quantity:	4950
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990702
Creation Date:	9/21/1999 0:00:00
Receipt Date:	19990709
Manifest ID:	98466203
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	CAD009230244
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD097030993
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	R01
Quantity Tons:	0.2293
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990702
Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D001
Meth Code:	T03
Quantity Tons:	1.1467
Waste Quantity:	275
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990702
Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	T01
Quantity Tons:	5.0457
Waste Quantity:	1210
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990702
Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	T03
Quantity Tons:	0.363
Waste Quantity:	110
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	1999
Shipment Date:	19990702

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Creation Date:	8/24/1999 0:00:00
Receipt Date:	19990712
Manifest ID:	98466204
Gen EPA ID:	CAL000130960
Trans EPA ID:	NJD986607380
Trans Name:	Not reported
Trans 2 EPA ID:	AZD982403586
Trans 2 Name:	Not reported
TSDF EPA ID:	AZD081705402
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	T01
Quantity Tons:	0.9174
Waste Quantity:	220
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990630
Creation Date:	8/16/1999 0:00:00
Receipt Date:	19990630
Manifest ID:	99173930
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAT000624247
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD008302903
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD008302903
TSDF Alt Name:	Not reported
Waste Code:	214
RCRA Code:	D001
Meth Code:	R01
Quantity Tons:	9.72
Waste Quantity:	2700
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	1999
Shipment Date:	19990630
Creation Date:	9/1/1999 0:00:00
Receipt Date:	19990630
Manifest ID:	99173931
Gen EPA ID:	CAL000130960
Trans EPA ID:	CAT000624247

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	Not reported
TSDF Alt EPA ID:	CAD097030993
TSDF Alt Name:	Not reported
Waste Code:	132
RCRA Code:	D002
Meth Code:	R01
Quantity Tons:	2.7522
Waste Quantity:	660
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Click this hyperlink while viewing on your computer to access
44 additional CA HAZNET: record(s) in the EDR Site Report.

CERS:

Name:	BAKER HUGHES
Address:	19433 COLOMBO ST
City,State,Zip:	BAKERSFIELD, CA 93308
Site ID:	453454
CERS ID:	110000481666
CERS Description:	US EPA Air Emission Inventory System (EIS)

Affiliation:

Affiliation Type Desc:	Environmental Contact
Entity Name:	PAM J MOOSE
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Environmental Contact
Entity Name:	TOM PAPPAS
Entity Title:	Not reported
Affiliation Address:	19433 COLOMBO ST
Affiliation City:	BAKERSFIELD
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Public Contact
Entity Name:	JAKE GRAF
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported

BJ CHEMICAL SERVICES CO (Continued) **S113074299**

Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

U116 **BAKERSFIELD UPSTREAM CHEMICALS** **HAZNET** **S113802734**
SE **19433 COLOMBO ST** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.951 mi.
5022 ft. **Site 3 of 17 in cluster U**

Actual:
470 ft.

Focus Map:
9

HAZNET:

Name:	BAKERSFIELD UPSTREAM CHEMICALS
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2014
Gepaid:	CAL000379080
Contact:	THOMAS PAPPAS
Telephone:	6613910794
Mailing Name:	Not reported
Mailing Address:	17021 ALDINE WESTFIELD RD
Gen County:	15
Waste Category:	Unspecified aqueous solution
TSD EPA ID:	NVT330010000
TSD County:	99
Disposal Method:	Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons:	1.26

Additional Info:

Year:	2014
Shipment Date:	20141016
Creation Date:	4/29/2015 22:15:12
Receipt Date:	20141024
Manifest ID:	013738522JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	OHR000162800
Trans Name:	NEXEO SOLUTIONS
Trans 2 EPA ID:	CAD981412356
Trans 2 Name:	PACIFIC TRANS ES
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY NEVADA INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	135
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	1.26
Waste Quantity:	300
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Name:	BAKERSFIELD UPSTREAM CHEMICALS
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2016
Gepaid:	CAL000379080
Contact:	BECKY BLOOMFIELD
Telephone:	6613363359
Mailing Name:	Not reported
Mailing Address:	3901 FANUCCHI WAY
Gen County:	15
Waste Category:	Other organic solids
TSD EPA ID:	CAD097030993
TSD County:	19
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.2

Additional Info:

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0152
Waste Quantity:	4
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0165
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.132
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.1815

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.1668
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.187
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H135
Quantity Tons:	0.22935
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.66
Waste Quantity:	200
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.066
Waste Quantity:	20
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868398JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	1.4
Waste Quantity:	2800
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868400JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.72975
Waste Quantity:	175
Quantity Unit:	G
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20151009
Creation Date:	1/5/2016 22:35:46
Receipt Date:	20151019
Manifest ID:	013868550JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.209
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20151009
Creation Date:	12/2/2015 22:15:28
Receipt Date:	20151019
Manifest ID:	013868551JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Quantity Tons:	0.075
Waste Quantity:	150
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20151009
Creation Date:	1/11/2016 22:16:05
Receipt Date:	20151019
Manifest ID:	013868552JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	611
RCRA Code:	Not reported
Meth Code:	H100
Quantity Tons:	1.5
Waste Quantity:	3000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	122
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.3
Waste Quantity:	600
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D001
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	D002
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D005
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D004
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Year:	2016
Shipment Date:	20150127
Creation Date:	5/6/2015 22:15:19
Receipt Date:	20150206
Manifest ID:	013868875JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.19
Waste Quantity:	50
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150127
Creation Date:	4/16/2015 22:14:42
Receipt Date:	20150206
Manifest ID:	013868876JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.5
Waste Quantity:	1000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	1.1455
Waste Quantity:	2291
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.248
Waste Quantity:	496
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	5.727
Waste Quantity:	11454
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	2.291
Waste Quantity:	4582
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150617
Creation Date:	1/21/2016 22:15:47
Receipt Date:	20150629
Manifest ID:	014370744JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	KSD980633259
Trans Name:	SYSTECH ENVIRONMENTAL CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	1.1455
Waste Quantity:	2291
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Name:	BAKERSFIELD UPSTREAM CHEMICALS
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2016
Gepaid:	CAL000379080
Contact:	BECKY BLOOMFIELD
Telephone:	6613363359
Mailing Name:	Not reported
Mailing Address:	3901 FANUCCHI WAY
Gen County:	15
Waste Category:	Waste oil and mixed oil
TSD EPA ID:	CAT080013352
TSD County:	19
Disposal Method:	Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons:	0.494

Additional Info:

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0152
Waste Quantity:	4
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0165
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.132
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.1815

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.1668
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.187
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H135
Quantity Tons:	0.22935
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.66
Waste Quantity:	200
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.066
Waste Quantity:	20
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868398JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	1.4
Waste Quantity:	2800
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868400JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.72975
Waste Quantity:	175
Quantity Unit:	G
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20151009
Creation Date:	1/5/2016 22:35:46
Receipt Date:	20151019
Manifest ID:	013868550JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.209
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20151009
Creation Date:	12/2/2015 22:15:28
Receipt Date:	20151019
Manifest ID:	013868551JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Quantity Tons:	0.075
Waste Quantity:	150
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20151009
Creation Date:	1/11/2016 22:16:05
Receipt Date:	20151019
Manifest ID:	013868552JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	611
RCRA Code:	Not reported
Meth Code:	H100
Quantity Tons:	1.5
Waste Quantity:	3000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	122
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.3
Waste Quantity:	600
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D001
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	D002
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D005
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D004
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Year:	2016
Shipment Date:	20150127
Creation Date:	5/6/2015 22:15:19
Receipt Date:	20150206
Manifest ID:	013868875JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.19
Waste Quantity:	50
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150127
Creation Date:	4/16/2015 22:14:42
Receipt Date:	20150206
Manifest ID:	013868876JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.5
Waste Quantity:	1000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	1.1455
Waste Quantity:	2291
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.248
Waste Quantity:	496
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	5.727
Waste Quantity:	11454
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	2.291
Waste Quantity:	4582
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150617
Creation Date:	1/21/2016 22:15:47
Receipt Date:	20150629
Manifest ID:	014370744JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	KSD980633259
Trans Name:	SYSTECH ENVIRONMENTAL CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	1.1455
Waste Quantity:	2291
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Name:	BAKERSFIELD UPSTREAM CHEMICALS
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2016
Gepaid:	CAL000379080
Contact:	BECKY BLOOMFIELD
Telephone:	6613363359
Mailing Name:	Not reported
Mailing Address:	3901 FANUCCHI WAY
Gen County:	15
Waste Category:	Off-specification, aged or surplus inorganics
TSD EPA ID:	IND000646943
TSD County:	99
Disposal Method:	Fuel Blending Prior To Energy Recovery At Another Site
Tons:	0.5421

Additional Info:

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0152
Waste Quantity:	4
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0165
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.132
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.1815
Waste Quantity:	55

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.1668
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.187
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H135
Quantity Tons:	0.22935
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.66
Waste Quantity:	200
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.066
Waste Quantity:	20
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868398JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	1.4
Waste Quantity:	2800
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868400JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.72975
Waste Quantity:	175
Quantity Unit:	G
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20151009
Creation Date:	1/5/2016 22:35:46
Receipt Date:	20151019
Manifest ID:	013868550JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.209
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20151009
Creation Date:	12/2/2015 22:15:28
Receipt Date:	20151019
Manifest ID:	013868551JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.075

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Waste Quantity:	150
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20151009
Creation Date:	1/11/2016 22:16:05
Receipt Date:	20151019
Manifest ID:	013868552JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	611
RCRA Code:	Not reported
Meth Code:	H100
Quantity Tons:	1.5
Waste Quantity:	3000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	122
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.3
Waste Quantity:	600
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D001
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	D002
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D005
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D004
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Shipment Date:	20150127
Creation Date:	5/6/2015 22:15:19
Receipt Date:	20150206
Manifest ID:	013868875JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.19
Waste Quantity:	50
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150127
Creation Date:	4/16/2015 22:14:42
Receipt Date:	20150206
Manifest ID:	013868876JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.5
Waste Quantity:	1000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	1.1455
Waste Quantity:	2291
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.248
Waste Quantity:	496
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	5.727
Waste Quantity:	11454
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P
Additional Code 1:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	2.291
Waste Quantity:	4582
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150617
Creation Date:	1/21/2016 22:15:47
Receipt Date:	20150629
Manifest ID:	014370744JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	KSD980633259
Trans Name:	SYSTECH ENVIRONMENTAL CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	1.1455
Waste Quantity:	2291
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Name:	BAKERSFIELD UPSTREAM CHEMICALS
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2016
Gepaid:	CAL000379080
Contact:	BECKY BLOOMFIELD
Telephone:	6613363359
Mailing Name:	Not reported
Mailing Address:	3901 FANUCCHI WAY
Gen County:	15
Waste Category:	Off-specification, aged or surplus organics
TSD EPA ID:	KSD980633259
TSD County:	99
Disposal Method:	Fuel Blending Prior To Energy Recovery At Another Site
Tons:	0.9735

Additional Info:

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0152
Waste Quantity:	4
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0165
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.132
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.1815
Waste Quantity:	55

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.1668
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.187
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H135
Quantity Tons:	0.22935
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.66
Waste Quantity:	200
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.066
Waste Quantity:	20
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868398JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	1.4
Waste Quantity:	2800
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868400JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.72975
Waste Quantity:	175
Quantity Unit:	G
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20151009
Creation Date:	1/5/2016 22:35:46
Receipt Date:	20151019
Manifest ID:	013868550JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.209
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20151009
Creation Date:	12/2/2015 22:15:28
Receipt Date:	20151019
Manifest ID:	013868551JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.075

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Waste Quantity:	150
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20151009
Creation Date:	1/11/2016 22:16:05
Receipt Date:	20151019
Manifest ID:	013868552JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	611
RCRA Code:	Not reported
Meth Code:	H100
Quantity Tons:	1.5
Waste Quantity:	3000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	122
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.3
Waste Quantity:	600
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D001
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	D002
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D005
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D004
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Shipment Date:	20150127
Creation Date:	5/6/2015 22:15:19
Receipt Date:	20150206
Manifest ID:	013868875JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.19
Waste Quantity:	50
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150127
Creation Date:	4/16/2015 22:14:42
Receipt Date:	20150206
Manifest ID:	013868876JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.5
Waste Quantity:	1000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	1.1455
Waste Quantity:	2291
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.248
Waste Quantity:	496
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	5.727
Waste Quantity:	11454
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P
Additional Code 1:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	2.291
Waste Quantity:	4582
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150617
Creation Date:	1/21/2016 22:15:47
Receipt Date:	20150629
Manifest ID:	014370744JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	KSD980633259
Trans Name:	SYSTECH ENVIRONMENTAL CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	1.1455
Waste Quantity:	2291
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Name:	BAKERSFIELD UPSTREAM CHEMICALS
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2016
Gepaid:	CAL000379080
Contact:	BECKY BLOOMFIELD
Telephone:	6613363359
Mailing Name:	Not reported
Mailing Address:	3901 FANUCCHI WAY
Gen County:	15
Waste Category:	Off-specification, aged or surplus organics
TSD EPA ID:	NVT330010000
TSD County:	99
Disposal Method:	Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons:	0.165

Additional Info:

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0152
Waste Quantity:	4
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0165
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.132
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.1815

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.1668
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.187
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H135
Quantity Tons:	0.22935
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150420

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.66
Waste Quantity:	200
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.066
Waste Quantity:	20
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868398JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	1.4
Waste Quantity:	2800
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868400JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.72975
Waste Quantity:	175
Quantity Unit:	G
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20151009
Creation Date:	1/5/2016 22:35:46
Receipt Date:	20151019
Manifest ID:	013868550JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.209
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20151009
Creation Date:	12/2/2015 22:15:28
Receipt Date:	20151019
Manifest ID:	013868551JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Quantity Tons:	0.075
Waste Quantity:	150
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20151009
Creation Date:	1/11/2016 22:16:05
Receipt Date:	20151019
Manifest ID:	013868552JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	611
RCRA Code:	Not reported
Meth Code:	H100
Quantity Tons:	1.5
Waste Quantity:	3000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	122
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.3
Waste Quantity:	600
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D001
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	D002
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D005
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D004
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Year:	2016
Shipment Date:	20150127
Creation Date:	5/6/2015 22:15:19
Receipt Date:	20150206
Manifest ID:	013868875JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.19
Waste Quantity:	50
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150127
Creation Date:	4/16/2015 22:14:42
Receipt Date:	20150206
Manifest ID:	013868876JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.5
Waste Quantity:	1000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	1.1455
Waste Quantity:	2291
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.248
Waste Quantity:	496
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	5.727
Waste Quantity:	11454
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2016
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	2.291
Waste Quantity:	4582
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2016
Shipment Date:	20150617
Creation Date:	1/21/2016 22:15:47
Receipt Date:	20150629
Manifest ID:	014370744JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	KSD980633259
Trans Name:	SYSTECH ENVIRONMENTAL CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	1.1455
Waste Quantity:	2291
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Name:	BAKERSFIELD UPSTREAM CHEMICALS
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2015
Gepaid:	CAL000379080
Contact:	BECKY BLOOMFIELD
Telephone:	6613363359
Mailing Name:	Not reported
Mailing Address:	3901 FANUCCHI WAY
Gen County:	15
Waste Category:	Off-specification, aged or surplus organics
TSD EPA ID:	CAT080013352
TSD County:	19
Disposal Method:	Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons:	0.396

Additional Info:

Year:	2015
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	5.727
Waste Quantity:	11454
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	2.291
Waste Quantity:	4582
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150617
Creation Date:	1/21/2016 22:15:47
Receipt Date:	20150629
Manifest ID:	014370744JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	KSD980633259
Trans Name:	SYSTECH ENVIRONMENTAL CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	1.1455

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Waste Quantity:	2291
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	1.1455
Waste Quantity:	2291
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.248
Waste Quantity:	496
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0152
Waste Quantity:	4
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0165
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.132
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.1668
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	Not reported
Meth Code:	H141

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Quantity Tons:	0.187
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H135
Quantity Tons:	0.22935
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.66
Waste Quantity:	200
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.066
Waste Quantity:	20
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868398JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	1.4
Waste Quantity:	2800
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868400JJK
Gen EPA ID:	CAL000379080

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.72975
Waste Quantity:	175
Quantity Unit:	G
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20151009
Creation Date:	1/5/2016 22:35:46
Receipt Date:	20151019
Manifest ID:	013868550JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.209
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20151009
Creation Date:	12/2/2015 22:15:28
Receipt Date:	20151019
Manifest ID:	013868551JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.075
Waste Quantity:	150
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20151009
Creation Date:	1/11/2016 22:16:05
Receipt Date:	20151019
Manifest ID:	013868552JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	611
RCRA Code:	Not reported
Meth Code:	H100
Quantity Tons:	1.5
Waste Quantity:	3000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	122
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.3
Waste Quantity:	600
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D001
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	D002
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

RCRA Code:	D005
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D004
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150127
Creation Date:	5/6/2015 22:15:19
Receipt Date:	20150206
Manifest ID:	013868875JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.19
Waste Quantity:	50
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150127
Creation Date:	4/16/2015 22:14:42
Receipt Date:	20150206
Manifest ID:	013868876JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.5
Waste Quantity:	1000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Name:	BAKERSFIELD UPSTREAM CHEMICALS
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2015
Gepaid:	CAL000379080
Contact:	BECKY BLOOMFIELD
Telephone:	6613363359
Mailing Name:	Not reported
Mailing Address:	3901 FANUCCHI WAY
Gen County:	15
Waste Category:	Off-specification, aged or surplus organics
TSD EPA ID:	NVT330010000
TSD County:	99
Disposal Method:	Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons:	2.291

Additional Info:

Year:	2015
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	5.727
Waste Quantity:	11454
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	2.291
Waste Quantity:	4582
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150617
Creation Date:	1/21/2016 22:15:47
Receipt Date:	20150629
Manifest ID:	014370744JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	KSD980633259
Trans Name:	SYSTECH ENVIRONMENTAL CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	1.1455

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Waste Quantity:	2291
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	1.1455
Waste Quantity:	2291
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.248
Waste Quantity:	496
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0152
Waste Quantity:	4
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0165
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.132
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.1668
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	Not reported
Meth Code:	H141

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Quantity Tons:	0.187
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H135
Quantity Tons:	0.22935
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.66
Waste Quantity:	200
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.066
Waste Quantity:	20
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868398JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	1.4
Waste Quantity:	2800
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868400JJK
Gen EPA ID:	CAL000379080

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.72975
Waste Quantity:	175
Quantity Unit:	G
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20151009
Creation Date:	1/5/2016 22:35:46
Receipt Date:	20151019
Manifest ID:	013868550JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.209
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20151009
Creation Date:	12/2/2015 22:15:28
Receipt Date:	20151019
Manifest ID:	013868551JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.075
Waste Quantity:	150
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20151009
Creation Date:	1/11/2016 22:16:05
Receipt Date:	20151019
Manifest ID:	013868552JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	611
RCRA Code:	Not reported
Meth Code:	H100
Quantity Tons:	1.5
Waste Quantity:	3000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	122
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.3
Waste Quantity:	600
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D001
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	D002
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

RCRA Code:	D005
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D004
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150127
Creation Date:	5/6/2015 22:15:19
Receipt Date:	20150206
Manifest ID:	013868875JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.19
Waste Quantity:	50
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150127
Creation Date:	4/16/2015 22:14:42
Receipt Date:	20150206
Manifest ID:	013868876JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.5
Waste Quantity:	1000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Name:	BAKERSFIELD UPSTREAM CHEMICALS
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2015
Gepaid:	CAL000379080
Contact:	BECKY BLOOMFIELD
Telephone:	6613363359
Mailing Name:	Not reported
Mailing Address:	3901 FANUCCHI WAY
Gen County:	15
Waste Category:	Off-specification, aged or surplus inorganics
TSD EPA ID:	NVT330010000
TSD County:	99
Disposal Method:	Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons:	7.349

Additional Info:

Year:	2015
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	5.727
Waste Quantity:	11454
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	2.291
Waste Quantity:	4582
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150617
Creation Date:	1/21/2016 22:15:47
Receipt Date:	20150629
Manifest ID:	014370744JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	KSD980633259
Trans Name:	SYSTECH ENVIRONMENTAL CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	1.1455

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Waste Quantity:	2291
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	1.1455
Waste Quantity:	2291
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.248
Waste Quantity:	496
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0152
Waste Quantity:	4
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0165
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.132
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.1668
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	Not reported
Meth Code:	H141

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Quantity Tons:	0.187
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H135
Quantity Tons:	0.22935
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.66
Waste Quantity:	200
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.066
Waste Quantity:	20
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868398JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	1.4
Waste Quantity:	2800
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868400JJK
Gen EPA ID:	CAL000379080

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.72975
Waste Quantity:	175
Quantity Unit:	G
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20151009
Creation Date:	1/5/2016 22:35:46
Receipt Date:	20151019
Manifest ID:	013868550JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.209
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20151009
Creation Date:	12/2/2015 22:15:28
Receipt Date:	20151019
Manifest ID:	013868551JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.075
Waste Quantity:	150
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20151009
Creation Date:	1/11/2016 22:16:05
Receipt Date:	20151019
Manifest ID:	013868552JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	611
RCRA Code:	Not reported
Meth Code:	H100
Quantity Tons:	1.5
Waste Quantity:	3000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	122
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.3
Waste Quantity:	600
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D001
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	D002
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

RCRA Code:	D005
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D004
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150127
Creation Date:	5/6/2015 22:15:19
Receipt Date:	20150206
Manifest ID:	013868875JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.19
Waste Quantity:	50
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150127
Creation Date:	4/16/2015 22:14:42
Receipt Date:	20150206
Manifest ID:	013868876JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.5
Waste Quantity:	1000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Name:	BAKERSFIELD UPSTREAM CHEMICALS
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2015
Gepaid:	CAL000379080
Contact:	BECKY BLOOMFIELD
Telephone:	6613363359
Mailing Name:	Not reported
Mailing Address:	3901 FANUCCHI WAY
Gen County:	15
Waste Category:	Off-specification, aged or surplus organics
TSD EPA ID:	KSD980633259
TSD County:	99
Disposal Method:	Fuel Blending Prior To Energy Recovery At Another Site
Tons:	1.1455

Additional Info:

Year:	2015
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	5.727
Waste Quantity:	11454
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	2.291
Waste Quantity:	4582
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150617
Creation Date:	1/21/2016 22:15:47
Receipt Date:	20150629
Manifest ID:	014370744JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	KSD980633259
Trans Name:	SYSTECH ENVIRONMENTAL CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	1.1455
Waste Quantity:	2291

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	1.1455
Waste Quantity:	2291
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.248
Waste Quantity:	496
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0152
Waste Quantity:	4
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0165
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.132
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.1668
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.187

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H135
Quantity Tons:	0.22935
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.66
Waste Quantity:	200
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.066
Waste Quantity:	20
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868398JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	1.4
Waste Quantity:	2800
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868400JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.72975
Waste Quantity:	175
Quantity Unit:	G
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20151009
Creation Date:	1/5/2016 22:35:46
Receipt Date:	20151019
Manifest ID:	013868550JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.209
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20151009
Creation Date:	12/2/2015 22:15:28
Receipt Date:	20151019
Manifest ID:	013868551JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.075
Waste Quantity:	150
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20151009
Creation Date:	1/11/2016 22:16:05
Receipt Date:	20151019
Manifest ID:	013868552JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	611
RCRA Code:	Not reported
Meth Code:	H100
Quantity Tons:	1.5
Waste Quantity:	3000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	122
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.3
Waste Quantity:	600
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D001
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	D002
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D005

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D004
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150127
Creation Date:	5/6/2015 22:15:19
Receipt Date:	20150206
Manifest ID:	013868875JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.19
Waste Quantity:	50
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150127
Creation Date:	4/16/2015 22:14:42
Receipt Date:	20150206
Manifest ID:	013868876JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.5
Waste Quantity:	1000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Click this hyperlink while viewing on your computer to access
13 additional CA HAZNET: record(s) in the EDR Site Report.

Name:	BAKERSFIELD UPSTREAM CHEMICALS
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2015
Gepaid:	CAL000379080
Contact:	BECKY BLOOMFIELD
Telephone:	6613363359
Mailing Name:	Not reported
Mailing Address:	3901 FANUCCHI WAY
Gen County:	15
Waste Category:	Unspecified organic liquid mixture
TSD EPA ID:	IND000646943
TSD County:	99
Disposal Method:	Fuel Blending Prior To Energy Recovery At Another Site
Tons:	0.916

Additional Info:

Year:	2015
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	5.727
Waste Quantity:	11454
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150617
Creation Date:	1/20/2016 22:15:07
Receipt Date:	20150630
Manifest ID:	014370743JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	2.291
Waste Quantity:	4582
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150617
Creation Date:	1/21/2016 22:15:47
Receipt Date:	20150629
Manifest ID:	014370744JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	KSD980633259
Trans Name:	SYSTECH ENVIRONMENTAL CORPORATION
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Meth Code:	H061
Quantity Tons:	1.1455
Waste Quantity:	2291
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	1.1455
Waste Quantity:	2291
Quantity Unit:	P
Additional Code 1:	D001

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150929
Manifest ID:	014365627JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	IND000646943
Trans Name:	TRADEBE TREATMENT AND RECYCLING LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343
RCRA Code:	D002
Meth Code:	H061
Quantity Tons:	0.458
Waste Quantity:	916
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.248
Waste Quantity:	496
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Year:	2015
Shipment Date:	20150909
Creation Date:	2/9/2016 22:15:11
Receipt Date:	20150918
Manifest ID:	014365628JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAD981382849
Trans Name:	UNIVAR USA INC
Trans 2 EPA ID:	CAR000047696
Trans 2 Name:	UNIVAR USA INC
TSDF EPA ID:	NVT330010000
Trans Name:	US ECOLOGY BEATTY
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.687
Waste Quantity:	1374
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0152
Waste Quantity:	4
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.0165
Waste Quantity:	5
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.132
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868244JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.1668
Waste Quantity:	40
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	343

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.187
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:08
Receipt Date:	20150428
Manifest ID:	013868246JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H135
Quantity Tons:	0.22935
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.66
Waste Quantity:	200
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H061
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Year:	2015
Shipment Date:	20150420
Creation Date:	7/8/2015 22:15:46
Receipt Date:	20150428
Manifest ID:	013868248JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	D001
Meth Code:	H039
Quantity Tons:	0.066
Waste Quantity:	20
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868398JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	1.4
Waste Quantity:	2800
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150708
Creation Date:	9/23/2015 22:15:22
Receipt Date:	20150717
Manifest ID:	013868400JJK

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.72975
Waste Quantity:	175
Quantity Unit:	G
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20151009
Creation Date:	1/5/2016 22:35:46
Receipt Date:	20151019
Manifest ID:	013868550JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.209
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20151009
Creation Date:	12/2/2015 22:15:28
Receipt Date:	20151019
Manifest ID:	013868551JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.075
Waste Quantity:	150
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20151009
Creation Date:	1/11/2016 22:16:05
Receipt Date:	20151019
Manifest ID:	013868552JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	611
RCRA Code:	Not reported
Meth Code:	H100
Quantity Tons:	1.5
Waste Quantity:	3000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	122
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868792JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	791
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.3
Waste Quantity:	600
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D001
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	D001
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868800JJK

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D002
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D009
Meth Code:	H141
Quantity Tons:	0.0075
Waste Quantity:	15
Quantity Unit:	P
Additional Code 1:	D002
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868802JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

RCRA Code:	D005
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.0025
Waste Quantity:	5
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150513
Creation Date:	8/10/2015 22:15:21
Receipt Date:	20150519
Manifest ID:	013868804JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	551
RCRA Code:	D004
Meth Code:	H141
Quantity Tons:	0.005
Waste Quantity:	10
Quantity Unit:	P

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150127
Creation Date:	5/6/2015 22:15:19
Receipt Date:	20150206
Manifest ID:	013868875JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.19
Waste Quantity:	50
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2015
Shipment Date:	20150127
Creation Date:	4/16/2015 22:14:42
Receipt Date:	20150206
Manifest ID:	013868876JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD097030993
Trans Name:	EVOQUA WATER TECHNOLOGIES LLC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.5
Waste Quantity:	1000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **S113802734**

Click this hyperlink while viewing on your computer to access
13 additional CA HAZNET: record(s) in the EDR Site Report.

U117 **BJ UNICHEM CHEMICAL SERVICES** **RCRA-SQG** **1008194531**
SE **19433 COLOMBO ST** **CAL000129983**
1/2-1 **BAKERSFIELD, CA 93380**
0.951 mi.
5022 ft. **Site 4 of 17 in cluster U**

Actual:
470 ft.

Focus Map:
9

RCRA-SQG:

Date form received by agency:	2004-02-26 00:00:00.0
Facility name:	BJ UNICHEM CHEMICAL SERVICES
Facility address:	19433 COLOMBO ST BAKERSFIELD, CA 93380
EPA ID:	CAL000129983
Contact:	PAM J MOOSE
Contact address:	Not reported Not reported
Contact country:	US
Contact telephone:	505-391-2317
Contact email:	PMOOSE@BJSERVICES.COM
EPA Region:	09
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	BJ SERVICES COMPANY, USA
Owner/operator address:	707 N. LEECH HOBBS, NM 88240
Owner/operator country:	US
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	1995-04-13 00:00:00.
Owner/Op end date:	Not reported
Owner/operator name:	RUSTY DAVIS
Owner/operator address:	Not reported Not reported
Owner/operator country:	US
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	1995-04-13 00:00:00.
Owner/Op end date:	Not reported

BJ UNICHEM CHEMICAL SERVICES (Continued) **1008194531**

Handler Activities Summary:
- U.S. importer of hazardous waste: No
- Mixed waste (haz. and radioactive): No
- Recycler of hazardous waste: No
- Transporter of hazardous waste: No
- Treater, storer or disposer of HW: No
- Underground injection activity: No
- On-site burner exemption: No
- Furnace exemption: No
- Used oil fuel burner: No
- Used oil processor: No
- User oil refiner: No
- Used oil fuel marketer to burner: No
- Used oil Specification marketer: No
- Used oil transfer facility: No
- Used oil transporter: No

Historical Generators:
- Date form received by agency: 2004-02-26 00:00:00.0
- Site name: BJ UNICHEM CHEMICAL SERVICES
- Classification: Large Quantity Generator

Hazardous Waste Summary:

- Waste code: D001
- Waste name: IGNITABLE WASTE

- Waste code: D002
- Waste name: CORROSIVE WASTE

Violation Status: No violations found

U118 **BAKER PETROLITE LLC** **CERS HAZ WASTE** **S121794971**
SE **19433 COLOMBO ST** **CERS TANKS** **N/A**
1/2-1 **BAKERSFIELD, CA 93308** **CERS**
0.951 mi.
5022 ft. **Site 5 of 17 in cluster U**

Actual:
470 ft.

Focus Map:
9

CERS HAZ WASTE:
- Name: BAKER PETROLITE LLC
- Address: 19433 COLOMBO ST
- City,State,Zip: BAKERSFIELD, CA 93308
- Site ID: 97129
- CERS ID: 10233049
- CERS Description: Hazardous Waste Generator

CERS TANKS:
- Name: BAKER PETROLITE LLC
- Address: 19433 COLOMBO ST
- City,State,Zip: BAKERSFIELD, CA 93308
- Site ID: 97129
- CERS ID: 10233049
- CERS Description: Aboveground Petroleum Storage

CERS:
- Name: BAKER PETROLITE LLC

BAKER PETROLITE LLC (Continued) **S121794971**

Address: 19433 COLOMBO ST
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 97129
CERS ID: 10233049
CERS Description: Chemical Storage Facilities

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 09-15-2015
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 09-15-2015
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 09-24-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 09-24-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HWLQG
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 09-15-2015
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: APSA
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 09-24-2018
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Refer to CERS Submittal of 9/26/2018: 1) Comments by regulator: The certification at the bottom of Business Owner/Operator Identification

BAKER PETROLITE LLC (Continued) **S121794971**

regarding Name/Title of Document Preparer/Signer needs to be completed. Resubmit with all other elements once all corrections have been made within 30 days. Christian Iwuchukwu G 661-862-8767 G iwuchukwuc@kerncounty.com 2) Comments by regulator: Please make the following corrections to the Hazardous Materials Inventory: add G Storage PressureG and "Storage Temperature" to INDUSTRIAL BIOCIDE (XC320); add G Storage PressureG to OILY RAGS ABSORBANT.; and, change "Storage Pressure" for CORROSION INHIBITOR (CRO8254U) from Above Ambient to Ambient. Resubmit with all other elements once all corrections have been made within 30 days. Christian Iwuchukwu G 661-862-8767 G iwuchukwuc@kerncounty.com

Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Coordinates:
Site ID: 97129
Facility Name: BAKER PETROLITE LLC
Env Int Type Code: HWG
Program ID: 10233049
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 35.446220
Longitude: -119.088730

Affiliation:
Affiliation Type Desc: Operator
Entity Name: Robert Misuraca
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (661) 496-6620

Affiliation Type Desc: Environmental Contact
Entity Name: Robert Misuraca
Entity Title: Not reported
Affiliation Address: 19433 COLOMBO ST.
Affiliation City: BAKERSFIELD
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 93308
Affiliation Phone: Not reported

Affiliation Type Desc: Property Owner
Entity Name: Construction Investment Corp
Entity Title: Not reported
Affiliation Address: 3211 Rio Mirada Drive
Affiliation City: Bakersfield
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 93308
Affiliation Phone: (661) 316-0100

BAKER PETROLITE LLC (Continued) **S121794971**

Affiliation Type Desc:	CUPA District
Entity Name:	Kern County Environmental Health Services Departme
Entity Title:	Not reported
Affiliation Address:	2700 M Street, Suite 300
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93301-2370
Affiliation Phone:	(661) 862-8740

Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	19433 COLOMBO ST
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93308
Affiliation Phone:	Not reported

Affiliation Type Desc:	Identification Signer
Entity Name:	Robert Misuraca
Entity Title:	OPERATIONS MANAGER
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Legal Owner
Entity Name:	BAKER PETROLITE LLC
Entity Title:	Not reported
Affiliation Address:	19433 COLOMBO ST
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93308
Affiliation Phone:	(661) 391-0794

Affiliation Type Desc:	Parent Corporation
Entity Name:	Baker Hughes
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Affiliation Type Desc:	Document Preparer
Entity Name:	Robert Misuraca
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported

BAKER PETROLITE LLC (Continued) **S121794971**

Affiliation Zip: Not reported
Affiliation Phone: Not reported

U119 **BAKER HUGHES** **FINDS** **1005609313**
SE **19433 COLOMBO ST** **ECHO** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.951 mi.
5022 ft. **Site 6 of 17 in cluster U**

Actual:
470 ft.

Focus Map:
9

FINDS:

Registry ID: 110000481666

Environmental Interest/Information System
AIR EMISSIONS CLASSIFICATION UNKNOWN
US EPA TRIS (Toxics Release Inventory System) contains information from facilities on the amounts of over 300 listed toxic chemicals that these facilities release directly to air, water, land, or that are transported off-site.
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.
STATE MASTER
HAZARDOUS WASTE BIENNIAL REPORTER
SSTS (Section Seven Tracking System) evolved from the FIFRA and TSCA Enforcement System (FATES). SSTS tracks the registration of all pesticide-producing establishments and tracks annually the types and amounts of pesticides, active ingredients, and related devices that are produced, sold, or distributed each year.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1005609313
Registry ID: 110000481666
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110000481666

U120 **BAKER HUGHES OILFIELD OPERATIONS INC** **HAZNET** **S124400568**
SE **19433 COLOMBO ST** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.951 mi.
5022 ft. **Site 7 of 17 in cluster U**

Actual:
470 ft.

Focus Map:
9

HAZNET:
Name: BAKER HUGHES OILFIELD OPERATIONS INC
Address: 19433 COLOMBO ST
Address 2: Not reported
City,State,Zip: BAKERSFIELD, CA 93308
Year: 2012
Gepaid: CAL000379080
Contact: Becky Bloomfield

BAKER HUGHES OILFIELD OPERATIONS INC (Continued) **S124400568**

Telephone:	6613363359
Mailing Name:	Not reported
Mailing Address:	3901 Fanucchi Way
Gen County:	15
Waste Category:	Other organic solids
TSD EPA ID:	CAD097030993
TSD County:	19
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	0.04

Additional Info:

Year:	2012
Shipment Date:	20121102
Creation Date:	1/25/2013 22:15:09
Receipt Date:	20121116
Manifest ID:	009716216JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	CAR000076166
Trans 2 Name:	QUALITY TRANSPORTATION
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	134
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.126
Waste Quantity:	30
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2012
Shipment Date:	20121102
Creation Date:	2/14/2013 22:15:16
Receipt Date:	20121116
Manifest ID:	009716218JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	CAR000076166
Trans 2 Name:	QUALITY TRANSPORTATION
TSDF EPA ID:	CAD097030993
Trans Name:	SIEMENS INDUSTRY INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.04
Waste Quantity:	80
Quantity Unit:	P

BAKER HUGHES OILFIELD OPERATIONS INC (Continued) **S124400568**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	BAKER HUGHES OILFIELD OPERATIONS INC
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2012
Gepaid:	CAL000379080
Contact:	Becky Bloomfield
Telephone:	6613363359
Mailing Name:	Not reported
Mailing Address:	3901 Fanucchi Way
Gen County:	15
Waste Category:	Aqueous solution with total organic residues less than 10 percent
TSD EPA ID:	CAT080013352
TSD County:	19
Disposal Method:	Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons:	0.126

Additional Info:

Year:	2012
Shipment Date:	20121102
Creation Date:	1/25/2013 22:15:09
Receipt Date:	20121116
Manifest ID:	009716216JJK
Gen EPA ID:	CAL000379080
Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	CAR000076166
Trans 2 Name:	QUALITY TRANSPORTATION
TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	134
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.126
Waste Quantity:	30
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2012
Shipment Date:	20121102
Creation Date:	2/14/2013 22:15:16
Receipt Date:	20121116
Manifest ID:	009716218JJK
Gen EPA ID:	CAL000379080

BAKER HUGHES OILFIELD OPERATIONS INC (Continued) **S124400568**

Trans EPA ID:	CAR000051169
Trans Name:	CVC ENVIRONMENTAL INC
Trans 2 EPA ID:	CAR000076166
Trans 2 Name:	QUALITY TRANSPORTATION
TSDF EPA ID:	CAD097030993
Trans Name:	SIEMENS INDUSTRY INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.04
Waste Quantity:	80
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

U121 **WESTERN UNICHEM** **HAZNET** **S124399917**
SE **19433 COLOMBO** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.951 mi.
5022 ft. **Site 8 of 17 in cluster U**

Actual:
470 ft.

Focus Map:
9

HAZNET:

Name:	WESTERN UNICHEM
Address:	19433 COLOMBO
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2003
Gepaid:	CAL000129983
Contact:	--
Telephone:	8053910794
Mailing Name:	Not reported
Mailing Address:	P O BOX 1499
Gen County:	15
Waste Category:	Off-specification, aged or surplus organics
TSD EPA ID:	WIR000108720
TSD County:	Not reported
Disposal Method:	Not reported
Tons:	0.9075

Additional Info:

Year:	2003
Shipment Date:	20031216
Creation Date:	8/11/2004 14:31:23
Receipt Date:	20040105
Manifest ID:	22403687
Gen EPA ID:	CAL000129983
Trans EPA ID:	CAR000005991
Trans Name:	ASHLAND DISTRIBUTION
Trans 2 EPA ID:	UTD048406144
Trans 2 Name:	ASHLAND DISTRIBUTION-CLFD
TSDF EPA ID:	IND000646943
Trans Name:	PCI - EAST CHICAGO

WESTERN UNICHEM (Continued) **S124399917**

TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D001
Meth Code:	T03
Quantity Tons:	0.4587
Waste Quantity:	110
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2003
Shipment Date:	20031216
Creation Date:	11/18/2004 8:25:56
Receipt Date:	20040112
Manifest ID:	22403688
Gen EPA ID:	CAL000129983
Trans EPA ID:	CAR000005991
Trans Name:	ASHLAND DISTRIBUTION
Trans 2 EPA ID:	UTD048406144
Trans 2 Name:	ASHLAND DISTRIBUTION-CLFD
TSDF EPA ID:	WIR000108720
Trans Name:	EMCO NON-HAZ
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2003
Shipment Date:	20031216
Creation Date:	11/18/2004 8:25:56
Receipt Date:	20040112
Manifest ID:	22403688
Gen EPA ID:	CAL000129983
Trans EPA ID:	CAR000005991
Trans Name:	ASHLAND DISTRIBUTION
Trans 2 EPA ID:	UTD048406144
Trans 2 Name:	ASHLAND DISTRIBUTION-CLFD
TSDF EPA ID:	WIR000108720
Trans Name:	EMCO NON-HAZ
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	Not reported

WESTERN UNICHEM (Continued) **S124399917**

Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2003
Shipment Date:	20031216
Creation Date:	11/18/2004 8:25:56
Receipt Date:	20040112
Manifest ID:	22403688
Gen EPA ID:	CAL000129983
Trans EPA ID:	CAR000005991
Trans Name:	ASHLAND DISTRIBUTION
Trans 2 EPA ID:	UTD048406144
Trans 2 Name:	ASHLAND DISTRIBUTION-CLFD
TSDF EPA ID:	WIR000108720
Trans Name:	EMCO NON-HAZ
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2003
Shipment Date:	20031216
Creation Date:	11/18/2004 8:25:56
Receipt Date:	20040112
Manifest ID:	22403688
Gen EPA ID:	CAL000129983
Trans EPA ID:	CAR000005991
Trans Name:	ASHLAND DISTRIBUTION
Trans 2 EPA ID:	UTD048406144
Trans 2 Name:	ASHLAND DISTRIBUTION-CLFD
TSDF EPA ID:	WIR000108720
Trans Name:	EMCO NON-HAZ
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.363
Waste Quantity:	110
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported

WESTERN UNICHEM (Continued) **S124399917**

Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	WESTERN UNICHEM
Address:	19433 COLOMBO
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2003
Gepaid:	CAL000129983
Contact:	--
Telephone:	8053910794
Mailing Name:	Not reported
Mailing Address:	P O BOX 1499
Gen County:	15
Waste Category:	Off-specification, aged or surplus inorganics
TSD EPA ID:	IND000646943
TSD County:	99
Disposal Method:	Treatment, Incineration
Tons:	0.4587

Additional Info:

Year:	2003
Shipment Date:	20031216
Creation Date:	8/11/2004 14:31:23
Receipt Date:	20040105
Manifest ID:	22403687
Gen EPA ID:	CAL000129983
Trans EPA ID:	CAR000005991
Trans Name:	ASHLAND DISTRIBUTION
Trans 2 EPA ID:	UTD048406144
Trans 2 Name:	ASHLAND DISTRIBUTION-CLFD
TSDF EPA ID:	IND000646943
Trans Name:	PCI - EAST CHICAGO
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	D001
Meth Code:	T03
Quantity Tons:	0.4587
Waste Quantity:	110
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2003
Shipment Date:	20031216
Creation Date:	11/18/2004 8:25:56
Receipt Date:	20040112
Manifest ID:	22403688
Gen EPA ID:	CAL000129983
Trans EPA ID:	CAR000005991
Trans Name:	ASHLAND DISTRIBUTION
Trans 2 EPA ID:	UTD048406144

WESTERN UNICHEM (Continued) **S124399917**

Trans 2 Name:	ASHLAND DISTRIBUTION-CLFD
TSDF EPA ID:	WIR000108720
Trans Name:	EMCO NON-HAZ
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2003
Shipment Date:	20031216
Creation Date:	11/18/2004 8:25:56
Receipt Date:	20040112
Manifest ID:	22403688
Gen EPA ID:	CAL000129983
Trans EPA ID:	CAR000005991
Trans Name:	ASHLAND DISTRIBUTION
Trans 2 EPA ID:	UTD048406144
Trans 2 Name:	ASHLAND DISTRIBUTION-CLFD
TSDF EPA ID:	WIR000108720
Trans Name:	EMCO NON-HAZ
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2003
Shipment Date:	20031216
Creation Date:	11/18/2004 8:25:56
Receipt Date:	20040112
Manifest ID:	22403688
Gen EPA ID:	CAL000129983
Trans EPA ID:	CAR000005991
Trans Name:	ASHLAND DISTRIBUTION
Trans 2 EPA ID:	UTD048406144
Trans 2 Name:	ASHLAND DISTRIBUTION-CLFD
TSDF EPA ID:	WIR000108720
Trans Name:	EMCO NON-HAZ
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported

WESTERN UNICHEM (Continued) **S124399917**

Waste Code:	331
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.1815
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2003
Shipment Date:	20031216
Creation Date:	11/18/2004 8:25:56
Receipt Date:	20040112
Manifest ID:	22403688
Gen EPA ID:	CAL000129983
Trans EPA ID:	CAR000005991
Trans Name:	ASHLAND DISTRIBUTION
Trans 2 EPA ID:	UTD048406144
Trans 2 Name:	ASHLAND DISTRIBUTION-CLFD
TSDF EPA ID:	WIR000108720
Trans Name:	EMCO NON-HAZ
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	331
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.363
Waste Quantity:	110
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Name:	WESTERN UNICHEM
Address:	19433 COLOMBO
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	1995
Gepaid:	CAL000129983
Contact:	--
Telephone:	8053910794
Mailing Name:	Not reported
Mailing Address:	P O BOX 1499
Gen County:	15
Waste Category:	Other organic solids
TSD EPA ID:	CAD980675276
TSD County:	15
Disposal Method:	Disposal, Land Fill
Tons:	6.58

Additional Info:

Year:	1995

WESTERN UNICHEM (Continued) **S124399917**

Shipment Date:	19951207
Creation Date:	7/26/1996 0:00:00
Receipt Date:	19951208
Manifest ID:	95839698
Gen EPA ID:	CAL000129983
Trans EPA ID:	CAD983620402
Trans Name:	Not reported
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD980675276
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	D80
Quantity Tons:	6.58
Waste Quantity:	13160
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	WESTERN UNICHEM
Address:	19433 COLOMBO
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	1996
Gepaid:	CAL000129983
Contact:	--
Telephone:	8053910794
Mailing Name:	Not reported
Mailing Address:	P O BOX 1499
Gen County:	15
Waste Category:	Unspecified organic liquid mixture
TSD EPA ID:	AZ0049318009
TSD County:	Not reported
Disposal Method:	Recycler
Tons:	0.187

Additional Info:

Year:	1996
Shipment Date:	19960604
Creation Date:	9/12/1997 0:00:00
Receipt Date:	19960613
Manifest ID:	95579408
Gen EPA ID:	CAL000129983
Trans EPA ID:	CA0000082347
Trans Name:	Not reported
Trans 2 EPA ID:	CAD000083121
Trans 2 Name:	Not reported
TSDF EPA ID:	AZ0049318009
Trans Name:	Not reported
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported

WESTERN UNICHEM (Continued) **S124399917**

Waste Code:	343
RCRA Code:	D001
Meth Code:	R01
Quantity Tons:	0.187
Waste Quantity:	55
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	WESTERN UNICHEM
Address:	19433 COLOMBO
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2004
Gepaid:	CAL000129983
Contact:	--
Telephone:	8053910794
Mailing Name:	Not reported
Mailing Address:	P O BOX 1499
Gen County:	15
Waste Category:	Off-specification, aged or surplus inorganics
TSD EPA ID:	IND000646943
TSD County:	99
Disposal Method:	Not reported
Tons:	0.68805

Additional Info:

Year:	2004
Shipment Date:	20040511
Creation Date:	10/7/2004 9:06:47
Receipt Date:	Not reported
Manifest ID:	23480007
Gen EPA ID:	CAL000129983
Trans EPA ID:	CAR000005991
Trans Name:	ASHLAND DISTRIBUTION
Trans 2 EPA ID:	UTD048406144
Trans 2 Name:	ASHLAND DISTRIBUTION-CLFD
TSDF EPA ID:	IND000646943
Trans Name:	PCI - EAST CHICAGO
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	141
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.68805
Waste Quantity:	165
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

U122 **BAKER HUGHES** **AST** **A100417529**
SE **19433 COLOMBO ST** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.951 mi.
5022 ft. **Site 9 of 17 in cluster U**

Actual:
470 ft.

Focus Map:
9

AST:

Name:	BAKER HUGHES
Address:	19433 COLOMBO ST
City/Zip:	BAKERSFIELD,93308
Certified Unified Program Agencies:	Not reported
Owner:	Baker Petrolite LLC
Total Gallons:	Not reported
CERSID:	10233049
Facility ID:	FA0002052
Business Name:	BAKER HUGHES
Phone:	(661) 391-0794
Fax:	661-391-0119
Mailing Address:	19433 COLOMBO ST
Mailing Address City:	BAKERSFIELD
Mailing Address State:	CA
Mailing Address Zip Code:	93308
Operator Name:	TOM PAPPAS
Operator Phone:	661-381-0070
Owner Phone:	(661) 391-0794
Owner Mail Address:	19433 COLOMBO ST
Owner State:	CA
Owner Zip Code:	93308
Owner Country:	United States
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	CAL000379080

U123 **BAKER PETROLITE** **FINDS** **1023695114**
SE **19433 COLOMBO ST** **ECHO** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.951 mi.
5022 ft. **Site 10 of 17 in cluster U**

Actual:
470 ft.

Focus Map:
9

FINDS:

Registry ID: 110070092182

Environmental Interest/Information System

US National Pollutant Discharge Elimination System (NPDES) module of the Compliance Information System (ICIS) tracks surface water permits issued under the Clean Water Act. Under NPDES, all facilities that discharge pollutants from any point source into waters of the United States are required to obtain a permit. The permit will likely contain limits on what can be discharged, impose monitoring and reporting requirements, and include other provisions to ensure that the discharge does not adversely affect water quality.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

BAKER PETROLITE (Continued) **1023695114**

ECHO:
Envid: 1023695114
Registry ID: 110070092182
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110070092182

U124 **BJ SERVICES CO, U.S.A.** **SSTS** **1012004476**
SE **19433 COLOMBO ST** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.951 mi.
5022 ft. **Site 11 of 17 in cluster U**

Actual:
470 ft.

Focus Map:
9

SSTS: Pesticide producing
Name: BJ SERVICES CO, USA (INACTIVE 4-10-12)
Address: 19433 COLOMBO ST
City,State,Zip: BAKERSFIELD, CA 93308
Report Year: 2010
Registration Number: 68329-CA-1

Pre 2016:
Registration Number: 68329-CA-1
Name: BJ SERVICES CO, USA (INACTIVE 4-10-12)
Address: 19433 COLOMBO ST
Address 2: Not reported
Country Code: USA
Country: United States
Contact Name: JO ANN COBB
Contact Title: ENVIR MGR- HQ
Contact Telephone: 6613910794
Contact Email: GEORGE.KATSIGRAS@BAKERHUGHES.COM
Product Name: ALPHA 120 MICROBIC- (50% DIDECYL DIMETHYL AMMONIUM CHLORIDE)
Product Code: Not reported
EPA Product Registration Number: 10324-70-68329
Product Type: 2 - End Use Product
Product Classification: 07 - Antimicrobial
Product Use: Not reported
Market Type: USA
Product Unit of Measure: Not reported
Region: 9
Zero Production: Not reported
RUP: 2 - All Other Products

Registration Number: 68329-CA-1
Name: BJ SERVICES CO, USA (INACTIVE 4-10-12)
Address: 19433 COLOMBO ST
Address 2: Not reported
Country Code: USA
Country: United States
Contact Name: JO ANN COBB
Contact Title: ENVIR MGR- HQ
Contact Telephone: 6613910794
Contact Email: GEORGE.KATSIGRAS@BAKERHUGHES.COM
Product Name: ALPHA 150 (50% GLUTERALDEHYDE)
Product Code: Not reported
EPA Product Registration Number: 464-694-68329
Product Type: 3 - Repackages/Relabeled
Product Classification: 07 - Antimicrobial
Product Use: Not reported
Market Type: USA

BJ SERVICES CO, U.S.A. (Continued) **1012004476**

Product Unit of Measure: Not reported
Region: 9
Zero Production: Not reported
RUP: 2 - All Other Products

Registration Number: 68329-CA-1
Name: BJ SERVICES CO, USA (INACTIVE 4-10-12)
Address: 19433 COLOMBO ST
Address 2: Not reported
Country Code: USA
Country: United States
Contact Name: JO ANN COBB
Contact Title: ENVIR MGR- HQ
Contact Telephone: 6613910794
Contact Email: GEORGE.KATSIGRAS@BAKERHUGHES.COM
Product Name: ALPHA 452 (35% TETRAKIS. . . (THPS))
Product Code: Not reported
EPA Product Registration Number: 33677-5-68329
Product Type: 2 - End Use Product
Product Classification: 07 - Antimicrobial
Product Use: Not reported
Market Type: USA
Product Unit of Measure: Not reported
Region: 9
Zero Production: Not reported
RUP: 2 - All Other Products

Report Year: 2007
Registration Number: 068329CA001

Pre 2016:
Registration Number: 068329CA001
Name: BJ SERVICES CO, U.S.A.
Address: 19433 COLOMBO ST
Address 2: Not reported
Country Code: Not reported
Country: Not reported
Contact Name: Not reported
Contact Title: Not reported
Contact Telephone: Not reported
Contact Email: Not reported
Product Name: ALPHA 120 (SUPP -68329)
Product Code: 1
EPA Product Registration Number: 01032400070
Product Type: 2
Product Classification: 05
Product Use: 2
Market Type: 1
Product Unit of Measure: Not reported
Region: 09
Zero Production: Not reported
RUP: Not reported

Registration Number: 068329CA001
Name: BJ SERVICES CO, U.S.A.
Address: 19433 COLOMBO ST
Address 2: Not reported

BJ SERVICES CO, U.S.A. (Continued) **1012004476**

Country Code:	Not reported
Country:	Not reported
Contact Name:	Not reported
Contact Title:	Not reported
Contact Telephone:	Not reported
Contact Email:	Not reported
Product Name:	ALPHA 125 (RTU MICROBIOCIDE) (SUPP -68329)
Product Code:	1
EPA Product Registration Number:	00046400688
Product Type:	3
Product Classification:	05
Product Use:	2
Market Type:	1
Product Unit of Measure:	Not reported
Region:	09
Zero Production:	Not reported
RUP:	Not reported

Registration Number:	068329CA001
Name:	BJ SERVICES CO, U.S.A.
Address:	19433 COLOMBO ST
Address 2:	Not reported
Country Code:	Not reported
Country:	Not reported
Contact Name:	Not reported
Contact Title:	Not reported
Contact Telephone:	Not reported
Contact Email:	Not reported
Product Name:	ALPHA 150 (SUPP -68329)
Product Code:	1
EPA Product Registration Number:	00046400694
Product Type:	3
Product Classification:	05
Product Use:	2
Market Type:	1
Product Unit of Measure:	Not reported
Region:	09
Zero Production:	Not reported
RUP:	Not reported

Report Year:	2008
Registration Number:	068329-CA-001

Pre 2016:

Registration Number:	068329-CA-001
Name:	BJ SERVICES CO, U.S.A.
Address:	19433 COLOMBO ST
Address 2:	Not reported
Country Code:	Not reported
Country:	Not reported
Contact Name:	JO ANN COBB RADIATION SAFETY OFFICER P: 281-357-2575
Contact Title:	Not reported
Contact Telephone:	Not reported
Contact Email:	Not reported
Product Name:	ALPHA 120 (SUPP -68329)
Product Code:	Not reported
EPA Product Registration Number:	10324-70

BJ SERVICES CO, U.S.A. (Continued) **1012004476**

Product Type: 2
Product Classification: 59
Product Use: Not reported
Market Type: 1
Product Unit of Measure: Not reported
Region: 9
Zero Production: No
RUP: 2

Registration Number: 068329-CA-001
Name: BJ SERVICES CO, U.S.A.
Address: 19433 COLOMBO ST
Address 2: Not reported
Country Code: Not reported
Country: Not reported
Contact Name: JO ANN COBB RADIATION SAFETY OFFICER P: 281-357-2575
Contact Title: Not reported
Contact Telephone: Not reported
Contact Email: Not reported
Product Name: ALPHA 125 (RTU MICROBIOCIDE) (SUPP -68329)
Product Code: Not reported
EPA Product Registration Number: 464-688
Product Type: 3
Product Classification: 59
Product Use: Not reported
Market Type: 1
Product Unit of Measure: Not reported
Region: 9
Zero Production: No
RUP: 2

Registration Number: 068329-CA-001
Name: BJ SERVICES CO, U.S.A.
Address: 19433 COLOMBO ST
Address 2: Not reported
Country Code: Not reported
Country: Not reported
Contact Name: JO ANN COBB RADIATION SAFETY OFFICER P: 281-357-2575
Contact Title: Not reported
Contact Telephone: Not reported
Contact Email: Not reported
Product Name: ALPHA 150 (SUPP -68329)
Product Code: Not reported
EPA Product Registration Number: 464-694
Product Type: 3
Product Classification: 59
Product Use: Not reported
Market Type: 1
Product Unit of Measure: Not reported
Region: 9
Zero Production: No
RUP: 2

Registration Number: 068329-CA-001
Name: BJ SERVICES CO, U.S.A.
Address: 19433 COLOMBO ST
Address 2: Not reported

BJ SERVICES CO, U.S.A. (Continued) **1012004476**

Country Code:	Not reported
Country:	Not reported
Contact Name:	JO ANN COBB RADIATION SAFETY OFFICER P: 281-357-2575
Contact Title:	Not reported
Contact Telephone:	Not reported
Contact Email:	Not reported
Product Name:	ALPHA 452 (SUPP -68329)
Product Code:	Not reported
EPA Product Registration Number:	33677-5
Product Type:	2
Product Classification:	59
Product Use:	Not reported
Market Type:	1
Product Unit of Measure:	Not reported
Region:	9
Zero Production:	No
RUP:	2

Report Year:	2009
Registration Number:	068329-CA-001

Pre 2016:

Registration Number:	068329-CA-001
Name:	BJ SERVICES CO, U.S.A.
Address:	19433 COLOMBO ST
Address 2:	Not reported
Country Code:	Not reported
Country:	Not reported
Contact Name:	JO ANN COBB ENVIR MGR- HQ P: 661-391-0794
Contact Title:	Not reported
Contact Telephone:	Not reported
Contact Email:	Not reported
Product Name:	ALPHA 120 MICROBIC- (50% DIDECYL DIMETHYL AMMONIUM CHLORIDE)
Product Code:	Not reported
EPA Product Registration Number:	10324-70-68329
Product Type:	2
Product Classification:	07
Product Use:	Not reported
Market Type:	1
Product Unit of Measure:	Not reported
Region:	Not reported
Zero Production:	No
RUP:	2

Registration Number:	068329-CA-001
Name:	BJ SERVICES CO, U.S.A.
Address:	19433 COLOMBO ST
Address 2:	Not reported
Country Code:	Not reported
Country:	Not reported
Contact Name:	JO ANN COBB ENVIR MGR- HQ P: 661-391-0794
Contact Title:	Not reported
Contact Telephone:	Not reported
Contact Email:	Not reported
Product Name:	ALPHA 125 RTU (25% GLUTERALDEHYDE)
Product Code:	Not reported
EPA Product Registration Number:	464-688-68329

BJ SERVICES CO, U.S.A. (Continued) **1012004476**

Product Type:	3
Product Classification:	07
Product Use:	Not reported
Market Type:	1
Product Unit of Measure:	Not reported
Region:	Not reported
Zero Production:	No
RUP:	2
Registration Number:	068329-CA-001
Name:	BJ SERVICES CO, U.S.A.
Address:	19433 COLOMBO ST
Address 2:	Not reported
Country Code:	Not reported
Country:	Not reported
Contact Name:	JO ANN COBB ENVIR MGR- HQ P: 661-391-0794
Contact Title:	Not reported
Contact Telephone:	Not reported
Contact Email:	Not reported
Product Name:	ALPHA 150 (50% GLUTERALDEHYDE)
Product Code:	Not reported
EPA Product Registration Number:	464-694-68329
Product Type:	3
Product Classification:	07
Product Use:	Not reported
Market Type:	1
Product Unit of Measure:	Not reported
Region:	Not reported
Zero Production:	No
RUP:	2
Registration Number:	068329-CA-001
Name:	BJ SERVICES CO, U.S.A.
Address:	19433 COLOMBO ST
Address 2:	Not reported
Country Code:	Not reported
Country:	Not reported
Contact Name:	JO ANN COBB ENVIR MGR- HQ P: 661-391-0794
Contact Title:	Not reported
Contact Telephone:	Not reported
Contact Email:	Not reported
Product Name:	ALPHA 452 (35% TETRAKIS. . . (THPS))
Product Code:	Not reported
EPA Product Registration Number:	33677-5-68329
Product Type:	2
Product Classification:	07
Product Use:	Not reported
Market Type:	1
Product Unit of Measure:	Not reported
Region:	Not reported
Zero Production:	No
RUP:	2

U125
SE
1/2-1
0.951 mi.
5022 ft.

BAKERSFIELD UPSTREAM CHEMICALS
19433 COLOMBO STREET
BAKERSFIELD, CA 93308

Site 12 of 17 in cluster U

RCRA-LQG
FINDS
ECHO

1019899416
CAL000379080

Actual:
470 ft.

Focus Map:
9

RCRA-LQG:

Date form received by agency:	2016-08-26 00:00:00.0
Facility name:	BAKERSFIELD UPSTREAM CHEMICALS
Facility address:	19433 COLOMBO STREET BAKERSFIELD, CA 93308
EPA ID:	CAL000379080
Mailing address:	COLOMBO STREET BAKERSFIELD, CA 93308
Contact:	DAVID M WILLIAMS
Contact address:	COLOMBO STREET BAKERSFIELD, CA 93308
Contact country:	US
Contact telephone:	661-336-3419
Contact email:	DAVID.WILLIAMS3@BAKERHUGHES.COM
EPA Region:	09
Classification:	Large Quantity Generator
Description:	Handler: generates 1,000 kg or more of hazardous waste during any calendar month; or generates more than 1 kg of acutely hazardous waste during any calendar month; or generates more than 100 kg of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month; or generates 1 kg or less of acutely hazardous waste during any calendar month, and accumulates more than 1 kg of acutely hazardous waste at any time; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates more than 100 kg of that material at any time

Owner/Operator Summary:

Owner/operator name:	BAKER HUGHES OILFIELD OPERATIONS, INC
Owner/operator address:	Not reported Not reported
Owner/operator country:	Not reported
Owner/operator telephone:	Not reported
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	2010-12-10 00:00:00.
Owner/Op end date:	Not reported

Owner/operator name:	BAKER HUGHES OILFIELD OPERATIONS, INC
Owner/operator address:	ALDINE WESTFIELD HOUSTON, TX 77073
Owner/operator country:	US
Owner/operator telephone:	713-879-1646
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **1019899416**

Owner/Op start date: 2010-12-10 00:00:00.
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

Hazardous Waste Summary:

. Waste code: 122
. Waste name: Alkaline solution without metals (pH > 12.5)

. Waste code: 141
. Waste name: Off-specification, aged, or surplus inorganics

. Waste code: 221
. Waste name: Waste oil and mixed oil

. Waste code: 331
. Waste name: Off-specification, aged, or surplus organics

. Waste code: 343
. Waste name: Unspecified organic liquid mixture

. Waste code: 352
. Waste name: Other organic solids

. Waste code: 551
. Waste name: Laboratory waste chemicals

. Waste code: 611
. Waste name: Contaminated soil from site clean-ups

. Waste code: 791
. Waste name: Liquids with pH < 2

. Waste code: D001
. Waste name: IGNITABLE WASTE

. Waste code: D002
. Waste name: CORROSIVE WASTE

. Waste code: D004

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **1019899416**

. Waste name: ARSENIC

. Waste code: D005
. Waste name: BARIUM

. Waste code: D009
. Waste name: MERCURY

Biennial Reports:

Last Biennial Reporting Year: 2017

Annual Waste Handled:

Waste code: D001
Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.
Amount (Lbs): 10919

Waste code: D002
Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.
Amount (Lbs): 19171

Waste code: D004
Waste name: ARSENIC
Amount (Lbs): 10

Waste code: D005
Waste name: BARIUM
Amount (Lbs): 5

Waste code: D009
Waste name: MERCURY
Amount (Lbs): 25

Violation Status: No violations found

FINDS:

Registry ID: 110069631795

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and

BAKERSFIELD UPSTREAM CHEMICALS (Continued) **1019899416**

corrective action activities required under RCRA.
HAZARDOUS WASTE BIENNIAL REPORTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:
Envid: 1019899416
Registry ID: 110069631795
DFR URL: http://echo.epa.gov/detailed-facility-report?fid=110069631795

U126 **BAKER PETROLITE** **NPDES** **S113073752**
SE **19433 COLOMBO ST** **CIWQS** **N/A**
1/2-1 **BAKERSFIELD, CA 93308** **CERS**
0.951 mi.
5022 ft. **Site 13 of 17 in cluster U**

Actual:
470 ft.

Focus Map:
9

NPDES: WDID 5F15I023925
Name: BAKER PETROLITE
Address: 19433 COLOMBO ST
City,State,Zip: BAKERSFIELD, CA 93308
Facility Status: Active
NPDES Number: CAS000001
Region: 5F
Agency Number: 0
Regulatory Measure ID: 432828
Place ID: Not reported
Order Number: 97-03-DWQ
WDID: 5F15I023925
Regulatory Measure Type: Enrollee
Program Type: Industrial
Adoption Date Of Regulatory Measure: Not reported
Effective Date Of Regulatory Measure: 11/16/2012
Termination Date Of Regulatory Measure: Not reported
Expiration Date Of Regulatory Measure: Not reported
Discharge Address: 3901 Fanucchi Way E
Discharge Name: Baker Hughes Oilfield Operations LLC
Discharge City: Shafter
Discharge State: California
Discharge Zip: 93263
Status: Not reported
Status Date: Not reported
Operator Name: Not reported
Operator Address: Not reported
Operator City: Not reported
Operator State: Not reported
Operator Zip: Not reported

NPDES as of 03/2018:
NPDES Number: Not reported
Status: Not reported
Agency Number: Not reported
Region: 5F
Regulatory Measure ID: 432828
Order Number: Not reported
Regulatory Measure Type: Industrial
Place ID: Not reported
WDID: 5F15I023925

BAKER PETROLITE (Continued) **S113073752**

Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	11/16/2012
Processed Date:	11/16/2012
Status:	Active
Status Date:	11/16/2012
Place Size:	1.8
Place Size Unit:	Acres
Contact:	Thomas Pappas
Contact Title:	Manager
Contact Phone:	661-391-0794
Contact Phone Ext:	Not reported
Contact Email:	tom.pappas@bakerhughes.com
Operator Name:	Baker Hughes Oilfield Operations LLC
Operator Address:	3901 Fanucchi Way E
Operator City:	Shafter
Operator State:	California
Operator Zip:	93263
Operator Contact:	Thomas Pappas
Operator Contact Title:	Manager
Operator Contact Phone:	661-391-0794
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	tom.pappas@bakerhughes.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	661-336-3100
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported

BAKER PETROLITE (Continued) **S113073752**

Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Kern River and various canals of the Tulare Lake Basin
Certifier:	David Williams
Certifier Title:	Director West Coast
Certification Date:	28-JUN-16
Primary Sic:	1389-Oil and Gas Field Services, NEC
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	5F
Regulatory Measure ID:	432828
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	5F15I023925
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	11/16/2012
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Baker Hughes Oilfield Operations LLC
Discharge Address:	3901 Fanucchi Way E
Discharge City:	Shafter
Discharge State:	California
Discharge Zip:	93263
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported

BAKER PETROLITE (Continued) **S113073752**

Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Name:	BAKER PETROLITE
Address:	19433 COLOMBO ST
City,State,Zip:	BAKERSFIELD, CA 93308
Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	5F15I023925
Regulatory Measure Type:	Industrial
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Status:	Active
Status Date:	11/16/2012
Operator Name:	Baker Hughes Oilfield Operations LLC
Operator Address:	3901 Fanucchi Way E
Operator City:	Shafter

BAKER PETROLITE (Continued) **S113073752**

Operator State:	California
Operator Zip:	93263

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	5F
Regulatory Measure ID:	432828
Order Number:	Not reported
Regulatory Measure Type:	Industrial
Place ID:	Not reported
WDID:	5F15I023925
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	11/16/2012
Processed Date:	11/16/2012
Status:	Active
Status Date:	11/16/2012
Place Size:	1.8
Place Size Unit:	Acres
Contact:	Thomas Pappas
Contact Title:	Manager
Contact Phone:	661-391-0794
Contact Phone Ext:	Not reported
Contact Email:	tom.pappas@bakerhughes.com
Operator Name:	Baker Hughes Oilfield Operations LLC
Operator Address:	3901 Fanucchi Way E
Operator City:	Shafter
Operator State:	California
Operator Zip:	93263
Operator Contact:	Thomas Pappas
Operator Contact Title:	Manager
Operator Contact Phone:	661-391-0794
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	tom.pappas@bakerhughes.com
Operator Type:	Private Business
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	California
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	661-336-3100
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported

BAKER PETROLITE (Continued) **S113073752**

Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Kern River and various canals of the Tulare Lake Basin
Certifier:	David Williams
Certifier Title:	Director West Coast
Certification Date:	28-JUN-16
Primary Sic:	1389-Oil and Gas Field Services, NEC
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	CAS000001
Status:	Active
Agency Number:	0
Region:	5F
Regulatory Measure ID:	432828
Order Number:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	5F15I023925
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	11/16/2012
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Baker Hughes Oilfield Operations LLC
Discharge Address:	3901 Fanucchi Way E
Discharge City:	Shafter
Discharge State:	California
Discharge Zip:	93263
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

BAKER PETROLITE (Continued) **S113073752**

Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

CIWQS:

Name:	BAKER PETROLITE
Address:	19433 COLOMBO ST
City,State,Zip:	BAKERSFIELD, CA 93308
Agency:	Baker Hughes Oilfield Operations LLC
Agency Address:	3901 Fanucchi Way E, Shafter, CA 93263
Place/Project Type:	Industrial - Oil and Gas Field Services, NEC
SIC/NAICS:	1389
Region:	5F
Program:	INDSTW
Regulatory Measure Status:	Active
Regulatory Measure Type:	Storm water industrial
Order Number:	2014-0057-DWQ
WDID:	5F15I023925
NPDES Number:	CAS000001

BAKER PETROLITE (Continued) **S113073752**

Adoption Date:	Not reported
Effective Date:	11/16/2012
Termination Date:	Not reported
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	35.44622
Longitude:	-119.08873

CERS:

Name:	BAKER PETROLITE
Address:	19433 COLOMBO ST
City,State,Zip:	BAKERSFIELD, CA 93308
Site ID:	526974
CERS ID:	820281
CERS Description:	Industrial Facility Storm Water

Affiliation:

Affiliation Type Desc:	Owner/Operator
Entity Name:	Baker Hughes Oilfield Operations LLC
Entity Title:	Operator
Affiliation Address:	3901 Fanucchi Way E
Affiliation City:	Shafter
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93263
Affiliation Phone:	Not reported

U127 **PALL WELL TECHNOLOGY** **HAZNET** **S113037703**
SE **19433 COLOMBO ST** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.951 mi.
5022 ft. **Site 14 of 17 in cluster U**

Actual:
470 ft.

Focus Map:
9

HAZNET:

Name:	PALL WELL TECHNOLOGY
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2014
Gepaid:	CAL000040113
Contact:	INACTIVE BUSINESS MOVED
Telephone:	--
Mailing Name:	Not reported
Mailing Address:	19433 COLOMBO ST
Gen County:	15
Waste Category:	Waste oil and mixed oil
TSD EPA ID:	CAD099452708
TSD County:	19
Disposal Method:	Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons:	0.19

PALL WELL TECHNOLOGY (Continued) **S113037703**

Additional Info:

Year:	2014
Shipment Date:	20140620
Creation Date:	9/8/2014 22:15:16
Receipt Date:	20140623
Manifest ID:	000824971GBF
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000280876
Trans Name:	ACTION WASTE OIL SERVICES
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD099452708
Trans Name:	INDUSTRIAL SERVICE OIL CO INC
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	0.19
Waste Quantity:	50
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	PALL WELL TECHNOLOGY
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2007
Gepaid:	CAL000040113
Contact:	INACTIVE BUSINESS MOVED
Telephone:	--
Mailing Name:	Not reported
Mailing Address:	19433 COLOMBO ST
Gen County:	15
Waste Category:	Unspecified aqueous solution
TSD EPA ID:	NVR000037432
TSD County:	99
Disposal Method:	Not reported
Tons:	0.252

Additional Info:

Year:	2007
Shipment Date:	20070110
Creation Date:	8/8/2007 18:30:15
Receipt Date:	20070118
Manifest ID:	000426070JJK
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	NVR000037432

PALL WELL TECHNOLOGY (Continued) **S113037703**

Trans Name:	EV-CON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	135
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.252
Waste Quantity:	60
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2007
Shipment Date:	20070111
Creation Date:	8/9/2007 18:30:13
Receipt Date:	20070123
Manifest ID:	000426098JJK
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.5
Waste Quantity:	1000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	PALL WELL TECHNOLOGY
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2007
Gepaid:	CAL000040113
Contact:	INACTIVE BUSINESS MOVED
Telephone:	--
Mailing Name:	Not reported
Mailing Address:	19433 COLOMBO ST
Gen County:	15
Waste Category:	Other organic solids
TSD EPA ID:	CAD028409019
TSD County:	19
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery

PALL WELL TECHNOLOGY (Continued) **S113037703**

	(H010-H129) Or (H131-H135)
Tons:	0.5
Additional Info:	
Year:	2007
Shipment Date:	20070110
Creation Date:	8/8/2007 18:30:15
Receipt Date:	20070118
Manifest ID:	000426070JJK
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	NVR000037432
Trans Name:	EV-CON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	135
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.252
Waste Quantity:	60
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2007
Shipment Date:	20070111
Creation Date:	8/9/2007 18:30:13
Receipt Date:	20070123
Manifest ID:	000426098JJK
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY & OVERTON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.5
Waste Quantity:	1000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Name:	PALL WELL TECHNOLOGY

PALL WELL TECHNOLOGY (Continued) **S113037703**

Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2006
Gepaid:	CAL000040113
Contact:	INACTIVE BUSINESS MOVED
Telephone:	--
Mailing Name:	Not reported
Mailing Address:	19433 COLOMBO ST
Gen County:	15
Waste Category:	Unspecified aqueous solution
TSD EPA ID:	NVR000037432
TSD County:	99
Disposal Method:	Not reported
Tons:	0.9576

Additional Info:

Year:	2006
Shipment Date:	20061121
Creation Date:	3/30/2007 13:33:18
Receipt Date:	20061129
Manifest ID:	000424581JJK
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	NVR000037432
Trans Name:	EV-CON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	135
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.63
Waste Quantity:	150
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2006
Shipment Date:	20061218
Creation Date:	4/19/2007 18:30:14
Receipt Date:	20061219
Manifest ID:	000424857JJK
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	NVR000037432
Trans Name:	EV-CON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	135

PALL WELL TECHNOLOGY (Continued) **S113037703**

RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.3276
Waste Quantity:	78
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2006
Shipment Date:	20060110
Creation Date:	3/22/2006 18:32:45
Receipt Date:	20060111
Manifest ID:	24809803
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	NONE
TSDF EPA ID:	NVR000037432
Trans Name:	EV-CON
TSDF Alt EPA ID:	NVR000037432
TSDF Alt Name:	Not reported
Waste Code:	135
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.189
Waste Quantity:	45
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2006
Shipment Date:	20060327
Creation Date:	12/21/2006 18:30:30
Receipt Date:	20060328
Manifest ID:	24810187
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY OVERTON INC
TSDF Alt EPA ID:	CAD028409019
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H01
Quantity Tons:	1
Waste Quantity:	2000
Quantity Unit:	P

PALL WELL TECHNOLOGY (Continued) **S113037703**

Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2006
Shipment Date:	20060327
Creation Date:	12/21/2006 18:30:30
Receipt Date:	20060328
Manifest ID:	24810187
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY OVERTON INC
TSDF Alt EPA ID:	CAD028409019
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H01
Quantity Tons:	0.3
Waste Quantity:	600
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Name:	PALL WELL TECHNOLOGY
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2006
Gepaid:	CAL000040113
Contact:	INACTIVE BUSINESS MOVED
Telephone:	--
Mailing Name:	Not reported
Mailing Address:	19433 COLOMBO ST
Gen County:	15
Waste Category:	Unspecified aqueous solution
TSD EPA ID:	NVR000037432
TSD County:	99
Disposal Method:	Recycler
Tons:	0.189

Additional Info:

Year:	2006
Shipment Date:	20061121
Creation Date:	3/30/2007 13:33:18
Receipt Date:	20061129
Manifest ID:	000424581JJK
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361

PALL WELL TECHNOLOGY (Continued) **S113037703**

Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	NVR000037432
Trans Name:	EV-CON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	135
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.63
Waste Quantity:	150
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2006
Shipment Date:	20061218
Creation Date:	4/19/2007 18:30:14
Receipt Date:	20061219
Manifest ID:	000424857JJK
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	NVR000037432
Trans Name:	EV-CON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	135
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.3276
Waste Quantity:	78
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2006
Shipment Date:	20060110
Creation Date:	3/22/2006 18:32:45
Receipt Date:	20060111
Manifest ID:	24809803
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	NONE
TSDF EPA ID:	NVR000037432
Trans Name:	EV-CON

PALL WELL TECHNOLOGY (Continued) **S113037703**

TSDF Alt EPA ID:	NVR000037432
TSDF Alt Name:	Not reported
Waste Code:	135
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.189
Waste Quantity:	45
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2006
Shipment Date:	20060327
Creation Date:	12/21/2006 18:30:30
Receipt Date:	20060328
Manifest ID:	24810187
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY OVERTON INC
TSDF Alt EPA ID:	CAD028409019
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H01
Quantity Tons:	1
Waste Quantity:	2000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2006
Shipment Date:	20060327
Creation Date:	12/21/2006 18:30:30
Receipt Date:	20060328
Manifest ID:	24810187
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY OVERTON INC
TSDF Alt EPA ID:	CAD028409019
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H01

PALL WELL TECHNOLOGY (Continued) **S113037703**

Quantity Tons:	0.3
Waste Quantity:	600
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	PALL WELL TECHNOLOGY
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2006
Gepaid:	CAL000040113
Contact:	INACTIVE BUSINESS MOVED
Telephone:	--
Mailing Name:	Not reported
Mailing Address:	19433 COLOMBO ST
Gen County:	15
Waste Category:	Other organic solids
TSD EPA ID:	CAD028409019
TSD County:	19
Disposal Method:	Transfer Station
Tons:	1.3

Additional Info:

Year:	2006
Shipment Date:	20061121
Creation Date:	3/30/2007 13:33:18
Receipt Date:	20061129
Manifest ID:	000424581JJK
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	NVR000037432
Trans Name:	EV-CON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	135
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.63
Waste Quantity:	150
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2006
Shipment Date:	20061218
Creation Date:	4/19/2007 18:30:14
Receipt Date:	20061219

PALL WELL TECHNOLOGY (Continued) **S113037703**

Manifest ID:	000424857JJK
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	NVR000037432
Trans Name:	EV-CON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	135
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.3276
Waste Quantity:	78
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2006
Shipment Date:	20060110
Creation Date:	3/22/2006 18:32:45
Receipt Date:	20060111
Manifest ID:	24809803
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	NONE
TSDF EPA ID:	NVR000037432
Trans Name:	EV-CON
TSDF Alt EPA ID:	NVR000037432
TSDF Alt Name:	Not reported
Waste Code:	135
RCRA Code:	Not reported
Meth Code:	R01
Quantity Tons:	0.189
Waste Quantity:	45
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2006
Shipment Date:	20060327
Creation Date:	12/21/2006 18:30:30
Receipt Date:	20060328
Manifest ID:	24810187
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported

PALL WELL TECHNOLOGY (Continued) **S113037703**

Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY OVERTON INC
TSDF Alt EPA ID:	CAD028409019
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H01
Quantity Tons:	1
Waste Quantity:	2000
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2006
Shipment Date:	20060327
Creation Date:	12/21/2006 18:30:30
Receipt Date:	20060328
Manifest ID:	24810187
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD028409019
Trans Name:	CROSBY OVERTON INC
TSDF Alt EPA ID:	CAD028409019
TSDF Alt Name:	Not reported
Waste Code:	352
RCRA Code:	Not reported
Meth Code:	H01
Quantity Tons:	0.3
Waste Quantity:	600
Quantity Unit:	P
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Name:	PALL WELL TECHNOLOGY
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	1990
Gepaid:	CAL000040113
Contact:	INACTIVE BUSINESS MOVED
Telephone:	--
Mailing Name:	Not reported
Mailing Address:	19433 COLOMBO ST
Gen County:	15
Waste Category:	Other inorganic solid waste
TSD EPA ID:	CAT000646117

PALL WELL TECHNOLOGY (Continued) **S113037703**

TSD County: 16
Disposal Method: Disposal, Land Fill
Tons: 3.3712

Name: PALL WELL TECHNOLOGY
Address: 19433 COLOMBO ST
Address 2: Not reported
City,State,Zip: BAKERSFIELD, CA 933080000
Year: 2005
Gepaid: CAL000040113
Contact: INACTIVE BUSINESS MOVED
Telephone: --
Mailing Name: Not reported
Mailing Address: 19433 COLOMBO ST
Gen County: 15
Waste Category: Unspecified aqueous solution
TSD EPA ID: NVR000037432
TSD County: 99
Disposal Method: Recycler
Tons: 0.126

Additional Info:
Year: 2005
Shipment Date: 20051020
Creation Date: 5/24/2006 18:31:13
Receipt Date: 20051027
Manifest ID: 24808037
Gen EPA ID: CAL000040113
Trans EPA ID: CAL000253361
Trans Name: ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID: Not reported
Trans 2 Name: NONE
TSDF EPA ID: NVR000037432
Trans Name: EV-CON
TSDF Alt EPA ID: NVR000037432
TSDF Alt Name: Not reported
Waste Code: 135
RCRA Code: Not reported
Meth Code: R01
Quantity Tons: 0.126
Waste Quantity: 30
Quantity Unit: G
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Year: 2005
Shipment Date: 20050714
Creation Date: 9/28/2005 18:34:44
Receipt Date: Not reported
Manifest ID: 24566418
Gen EPA ID: CAL000040113
Trans EPA ID: CAL000253361
Trans Name: ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID: Not reported
Trans 2 Name: NONE

PALL WELL TECHNOLOGY (Continued) **S113037703**

TSDF EPA ID: NVR000037432
Trans Name: EV-CON
TSDF Alt EPA ID: Not reported
TSDF Alt Name: Not reported
Waste Code: 135
RCRA Code: Not reported
Meth Code: Not reported
Quantity Tons: 0.1596
Waste Quantity: 38
Quantity Unit: G
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

Name: PALL WELL TECHNOLOGY
Address: 19433 COLOMBO ST
Address 2: Not reported
City,State,Zip: BAKERSFIELD, CA 933080000
Year: 2005
Gepaid: CAL000040113
Contact: INACTIVE BUSINESS MOVED
Telephone: --
Mailing Name: Not reported
Mailing Address: 19433 COLOMBO ST
Gen County: 15
Waste Category: Unspecified aqueous solution
TSD EPA ID: NVR000037432
TSD County: 99
Disposal Method: Not reported
Tons: 0.1596

Additional Info:
Year: 2005
Shipment Date: 20051020
Creation Date: 5/24/2006 18:31:13
Receipt Date: 20051027
Manifest ID: 24808037
Gen EPA ID: CAL000040113
Trans EPA ID: CAL000253361
Trans Name: ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID: Not reported
Trans 2 Name: NONE
TSDF EPA ID: NVR000037432
Trans Name: EV-CON
TSDF Alt EPA ID: NVR000037432
TSDF Alt Name: Not reported
Waste Code: 135
RCRA Code: Not reported
Meth Code: R01
Quantity Tons: 0.126
Waste Quantity: 30
Quantity Unit: G
Additional Code 1: Not reported
Additional Code 2: Not reported
Additional Code 3: Not reported

PALL WELL TECHNOLOGY (Continued) **S113037703**

Additional Code 4:	Not reported
Additional Code 5:	Not reported
Year:	2005
Shipment Date:	20050714
Creation Date:	9/28/2005 18:34:44
Receipt Date:	Not reported
Manifest ID:	24566418
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	NONE
TSDF EPA ID:	NVR000037432
Trans Name:	EV-CON
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	135
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.1596
Waste Quantity:	38
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported
Name:	PALL WELL TECHNOLOGY
Address:	19433 COLOMBO ST
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2004
Gepaid:	CAL000040113
Contact:	INACTIVE BUSINESS MOVED
Telephone:	--
Mailing Name:	Not reported
Mailing Address:	19433 COLOMBO ST
Gen County:	15
Waste Category:	Unspecified aqueous solution
TSD EPA ID:	NVR000037432
TSD County:	99
Disposal Method:	Not reported
Tons:	0.42

Additional Info:

Year:	2004
Shipment Date:	20040921
Creation Date:	3/16/2007 18:31:12
Receipt Date:	20040922
Manifest ID:	23784850
Gen EPA ID:	CAL000040113
Trans EPA ID:	CAL000253361
Trans Name:	ALL PHASE ENVIRONMENTAL
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported

PALL WELL TECHNOLOGY (Continued) **S113037703**

TSDF EPA ID:	NVR000037432
Trans Name:	EV -CON
TSDF Alt EPA ID:	NVR000037432
TSDF Alt Name:	Not reported
Waste Code:	135
RCRA Code:	EXEM
Meth Code:	Not reported
Quantity Tons:	0.42
Waste Quantity:	100
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Click this hyperlink while viewing on your computer to access additional CA HAZNET: detail in the EDR Site Report.

U128 **UNICHEM, A DIV OF BJ SERVICES CO, U.S.A.** **SSTS** **1005438589**
SE **19433 COLOMBO** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.951 mi.
5022 ft. **Site 15 of 17 in cluster U**

Actual:
470 ft.

Focus Map:
9

SSTS:

Name:	UNICHEM, A DIV OF BJ SERVICES CO, U.S.A.
Address:	19433 COLOMBO
City,State,Zip:	BAKERSFIELD 93308
Report Year:	1999
Registration Number:	068329CA 001

Pre 2016:

Registration Number:	068329CA 001
Name:	UNICHEM, A DIV OF BJ SERVICES CO, U.S.A.
Address:	19433 COLOMBO
Address 2:	Not reported
Country Code:	Not reported
Country:	Not reported
Contact Name:	Not reported
Contact Title:	Not reported
Contact Telephone:	Not reported
Contact Email:	Not reported
Product Name:	ALPHA 580
Product Code:	1
EPA Product Registration Number:	00144800344068329
Product Type:	3
Product Classification:	05
Product Use:	2
Market Type:	1
Product Unit of Measure:	Not reported
Region:	Not reported
Zero Production:	Not reported
RUP:	Not reported

Report Year:	2000

UNICHEM, A DIV OF BJ SERVICES CO, U.S.A. (Continued) **1005438589**

Registration Number: 068329CA 001

Pre 2016:
Registration Number: 068329CA 001
Name: UNICHEM, A DIV OF BJ SERVICES CO, U.S.A.
Address: 19433 COLOMBO
Address 2: Not reported
Country Code: Not reported
Country: Not reported
Contact Name: Not reported
Contact Title: Not reported
Contact Telephone: Not reported
Contact Email: Not reported
Product Name: ALPHA 580
Product Code: 1
EPA Product Registration Number: 00144800344
Product Type: 3
Product Classification: 05
Product Use: 2
Market Type: 1
Product Unit of Measure: Not reported
Region: Not reported
Zero Production: Not reported
RUP: Not reported

Report Year: 2005
Registration Number: 068329CA001

Pre 2016:
Registration Number: 068329CA001
Name: UNICHEM, A DIV OF BJ SERVICES CO, U.S.A.
Address: 19433 COLOMBO
Address 2: Not reported
Country Code: Not reported
Country: Not reported
Contact Name: Not reported
Contact Title: Not reported
Contact Telephone: Not reported
Contact Email: Not reported
Product Name: ALPHA 120 (SUPP -68329)
Product Code: 0
EPA Product Registration Number: 01032400070
Product Type: 2
Product Classification: 05
Product Use: 2
Market Type: 1
Product Unit of Measure: Not reported
Region: Not reported
Zero Production: Not reported
RUP: Not reported

Registration Number: 068329CA001
Name: UNICHEM, A DIV OF BJ SERVICES CO, U.S.A.
Address: 19433 COLOMBO
Address 2: Not reported
Country Code: Not reported
Country: Not reported

UNICHEM, A DIV OF BJ SERVICES CO, U.S.A. (Continued) **1005438589**

Contact Name:	Not reported
Contact Title:	Not reported
Contact Telephone:	Not reported
Contact Email:	Not reported
Product Name:	ALPHA 125 (RTU MICROBIOCIDE) (SUPP -68329)
Product Code:	0
EPA Product Registration Number:	00046400688
Product Type:	3
Product Classification:	05
Product Use:	2
Market Type:	1
Product Unit of Measure:	Not reported
Region:	Not reported
Zero Production:	Not reported
RUP:	Not reported

Registration Number:	068329CA001
Name:	UNICHEM, A DIV OF BJ SERVICES CO, U.S.A.
Address:	19433 COLOMBO
Address 2:	Not reported
Country Code:	Not reported
Country:	Not reported
Contact Name:	Not reported
Contact Title:	Not reported
Contact Telephone:	Not reported
Contact Email:	Not reported
Product Name:	ALPHA 580 (SUPP -68329)
Product Code:	0
EPA Product Registration Number:	00144800198
Product Type:	3
Product Classification:	05
Product Use:	2
Market Type:	1
Product Unit of Measure:	Not reported
Region:	Not reported
Zero Production:	Not reported
RUP:	Not reported

Report Year:	2002
Registration Number:	068329CA001

Pre 2016:

Registration Number:	068329CA001
Name:	UNICHEM, A DIV OF BJ SERVICES CO, U.S.A.
Address:	19433 COLOMBO
Address 2:	Not reported
Country Code:	Not reported
Country:	Not reported
Contact Name:	Not reported
Contact Title:	Not reported
Contact Telephone:	Not reported
Contact Email:	Not reported
Product Name:	ALPHA 580 (SUPP -68329)
Product Code:	1
EPA Product Registration Number:	00144800034
Product Type:	3
Product Classification:	05

UNICHEM, A DIV OF BJ SERVICES CO, U.S.A. (Continued) **1005438589**

Product Use: 2
Market Type: 1
Product Unit of Measure: Not reported
Region: 09
Zero Production: Not reported
RUP: Not reported

Report Year: 2006
Registration Number: 068329-CA-001

Pre 2016:
Registration Number: 068329-CA-001
Name: UNICHEM, A DIV OF BJ SERVICES CO, U.S.A.
Address: 19433 COLOMBO
Address 2: Not reported
Country Code: Not reported
Country: Not reported
Contact Name: Not reported
Contact Title: Not reported
Contact Telephone: Not reported
Contact Email: Not reported
Product Name: ALPHA 120 (SUPP -68329)
Product Code: Not reported
EPA Product Registration Number: 010324-00070
Product Type: END-USE BLEND, FORMULATION, CONCENTRATE
Product Classification: ALGICIDE
Product Use: ALL OTHER PRODUCTS
Market Type: MARKETED IN UNITED STATES
Product Unit of Measure: Not reported
Region: Not reported
Zero Production: Not reported
RUP: Not reported

Registration Number: 068329-CA-001
Name: UNICHEM, A DIV OF BJ SERVICES CO, U.S.A.
Address: 19433 COLOMBO
Address 2: Not reported
Country Code: Not reported
Country: Not reported
Contact Name: Not reported
Contact Title: Not reported
Contact Telephone: Not reported
Contact Email: Not reported
Product Name: ALPHA 125 (RTU MICROBIOCIDE) (SUPP -68329)
Product Code: Not reported
EPA Product Registration Number: 000464-00688
Product Type: REPACKAGED OR RELABELED
Product Classification: ALGICIDE
Product Use: ALL OTHER PRODUCTS
Market Type: MARKETED IN UNITED STATES
Product Unit of Measure: Not reported
Region: Not reported
Zero Production: Not reported
RUP: Not reported

Registration Number: 068329-CA-001
Name: UNICHEM, A DIV OF BJ SERVICES CO, U.S.A.

UNICHEM, A DIV OF BJ SERVICES CO, U.S.A. (Continued) **1005438589**

Address:	19433 COLOMBO
Address 2:	Not reported
Country Code:	Not reported
Country:	Not reported
Contact Name:	Not reported
Contact Title:	Not reported
Contact Telephone:	Not reported
Contact Email:	Not reported
Product Name:	ALPHA 150 (SUPP -68329)
Product Code:	Not reported
EPA Product Registration Number:	000464-00694
Product Type:	REPACKAGED OR RELABELED
Product Classification:	ALGICIDE
Product Use:	ALL OTHER PRODUCTS
Market Type:	MARKETED IN UNITED STATES
Product Unit of Measure:	Not reported
Region:	Not reported
Zero Production:	Not reported
RUP:	Not reported

Report Year:	2003
Registration Number:	068329CA001

Pre 2016:

Registration Number:	068329CA001
Name:	UNICHEM, A DIV OF BJ SERVICES CO, U.S.A.
Address:	19433 COLOMBO
Address 2:	Not reported
Country Code:	Not reported
Country:	Not reported
Contact Name:	Not reported
Contact Title:	Not reported
Contact Telephone:	Not reported
Contact Email:	Not reported
Product Name:	ALPHA 125 (RTU MICROBIOCIDE) (SUPP -68329)
Product Code:	1
EPA Product Registration Number:	00046400688
Product Type:	3
Product Classification:	05
Product Use:	2
Market Type:	1
Product Unit of Measure:	Not reported
Region:	09
Zero Production:	Not reported
RUP:	Not reported

Registration Number:	068329CA001
Name:	UNICHEM, A DIV OF BJ SERVICES CO, U.S.A.
Address:	19433 COLOMBO
Address 2:	Not reported
Country Code:	Not reported
Country:	Not reported
Contact Name:	Not reported
Contact Title:	Not reported
Contact Telephone:	Not reported
Contact Email:	Not reported
Product Name:	ALPHA 150 (MICROBIOCIDE) (SUPPLE -68329)

UNICHEM, A DIV OF BJ SERVICES CO, U.S.A. (Continued) **1005438589**

Product Code:	1
EPA Product Registration Number:	00046400694
Product Type:	3
Product Classification:	05
Product Use:	2
Market Type:	1
Product Unit of Measure:	Not reported
Region:	09
Zero Production:	Not reported
RUP:	Not reported
Registration Number:	068329CA001
Name:	UNICHEM, A DIV OF BJ SERVICES CO, U.S.A.
Address:	19433 COLOMBO
Address 2:	Not reported
Country Code:	Not reported
Country:	Not reported
Contact Name:	Not reported
Contact Title:	Not reported
Contact Telephone:	Not reported
Contact Email:	Not reported
Product Name:	ALPHA 580 (SUPP -68329) (MICROBIOCIDE)
Product Code:	1
EPA Product Registration Number:	00144800034
Product Type:	3
Product Classification:	05
Product Use:	2
Market Type:	1
Product Unit of Measure:	Not reported
Region:	09
Zero Production:	Not reported
RUP:	Not reported
Report Year:	Not reported
Registration Number:	068329CA 001
Report Year:	2004
Registration Number:	068329CA001

Pre 2016:

Registration Number:	068329CA001
Name:	UNICHEM, A DIV OF BJ SERVICES CO, U.S.A.
Address:	19433 COLOMBO
Address 2:	Not reported
Country Code:	Not reported
Country:	Not reported
Contact Name:	Not reported
Contact Title:	Not reported
Contact Telephone:	Not reported
Contact Email:	Not reported
Product Name:	ALPHA 125 (RTU MICROBIOCIDE) (SUPP -68329)
Product Code:	0
EPA Product Registration Number:	100046400688
Product Type:	3
Product Classification:	05
Product Use:	2
Market Type:	2

UNICHEM, A DIV OF BJ SERVICES CO, U.S.A. (Continued) **1005438589**

Product Unit of Measure: Not reported
Region: Not reported
Zero Production: Not reported
RUP: Not reported

Registration Number: 068329CA001
Name: UNICHEM, A DIV OF BJ SERVICES CO, U.S.A.
Address: 19433 COLOMBO
Address 2: Not reported
Country Code: Not reported
Country: Not reported
Contact Name: Not reported
Contact Title: Not reported
Contact Telephone: Not reported
Contact Email: Not reported
Product Name: ALPHA 580 (SUPP -68329) (MICROBIOCIDE)
Product Code: 0
EPA Product Registration Number: 100144800034
Product Type: 3
Product Classification: 05
Product Use: 2
Market Type: 1
Product Unit of Measure: Not reported
Region: Not reported
Zero Production: Not reported
RUP: Not reported

Report Year: 2001
Registration Number: 068329CA001

Pre 2016:
Registration Number: 068329CA001
Name: UNICHEM, A DIV OF BJ SERVICES CO, U.S.A.
Address: 19433 COLOMBO
Address 2: Not reported
Country Code: Not reported
Country: Not reported
Contact Name: Not reported
Contact Title: Not reported
Contact Telephone: Not reported
Contact Email: Not reported
Product Name: ALPHA 125
Product Code: 1
EPA Product Registration Number: 01035200014
Product Type: 3
Product Classification: 09
Product Use: 2
Market Type: 1
Product Unit of Measure: Not reported
Region: 09
Zero Production: Not reported
RUP: Not reported

Registration Number: 068329CA001
Name: UNICHEM, A DIV OF BJ SERVICES CO, U.S.A.
Address: 19433 COLOMBO
Address 2: Not reported

UNICHEM, A DIV OF BJ SERVICES CO, U.S.A. (Continued) **1005438589**

Country Code:	Not reported
Country:	Not reported
Contact Name:	Not reported
Contact Title:	Not reported
Contact Telephone:	Not reported
Contact Email:	Not reported
Product Name:	ALPHA 580 (SUPP -68329)
Product Code:	1
EPA Product Registration Number:	00144800034
Product Type:	3
Product Classification:	05
Product Use:	2
Market Type:	1
Product Unit of Measure:	Not reported
Region:	09
Zero Production:	Not reported
RUP:	Not reported

U129 **B J CHEMICAL SERVICES** **AST** **S102822750**
SE **19433 COLOMBO** **N/A**
1/2-1 **BAKERSFIELD, CA**
0.951 mi.
5022 ft. **Site 16 of 17 in cluster U**

Actual:
470 ft.

Focus Map:
9

AST:

Name:	B J CHEMICAL SERVICES
Address:	19433 COLOMBO
City/Zip:	BAKERSFIELD,
Certified Unified Program Agencies:	Kern
Owner:	B J CHEMICAL SERVICES
Total Gallons:	28,845
CERSID:	Not reported
Facility ID:	Not reported
Business Name:	Not reported
Phone:	Not reported
Fax:	Not reported
Mailing Address:	Not reported
Mailing Address City:	Not reported
Mailing Address State:	Not reported
Mailing Address Zip Code:	Not reported
Operator Name:	Not reported
Operator Phone:	Not reported
Owner Phone:	Not reported
Owner Mail Address:	Not reported
Owner State:	Not reported
Owner Zip Code:	Not reported
Owner Country:	Not reported
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	Not reported

U130
SE
1/2-1
0.969 mi.
5114 ft.

19433 COLUMBO STREET
BAKERSFIELD, CA 88240

Site 17 of 17 in cluster U

CHMIRS **S105663058**
N/A

Actual:
471 ft.

Focus Map:
9

CHMIRS:

Name:	Not reported
Address:	19433 COLUMBO STREET
City,State,Zip:	BAKERSFIELD, CA 88240
OES Incident Number:	9-0597
OES notification:	02/08/1999
OES Date:	Not reported
OES Time:	Not reported
Date Completed:	**Not reported**
Property Use:	Not reported
Agency Id Number:	Not reported
Agency Incident Number:	Not reported
Time Notified:	Not reported
Time Completed:	Not reported
Surrounding Area:	Not reported
Estimated Temperature:	Not reported
Property Management:	Not reported
More Than Two Substances Involved?:	Not reported
Resp Agncy Personel # Of Decontaminated:	Not reported
Responding Agency Personel # Of Injuries:	Not reported
Responding Agency Personel # Of Fatalities:	Not reported
Others Number Of Decontaminated:	Not reported
Others Number Of Injuries:	Not reported
Others Number Of Fatalities:	Not reported
Vehicle Make/year:	Not reported
Vehicle License Number:	Not reported
Vehicle State:	Not reported
Vehicle Id Number:	Not reported
CA DOT PUC/ICC Number:	Not reported
Company Name:	Not reported
Reporting Officer Name/ID:	Not reported
Report Date:	Not reported
Facility Telephone:	Not reported
Waterway Involved:	Yes
Waterway:	storm drain
Spill Site:	Not reported
Cleanup By:	Responsible Party
Containment:	Not reported
What Happened:	Not reported
Type:	Not reported
Measure:	Not reported
Other:	Not reported
Date/Time:	Not reported
Year:	1999
Agency:	Unichem
Incident Date:	2/8/199912:00:00 AM
Admin Agency:	Bakersfield Fire Department
Amount:	Not reported
Contained:	Yes
Site Type:	Oil Field
E Date:	Not reported
Substance:	Techni-Clean 485W
Gallons:	165

(Continued) **S105663058**

Unknown:	0
Substance #2:	Not reported
Substance #3:	Not reported
Evacuations:	0
Number of Injuries:	0
Number of Fatalities:	0
#1 Pipeline:	Not reported
#2 Pipeline:	Not reported
#3 Pipeline:	Not reported
#1 Vessel >= 300 Tons:	Not reported
#2 Vessel >= 300 Tons:	Not reported
#3 Vessel >= 300 Tons:	Not reported
Evacs:	Not reported
Injuries:	Not reported
Fatals:	Not reported
Comments:	Not reported
Description:	Techni-Clean 485W is a flammable liquid, a blend of surfactant and inaromatic solvent. Release occurred when three 55 gallon steel drums ruptured, pressured up due to weather and blew. Most in containment but some went off the property, possibly twwo gallons went into storm drain, along curb to a storm drain 1/4 mile away. Unknown where drain leads to. Absorbant has been placed around storm drain.

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131 North 1/2-1 0.970 mi. 5121 ft.

BAKERSFIELD VORTEC EHF
MINTER FIELD
BAKERSFIELD, CA 93308

N/A,
At Minter Field, more than 1 mile distant

LUST
HIST CORTESE
CERS

S103479985
N/A

Actual: 546 ft.

Focus Map: 3

LUST REG 5:

Name:	BAKERSFIELD VORTEC EHF
Address:	MINTER FIELD
City:	BAKERSFIELD
Region:	5
Status:	Case Closed
Case Number:	5T15000362
Case Type:	Soil only
Substance:	UNLEAD GASOLINE
Staff Initials:	JDW
Lead Agency:	Local
Program:	LUST
MTBE Code:	N/A

HIST CORTESE:

edr_fname:	BAKERSFIELD VORTEC EHF
edr_fadd1:	MINTER FIELD
City,State,Zip:	BAKERSFIELD, CA 93308
Region:	CORTESE
Facility County Code:	15
Reg By:	LTNKA
Reg Id:	5T15000362

CERS:

Name:	BAKERSFIELD VORTEC EHF

BAKERSFIELD VORTEC EHF (Continued) **S103479985**

Address: MINTER FIELD
City,State,Zip: BAKERSFIELD, CA 93308
Site ID: 246263
CERS ID: T0602900355
CERS Description: Leaking Underground Storage Tank Cleanup Site

Affiliation:
Affiliation Type Desc: Local Agency Caseworker
Entity Name: X - KERN'S PILOT PROGRAM - KERN COUNTY
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: R5 UNKNOWN
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Regional Board Caseworker
Entity Name: JOHN WHITING - CENTRAL VALLEY RWQCB (REGION 5F)
Entity Title: Not reported
Affiliation Address: 1685 E STREET
Affiliation City: FRESNO
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

R132 **NKWSD FIELD OFFICE** **HIST UST** **U001584685**
SE **13000 GOLDEN STATE HIGHWAY** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.976 mi.
5151 ft. **Site 3 of 5 in cluster R**

6/01/1988 SWRCS UST tank listing,
actually located at Cluster K, Map 1

Actual:
458 ft.

Focus Map:
9

HIST UST:
Name: NKWSD FIELD OFFICE
Address: 13000 GOLDEN STATE HIGHWAY
City,State,Zip: BAKERSFIELD, CA 93308
File Number: 00024E01
URL: http://geotracker.waterboards.ca.gov/ustpdfs/pdf/00024E01.pdf
Region: STATE
Facility ID: 00000021752
Facility Type: Other
Other Type: IRRIGATION DISTRICT
Contact Name: H.E. STEINMETZ
Telephone: 8053933361
Owner Name: NORTH KERN WATER STORAGE DISTR
Owner Address: 13000 GOLDEN STATE HIGHWAY
Owner City,St,Zip: BAKERSFIELD, CA 93308
Total Tanks: 0003

Tank Num: 001
Container Num: 1
Year Installed: 1979
Tank Capacity: 00006000
Tank Used for: PRODUCT
Type of Fuel: UNLEADED
Container Construction Thickness: Not reported

NKWSD FIELD OFFICE (Continued) **U001584685**

Leak Detection: None

Tank Num: 002
Container Num: 2
Year Installed: 1980
Tank Capacity: 00006000
Tank Used for: PRODUCT
Type of Fuel: UNLEADED
Container Construction Thickness: Not reported
Leak Detection: None

Tank Num: 003
Container Num: 3
Year Installed: 1982
Tank Capacity: 00005000
Tank Used for: WASTE
Type of Fuel: Not reported
Container Construction Thickness: Not reported
Leak Detection: Visual

Click here for Geo Tracker PDF:

R133 **1X STEIN, HARRY** **HAZNET** **S123732907**
SE **13000 GOLDEN STATE HIGHWAY** **N/A**
1/2-1 **BAKERSFIELD, CA 93309**
0.976 mi.
5151 ft. **Site 4 of 5 in cluster R**

Actual: **458 ft.**

Focus Map: 9

HAZNET:
Name: 1X STEIN, HARRY
Address: 13000 GOLDEN STATE HIGHWAY
Address 2: Not reported
City,State,Zip: BAKERSFIELD, CA 933090000
Year: 1990
Gepaid: CAC000547936
Contact: RICHARD WARNER / CONTRACTOR
Telephone: 2097346381
Mailing Name: Not reported
Mailing Address: RT 1 BOX 487
Gen County: 15
Waste Category: Unspecified oil-containing waste
TSD EPA ID: CAD980883177
TSD County: 15
Disposal Method: Recycler
Tons: 1.251

R134 **N. KERN WATER STORAGE DIST.** **UST** **U004112081**
SE **13000 GOLDEN STATE HWY** **N/A**
1/2-1 **BAKERSFIELD, CA**
0.976 mi.
5151 ft. **Site 5 of 5 in cluster R** @ Cluster K, Map 1

Actual: **458 ft.**

Focus Map: 9

KERN CO. UST:
Name: N. KERN WATER STORAGE DIST.
Address: 13000 GOLDEN STATE HWY
City: BAKERSFIELD

N. KERN WATER STORAGE DIST. (Continued) **U004112081**

Region:	Kern
Facility ID:	Not reported
CERSID:	Not reported
Owner Id:	390005
Owner Name:	N. KERN WATER STORAGE DIST
Tank Num:	1
Tank Capacity:	0
Common Name:	Not reported
Description:	Not reported
Number of Compartments:	Not reported
Install Date:	Not reported
Date of Closure:	Not reported
Billing Status:	Not reported
Mailing Address:	Not reported
Mailing Address (care of):	Not reported
Mailing City/State/Zip:	Not reported

V135 **SWAIM AND SONS** **CERS HAZ WASTE** **S121747907**
SE **34758 LENCIONI AVE** **CERS TANKS** **N/A**
1/2-1 **BAKERSFIELD, CA 93308** **CERS**
0.989 mi.
5221 ft. **Site 1 of 8 in cluster V**

Actual:
480 ft.

Focus Map:
9

CERS HAZ WASTE:

Name:	SWAIM AND SONS
Address:	34758 LENCIONI AVE
City,State,Zip:	BAKERSFIELD, CA 93308
Site ID:	158625
CERS ID:	10233007
CERS Description:	Hazardous Waste Generator

CERS TANKS:

Name:	SWAIM AND SONS
Address:	34758 LENCIONI AVE
City,State,Zip:	BAKERSFIELD, CA 93308
Site ID:	158625
CERS ID:	10233007
CERS Description:	Aboveground Petroleum Storage

CERS:

Name:	SWAIM AND SONS
Address:	34758 LENCIONI AVE
City,State,Zip:	BAKERSFIELD, CA 93308
Site ID:	158625
CERS ID:	10233007
CERS Description:	Chemical Storage Facilities

Violations:

Site ID:	158625
Site Name:	SWAIM AND SONS
Violation Date:	11-26-2018
Citation:	HSC 6.67 25270.4.5(a) - California Health and Safety Code, Chapter 6.67, Section(s) 25270.4.5(a)
Violation Description:	Failure to maintain a complete copy of the SPCC Plan at the facility if the facility is normally attended at least four hours per day, or at the nearest field office if the facility is not so attended.

SWAIM AND SONS (Continued) **S121747907**

Violation Notes:	Observation: Spill Prevention Control and Counter-measure (SPCC) plan was not available for review at the time of inspection. Corrective Action: Provide Tier I Qualified Facility SPCC plan for review. Email or fax the SPCC plan to Kern County Environmental Health Division. Attn: Christian Iwuchukwu (Email: iwuchukwuc@kerncounty.com; Fax: 661-862-8701).
Violation Division:	Kern County Env Health Services Department
Violation Program:	APSA
Violation Source:	CERS
Site ID:	158625
Site Name:	SWAIM AND SONS
Violation Date:	11-26-2018
Citation:	22 CCR 12 66262.40(a) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.40(a)
Violation Description:	Failure to keep a copy of each properly signed manifest for at least three years from the date the waste was accepted by the initial transporter. The manifest signed at the time the waste was accepted for transport shall be kept until receiving a signed copy from the designated facility which received the waste.
Violation Notes:	Returned to compliance on 12/17/2018. Observation: Hazardous Waste manifests/bill of ladings were not available for review at the time of inspection. Corrective Action: Provide 3 years of Hazardous Waste manifests/bill of ladings (2016 to 2018) for review. Email or fax 2016 -2018 bill of ladings or manifest for hazardous waste disposal to Kern County Environmental Health Division. Attn: Christian Iwuchukwu (Email: iwuchukwuc@kerncounty.com; Fax: 661-862-8701).
Violation Division:	Kern County Env Health Services Department
Violation Program:	HW
Violation Source:	CERS
Site ID:	158625
Site Name:	SWAIM AND SONS
Violation Date:	11-26-2018
Citation:	40 CFR 1 262.34(d)(5)(iii) - U.S. Code of Federal Regulations, Title 40, Chapter 1, Section(s) 262.34(d)(5)(iii)
Violation Description:	Failure to ensure that all employees are thoroughly familiar with proper waste handling and emergency procedures, relevant to their responsibilities during normal facility operations and emergencies.
Violation Notes:	Returned to compliance on 12/15/2018. Observation: Uncovered absorbent soaked with oil/water; incorrect or incomplete labeling of hazardous waste containers; unavailability of employee training logs and certification; and unavailability of hazardous waste manifests/bills of lading. Corrective Action: Employee training is required on proper hazardous materials/waste management and handling procedures. Provide hazardous materials/waste handling procedures and management training to all employees, and send signed training log which indicates topic of training received to Kern County Environmental Health Division. Attn: Christian Iwuchukwu (Email: iwuchukwuc@kerncounty.com; fax: 661-862-8701).
Violation Division:	Kern County Env Health Services Department
Violation Program:	HW
Violation Source:	CERS
Site ID:	158625
Site Name:	SWAIM AND SONS
Violation Date:	11-26-2018

SWAIM AND SONS (Continued) **S121747907**

Citation:	22 CCR 12 66262.34(f) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.34(f)
Violation Description:	Failure to properly label hazardous waste accumulation containers and portable tanks with the following requirements: "Hazardous Waste", name and address of the generator, physical and chemical characteristics of the Hazardous Waste, and starting accumulation date.
Violation Notes:	Returned to compliance on 12/17/2018. Observation: Hazardous waste containers observed at the time of inspection were not properly labeled and marked accumulation start dates. Corrective Action: Properly label and mark hazardous waste containers with accumulation start dates. Manage the containers according to hazardous waste regulation. Send photos of properly labeled and marked hazardous waste containers to Kern County Environmental Health Division. Attn: Christian Iwuchukwu (Email: iwuchukwuc@kerncounty.com; fax: 661-862-8701).
Violation Division:	Kern County Env Health Services Department
Violation Program:	HW
Violation Source:	CERS
Site ID:	158625
Site Name:	SWAIM AND SONS
Violation Date:	11-26-2018
Citation:	HSC 6.95 25508.2 - California Health and Safety Code, Chapter 6.95, Section(s) 25508.2
Violation Description:	Failure to annually review and electronically certify that the business plan is complete and accurate on or before the annual due date.
Violation Notes:	Returned to compliance on 12/17/2018. Observation: Review of California Environmental Reporting System (CERS) indicates that the last submittal of the Hazardous Materials Inventory was done on July 07, 2016. The facility failed to annually review and electronically certify that the Hazardous Materials Business Plan (HMBP) was complete and accurate on or before July 06, 2017. Corrective Action: Immediately review the CERS and electronically certify that the Hazardous Materials Business Plan (HMBP) is complete and accurate.
Violation Division:	Kern County Env Health Services Department
Violation Program:	HMRRP
Violation Source:	CERS

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	11-16-2015
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Kern County Env Health Services Department
Eval Program:	APSA
Eval Source:	CERS
Eval General Type:	Compliance Evaluation Inspection
Eval Date:	11-16-2015
Violations Found:	No
Eval Type:	Routine done by local agency
Eval Notes:	Not reported
Eval Division:	Kern County Env Health Services Department
Eval Program:	HMRRP

SWAIM AND SONS (Continued) **S121747907**

Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 11-16-2015
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 11-26-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 11-26-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Recommendation: All inventory items will need to be updated by unchecking all Obsolete Federal Hazard Categories and checking the appropriate new Federal Hazard Categories. Information is in Section 2 of the updated Safety Data Sheets (SDS). Resubmit with all other elements once all corrections have been made within 30 days.
Eval Division: Kern County Env Health Services Department
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 11-26-2018
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Kern County Env Health Services Department
Eval Program: APSA
Eval Source: CERS

Coordinates:
Site ID: 158625
Facility Name: SWAIM AND SONS
Env Int Type Code: HWG
Program ID: 10233007
Coord Name: Not reported
Ref Point Type Desc: Center of a facility or station.
Latitude: 35.447980
Longitude: -119.086480

Affiliation:
Affiliation Type Desc: Document Preparer
Entity Name: mike aguirre
Entity Title: Not reported

SWAIM AND SONS (Continued) **S121747907**

Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	CUPA District
Entity Name:	Kern County Environmental Health Services Departme
Entity Title:	Not reported
Affiliation Address:	2700 M Street, Suite 300
Affiliation City:	Bakersfield
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93301-2370
Affiliation Phone:	(661) 862-8740
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	34758 lencioni ave
Affiliation City:	bakersfield
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93308
Affiliation Phone:	Not reported
Affiliation Type Desc:	Environmental Contact
Entity Name:	BILL SWAIM
Entity Title:	Not reported
Affiliation Address:	34758 LENCIONI AVE
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93308
Affiliation Phone:	Not reported
Affiliation Type Desc:	Property Owner
Entity Name:	Bill Swaim
Entity Title:	Not reported
Affiliation Address:	34758 LENCIONI AVE
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93308
Affiliation Phone:	(661) 201-8313
Affiliation Type Desc:	Identification Signer
Entity Name:	Mike Aguirre
Entity Title:	QC Manager
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

SWAIM AND SONS (Continued) **S121747907**

Affiliation Type Desc:	Legal Owner
Entity Name:	BILL SWAIM
Entity Title:	Not reported
Affiliation Address:	34758 LENCIONI AVE
Affiliation City:	BAKERSFIELD
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	93308
Affiliation Phone:	(661) 201-8313

Affiliation Type Desc:	Operator
Entity Name:	BILL SWAIM
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(661) 872-2098

Affiliation Type Desc:	Parent Corporation
Entity Name:	SWAIM AND SONS
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

V136 **SWAIM AND SONS** **AST** **A100425052**
SE **34758 LENCIONI AVE** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.989 mi.
5221 ft. **Site 2 of 8 in cluster V**

Actual:
480 ft.

Focus Map:
9

AST:

Name:	SWAIM AND SONS
Address:	34758 LENCIONI AVE
City/Zip:	BAKERSFIELD,93308
Certified Unified Program Agencies:	Not reported
Owner:	SWAIM AND SONS
Total Gallons:	Not reported
CERSID:	10233007
Facility ID:	Not reported
Business Name:	SWAIM AND SONS
Phone:	(661) 392-4151
Fax:	Not reported
Mailing Address:	34758 LENCIONI AVE
Mailing Address City:	BAKERSFIELD
Mailing Address State:	CA
Mailing Address Zip Code:	93308
Operator Name:	BILL SWAIM
Operator Phone:	661-872-2098
Owner Phone:	(661) 392-4151
Owner Mail Address:	34758 LENCIONI AVE
Owner State:	CA

SWAIM AND SONS (Continued) **A100425052**

Owner Zip Code:	93308
Owner Country:	United States
Property Owner Name:	Not reported
Property Owner Phone:	Not reported
Property Owner Mailing Address:	Not reported
Property Owner City:	Not reported
Property Owner Stat :	Not reported
Property Owner Zip Code:	Not reported
Property Owner Country:	Not reported
EPAID:	CAL000326790 Cal ID only

V137 **SWAIMS MACHINE SHOP INC DBA SWAIM AND SONS INC** **FINDS** **1024683323**
SE **34758 LENCIONI AVE** **ECHO** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.989 mi.
5221 ft. **Site 3 of 8 in cluster V**

Actual:
480 ft.

Focus Map:
9

FINDS:

Registry ID: 110070471717

Environmental Interest/Information System
RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

ECHO:

Envid:	1024683323
Registry ID:	110070471717
DFR URL:	http://echo.epa.gov/detailed-facility-report?fid=110070471717

V138 **SWAIMS MACHINE SHOP INC DBA SWAIM AND SONS INC** **HAZNET** **S118231624**
SE **34758 LENCIONI AVE** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.989 mi.
5221 ft. **Site 4 of 8 in cluster V**

Actual:
480 ft.

Focus Map:
9

HAZNET:

Name:	SWAIMS MACHINE SHOP INC DBA SWAIM AND SONS INC
Address:	34758 LENCIONI AVE
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933089768
Year:	2014
Gepaid:	CAL000326790
Contact:	BILL SWAIM
Telephone:	6613924151
Mailing Name:	Not reported
Mailing Address:	34758 LENCIONI AVENUE
Gen County:	15
Waste Category:	Waste oil and mixed oil

SWAIMS MACHINE SHOP INC DBA SWAIM AND SONS INC (Continued) **S118231624**

TSD EPA ID:	CAL000282598
TSD County:	15
Disposal Method:	Storage, Bulking, And/Or Transfer Off Site--No Treatment/Reovery (H010-H129) Or (H131-H135)
Tons:	1.9

Additional Info:

Year:	2014
Shipment Date:	20140521
Creation Date:	8/8/2014 22:14:58
Receipt Date:	20140603
Manifest ID:	012866677JJK
Gen EPA ID:	CAL000326790
Trans EPA ID:	CAL000268462
Trans Name:	CSI (COLES SERVICES INC-DBA: COLES ENVIRONMENTAL)
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	0.817
Waste Quantity:	215
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

Year:	2014
Shipment Date:	20140521
Creation Date:	7/12/2014 22:15:07
Receipt Date:	20140522
Manifest ID:	012866680JJK
Gen EPA ID:	CAL000326790
Trans EPA ID:	CAL000268462
Trans Name:	CSI (COLES SERVICES INC-DBA: COLES ENVIRONMENTAL)
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAL000282598
Trans Name:	BTI (BAKERSFIELD TRANSFER INC)
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	H141
Quantity Tons:	1.083
Waste Quantity:	285
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

V139 **SWAIMS MACHINE SHOP INC DBA SWAIM AND SONS INC** **RCRA NonGen / NLR** **1024818735**
SE **34758 LENCIONI AVE** **CAL000326790**
1/2-1 **BAKERSFIELD, CA 93308**
0.989 mi.
5221 ft. **Site 5 of 8 in cluster V**

Actual:
480 ft.

Focus Map:
9

RCRA NonGen / NLR:

Date form received by agency:	2007-11-16 00:00:00.0
Facility name:	SWAIMS MACHINE SHOP INC DBA SWAIM AND SONS INC
Facility address:	34758 LENCIONI AVE BAKERSFIELD, CA 93308-9768
EPA ID:	CAL000326790
Mailing address:	34758 LENCIONI AVENUE BAKERSFIELD, CA 93308-9768
Contact:	BILL SWAIM
Contact address:	34758 LENCIONI AVE BAKERSFIELD, CA 93308
Contact country:	Not reported
Contact telephone:	661-392-4151
Contact email:	ACCOUNTING@SAS-MFG.COM
EPA Region:	09
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	SWAIMS MACHINE SHOP INC
Owner/operator address:	34758 LENCIONI AVE BAKERSFIELD, CA 93308
Owner/operator country:	Not reported
Owner/operator telephone:	661-392-4151
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Owner/operator name:	BILL SWAIM
Owner/operator address:	34758 LENCIONI AVE BAKERSFIELD, CA 93308
Owner/operator country:	Not reported
Owner/operator telephone:	661-392-4151
Owner/operator email:	Not reported
Owner/operator fax:	Not reported
Owner/operator extension:	Not reported
Legal status:	Other
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	Yes
Treater, storer or disposer of HW:	No
Underground injection activity:	No

SWAIMS MACHINE SHOP INC DBA SWAIM AND SONS INC (Continued) **1024818735**

On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No

Violation Status: No violations found

V140 **SWAIM & SONS** **HAZNET** **S112893307**
SE **34758 LENCIONI AVE** **N/A**
1/2-1 **BAKERSFIELD, CA 93308**
0.989 mi.
5221 ft. **Site 6 of 8 in cluster V**

Actual:
480 ft.

Focus Map:
9

HAZNET:

Name:	SWAIM & SONS
Address:	34758 LENCIONI AVE
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 933080000
Year:	2007
Gepaid:	CAC001467152
Contact:	BILL SWAIM
Telephone:	8053924151
Mailing Name:	Not reported
Mailing Address:	34758 LENCIONI AVE
Gen County:	15
Waste Category:	Aqueous solution with total organic residues less than 10 percent
TSD EPA ID:	CAD099452708
TSD County:	19
Disposal Method:	Other Recovery Of Reclamation For Reuse Including Acid Regeneration, Organics Recovery Ect
Tons:	7.014

Additional Info:

Year:	2007
Shipment Date:	20071120
Creation Date:	2/4/2008 18:30:26
Receipt Date:	20071127
Manifest ID:	002803047JJK
Gen EPA ID:	CAC001467152
Trans EPA ID:	CAD980813950
Trans Name:	CRANES WASTE OIL INC
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported
TSDF EPA ID:	CAD099452708
Trans Name:	INDUSTRIAL OIL
TSDF Alt EPA ID:	Not reported
TSDF Alt Name:	Not reported
Waste Code:	134
RCRA Code:	Not reported
Meth Code:	H039
Quantity Tons:	7.014
Waste Quantity:	1670
Quantity Unit:	G
Additional Code 1:	Not reported

SWAIM & SONS (Continued) **S112893307**

Additional Code 2: Not reported
Additional Code 3: Not reported
Additional Code 4: Not reported
Additional Code 5: Not reported

V141
SE
1/2-1
0.989 mi.
5221 ft.

SWAIM AND SONS
34758 LENCIONI AVE
BAKERSFIELD, CA 93308

Site 7 of 8 in cluster V

FINDS **1023305166**
N/A

Actual:
480 ft.

Focus Map:
9

FINDS:

Registry ID: 110065975840

Environmental Interest/Information System
STATE MASTER

Click this hyperlink while viewing on your computer to access additional FINDS: detail in the EDR Site Report.

V142
SE
1/2-1
0.991 mi.
5230 ft.

MODY PUMPS INC
34750 LENCIONI AVE
BAKERSFIELD, CA 93308

Current Location
2166 Zeus Ct, Bkfd, 93308
GEPAID: CAL000295312

Site 8 of 8 in cluster V

HAZNET **S113122995**
N/A

Actual:
479 ft.

Focus Map:
9

HAZNET:

Name:	MODY PUMPS INC
Address:	34750 LENCIONI AVE
Address 2:	Not reported
City,State,Zip:	BAKERSFIELD, CA 93308
Year:	2004
Gepaid:	CAL000261549 Now CAL000295312
Contact:	SURAJ MODY
Telephone:	6613927600
Mailing Name:	Not reported
Mailing Address:	2166 ZEUS COURT
Gen County:	15
Waste Category:	Waste oil and mixed oil
TSD EPA ID:	CAT080013352
TSD County:	19
Disposal Method:	Not reported
Tons:	0.19

Additional Info:

Year:	2004
Shipment Date:	20040316
Creation Date:	10/1/2004 18:31:09
Receipt Date:	20040317
Manifest ID:	22393111 Too old for DTSC site data
Gen EPA ID:	CAL000261549
Trans EPA ID:	CAL000268462
Trans Name:	COLE'S SERVICES
Trans 2 EPA ID:	Not reported
Trans 2 Name:	Not reported

MODY PUMPS INC (Continued) **S113122995**

TSDF EPA ID:	CAT080013352
Trans Name:	DEMENNO KERDOON
TSDF Alt EPA ID:	CAT080013352
TSDF Alt Name:	Not reported
Waste Code:	221
RCRA Code:	Not reported
Meth Code:	Not reported
Quantity Tons:	0.19
Waste Quantity:	50
Quantity Unit:	G
Additional Code 1:	Not reported
Additional Code 2:	Not reported
Additional Code 3:	Not reported
Additional Code 4:	Not reported
Additional Code 5:	Not reported

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143 **GOSSAMER GROVE TRACT 7315** **NPDES S119085305**
SW **SEC OF GOSSAMER GROVE BLVD AND COBBLE CREEK DRIVE** **CIWQS N/A**
1/2-1 **SHAFTER, CA 93263** **CERS**
0.991 mi.
5231 ft.

Actual:
394 ft.

Focus Map:
8

NPDES:

Name:	GOSSAMER GROVE TRACT 7315
Address:	SEC OF GOSSAMER GROVE BLVD AND COBBLE CREEK DRIVE
City,State,Zip:	SHAFTER, CA 93263
Facility Status:	Active
NPDES Number:	CAS000002
Region:	5F
Agency Number:	0
Regulatory Measure ID:	480949
Place ID:	Not reported
Order Number:	2009-0009-DWQ
WDID:	5F15C378438
Regulatory Measure Type:	Enrollee
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	12/16/2016
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	8080 N Palm Ave Ste 110
Discharge Name:	Lennar Fresno Inc
Discharge City:	Fresno
Discharge State:	California
Discharge Zip:	93711
Status:	Not reported
Status Date:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported

GOSSAMER GROVE TRACT 7315 (Continued) **S119085305**

Region:	5F
Regulatory Measure ID:	480949
Order Number:	Not reported
Regulatory Measure Type:	Construction
Place ID:	Not reported
WDID:	5F15C378438
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	12/06/2016
Processed Date:	12/16/2016
Status:	Active
Status Date:	12/16/2016
Place Size:	18.37
Place Size Unit:	Acres
Contact:	Cheyenne Plotner
Contact Title:	Division Environmental Manager
Contact Phone:	661-362-4092
Contact Phone Ext:	Not reported
Contact Email:	cheyenne.plotner@lennar.com
Operator Name:	Lennar Fresno Inc
Operator Address:	8080 N Palm Ave Ste 110
Operator City:	Fresno
Operator State:	California
Operator Zip:	93711
Operator Contact:	Mike Miller
Operator Contact Title:	Not reported
Operator Contact Phone:	559-447-3400
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	mike.miller@lennar.com
Operator Type:	Private Business
Developer:	Lennar Fresno Inc
Developer Address:	8080 N Palm Ave Ste 110
Developer City:	Fresno
Developer State:	California
Developer Zip:	93711
Developer Contact:	James Sandrini
Developer Contact Title:	Director of Construction
Constype Linear Utility Ind:	N
Emergency Phone:	661-447-5593
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	N
Constype Below Ground Ind:	N
Constype Cable Line Ind:	N
Constype Comm Line Ind:	N
Constype Commertial Ind:	N
Constype Electrical Line Ind:	N
Constype Gas Line Ind:	N
Constype Industrial Ind:	N
Constype Other Description:	Not reported

GOSSAMER GROVE TRACT 7315 (Continued) **S119085305**

Constype Other Ind:	N
Constype Recons Ind:	N
Constype Residential Ind:	N
Constype Transport Ind:	N
Constype Utility Description:	Not reported
Constype Utility Ind:	N
Constype Water Sewer Ind:	N
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Not reported
Certifier:	Mike Miller
Certifier Title:	Division President
Certification Date:	06-DEC-16
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	CAS000002
Status:	Active
Agency Number:	0
Region:	5F
Regulatory Measure ID:	480949
Order Number:	2009-0009-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	5F15C378438
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	12/16/2016
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Lennar Fresno Inc
Discharge Address:	8080 N Palm Ave Ste 110
Discharge City:	Fresno
Discharge State:	California
Discharge Zip:	93711
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported
Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported

GOSSAMER GROVE TRACT 7315 (Continued) **S119085305**

Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

Name:	GOSSAMER GROVE TRACT 7315
Address:	SEC OF GOSSAMER GROVE BLVD AND COBBLE CREEK DRIVE
City,State,Zip:	SHAFTER, CA 93263
Facility Status:	Not reported
NPDES Number:	Not reported
Region:	Not reported
Agency Number:	Not reported
Regulatory Measure ID:	Not reported
Place ID:	Not reported
Order Number:	Not reported
WDID:	5F15C378438
Regulatory Measure Type:	Construction
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Discharge Address:	Not reported
Discharge Name:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported

GOSSAMER GROVE TRACT 7315 (Continued) **S119085305**

Discharge Zip:	Not reported
Status:	Active
Status Date:	12/16/2016
Operator Name:	Lennar Fresno Inc
Operator Address:	8080 N Palm Ave Ste 110
Operator City:	Fresno
Operator State:	California
Operator Zip:	93711

NPDES as of 03/2018:

NPDES Number:	Not reported
Status:	Not reported
Agency Number:	Not reported
Region:	5F
Regulatory Measure ID:	480949
Order Number:	Not reported
Regulatory Measure Type:	Construction
Place ID:	Not reported
WDID:	5F15C378438
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
Received Date:	12/06/2016
Processed Date:	12/16/2016
Status:	Active
Status Date:	12/16/2016
Place Size:	18.37
Place Size Unit:	Acres
Contact:	Cheyenne Plotner
Contact Title:	Division Environmental Manager
Contact Phone:	661-362-4092
Contact Phone Ext:	Not reported
Contact Email:	cheyenne.plotner@lennar.com
Operator Name:	Lennar Fresno Inc
Operator Address:	8080 N Palm Ave Ste 110
Operator City:	Fresno
Operator State:	California
Operator Zip:	93711
Operator Contact:	Mike Miller
Operator Contact Title:	Not reported
Operator Contact Phone:	559-447-3400
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	mike.miller@lennar.com
Operator Type:	Private Business
Developer:	Lennar Fresno Inc
Developer Address:	8080 N Palm Ave Ste 110
Developer City:	Fresno
Developer State:	California
Developer Zip:	93711
Developer Contact:	James Sandrini
Developer Contact Title:	Director of Construction

GOSSAMER GROVE TRACT 7315 (Continued) **S119085305**

Constype Linear Utility Ind:	N
Emergency Phone:	661-447-5593
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	N
Constype Below Ground Ind:	N
Constype Cable Line Ind:	N
Constype Comm Line Ind:	N
Constype Commertial Ind:	N
Constype Electrical Line Ind:	N
Constype Gas Line Ind:	N
Constype Industrial Ind:	N
Constype Other Description:	Not reported
Constype Other Ind:	N
Constype Recons Ind:	N
Constype Residential Ind:	N
Constype Transport Ind:	N
Constype Utility Description:	Not reported
Constype Utility Ind:	N
Constype Water Sewer Ind:	N
Dir Discharge Uswater Ind:	N
Receiving Water Name:	Not reported
Certifier:	Mike Miller
Certifier Title:	Division President
Certification Date:	06-DEC-16
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported
NPDES Number:	CAS000002
Status:	Active
Agency Number:	0
Region:	5F
Regulatory Measure ID:	480949
Order Number:	2009-0009-DWQ
Regulatory Measure Type:	Enrollee
Place ID:	Not reported
WDID:	5F15C378438
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	12/16/2016
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Lennar Fresno Inc
Discharge Address:	8080 N Palm Ave Ste 110
Discharge City:	Fresno
Discharge State:	California
Discharge Zip:	93711
Received Date:	Not reported
Processed Date:	Not reported
Status:	Not reported
Status Date:	Not reported
Place Size:	Not reported
Place Size Unit:	Not reported
Contact:	Not reported
Contact Title:	Not reported
Contact Phone:	Not reported
Contact Phone Ext:	Not reported

GOSSAMER GROVE TRACT 7315 (Continued) **S119085305**

Contact Email:	Not reported
Operator Name:	Not reported
Operator Address:	Not reported
Operator City:	Not reported
Operator State:	Not reported
Operator Zip:	Not reported
Operator Contact:	Not reported
Operator Contact Title:	Not reported
Operator Contact Phone:	Not reported
Operator Contact Phone Ext:	Not reported
Operator Contact Email:	Not reported
Operator Type:	Not reported
Developer:	Not reported
Developer Address:	Not reported
Developer City:	Not reported
Developer State:	Not reported
Developer Zip:	Not reported
Developer Contact:	Not reported
Developer Contact Title:	Not reported
Constype Linear Utility Ind:	Not reported
Emergency Phone:	Not reported
Emergency Phone Ext:	Not reported
Constype Above Ground Ind:	Not reported
Constype Below Ground Ind:	Not reported
Constype Cable Line Ind:	Not reported
Constype Comm Line Ind:	Not reported
Constype Commertial Ind:	Not reported
Constype Electrical Line Ind:	Not reported
Constype Gas Line Ind:	Not reported
Constype Industrial Ind:	Not reported
Constype Other Description:	Not reported
Constype Other Ind:	Not reported
Constype Recons Ind:	Not reported
Constype Residential Ind:	Not reported
Constype Transport Ind:	Not reported
Constype Utility Description:	Not reported
Constype Utility Ind:	Not reported
Constype Water Sewer Ind:	Not reported
Dir Discharge Uswater Ind:	Not reported
Receiving Water Name:	Not reported
Certifier:	Not reported
Certifier Title:	Not reported
Certification Date:	Not reported
Primary Sic:	Not reported
Secondary Sic:	Not reported
Tertiary Sic:	Not reported

CIWQS:

Name:	GOSSAMER GROVE TRACT 7315
Address:	SEC OF GOSSAMER GROVE BLVD AND COBBLE CREEK DRIVE
City,State,Zip:	SHAFTER, CA 93263
Agency:	Lennar Fresno Inc
Agency Address:	8080 N Palm Ave Ste 110, Fresno, CA 93711
Place/Project Type:	Construction
SIC/NAICS:	Not reported
Region:	5F

GOSSAMER GROVE TRACT 7315 (Continued) **S119085305**

Program:	CONSTW
Regulatory Measure Status:	Active
Regulatory Measure Type:	Storm water construction
Order Number:	2009-0009-DWQ
WDID:	5F15C378438
NPDES Number:	CAS000002
Adoption Date:	Not reported
Effective Date:	12/16/2016
Termination Date:	Not reported
Expiration/Review Date:	Not reported
Design Flow:	Not reported
Major/Minor:	Not reported
Complexity:	Not reported
TTWQ:	Not reported
Enforcement Actions within 5 years:	0
Violations within 5 years:	0
Latitude:	35.446297
Longitude:	-119.119037

CERS:

Name:	GOSSAMER GROVE TRACT 7315
Address:	SEC OF GOSSAMER GROVE BLVD AND COBBLE CREEK DRIVE
City,State,Zip:	SHAFTER, CA 93263
Site ID:	533018
CERS ID:	851459
CERS Description:	Construction Storm Water

Affiliation:

Affiliation Type Desc:	Owner/Operator
Entity Name:	Lennar Fresno Inc
Entity Title:	Operator
Affiliation Address:	8080 N Palm Ave Ste 110
Affiliation City:	Fresno
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	93711
Affiliation Phone:	Not reported

Count: 7 records

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
BAKERSFIELD	S106389414		THREE POWER POLES (1)SHAFTER NEAR BAKERSFIELD (2) BURBANK ST (3) PALM ST		CHMIRS
BAKERSFIELD	1023698018	SCHLUMBERGER TECHNOLOGY CORP COIL TUBING SERVICES	34967 IMPERIAL AVENUE	93308	FINDS, ECHO
BAKERSFIELD	1023225018	MALIBU VINEYARDS	IMPERIAL & SACO RD	93308	FINDS
BAKERSFIELD	S121659335	NORTH MEADOWS INDUSTRAIL PARK	SWC OF SR65 & IMPERIAL AVE		CIWQS
KERN COUNTY	S107526542		0.1 MILE E OF ZERKER RD/1 MI S SAMOSO..		CDL
KERN COUNTY	S107539143		KYTE RD, 1 MI S OF POND ROAD		CDL
KERN COUNTY	S106390111		ANZA & IMPERIAL TANK FARM S-4 T-28 R-27 = PORTERVILLE HIWAY		CHMIRS

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/20/2019
Number of Days to Update: 13

Source: EPA
Telephone: N/A
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 5
Telephone 312-886-6686

EPA Region 10
Telephone 206-553-8665

EPA Region 6
Telephone: 214-655-6659

EPA Region 7
Telephone: 913-551-7247

EPA Region 8
Telephone: 303-312-6774

EPA Region 9
Telephone: 415-947-4246

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/20/2019
Number of Days to Update: 13

Source: EPA
Telephone: N/A
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/20/2019
Number of Days to Update: 13

Source: EPA
Telephone: N/A
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 04/03/2019
Date Data Arrived at EDR: 04/05/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/21/2019
Number of Days to Update: 14

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Quarterly

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/21/2019
Number of Days to Update: 14

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Quarterly

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 11/04/2019
Date Data Arrived at EDR: 11/13/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 76

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 02/10/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 11/22/2019
Date Data Arrived at EDR: 11/22/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/22/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 11/22/2019
Date Data Arrived at EDR: 11/22/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 67

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/22/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 14

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

STANDARD ENVIRONMENTAL RECORDS

State- and tribal - equivalent NPL

CA RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 10/28/2019
Date Data Arrived at EDR: 10/29/2019
Date Made Active in Reports: 01/07/2020
Number of Days to Update: 70

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/28/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

CA ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 10/28/2019
Date Data Arrived at EDR: 10/29/2019
Date Made Active in Reports: 01/07/2020
Number of Days to Update: 70

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/28/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

CA SWF/LF (SWIS): Solid Waste Information System
Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 11/11/2019
Date Data Arrived at EDR: 11/12/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 57

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 02/11/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

CA LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

CA LUST REG 1: Active Toxic Site Investigation
Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

CA LUST REG 2: Fuel Leak List
Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

CA LUST REG 3: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

CA LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)

Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

CA LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

CA LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

CA LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

CA LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

CA LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

CA LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/10/2019
Date Data Arrived at EDR: 12/05/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 67

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/10/2019
Date Data Arrived at EDR: 12/05/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 67

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/10/2019
Date Data Arrived at EDR: 12/05/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 67

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/10/2019
Date Data Arrived at EDR: 12/05/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 67

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/10/2019
Date Data Arrived at EDR: 12/05/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 67

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/10/2019
Date Data Arrived at EDR: 12/05/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 67

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/10/2019
Date Data Arrived at EDR: 12/05/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 67

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/10/2019
Date Data Arrived at EDR: 12/05/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 67

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

CA CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 58

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

CA SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

CA SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

CA SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

CA SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

CA SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

CA SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

CA SLIC REG 6L: SLIC Sites

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

CA SLIC REG 7: SLIC List

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

CA SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

CA SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: No Update Planned

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 08/27/2019
Date Data Arrived at EDR: 08/28/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 75

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 01/21/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Varies

State and tribal registered storage tank lists

CA MILITARY UST SITES: Military UST Sites (GEOTRACKER)
Military ust sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

CA UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Semi-Annually

CA UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases
UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 09/06/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

CA AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 12/11/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 05/02/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 20

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 05/02/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 20

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 05/02/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 20

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 05/02/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 20

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 05/02/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 20

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 05/02/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 20

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 05/02/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 20

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 05/02/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 20

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

CA VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 10/28/2019
Date Data Arrived at EDR: 10/29/2019
Date Made Active in Reports: 01/07/2020
Number of Days to Update: 70

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/28/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Quarterly

State and tribal Brownfields sites

CA BROWNFIELDS: Considered Brownfieds Sites Listing

A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 09/23/2019
Date Data Arrived at EDR: 09/24/2019
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 43

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/03/2019
Date Data Arrived at EDR: 06/04/2019
Date Made Active in Reports: 08/26/2019
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: Semi-Annually

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Landfill / Solid Waste Disposal Sites

CA WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: No Update Planned

CA SWRCY: Recycler Database

A listing of recycling facilities in California.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/07/2019
Number of Days to Update: 59

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

CA HAULERS: Registered Waste Tire Haulers Listing

A listing of registered waste tire haulers.

Date of Government Version: 11/15/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/23/2020
Number of Days to Update: 69

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 02/07/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 01/27/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Varies

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39
Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137
Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176
Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Varies

US HIST CDL: National Clandestine Laboratory Register
A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 06/11/2019
Date Data Arrived at EDR: 06/13/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 82
Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: No Update Planned

Local Lists of Hazardous waste / Contaminated Sites

CA HIST CAL-SITES: Calsites Database
The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21
Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

CA SCH: School Property Evaluation Program
This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 10/28/2019
Date Data Arrived at EDR: 10/29/2019
Date Made Active in Reports: 01/07/2020
Number of Days to Update: 70
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/28/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Quarterly

CA CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/16/2019
Date Made Active in Reports: 09/24/2019
Number of Days to Update: 70

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Varies

CA CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 10/21/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/02/2020
Number of Days to Update: 72

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 01/22/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Quarterly

CA TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 06/11/2019
Date Data Arrived at EDR: 06/13/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Quarterly

CA PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 57

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

CA SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 08/20/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Annually

CA HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA SAN FRANCISCO AST: Aboveground Storage Tank Site Listing
Aboveground storage tank sites

Date of Government Version: 08/01/2019
Date Data Arrived at EDR: 08/02/2019
Date Made Active in Reports: 10/11/2019
Number of Days to Update: 70

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Varies

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 10/21/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/03/2020
Number of Days to Update: 73

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 01/22/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Quarterly

Local Land Records

CA LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 12/02/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 62

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/20/2019
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Semi-Annually

CA DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 12/03/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 62

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Semi-Annually

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 06/24/2019
Date Data Arrived at EDR: 06/26/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 89

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 12/06/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

Records of Emergency Release Reports

CA CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 05/15/2019
Date Data Arrived at EDR: 06/24/2019
Date Made Active in Reports: 08/21/2019
Number of Days to Update: 58

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 01/22/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Semi-Annually

CA LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 57

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

CA MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 57

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

CA SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/16/2019
Date Data Arrived at EDR: 12/16/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 4

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 11/12/2019
Date Data Arrived at EDR: 11/19/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 70

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 11/19/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 01/10/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 01/09/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 02/24/2020
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 09/23/2019
Date Data Arrived at EDR: 09/24/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 87

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 02/03/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 02/07/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 11/16/2018
Date Made Active in Reports: 11/21/2019
Number of Days to Update: 370

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 10/23/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 84

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/20/2019
Number of Days to Update: 13

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 04/25/2019
Date Data Arrived at EDR: 05/02/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 01/21/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties

A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/21/2019
Number of Days to Update: 14

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 02/06/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 10/09/2019
Date Data Arrived at EDR: 10/11/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 70

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 01/10/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 10/25/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 82
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 01/21/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 42
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 11/25/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 02/07/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Varies

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 10/29/2019
Date Made Active in Reports: 01/15/2020
Number of Days to Update: 78

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 01/28/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/30/2019
Date Data Arrived at EDR: 10/09/2019
Date Made Active in Reports: 12/20/2019
Number of Days to Update: 72

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 12/16/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 01/07/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 11/15/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/20/2019
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 10/25/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 11/20/2019
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 02/05/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Varies

US AIRS (AFS): Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

MINES VIOLATIONS: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/22/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

US MINES: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/22/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

US MINES 2: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/22/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/22/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/10/2019
Date Data Arrived at EDR: 09/10/2019
Date Made Active in Reports: 10/17/2019
Number of Days to Update: 37

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 08/12/2019
Date Data Arrived at EDR: 09/04/2019
Date Made Active in Reports: 12/03/2019
Number of Days to Update: 90

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 01/17/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 74

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 01/13/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 10/06/2019
Date Data Arrived at EDR: 10/08/2019
Date Made Active in Reports: 01/02/2020
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 01/07/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Quarterly

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 11/18/2019
Date Data Arrived at EDR: 11/19/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 70

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 11/19/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Quarterly

Other Ascertainable Records

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 09/23/2019
Date Data Arrived at EDR: 09/24/2019
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 43

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

CA CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing

list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 07/17/2019
Number of Days to Update: 64

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 02/24/2020
Data Release Frequency: Varies

CA CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 10/31/2019
Date Data Arrived at EDR: 11/01/2019
Date Made Active in Reports: 12/11/2019
Number of Days to Update: 40

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Varies

CA DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 09/06/2019
Date Data Arrived at EDR: 10/11/2019
Date Made Active in Reports: 12/12/2019
Number of Days to Update: 62

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Annually

CA DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 12/02/2019
Date Data Arrived at EDR: 12/03/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 63

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

CA DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 09/27/2019
Date Data Arrived at EDR: 10/01/2019
Date Made Active in Reports: 11/07/2019
Number of Days to Update: 37
Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

CA EMI: Emissions Inventory Data
Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/24/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 59
Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 03/29/2020
Data Release Frequency: Varies

CA ENF: Enforcement Action Listing
A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 07/19/2019
Date Data Arrived at EDR: 07/22/2019
Date Made Active in Reports: 09/26/2019
Number of Days to Update: 66
Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 01/22/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

CA Financial Assurance 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 10/17/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/02/2020
Number of Days to Update: 72
Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

CA Financial Assurance 2: Financial Assurance Information Listing
A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 11/08/2019
Date Data Arrived at EDR: 11/12/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 57
Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 02/07/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: Varies

CA HAZNET: Facility and Manifest Data
Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 05/29/2019
Date Made Active in Reports: 07/22/2019
Number of Days to Update: 54
Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Annually

CA ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 11/18/2019
Date Data Arrived at EDR: 11/19/2019
Date Made Active in Reports: 01/23/2020
Number of Days to Update: 65

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 11/19/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Quarterly

CA HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 11/18/2019
Date Data Arrived at EDR: 11/19/2019
Date Made Active in Reports: 01/23/2020
Number of Days to Update: 65

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/19/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Quarterly

CA HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 10/07/2019
Date Data Arrived at EDR: 10/08/2019
Date Made Active in Reports: 11/07/2019
Number of Days to Update: 30

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 01/07/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Quarterly

CA MINES: Mines Site Location Listing

A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 57

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

CA MWMP: Medical Waste Management Program Listing

The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 11/22/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 62

Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

CA NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 11/11/2019
Date Data Arrived at EDR: 11/12/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 57
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 02/11/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: Quarterly

CA PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 12/03/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 62
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

CA PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 57
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

CA NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 09/16/2019
Date Data Arrived at EDR: 09/18/2019
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 49
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 12/11/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: No Update Planned

CA UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 08/20/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 11/18/2019
Number of Days to Update: 90
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

CA UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53
Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

CA WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 07/11/2018
Date Made Active in Reports: 09/13/2018
Number of Days to Update: 64

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 01/07/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Varies

CA WDS: Waste Discharge System

Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: No Update Planned

CA WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 12/17/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: No Update Planned

CA MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)

Military privatized sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

CA PROJECT: Project Sites (GEOTRACKER)

Projects sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

CA WDR: Waste Discharge Requirements Listing

In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 58

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

CA CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 12/03/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 62
Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

CA CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 10/21/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/03/2020
Number of Days to Update: 73
Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 01/22/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

CA NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

CA OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

CA PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)

Produced water ponds sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

CA SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)

Sampling point - public sites

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

CA WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)

Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 09/09/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/01/2019
Number of Days to Update: 53

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Varies

CA HWTS: Hazardous Waste Tracking System
-> Description here.

Date of Government Version: 10/15/2019
Date Data Arrived at EDR: 11/14/2019
Date Made Active in Reports: 02/07/2020
Number of Days to Update: 85

Source: -> Agency name here.
Telephone: -> Phone here.
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 11/22/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners
EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

CA RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

CA RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 10/02/2019
Date Data Arrived at EDR: 10/03/2019
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 34

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA Facility List
Cupa Facility List

Date of Government Version: 09/06/2019
Date Data Arrived at EDR: 09/10/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 51

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 12/02/2019
Date Data Arrived at EDR: 12/03/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 63

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 12/03/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 08/14/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 10/18/2019
Number of Days to Update: 59

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 12/02/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 62

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 01/27/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA Facility List
Cupa Facility list

Date of Government Version: 10/11/2019
Date Data Arrived at EDR: 10/29/2019
Date Made Active in Reports: 12/11/2019
Number of Days to Update: 43

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 09/06/2019
Date Data Arrived at EDR: 09/12/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 49

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 01/03/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 10/08/2019
Date Data Arrived at EDR: 10/10/2019
Date Made Active in Reports: 12/11/2019
Number of Days to Update: 62

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 01/03/2020
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 11/13/2019
Date Data Arrived at EDR: 11/14/2019
Date Made Active in Reports: 01/23/2020
Number of Days to Update: 70

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 10/30/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 10/17/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/02/2020
Number of Days to Update: 72

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 10/28/2019
Date Data Arrived at EDR: 11/05/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 64

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 11/25/2019
Date Data Arrived at EDR: 12/05/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 61

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 11/25/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

LAKE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 08/16/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 10/18/2019
Number of Days to Update: 59

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 01/08/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Varies

LASSEN COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA Facility List
Cupa facility list

Date of Government Version: 07/22/2019
Date Data Arrived at EDR: 07/23/2019
Date Made Active in Reports: 09/26/2019
Number of Days to Update: 65

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

LOS ANGELES COUNTY:

Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 12/11/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 01/15/2020
Date Data Arrived at EDR: 01/16/2020
Date Made Active in Reports: 02/07/2020
Number of Days to Update: 22

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 01/06/2020
Next Scheduled EDR Contact: 04/20/2020
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 10/15/2019
Date Data Arrived at EDR: 10/16/2019
Date Made Active in Reports: 12/12/2019
Number of Days to Update: 57

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 01/14/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 01/15/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 51

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 01/13/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Varies

Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Varies

Methane Producing Landfills

This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 04/30/2012
Date Data Arrived at EDR: 04/17/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 42

Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: No Update Planned

Active & Inactive Hazardous Materials Inventory

A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Varies

Active & Inactive UST Inventory

A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/20/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Varies

Site Mitigation List

Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 10/29/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 71

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 01/14/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank

Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 01/13/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: No Update Planned

City of Long Beach Underground Storage Tank

Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 06/27/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 10/02/2019
Number of Days to Update: 64

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 11/18/2019
Date Data Arrived at EDR: 11/20/2019
Date Made Active in Reports: 01/27/2020
Number of Days to Update: 68

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 11/18/2019
Date Data Arrived at EDR: 11/20/2019
Date Made Active in Reports: 01/03/2020
Number of Days to Update: 44

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

MONO COUNTY:

CUPA Facility List
CUPA Facility List

Date of Government Version: 11/20/2019
Date Data Arrived at EDR: 12/02/2019
Date Made Active in Reports: 02/07/2020
Number of Days to Update: 67

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: Varies

MONTEREY COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 11/06/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 62

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 10/30/2019
Date Data Arrived at EDR: 10/30/2019
Date Made Active in Reports: 12/11/2019
Number of Days to Update: 42

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 01/24/2020
Next Scheduled EDR Contact: 05/11/2020
Data Release Frequency: Varies

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 10/04/2019
Date Data Arrived at EDR: 12/02/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 64

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/03/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 10/04/2019
Date Data Arrived at EDR: 12/02/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 64

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/03/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 10/04/2019
Date Data Arrived at EDR: 11/05/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 64

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/04/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 12/02/2019
Date Data Arrived at EDR: 12/03/2019
Date Made Active in Reports: 02/07/2020
Number of Days to Update: 66

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 10/17/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 12/13/2019
Number of Days to Update: 52

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 02/10/2020
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 10/17/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/03/2020
Number of Days to Update: 73

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 02/10/2020
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 08/06/2019
Date Data Arrived at EDR: 10/01/2019
Date Made Active in Reports: 11/07/2019
Number of Days to Update: 37

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 12/23/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 08/07/2019
Date Data Arrived at EDR: 10/01/2019
Date Made Active in Reports: 11/08/2019
Number of Days to Update: 38

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 12/23/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 11/14/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/23/2020
Number of Days to Update: 69

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 11/26/2019
Date Data Arrived at EDR: 11/27/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 69

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 02/03/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 12/03/2019
Date Data Arrived at EDR: 12/04/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 62

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 12/04/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 56
Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

Local Oversight Program Listing
A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 10/16/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 12/13/2019
Number of Days to Update: 52
Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24
Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 11/25/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10
Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: No Update Planned

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 08/01/2019
Date Data Arrived at EDR: 08/02/2019
Date Made Active in Reports: 10/08/2019
Number of Days to Update: 67
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 01/07/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 12/11/2019
Next Scheduled EDR Contact: 03/30/2020
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 08/14/2019
Date Data Arrived at EDR: 08/20/2019
Date Made Active in Reports: 10/18/2019
Number of Days to Update: 59

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 12/11/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 09/03/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 11/05/2019
Number of Days to Update: 57

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 12/05/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

Cupa Facility List
Cupa facility list

Date of Government Version: 11/18/2019
Date Data Arrived at EDR: 11/19/2019
Date Made Active in Reports: 01/23/2020
Number of Days to Update: 65

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13
Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 11/20/2019
Next Scheduled EDR Contact: 03/09/2020
Data Release Frequency: No Update Planned

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 10/30/2019
Date Data Arrived at EDR: 11/01/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 68
Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 01/31/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90
Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51
Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 03/02/2020
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 11/25/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 08/28/2019
Date Data Arrived at EDR: 08/30/2019
Date Made Active in Reports: 10/29/2019
Number of Days to Update: 60
Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Quarterly

SONOMA COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Cupa Facility List
Cupa Facility list

Date of Government Version: 06/18/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 07/24/2019
Number of Days to Update: 29

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 11/14/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Varies

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 10/01/2019
Date Data Arrived at EDR: 10/02/2019
Date Made Active in Reports: 11/07/2019
Number of Days to Update: 36

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 12/17/2019
Next Scheduled EDR Contact: 04/06/2020
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 11/04/2019
Date Data Arrived at EDR: 11/07/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 62

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 01/13/2020
Next Scheduled EDR Contact: 04/27/2020
Data Release Frequency: Varies

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 12/02/2019
Date Data Arrived at EDR: 12/03/2019
Date Made Active in Reports: 02/07/2020
Number of Days to Update: 66

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 12/02/2019
Next Scheduled EDR Contact: 03/16/2020
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA Facility List
Cupa facilities

Date of Government Version: 05/20/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 07/18/2019
Number of Days to Update: 58

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 01/23/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 10/17/2019
Date Data Arrived at EDR: 10/22/2019
Date Made Active in Reports: 01/02/2020
Number of Days to Update: 72

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

TULARE COUNTY:

CUPA Facility List
Cupa program facilities

Date of Government Version: 11/25/2019
Date Data Arrived at EDR: 11/27/2019
Date Made Active in Reports: 02/04/2020
Number of Days to Update: 69

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 02/03/2020
Next Scheduled EDR Contact: 05/18/2020
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 01/17/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Varies

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 05/29/2019
Date Data Arrived at EDR: 07/29/2019
Date Made Active in Reports: 09/30/2019
Number of Days to Update: 63

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 01/21/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: No Update Planned

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 02/07/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: No Update Planned

Medical Waste Program List

To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 09/26/2019
Date Data Arrived at EDR: 10/23/2019
Date Made Active in Reports: 12/13/2019
Number of Days to Update: 51

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 01/21/2020
Next Scheduled EDR Contact: 05/04/2020
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 07/26/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/10/2019
Next Scheduled EDR Contact: 03/23/2020
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 09/25/2019
Date Data Arrived at EDR: 10/01/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 30

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 12/19/2019
Next Scheduled EDR Contact: 04/13/2020
Data Release Frequency: Annually

YUBA COUNTY:

CUPA Facility List

CUPA facility listing for Yuba County.

Date of Government Version: 11/04/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 01/08/2020
Number of Days to Update: 63

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 02/07/2020
Next Scheduled EDR Contact: 05/25/2020
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

Oil/Gas Pipelines

Source: PennWell Corporation

Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data

Source: PennWell Corporation

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GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

STREET AND ADDRESS INFORMATION

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EDR DataMap® Well Search

Malibu Vineyards

- Listed Water Wells
- Oil & Gas Wells
- Study Boundary
- Roads
- Major Roads
- Waterways
- Railroads
- Contour Lines
- Fault Lines
- Water
- Superfund Sites
- Wetlands



Bakersfield, CA

0 1/4 1/2

Scale in Miles

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5967931.2w - 12 Feb 20

Malibu Vineyards
Bakersfield, CA 93308

Inquiry Number: 5967931.2w
February 12, 2020

EDR DataMap™ Well Search Report

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Shelton, CT 06484
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GEOCHECK VERSION 2.1
SUMMARY

FEDERAL DATABASE WELL INFORMATION

MAP ID	WELL ID
1	USGS40000164268
2	USGS40000164258
3	USGS40000164252
4	USGS40000164228
5	USGS40000164227
7	USGS40000164206
8	USGS40000164204
9	USGS40000164203
10	USGS40000164202
11	USGS40000164201
12	USGS40000164182
13	USGS40000164181
14	USGS40000164179
16	USGS40000164164
17	USGS40000164158
18	USGS40000164157
19	USGS40000164155
21	USGS40000164148
22	USGS40000164143
22	USGS40000164142
23	USGS40000164141
25	USGS40000164129
26	USGS40000164118
26	USGS40000164114
27	USGS40000164110
28	USGS40000164091
29	USGS40000164088
30	USGS40000164102
31	USGS40000164083
32	USGS40000164082
33	USGS40000164078
34	USGS40000164077
35	USGS40000164075
37	USGS40000164044
38	USGS40000164043
39	USGS40000164039
42	USGS40000164018
43	USGS40000164017
44	USGS40000164013
45	USGS40000164012
46	USGS40000163994
47	USGS40000163990
49	USGS40000163981
49	USGS40000163980
50	USGS40000163967

GEOCHECK VERSION 2.1
SUMMARY

FEDERAL DATABASE WELL INFORMATION

MAP ID	WELL ID
53	USGS40000163964
54	USGS40000163962
55	USGS40000163952

STATE WATER WELL INFORMATION

MAP ID	WELL ID
6	CADWR8000018527
15	CADWR8000018511
20	CADWR8000018496
24	CADWR8000018490
36	CADWR8000018451
40	CADWR8000018441
41	CADWR8000018432
48	CADWR8000018414
47	CADWR8000018413
51	16956
52	12320

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID
1	CAOG13000002065
2	CAOG13000002055
3	CAOG13000001941
4	CAOG13000002071
5	CAOG13000197708
6	CAOG13000197706
7	CAOG13000197258
8	CAOG13000002057
9	CAOG13000197774
10	CAOG13000197775
11	CAOG13000197445
12	CAOG13000197709
13	CAOG13000197713
14	CAOG13000197444
15	CAOG13000196900
16	CAOG13000197196
17	CAOG13000197446
18	CAOG13000197719
19	CAOG13000197710
20	CAOG13000197714
21	CAOG13000197776
22	CAOG13000197420
23	CAOG13000198418
24	CAOG13000197240
25	CAOG13000197720
26	CAOG13000197703
27	CAOG13000197702
28	CAOG13000197730
29	CAOG13000197227

GEOCHECK VERSION 2.1
SUMMARY

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID
30	CAOG13000197731
31	CAOG13000002049
32	CAOG13000197721
33	CAOG13000197704
34	CAOG13000001942
35	CAOG13000198374
36	CAOG13000197701
37	CAOG13000197283
38	CAOG13000197705
39	CAOG13000197228
40	CAOG13000196765
41	CAOG13000197722
42	CAOG13000197732
43	CAOG13000197198
44	CAOG13000197186
45	CAOG13000197746
46	CAOG13000197814
47	CAOG13000197733
48	CAOG13000002067
49	CAOG13000002056
50	CAOG13000104620
51	CAOG13000003994
52	CAOG13000002053
53	CAOG13000002068
54	CAOG13000002069
55	CAOG13000002073
56	CAOG13000002070
57	CAOG13000203572
58	CAOG13000203557
59	CAOG13000203580
60	CAOG13000203586
61	CAOG13000203571
62	CAOG13000203587
63	CAOG13000203556

PUBLIC WATER SUPPLY SYSTEM INFORMATION

NO WELLS FOUND

USGS TOPOGRAPHIC MAP(S)

35119-D1 OILDALE, CA
35119-D2 ROSEDALE, CA

AREA RADON INFORMATION

Federal Area Radon Information for Zip Code: 93308

Number of sites tested: 4

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.675 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

GEOCHECK VERSION 2.1
SUMMARY

AREA RADON INFORMATION

Federal EPA Radon Zone for KERN County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for KERN COUNTY, CA

Number of sites tested: 94

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.422 pCi/L	98%	2%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

GEOCHECK VERSION 2.1
STATE DATABASE WELL INFORMATION

Water Well Information:

Map ID:	1		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S026E13L001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	1937	Well Depth:	799
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1960-02-04
Feet below surface:	271.00	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID:	2		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S026E14J001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1960-10-06
Feet below surface:	215.00	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID:	3		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S026E14P001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	1949	Well Depth:	506
Well Depth Units:	ft	Well Hole Depth:	506

Well Hole Depth Units: ft

Ground water levels,Number of Measurements: 1 Level reading date: 1960-10-05
Feet below surface: 191.00 Feet to sea level: Not Reported
Note: Not Reported

Map ID: 4
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 028S026E23C001M Type: Well
Description: Not Reported HUC: 18030012
Drainage Area: Not Reported Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Not Reported Aquifer Type: Not Reported
Construction Date: Not Reported Well Depth: 1072
Well Depth Units: ft Well Hole Depth: Not Reported
Well Hole Depth Units: Not Reported

Map ID: 5
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 028S026E24A001M Type: Well
Description: Not Reported HUC: 18030012
Drainage Area: Not Reported Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Not Reported Aquifer Type: Not Reported
Construction Date: Not Reported Well Depth: 548
Well Depth Units: ft Well Hole Depth: Not Reported
Well Hole Depth Units: Not Reported

Ground water levels,Number of Measurements: 1 Level reading date: 1961-01-21
Feet below surface: 305.00 Feet to sea level: Not Reported
Note: Not Reported

Map ID: 7
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 028S027E19C001M Type: Well
Description: Not Reported HUC: 18030012
Drainage Area: Not Reported Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Not Reported Aquifer Type: Not Reported
Construction Date: 1945 Well Depth: 1055
Well Depth Units: ft Well Hole Depth: Not Reported

Well Hole Depth Units: Not Reported

Map ID: 8
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center

Monitor Location:	028S027E20C001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1961-02-06
Feet below surface:	406.00	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID: 9
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center

Monitor Location:	028S026E24F001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	300
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1960-10-05
Feet below surface:	178.00	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID: 10
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center

Monitor Location:	028S026E23E001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	1060
Well Depth Units:	ft	Well Hole Depth:	Not Reported

Well Hole Depth Units: Not Reported

Ground water levels,Number of Measurements: 1 Level reading date: 1960-10-06
Feet below surface: 171.00 Feet to sea level: Not Reported
Note: Not Reported

Map ID: 11
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 028S026E23G001M Type: Well
Description: Not Reported HUC: 18030012
Drainage Area: Not Reported Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Not Reported Aquifer Type: Not Reported
Construction Date: Not Reported Well Depth: 300
Well Depth Units: ft Well Hole Depth: Not Reported
Well Hole Depth Units: Not Reported

Map ID: 12
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 028S027E19L001M Type: Well
Description: Not Reported HUC: 18030012
Drainage Area: Not Reported Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Not Reported Aquifer Type: Not Reported
Construction Date: Not Reported Well Depth: Not Reported
Well Depth Units: Not Reported Well Hole Depth: Not Reported
Well Hole Depth Units: Not Reported

Ground water levels,Number of Measurements: 1 Level reading date: 1960-10-05
Feet below surface: 408.00 Feet to sea level: Not Reported
Note: Not Reported

Map ID: 13
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 028S027E20L001M Type: Well
Description: Not Reported HUC: 18030012
Drainage Area: Not Reported Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Not Reported Aquifer Type: Not Reported
Construction Date: Not Reported Well Depth: Not Reported
Well Depth Units: Not Reported Well Hole Depth: Not Reported

Well Hole Depth Units: Not Reported

Map ID: 14
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center

Monitor Location:	028S027E20K001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1961-02-06
Feet below surface:	403.00	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID: 16
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center

Monitor Location:	028S026E24N001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	1944	Well Depth:	840
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Map ID: 17
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center

Monitor Location:	028S026E23P001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	1952	Well Depth:	300
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1960-10-06

Feet below surface:	160.00	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID:	18		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S027E20R001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	1955	Well Depth:	810
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1961-02-20
Feet below surface:	415.00	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID:	19		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S026E24P002M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	758
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1960-10-06
Feet below surface:	282.00	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID:	21		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S026E26A001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	1944	Well Depth:	1002
Well Depth Units:	ft	Well Hole Depth:	Not Reported

Well Hole Depth Units: Not Reported

Ground water levels,Number of Measurements: 1 Level reading date: 1961-02-08
Feet below surface: 181.00 Feet to sea level: Not Reported
Note: Not Reported

Map ID: 22
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 028S027E30A002M Type: Well
Description: Not Reported HUC: 18030012
Drainage Area: Not Reported Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Not Reported Aquifer Type: Not Reported
Construction Date: 1952 Well Depth: 1200
Well Depth Units: ft Well Hole Depth: Not Reported
Well Hole Depth Units: Not Reported

Ground water levels,Number of Measurements: 1 Level reading date: 1960-02-06
Feet below surface: 329.00 Feet to sea level: Not Reported
Note: Not Reported

Map ID: 22
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 028S027E30A001M Type: Well
Description: Not Reported HUC: 18030012
Drainage Area: Not Reported Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Not Reported Aquifer Type: Not Reported
Construction Date: 1940 Well Depth: 745
Well Depth Units: ft Well Hole Depth: Not Reported
Well Hole Depth Units: Not Reported

Map ID: 23
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 028S027E29D001M Type: Well
Description: Not Reported HUC: 18030012
Drainage Area: Not Reported Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Not Reported Aquifer Type: Not Reported
Construction Date: 1941 Well Depth: 745
Well Depth Units: ft Well Hole Depth: Not Reported

Well Hole Depth Units: Not Reported

Map ID: 25
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center

Monitor Location:	028S027E30D001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	712
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1960-10-06
Feet below surface:	196.00	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID: 26
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center

Monitor Location:	028S026E26F002M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	300
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1961-02-14
Feet below surface:	124.00	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID: 26
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center

Monitor Location:	028S026E26F001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	300
Well Depth Units:	ft	Well Hole Depth:	Not Reported

Well Hole Depth Units: Not Reported

Map ID: 27
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 028S026E25H001M
Type: Well
Description: Not Reported
HUC: 18030012
Drainage Area: Not Reported
Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported
Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Not Reported
Aquifer Type: Not Reported
Construction Date: 1939
Well Depth: 830
Well Depth Units: ft
Well Hole Depth: Not Reported
Well Hole Depth Units: Not Reported

Ground water levels,Number of Measurements: 1
Level reading date: 1963-02-20
Feet below surface: 193.00
Feet to sea level: Not Reported
Note: Not Reported

Map ID: 28
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 028S027E30J001M
Type: Well
Description: Not Reported
HUC: 18030012
Drainage Area: Not Reported
Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported
Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Not Reported
Aquifer Type: Not Reported
Construction Date: 1956
Well Depth: 1614
Well Depth Units: ft
Well Hole Depth: Not Reported
Well Hole Depth Units: Not Reported

Ground water levels,Number of Measurements: 1
Level reading date: 1960-10-05
Feet below surface: 320.00
Feet to sea level: Not Reported
Note: Not Reported

Map ID: 29
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 028S026E25L001M
Type: Well
Description: Not Reported
HUC: 18030012
Drainage Area: Not Reported
Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported
Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Not Reported
Aquifer Type: Not Reported
Construction Date: 1943
Well Depth: 720
Well Depth Units: ft
Well Hole Depth: Not Reported

Well Hole Depth Units: Not Reported

Ground water levels,Number of Measurements: 1 Level reading date: 1960-10-05
Feet below surface: 207.00 Feet to sea level: Not Reported
Note: Not Reported

Map ID: 30
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 028S027E29H001M Type: Well
Description: Not Reported HUC: 18030012
Drainage Area: Not Reported Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Alluvium of the Sierra Nevada, Younger (Pleistocene-Holocene)
Aquifer Type: Not Reported Construction Date: Not Reported
Well Depth: 687 Well Depth Units: ft
Well Hole Depth: Not Reported Well Hole Depth Units: Not Reported

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Map ID: 31
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 028S027E29J001M Type: Well
Description: Not Reported HUC: 18030012
Drainage Area: Not Reported Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Not Reported Aquifer Type: Not Reported
Construction Date: Not Reported Well Depth: 960
Well Depth Units: ft Well Hole Depth: Not Reported
Well Hole Depth Units: Not Reported

Map ID: 32
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 028S027E29L001M Type: Well
Description: Not Reported HUC: 18030012
Drainage Area: Not Reported Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Not Reported Aquifer Type: Not Reported
Construction Date: Not Reported Well Depth: Not Reported
Well Depth Units: Not Reported Well Hole Depth: Not Reported
Well Hole Depth Units: Not Reported

Ground water levels,Number of Measurements: 1 Level reading date: 1961-02-02

Feet below surface:	325.00	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID:	33		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S027E30M001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1960-10-05
Feet below surface:	276.00	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID:	34		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S026E25J001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	1943	Well Depth:	700
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Map ID:	35		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S027E30M002M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	524
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Map ID:	37		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S026E36A001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	1937	Well Depth:	650
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1960-10-05
Feet below surface:	241.00	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID:	38		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S027E31C001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	1937	Well Depth:	632
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1961-02-06
Feet below surface:	221.00	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID:	39		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S027E32A001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	750
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Map ID:	42		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S027E31H002M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	1937	Well Depth:	795
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1960-10-05
Feet below surface:	366.00	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID:	43		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S027E32E001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	1951	Well Depth:	605
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1961-02-06
Feet below surface:	270.00	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID:	44		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S027E31H001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	271
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1961-02-20
Feet below surface:	159.00	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID:	45		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	027S027E32E002M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	1956	Well Depth:	398
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Map ID:	46		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S027E31J001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	400
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1960-10-05
Feet below surface:	123.00	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID:	47		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S027E31L001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	1945	Well Depth:	1030
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Map ID:	49		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S027E32L002M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Map ID:	49		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S027E32L001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Map ID:	50		
Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	028S027E32P001M	Type:	Well
Description:	Not Reported	HUC:	18030012
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	402
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1961-02-06
Feet below surface:	193.00	Feet to sea level:	Not Reported
Note:	Not Reported		

Map ID: 53
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 028S027E32P002M
Type: Well
Description: Not Reported
HUC: 18030012
Drainage Area: Not Reported
Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported
Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Not Reported
Aquifer Type: Not Reported
Construction Date: 1959
Well Depth: 1010
Well Depth Units: ft
Well Hole Depth: Not Reported
Well Hole Depth Units: Not Reported

Ground water levels,Number of Measurements: 1
Level reading date: 1961-02-20
Feet below surface: 259.00
Feet to sea level: Not Reported
Note: Not Reported

Map ID: 54
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 028S027E31R001M
Type: Well
Description: Not Reported
HUC: 18030012
Drainage Area: Not Reported
Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported
Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Not Reported
Aquifer Type: Not Reported
Construction Date: Not Reported
Well Depth: 300
Well Depth Units: ft
Well Hole Depth: Not Reported
Well Hole Depth Units: Not Reported

Map ID: 55
Organization ID: USGS-CA
Organization Name: USGS California Water Science Center
Monitor Location: 028S027E31P001M
Type: Well
Description: Not Reported
HUC: 18030012
Drainage Area: Not Reported
Drainage Area Units: Not Reported
Contrib Drainage Area: Not Reported
Contrib Drainage Area Unts: Not Reported
Aquifer: Central Valley aquifer system
Formation Type: Not Reported
Aquifer Type: Not Reported
Construction Date: 1952
Well Depth: 305
Well Depth Units: ft
Well Hole Depth: Not Reported
Well Hole Depth Units: Not Reported

Map ID: 6
State Well #: 28S27E19C002M
Station ID: 36568
Well Name: Not Reported
Well Use: Unknown
Well Type: Unknown
Well Depth: 0
Basin Name: Kern County
Well Completion Rpt #: Not Reported

Map ID: 15

State Well #:	28S27E19J001M	Station ID:	23940
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Kern County	Well Completion Rpt #:	Not Reported

Map ID:	20		
State Well #:	28S26E26A001M	Station ID:	22123
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Kern County	Well Completion Rpt #:	Not Reported

Map ID:	24		
State Well #:	28S27E29A001M	Station ID:	23941
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Kern County	Well Completion Rpt #:	Not Reported

Map ID:	36		
State Well #:	28S27E30P001M	Station ID:	23942
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Kern County	Well Completion Rpt #:	Not Reported

Map ID:	40		
State Well #:	Not Reported	Station ID:	49459
Well Name:	88-1-13	Well Use:	Irrigation
Well Type:	Single Well	Well Depth:	1000
Basin Name:	Kern County	Well Completion Rpt #:	EO 136787

Map ID:	41		
State Well #:	28S27E32B002M	Station ID:	23945
Well Name:	4F321	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Kern County	Well Completion Rpt #:	Not Reported

Map ID:	48		
State Well #:	28S27E31K001M	Station ID:	23943
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Kern County	Well Completion Rpt #:	Not Reported

Map ID: 47

GEOCHECK VERSION 2.1
STATE DATABASE WELL INFORMATION

State Well #:	28S27E31L001M	Station ID:	23944
Well Name:	Not Reported	Well Use:	Unknown
Well Type:	Unknown	Well Depth:	0
Basin Name:	Kern County	Well Completion Rpt #:	Not Reported

Map ID:	51		
Seq:	16956	Prim sta c:	28S/27E-31R02 M
Frds no:	1500373001	County:	15
District:	12	User id:	CYA
System no:	1500373	Water type:	G
Source nam:	WELL 02	Station ty:	WELL/AMBNT/MUN/INTAKE
Latitude:	352639.0	Longitude:	1190612.0
Precision:	4	Status:	AU
Comment 1:	THIS WELL IS LOCATED .7 M NORTH OF COFFEE ROAD; 2 M N OF SEVENTH STAND		
Comment 2:	Not Reported	Comment 3:	Not Reported
Comment 4:	Not Reported	Comment 5:	Not Reported
Comment 6:	Not Reported	Comment 7:	Not Reported
System no:	1500373	System nam:	Seventh Standard Mutual
Hqname:	Not Reported	Address:	P.O. BOX 80533
City:	BAKERSFIELD	State:	CA
Zip:	93380	Zip ext:	Not Reported
Pop serv:	60	Connection:	22
Area serve:	Not Reported		

Map ID:	52		
Seq:	12320	Prim sta c:	1500373-002
Frds no:	1500373002	County:	15
District:	12	User id:	CYA
System no:	1500373	Water type:	G
Source nam:	WELL 01	Station ty:	WELL/AMBNT
Latitude:	352638.0	Longitude:	1190615.0
Precision:	4	Status:	AU
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		
System no:	1500373	System nam:	Seventh Standard Mutual
Hqname:	Not Reported	Address:	P.O. BOX 80533
City:	BAKERSFIELD	State:	CA
Zip:	93380	Zip ext:	Not Reported
Pop serv:	60	Connection:	22
Area serve:	Not Reported		
Sample date:	17-APR-14	Finding:	47.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	13-MAR-14	Finding:	44.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	16-JAN-14	Finding:	44.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		

Sample date:	10-OCT-13	Finding:	60.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	16-AUG-13	Finding:	54.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	15-MAR-13	Finding:	57.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	07-SEP-12	Finding:	61.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	13-MAR-12	Finding:	46.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		

Map ID:	1		
API #:	0402930774	Well #:	54-13
Well Status:	Plugged	Well Type:	DH
Operator Name:	Sentinel Peak Resources California LLC		
Lease Name:	Mattei Fee	Field Name:	Any Field
Area Name:	Any Area	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
SPUD Date:	Not Reported		

Map ID:	2		
API #:	0402930764	Well #:	18X-13
Well Status:	Plugged	Well Type:	DH
Operator Name:	Arco Western Energy Co.	Lease Name:	Occidental-KCL
Field Name:	Any Field	Area Name:	Any Area
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	3		
API #:	0402930786	Well #:	41-19
Well Status:	Plugged	Well Type:	DH
Operator Name:	Sentinel Peak Resources California LLC		
Lease Name:	Mattei Fee	Field Name:	Any Field
Area Name:	Any Area	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
SPUD Date:	Not Reported		

Map ID:	4		
API #:	0402930780	Well #:	1
Well Status:	Plugged	Well Type:	DH
Operator Name:	Mobil Oil Corporation	Lease Name:	Mattei
Field Name:	Any Field	Area Name:	Any Area

GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	5		
API #:	0402916419	Well #:	10-2
Well Status:	Plugged	Well Type:	OG
Operator Name:	Chevron U.S.A. Inc.	Lease Name:	Tyson
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	6		
API #:	0402916417	Well #:	1-3
Well Status:	Plugged	Well Type:	OG
Operator Name:	Chevron U.S.A. Inc.	Lease Name:	Tyson
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	7		
API #:	0402951531	Well #:	10-2A
Well Status:	Plugged	Well Type:	OG
Operator Name:	Chevron U.S.A. Inc.	Lease Name:	Tyson
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	8		
API #:	0402930766	Well #:	1-1
Well Status:	Plugged	Well Type:	DH
Operator Name:	Shell Western E&P Inc.	Lease Name:	Lee
Field Name:	Any Field	Area Name:	Any Area
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	9		
API #:	0402914731	Well #:	1
Well Status:	Plugged	Well Type:	OG
Operator Name:	Bender Oil Operations	Lease Name:	Kelly
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 10

API #:	0402914732	Well #:	2
Well Status:	Plugged	Well Type:	OG
Operator Name:	Bender Oil Operations	Lease Name:	Kelly
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	11		
API #:	0402916574	Well #:	1
Well Status:	Plugged	Well Type:	OG
Operator Name:	John M. Young	Lease Name:	Young
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	12		
API #:	0402916420	Well #:	10-3
Well Status:	Plugged	Well Type:	OG
Operator Name:	Chevron U.S.A. Inc.	Lease Name:	Tyson
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	13		
API #:	0402916424	Well #:	11-3
Well Status:	Plugged	Well Type:	OG
Operator Name:	Chevron U.S.A. Inc.	Lease Name:	Tyson
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	14		
API #:	0402916573	Well #:	1
Well Status:	Plugged	Well Type:	OG
Operator Name:	John M. Young	Lease Name:	Marty
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	15		
API #:	0402952156	Well #:	10-3A
Well Status:	Plugged	Well Type:	OG
Operator Name:	Chevron U.S.A. Inc.	Lease Name:	Tyson
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 16

API #:	0402944299	Well #:	3
Well Status:	Plugged	Well Type:	OG
Operator Name:	Chevron U.S.A. Inc.	Lease Name:	Tyson-Sec. 21 LW
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 17

API #:	0402916575	Well #:	2
Well Status:	Plugged	Well Type:	OG
Operator Name:	John M. Young, Operator	Lease Name:	Barnes-Young
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 18

API #:	0402916430	Well #:	1-5
Well Status:	Plugged	Well Type:	OG
Operator Name:	Blackhawk Oil Company	Lease Name:	Lease by Blackhawk Oil Company
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 19

API #:	0402916421	Well #:	10-4
Well Status:	Plugged	Well Type:	OG
Operator Name:	Chevron U.S.A. Inc.	Lease Name:	Tyson
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 20

API #:	0402916425	Well #:	11-4
Well Status:	Plugged	Well Type:	OG
Operator Name:	Chevron U.S.A. Inc.	Lease Name:	Tyson
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 21

API #:	0402914733	Well #:	3
Well Status:	Plugged	Well Type:	OG
Operator Name:	Bender Oil Operations	Lease Name:	Kelly
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 22

API #:	0402916148	Well #:	1
Well Status:	Plugged	Well Type:	OG
Operator Name:	A. J. Rubenstein, M. Thomas Rynne, Wix Lichty, Hugo Duehr		
Lease Name:	Lillian Kelly	Field Name:	Poso Creek
Area Name:	Premier	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
SPUD Date:	Not Reported		

Map ID:	23		
API #:	0403037033	Well #:	1-6X
Well Status:	Canceled	Well Type:	OG
Operator Name:	E & B Natural Resources Management Corporation		
Lease Name:	Section 21	Field Name:	Poso Creek
Area Name:	Premier	GIS Source:	GPS
Confidential Well:	N	Directionally Drilled:	N
SPUD Date:	Not Reported		

Map ID:	24		
API #:	0402949617	Well #:	11-5A
Well Status:	Plugged	Well Type:	OG
Operator Name:	Hubl/Harbin	Lease Name:	Snow-USL
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	25		
API #:	0402916431	Well #:	1-7
Well Status:	Active	Well Type:	OG
Operator Name:	E & B Natural Resources Management Corporation		
Lease Name:	Section 21	Field Name:	Poso Creek
Area Name:	Premier	GIS Source:	GPS
Confidential Well:	N	Directionally Drilled:	N
SPUD Date:	02/01/1963		

Map ID:	26		
API #:	0402916414	Well #:	11-5
Well Status:	Plugged	Well Type:	OG
Operator Name:	Hubl/Harbin	Lease Name:	Snow
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	27		
API #:	0402916413	Well #:	10-5
Well Status:	Plugged	Well Type:	OG
Operator Name:	Advanced Production Serv.	Lease Name:	Snow
Field Name:	Poso Creek	Area Name:	Premier

GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	28		
API #:	0402916441	Well #:	2-7
Well Status:	Idle	Well Type:	OG
Operator Name:	E & B Natural Resources Management Corporation		
Lease Name:	Section 21	Field Name:	Poso Creek
Area Name:	Premier	GIS Source:	GPS
Confidential Well:	N	Directionally Drilled:	N
SPUD Date:	Not Reported		

Map ID:	29		
API #:	0402942761	Well #:	1-7B
Well Status:	Active	Well Type:	OG
Operator Name:	E & B Natural Resources Management Corporation		
Lease Name:	Section 21	Field Name:	Poso Creek
Area Name:	Premier	GIS Source:	GPS
Confidential Well:	N	Directionally Drilled:	N
SPUD Date:	Not Reported		

Map ID:	30		
API #:	0402916442	Well #:	2-8
Well Status:	Active	Well Type:	OG
Operator Name:	E & B Natural Resources Management Corporation		
Lease Name:	Section 21	Field Name:	Poso Creek
Area Name:	Premier	GIS Source:	GPS
Confidential Well:	N	Directionally Drilled:	N
SPUD Date:	Not Reported		

Map ID:	31		
API #:	0402930758	Well #:	41
Well Status:	Plugged	Well Type:	DH
Operator Name:	Arkelo Petroleum Co.	Lease Name:	Arkelo
Field Name:	Any Field	Area Name:	Any Area
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	32		
API #:	0402916432	Well #:	1-8
Well Status:	Idle	Well Type:	OG
Operator Name:	E & B Natural Resources Management Corporation		
Lease Name:	Section 21	Field Name:	Poso Creek
Area Name:	Premier	GIS Source:	GPS
Confidential Well:	N	Directionally Drilled:	N
SPUD Date:	03/02/1963		

Map ID: 33

API #:	0402916415	Well #:	11-6
Well Status:	Plugged	Well Type:	OG
Operator Name:	Advanced Production Serv.	Lease Name:	Snow
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	03/09/1963

Map ID:	34		
API #:	0402930787	Well #:	36-19
Well Status:	Plugged	Well Type:	DH
Operator Name:	Sentinel Peak Resources California LLC		
Lease Name:	Wishon-Watson	Field Name:	Any Field
Area Name:	Any Area	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
SPUD Date:	Not Reported		

Map ID:	35		
API #:	0403034205	Well #:	WD1
Well Status:	Active	Well Type:	INJ
Operator Name:	E & B Natural Resources Management Corporation		
Lease Name:	Section 21	Field Name:	Poso Creek
Area Name:	Premier	GIS Source:	GPS
Confidential Well:	N	Directionally Drilled:	N
SPUD Date:	10/29/2007		

Map ID:	36		
API #:	0402916412	Well #:	8-6
Well Status:	Plugged	Well Type:	DH
Operator Name:	Advanced Production Serv.	Lease Name:	Snow
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	09/09/1963

Map ID:	37		
API #:	0402940908	Well #:	2-8A
Well Status:	Plugged	Well Type:	OG
Operator Name:	Blackhawk Oil Company	Lease Name:	Lease by Blackhawk Oil Company
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	38		
API #:	0402916416	Well #:	11-7
Well Status:	Plugged	Well Type:	OG
Operator Name:	Advanced Production Serv.	Lease Name:	Snow
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	hud	Confidential Well:	N

Directionally Drilled:	N	SPUD Date:	07/02/1963

Map ID:	39		
API #:	0402942762	Well #:	1-8B
Well Status:	Idle	Well Type:	OG
Operator Name:	E & B Natural Resources Management Corporation		
Lease Name:	Section 21	Field Name:	Poso Creek
Area Name:	Premier	GIS Source:	GPS
Confidential Well:	N	Directionally Drilled:	N
SPUD Date:	Not Reported		

Map ID:	40		
API #:	0402964291	Well #:	1-9W
Well Status:	Plugged	Well Type:	Multi
Operator Name:	Blackhawk Oil Company	Lease Name:	Lease by Blackhawk Oil Company
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	41		
API #:	0402916433	Well #:	1-9
Well Status:	Plugged	Well Type:	OG
Operator Name:	Blackhawk Oil Company	Lease Name:	Lease by Blackhawk Oil Company
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	42		
API #:	0402916443	Well #:	2-9
Well Status:	Plugged	Well Type:	OG
Operator Name:	Blackhawk Oil Company	Lease Name:	Lease by Blackhawk Oil Company
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	43		
API #:	0402944030	Well #:	2-9A
Well Status:	Plugged	Well Type:	OG
Operator Name:	Blackhawk Oil Company	Lease Name:	Lease by Blackhawk Oil Company
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID:	44

API #:	0402944409	Well #:	1-9A
Well Status:	Plugged	Well Type:	OG
Operator Name:	Blackhawk Oil Company	Lease Name:	Lease by Blackhawk Oil Company
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 45

API #:	0402916457	Well #:	3-11
Well Status:	Plugged	Well Type:	OG
Operator Name:	Blackhawk Oil Company	Lease Name:	Lease by Blackhawk Oil Company
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 46

API #:	0402914766	Well #:	1
Well Status:	Plugged	Well Type:	OG
Operator Name:	Enterprise Oil Company	Lease Name:	Judy
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 47

API #:	0402916444	Well #:	2-11
Well Status:	Plugged	Well Type:	OG
Operator Name:	Blackhawk Oil Company	Lease Name:	Lease by Blackhawk Oil Company
Field Name:	Poso Creek	Area Name:	Premier
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 48

API #:	0402930776	Well #:	1
Well Status:	Plugged	Well Type:	DH
Operator Name:	Deep Zone Oil Co.	Lease Name:	Lease by Deep Zone Oil Co.
Field Name:	Any Field	Area Name:	Any Area
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 49

API #:	0402930765	Well #:	1-5
Well Status:	Plugged	Well Type:	DH
Operator Name:	Morton and Sons	Lease Name:	Lerdo Community
Field Name:	Any Field	Area Name:	Any Area
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 50

API #:	0402910676	Well #:	2-1
Well Status:	Plugged	Well Type:	OG
Operator Name:	Chevron U.S.A. Inc.	Lease Name:	Witmer & DeSmet
Field Name:	Kern Front	Area Name:	Any Area
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 51

API #:	0402963270	Well #:	1
Well Status:	Plugged	Well Type:	DH
Operator Name:	Energy Production & Sales Co.		
Lease Name:	Avedian-Arkelian	Field Name:	Any Field
Area Name:	Any Area	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	N
SPUD Date:	Not Reported		

Map ID: 52

API #:	0402930762	Well #:	1
Well Status:	Plugged	Well Type:	DH
Operator Name:	Chevron U.S.A. Inc.	Lease Name:	KCL-Lerdo
Field Name:	Any Field	Area Name:	Any Area
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 53

API #:	0402930777	Well #:	1
Well Status:	Plugged	Well Type:	DH
Operator Name:	Chevron U.S.A. Inc.	Lease Name:	Brown
Field Name:	Any Field	Area Name:	Any Area
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 54

API #:	0402930778	Well #:	2
Well Status:	Plugged	Well Type:	DH
Operator Name:	Chevron U.S.A. Inc.	Lease Name:	Brown
Field Name:	Any Field	Area Name:	Any Area
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 55

API #:	0402930782	Well #:	C
Well Status:	Plugged	Well Type:	CH
Operator Name:	Shell Western E&P Inc.	Lease Name:	Core Hole
Field Name:	Any Field	Area Name:	Any Area
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 56

API #:	0402930779	Well #:	51-32
Well Status:	Plugged	Well Type:	DH
Operator Name:	Arco Western Energy Co.	Lease Name:	KCL-Occidental-Mettler
Field Name:	Any Field	Area Name:	Any Area
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 57

API #:	0402978467	Well #:	1
Well Status:	Plugged	Well Type:	DH
Operator Name:	Natural Gas Corp. of Calif.		
Lease Name:	Kaiser Lerdo	Field Name:	Rosedale Ranch
Area Name:	Northeast	GIS Source:	hud
Confidential Well:	N	Directionally Drilled:	Y
SPUD Date:	06/19/1986		

Map ID: 58

API #:	0402930784	Well #:	F
Well Status:	Plugged	Well Type:	CH
Operator Name:	Shell Western E&P Inc.	Lease Name:	Core Hole
Field Name:	Rosedale Ranch	Area Name:	Northeast
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 59

API #:	0402986354	Well #:	3
Well Status:	Active	Well Type:	OG
Operator Name:	Freedom Oil Company, LLC	Lease Name:	Lerdo
Field Name:	Rosedale Ranch	Area Name:	Northeast
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 60

API #:	0402985041	Well #:	2
Well Status:	Active	Well Type:	INJ
Operator Name:	Freedom Oil Company, LLC	Lease Name:	Lerdo
Field Name:	Rosedale Ranch	Area Name:	Northeast
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	Y	SPUD Date:	Not Reported

Map ID: 61

API #:	0402977140	Well #:	1A
Well Status:	Active	Well Type:	OG
Operator Name:	Freedom Oil Company, LLC	Lease Name:	Lerdo
Field Name:	Rosedale Ranch	Area Name:	Northeast
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

Map ID: 62

GEOCHECK VERSION 2.1
STATE DATABASE WELL INFORMATION

API #:	0402984869	Well #:	1
Well Status:	Active	Well Type:	OG
Operator Name:	Freedom Oil Company, LLC	Lease Name:	Lerdo
Field Name:	Rosedale Ranch	Area Name:	Northeast
GIS Source:	GPS	Confidential Well:	N
Directionally Drilled:	Y	SPUD Date:	Not Reported

Map ID:	63		
API #:	0402930783	Well #:	B
Well Status:	Plugged	Well Type:	CH
Operator Name:	Shell Western E&P Inc.	Lease Name:	Core Hole
Field Name:	Rosedale Ranch	Area Name:	Northeast
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	Not Reported

CALIFORNIA GOVERNMENT WELL RECORDS SEARCHED

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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APPENDIX J

Figures

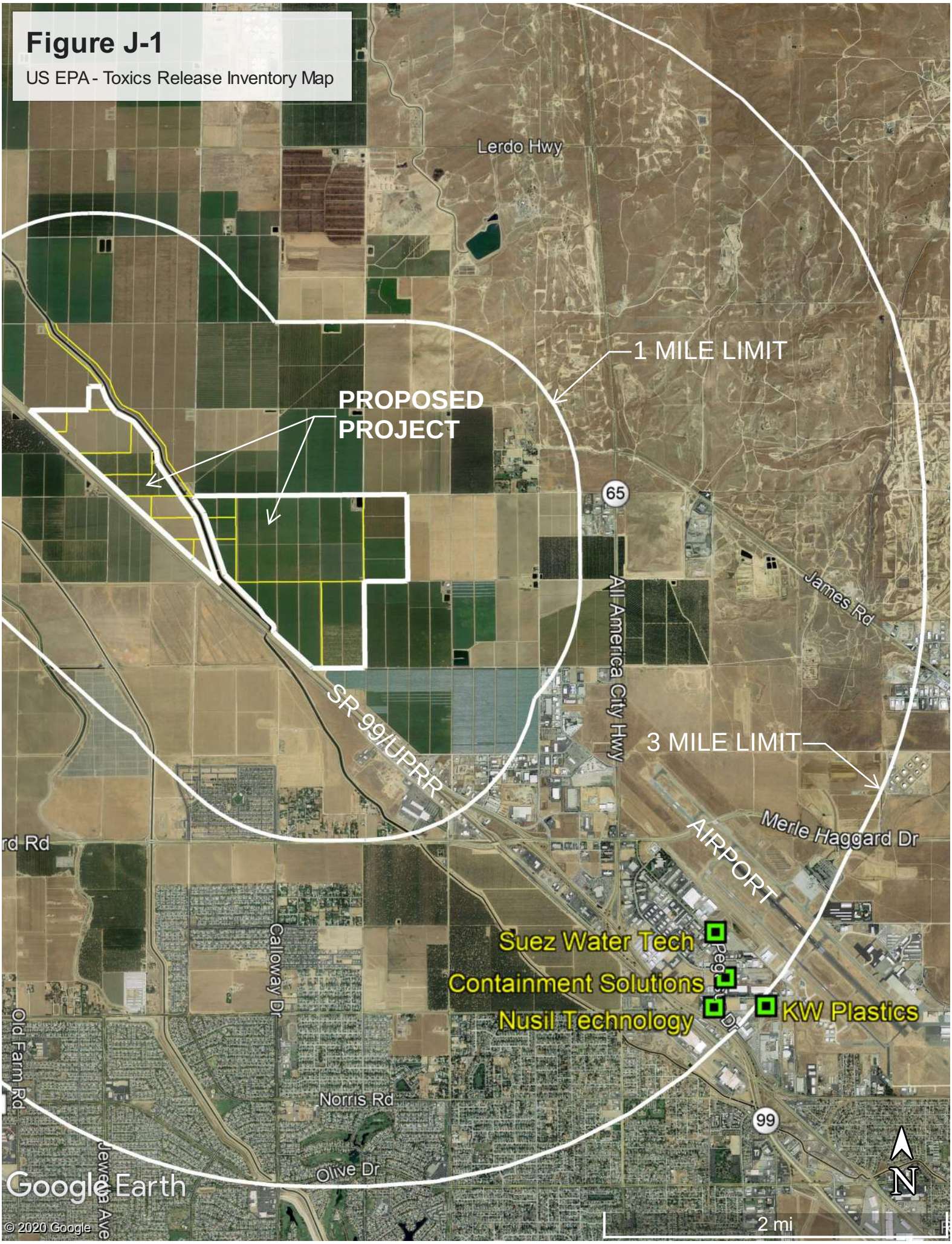
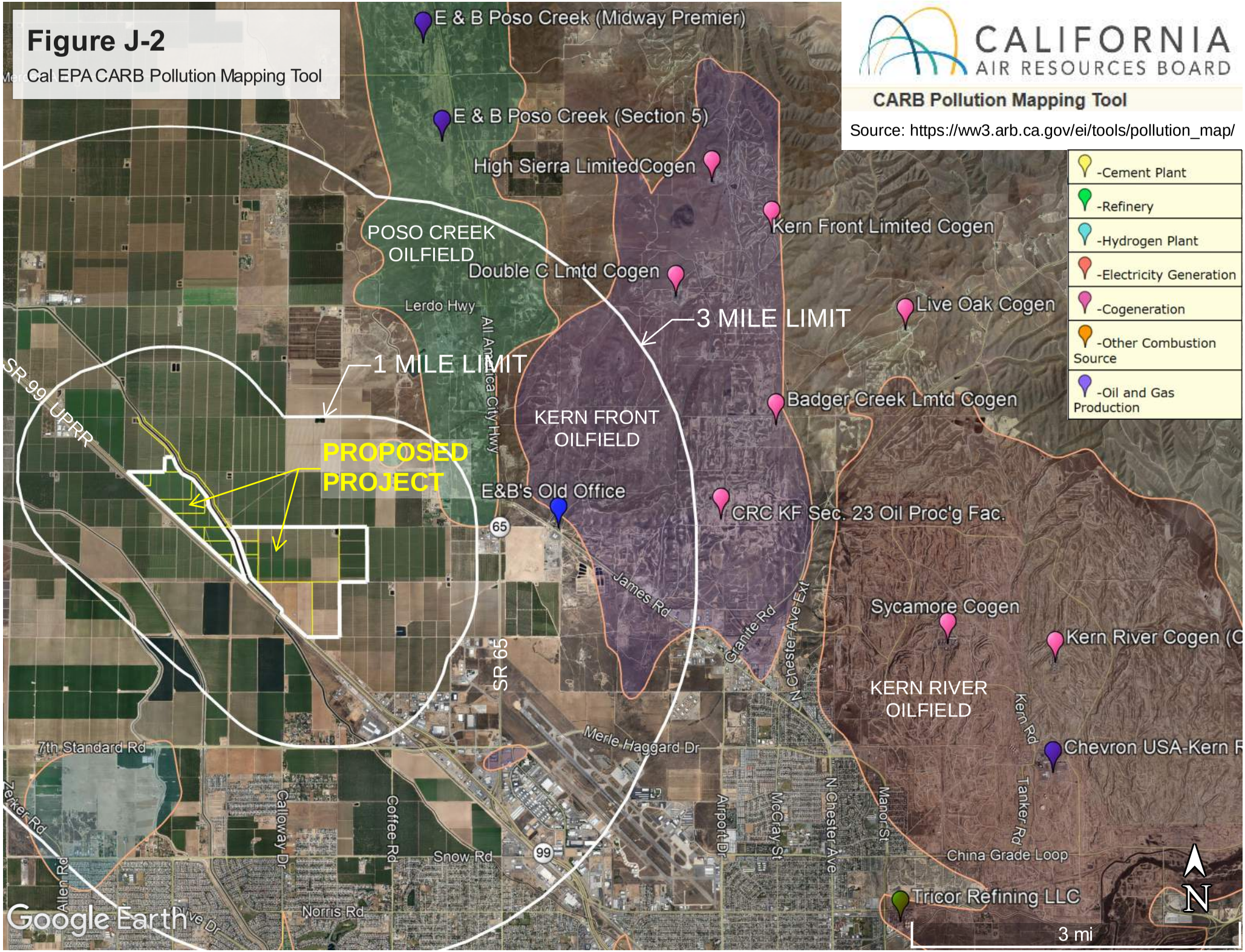
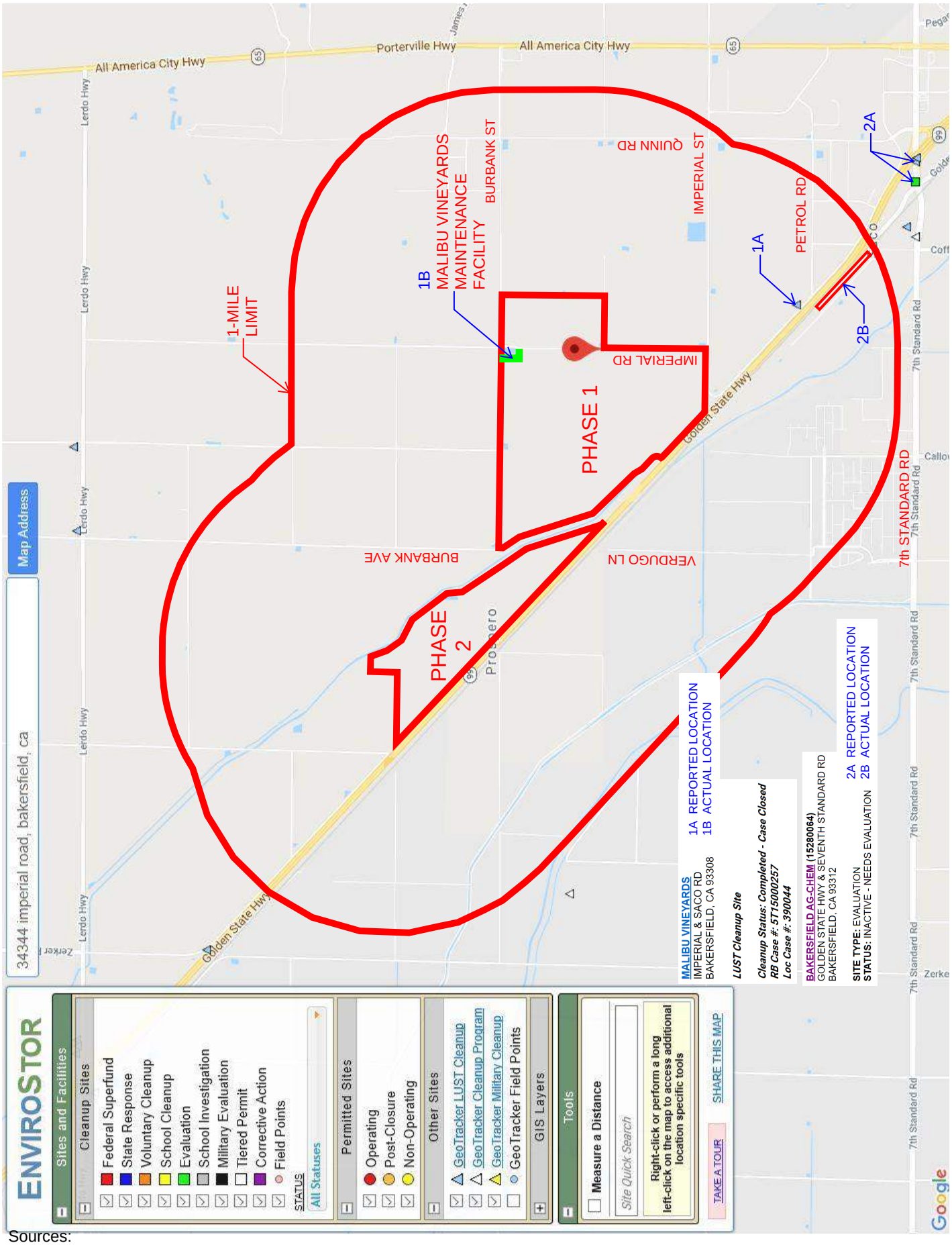


Figure J-1
US EPA - Toxics Release Inventory Map
Lerdo Hwy
1 MILE LIMIT
PROPOSED PROJECT
65
James Rd
All-America City Hwy
SR 99/UPRR
3 MILE LIMIT
AIRPORT
Merle Haggard Dr
rd Rd
Suez Water Tech
Containment Solutions
Nusil Technology
KW Plastics
Calloway Dr
Old Farm Rd
Norris Rd
Olive Dr
99
N
2 mi
Google Earth
© 2020 Google

Figure J-2

Cal EPA CARB Pollution Mapping Tool





Sources:
https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=34344+imperial+road%2C+bakersfield%2C+ca
https://geotracker.waterboards.ca.gov/profile_report?global_id=T0602900256
https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=15280064

Figure J-3
Cal DTSC EnviroStor Map

EPA EJSCREEN

Malibu Vineyards

EPA's Environmental Justice Screening and Mapping Tool (Version 2019)

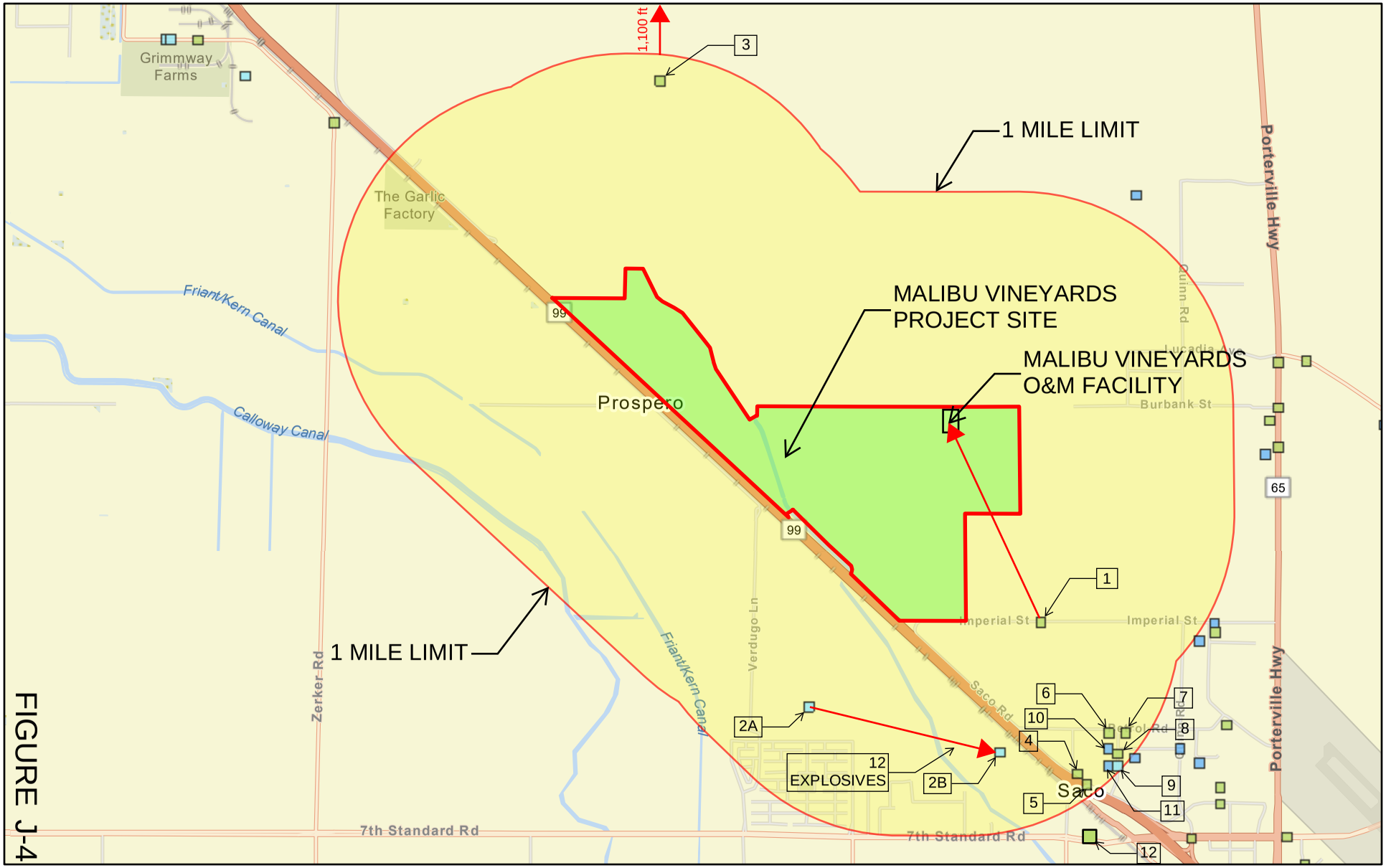


FIGURE J-4

June 11, 2020

Schools
Churches
Hospitals
Hazardous waste (TSDF)
Superfund
Toxic releases
Water dischargers
Air pollution
Hazardous waste
Brownfields
Malibu Vineyards
Actual Location

1:50,000

0 0.35 0.7 1.4 mi

0 0.5 1 2 km

Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community, EPA OEI, EPA OEI, OFA

APPENDIX K

Malibu Vineyards
LUST 1989-1996

LIQUID CONSTRUCTION, INC.
P.O. Box 1220
TULARE, CALIFORNIA 93275

(209) 688-1980

LETTER OF TRANSMITTAL

DATE	JOB NO.
8/30/89	89-5246

ATTENTION

RE: Tel-A-Leak System Test Results

TO Kern County Environmental Health Services
2700 "M" Street
Bakersfield, CA 93301

WE ARE SENDING YOU ☐ Attached ☐ Under separate cover via _____ the following items:

☐ Shop drawings ☐ Prints ☐ Plans ☐ Samples ☐ Specifications
☐ Copy of letter ☐ Change order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
1			Malibu Vineyard, Bakersfield, CA

THESE ARE TRANSMITTED as checked below:

☐ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval
☒ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution
☐ As requested ☐ Returned for corrections ☐ Return _____ corrected prints
☐ For review and comment ☐ _____
☐ FOR BIDS DUE _____ 19_____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS Enclosed are the test results for your files.

COPY TO _____

SIGNED: Patricia L Anderson

PRODUCT 240-3 NEBS Inc., Groton, Mass. 01471.

If enclosures are not as noted, kindly notify us at once.

LCI LIQUID CONSTRUCTION, INC.

August 25, 1989

Gregs Petroleum
621 High Street
Delano, CA 93215

Re: Malibu Vineyard, Bakersfield, CA

Dear Mr. Torres:

On August 18, 1989 a Tel-A-Leak System Test was performed at the above-referenced location. The test was performed by Dennis E. Goodan. The NFPA Code 329.02 criteria for a tight system is a maximum loss of .05 gallons per hour. Because of the almost infinite variables involved, this is not intended to be a mathematical tolerance and is not the permission of actual leakage.

SYSTEM TEST
Tank No. 1
Size - 550 Gallons
Product - Unleaded
Test aborted due to excessive product loss.

This concludes our test and findings. If you have any questions regarding the results, please contact me. For your convenience, a copy of the test results has been sent to the County.

We have enjoyed working with you on this project. If you need any further information, please feel free to call.

Regards,

Johnny Enos Jr

Johnny A. Enos, Jr.
Tank Testing Coordinator

JAE/meo
enclosures

1054 North 'J' Street • Post Office Box 1220 • Tulare, California 93275 • (209) 688-1980

TEL-A-LEAK I™

TANK CERTIFICATION REPORT

OWNER'S NAME — Property ☑ Tank(s) ☐

Name: MALIBU VINEYARDS (LEICH FARMS) Telephone: 805-725-2028

Address: P.O. BOX 1266 City: DELANO Zip: 93216

NAME OF LOCATION

Name: MALIBU VINEYARD Telephone: 805-725-2028

Address: SACO ROAD North of 7TH STANDARD ROAD City: Zip: County: KERN

RECORD OF FILING

NOTICE TO OWNER: A copy of all test results have been filed with the proper regulatory agency governing underground storage systems. Yes ☐ No ☑ If not filed, see explanation below:

Location of agency where filed: L.A.F.D. P.O. BOX

REASON FOR TEST (Explain Fully)

STATE LAW

NOTICE: It is the owner's responsibility to contact the environmental health department of any failures within 24 hrs. of the results given to the owner.

WHO REQUESTED TEST AND WHEN?

Name: LAWRENCE TORRES Date: 7-20-89

Address: P.O. BOX 1266 DELANO Telephone:

ITEM OR SYSTEM TESTED

TANK ONLY ☐
PRODUCT LINE ☐
VENT LINE ☐
VAPOR LINE ☐
ALL OF THE ABOVE ☐

Identity by Direction of owner ID#	Capacity	Brand / Supplier	Grade	Approx. Age (if known)	Steel ☑	Fiberglass ☐
1	550	CHEVRON	UNLEAD	?	☑	☐
					☐	☐
					☐	☐
					☐	☐
					☐	☐

FILL-UP ARRANGEMENTS

Tanks to be filled ? hr. ? Date

Distributor GREGS PETROLEUM Name

Extra product to "top off" YES (NO)

OTHER INFORMATION OR REMARKS

UNABLE TO CERTIFY TEST DUE TO CRACK IN FILL PIPE

Additional information on any items above. Officials or others to be advised when testing is in progress or completed. Visitors or observers present during test etc.

TEST RESULTS

TANKS ☑
PRODUCT LINES ☑
Vapor & Vent Lines Included Yes ☑ No ☐

Tests were made on the above tank systems in accordance with TEL-A-LEAK Detection test procedures prescribed for as detailed on attached field sheets with results as follows:

Tank Identification #	Tight Tank	Tight Lines	Leakrate Indicated Tank	Leakrate Indicated Line(s)	Date Tested
1	Yes ☐ No ☑	Yes ☐ No ☐			8-18-89
	Yes ☐ No ☐	Yes ☐ No ☐			
	Yes ☐ No ☐	Yes ☐ No ☐			
	Yes ☐ No ☐	Yes ☐ No ☐			
	Yes ☐ No ☐	Yes ☐ No ☐			

CERTIFICATION

8-18-89
Data

This is to certify that these tank systems were tested on the date(s) shown. Those indicated as "Tight" meet the criteria established by the National Fire Protection Association (Pamphlet 329).

DENNIS E. GOODAN
Operator

Dennis E. Goodan

TEL-A-LEAK I™

PAGE ____ OF ____

TANK NO. 1

DATE 8-18-89

PRODUCT UNLEAD

LOCATION MACIAS VINEYARD

HEIGHT OF: Test Stand ____

ADDRESS SACO & 7TH STANDARD ROAD

TEL-A-LEAK I™

FIELD SHEET

76 TOTAL — Fill Pipe 30 — TANK DIAM. ____

CITY BAKERSFIELD

PHONE ____

WATER TABLE: UNKNOWN

WATER IN TANK Y ☐ N ☑ Inches 0

Temp. Indicator: A (B) C D

TYPE OF SYSTEM
None ☐ Suction ☑ Manifold Y ☐ N ☑
Hand ☐ Turbine ☐ Siphon Y ☐ N ☑

Vapor Recovery
NONE ☐
Stage 1 ☑ Stage 2 ☐

TYPE of COVER
Concrete ☐
Blacktop ☐
Earth ☑
Other ____

Vent Size 1"
Fill Size 2"
Remote Fill Y ☐ N ☑

Product Temp. ____
Measured Gravity ____
Coefficient Average ____

HYDROSTATIC TEST ON PRODUCT LINE
Y ☐ N ☑

B FACTOR
550 (TANK SIZE) X ____ (COEFFICIENT) = ____ (B)

LEVEL START	LEVEL END	GAIN+ LOSS-	x (A) FACTOR	LEVEL RESULT	TEMP START	TEMP END	GAIN+ LOSS-	x (B) FACTOR	TEMP RESULT	FINAL RESULT	TIME
UNABLE TO CERTIFY DUE TO CRACK LOCATED IN FILL PIPE											
–	=	x	"	=	–	=	x	"	=	=	
–	=	x	"	=	–	=	x	"	=	=	
–	=	x	"	=	–	=	x	"	=	=	
–	=	x	"	=	–	=	x	"	=	=	
–	=	x	"	=	–	=	x	"	=	=	
–	=	x	"	=	–	=	x	"	=	=	
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–	=	x	"	=	–	=	x	"	=	=	
–	=	x	"	=	–	=	x	"	=	=	
–	=	x	"	=	–	=	x	"	=	=	
–	=	x	"	=	–	=	x	"	=	=	

REMARKS: ____

Rate of loss gal/hr. ____ CERTIFY Y ☐ N ☐

Operator Ronnie E. Dow

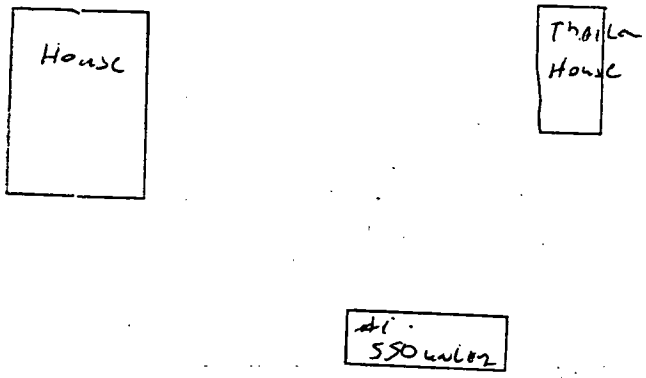
Plot Plan
Jobsite Location

Invoice # _____

Jobsite # _____

MALISH VINEYARDS

Drive off of Saco



TANKS	(Jobsite Description)	LEGEND	
#1		F = FILL	V = VAPOR DROP
#2		T = TURBINE	= VENTS
#3		F = OVERSPILL CONTAINER /ON FILL RISE	
#4		E = EXTRACTOR VALVE	
#5		M = MONITOR SYSTEM	
#6		= SIPHON SYSTEM	
#7		V = VAPOR DROP W/OVERSPILL CONTAINER	
MISC.		MISC.	

RECEIVED
AUG 3 1 1989
ENVIRONMENTAL HEALTH

GARY J. WICKS
Agency Director
(805) 861-3502

STEVE McCALLEY
Director

2700 M Street, Suite 300
Bakersfield, CA 93301
Telephone (805) 861-3636
Telecopier (805) 861-3429

RESOURCE MANAGEMENT AGENCY

DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES

PERMIT FOR PERMANENT CLOSURE OF UNDERGROUND HAZARDOUS SUBSTANCES STORAGE FACILITY

PERMIT NUMBER A A1074-39

FACILITY NAME/ADDRESS:	**OWNER(S) NAME/ADDRESS:**	**CONTRACTOR:**
Malibu Vineyards Imperial and Saco Roads Bakersfield, CA	Malibu Vineyards P. O. Box 1266 Delano, CA 93215 **Phone:** (805) 397-2445	CALPI P. O. Box 6278 Bakersfield, CA 93386 **License** #506025 **Phone:** (805) 589-5648

PERMIT FOR CLOSURE OF

1 TANK(S) AT ABOVE

LOCATION

PERMIT EXPIRES February 8, 1990

APPROVAL DATE November 8, 1989

APPROVED BY

Brian Pitts
Hazardous Materials Specialist

POST ON PREMISES

CONDITIONS AS FOLLOWS:

1. It is the responsibility of the Permittee to obtain permits which may be required by other regulatory agencies prior to beginning work. (i.e., City Fire and Building Departments)
2. Permittee must notify the Hazardous Materials Management Program at (805) 861-3636 two working days prior to tank removal or abandonment in place to arrange for required inspections(s).
3. Tank closure activities must be per Kern County Environmental Health and Fire Department approved methods as described in Handbook UT-30.
4. It is the contractor's responsibility to know and adhere to all applicable laws regarding the handling, transportation or treatment of hazardous materials.
5. The tank removal contractor must have a qualified company employee onsite supervising the tank removal. The employee must have tank removal experience prior to working unsupervised.
6. If any contractors other than those listed on permit and permit application are to be utilized, prior approval must be granted by the specialist listed on the permit. Deviation from the submitted application is not allowed.
7. Soil Sampling:
   a. **Tank size less than or equal to 1,000 gallons** - a minimum of two samples must be retrieved from beneath the center of the tank at depths of approximately two feet and six feet.
   b. **Tank size greater than 1,000 to 10,000 gallons** - a minimum of four samples must be retrieved one-third of the way in from the ends of each tank at depths of approximately two feet and six feet.
   c. **Tank size greater than 10,000 gallons** - a minimum of six samples must be retrieved on-fourth of the way in from the ends of each tank and beneath the center of each tank at depths of approximately two feet and six feet.
8. Soil Sampling (piping area):
   A minimum of two samples must be retrieved at depths of approximately two feet and six feet for every 15 linear feet of pipe run and under the dispenser area.

PERMIT FOR PERMANENT CLOSURE
OF UNDERGROUND HAZARDOUS
SUBSTANCES STORAGE FACILITY

PERMIT NUMBER A 1074-39
ADDENDUM

9. Soil Sample analysis:
   a. All soil samples retrieved from beneath gasoline (leaded/unleaded) tanks and appurtenances must be analyzed for benzene, toluene, xylene, and total petroleum hydrocarbons (for gasoline).
   b. All soil samples retrieved from beneath diesel tanks and appurtenances must be analyzed for total petroleum hydrocarbons (for diesel) and benzene.
   c. All soil samples retrieved from beneath waste oil tanks and appurtenances must be analyzed for total organic halides, lead, oil and grease.
   d. All soil samples retrieved from beneath crude oil tanks and appurtenances must be analyzed for oil and grease.
   e. All soil samples retrieved from beneath tanks and appurtenances that contain unknown substances must be analyzed for a full range of substances that may have been stored within the tank.

10. The following timetable lists pre-and post-tank removal requirements:

ACTIVITY	DEADLINE
Complete permit application submitted to Hazardous Materials Management Program	At least two weeks prior to closure
Notification to inspector listed on permit of date and time of closure and soil sampling	Two working days
Transportation and tracking forms sent to Hazardous Materials Management Program. All hazardous waste manifests must be signed by the receiver of the hazardous waste	No later than 5 working days for transportation and 14 working days for the tracking form after tank removal
Sample analysis to Hazardous Materials Management Program	No later than 3 working days after completion of analysis

11. Purging/Inerting Conditions:
   a. Liquid shall be pumped from tank prior to purging such that less than 8 gallons of liquid remain in tank. (CSH&SC 41700)
   b. Tank shall be purged through vent pipe discharging at least 10 feet above ground level. (CSH&SC 41700)
   c. No emission shall result in odors detectable at or beyond property line. (Rule 419)
   d. No emission shall endanger the health, safety, comfort of repose of any person. (CSH&SC 41700)
   e. Vent lines shall remain attached to tank until the inspector arrives to authorize removal.

RECOMMENDATIONS/GUIDELINES FOR REMOVAL OF UNDERGROUND STORAGE TANKS

This department is responsible for enforcing the Kern County Ordinance Code, Division 8 and state regulations pertaining to underground storage tanks. Representatives from this department respond to job sites during tank removals to ensure that the tanks are safe to remove/close and that the overall job performance is consistent with permit requirements, applicable laws and safety standards. The following guidelines are offered to clarify the interests and expectations for this department.

1. Job site safety is one of our primary concerns. Excavations are inherently dangerous. It is the contractor's responsibility to know and abide by CAL-OSHA regulations. The job foreman is responsible for the crew and any subcontractors on the job. As a general rule workers are not permitted in improperly sloped excavations or when unsafe conditions exist in the hole. Tools and equipment are to be used only for their designed function. For example, backhoe buckets are never substituted for ladders.

2. Properly licensed contractors are assumed to understand the requirements of the permit issued. The job foreman is responsible for knowing and abiding by the conditions of the permit. Deviation from the permit conditions may result in a stop-work order.

3. Individual contractors will be held responsible for their post-removal paperwork. Tracking forms, hazardous-waste manifests and analyses documentation is necessary for each site in order to close a case file or move it into mitigation. When contractors do not follow through on necessary paperwork, an unmanageable backlog of incomplete cases results. If this continues, processing time for completing new closures will increase.

Accepted By: John Gonsalves Calpi Inc. — 11-10-89
OWNER OR AGENT — DATE

BP:cas
\a1074-39.ptc

KERN COUNTY HEALTH DEPART
DIVISION OF ENVIRONMENTAL HEALTH
1700 FLOWER STREET, BAKERSFIELD, CA 93305
(805) 861-3636

INTERNAL USE ONLY:
TO 390044 PTA A 1074-39
APPLICATION DATE 11-3-89
OF TANKS TO BE ABANDONED 1
LENGTH OF PIPING TO ABANDON

APPLICATION FOR PERMIT FOR PERMANENT CLOSURE/ABANDONMENT OF UNDERGROUND HAZARDOUS SUBSTANCES STORAGE FACILITY

THIS APPLICATION IS FOR ☒ REMOVAL, OR ☐ ABANDONMENT IN PLACE (FILL OUT ONE APPLICATION PER FACILITY)

A. FACILITY INFORMATION

PROJECT CONTACT	PHONE # DAYS- NIGHTS-	SEC/T/R (RURAL LOCATIONS ONLY)
NICK ZANINOVICH	399-2445	

FACILITY NAME	ADDRESS	NEAREST CROSS STREET
MALIBU VINEYARDS	IMPERIAL & SACO ROADS	SACO
OWNER	**ADDRESS**	**PHONE**
MALIBU VINEYARDS	P O BOX 1266, DELANO CA 93216	(805)399-2445

B. CONTRACTOR INFORMATION

TANK REMOVAL CONTRACTOR	ADDRESS	PHONE
CALPI, Inc.	P O BOX 6278 BAKERSFIELD CA 93386	(805)589-5648

PROPOSED PROJECT STARTING DATE	CALIFORNIA LICENSE #	WORKER'S COMPENSATION #	INSURER
11-1-89 or before	506025	1011809-89	STATE FUND

PRELIMINARY SITE ASSESSMENT CONTRACTOR	ADDRESS	PHONE
CALPI, Inc.	P O BOX 6278, BKFD CA 93386	(805) 589-5648
WORKER'S COMPENSATION #	**INSURER**	**PHONE**
1011809-89	STATE FUND	(805)834-8300
LABORATORY THAT WILL ANALYZE SAMPLES	**ADDRESS**	**PHONE**
SMC	3155 PEGASUS DRIVE	(805)393-3597

C. CHEMICAL INFORMATION

CHEMICAL COMPOSITION OF MATERIALS STORED

TANK #	VOLUME	CHEMICAL STORED (NON-COMMERCIAL NAME)	DATES STORED	CHEMICAL PREVIOUSLY STORED
1	1000 g.	UNLEADED GASOLINE	NEW TO PRESENT	N/A
			TO	
			TO	
			TO	

D. ENVIRONMENTAL INFORMATION

WATER TO FACILITY PROVIDED BY	DEPTH TO GROUNDWATER
CALPI	75' to 80'
NEAREST WATER WELL - GIVE DISTANCE AND DESCRIBE TYPE IF WITHIN 500 FEET	**SOIL TYPE AT FACILITY**
NEAREST POTABLE WATER 1/4 EAST	SANDY LOAM

BASIS FOR SOIL TYPE AND GROUNDWATER DEPTH DETERMINATION
~~SUPERVISOR~~ NICK ZANINOVICH MANAGER

TOTAL NUMBER OF SAMPLES TO BE ANALYZED	SAMPLES WILL BE ANALYZED FOR:
TEN (10)	TPH & BTX

E. DISPOSAL INFORMATION

DESCRIBE HOW RESIDUE IN TANK(S) AND PIPING IS TO BE REMOVED AND DISPOSED OF (INCLUDE TRANSPORTATION AND DISPOSAL COMPANIES):
CALPI, INC. TO TRANSPORT LIQUIDS TO GIBSON OIL TO RECYCLE (805)327-0413

DESCRIBE BOTH THE DISPOSAL METHOD AND DISPOSAL LOCATION FOR:
TANK(S)
A.M.R. - 2202 SOUTH MILLIKEN AVE, ONTARIO, CA 91761 - 714-988-8000

PIPING
A.M.R. - 2202 SOUTH MILLIKEN AVE ONTARIO CA 91761 - 714-988-8000

** PLEASE PROVIDE INFORMATION REQUESTED ON REVERSE SIDE OF THIS SHEET BEFORE SUBMITTING APPLICATION FOR REVIEW **

THIS FORM HAS BEEN COMPLETED UNDER PENALTY OF PERJURY AND TO THE BEST OF MY KNOWLEDGE IS TRUE AND CORRECT.

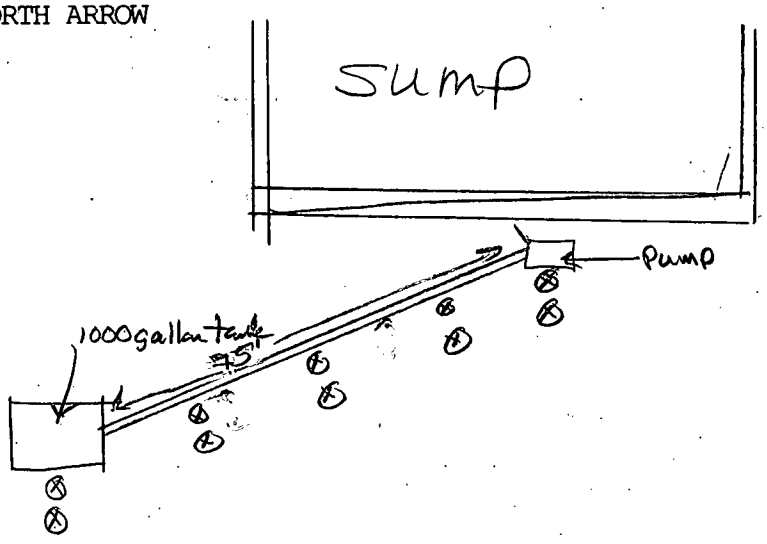
SIGNATURE Nick Zaninovich TITLE MANAGER DATE 11/2/89

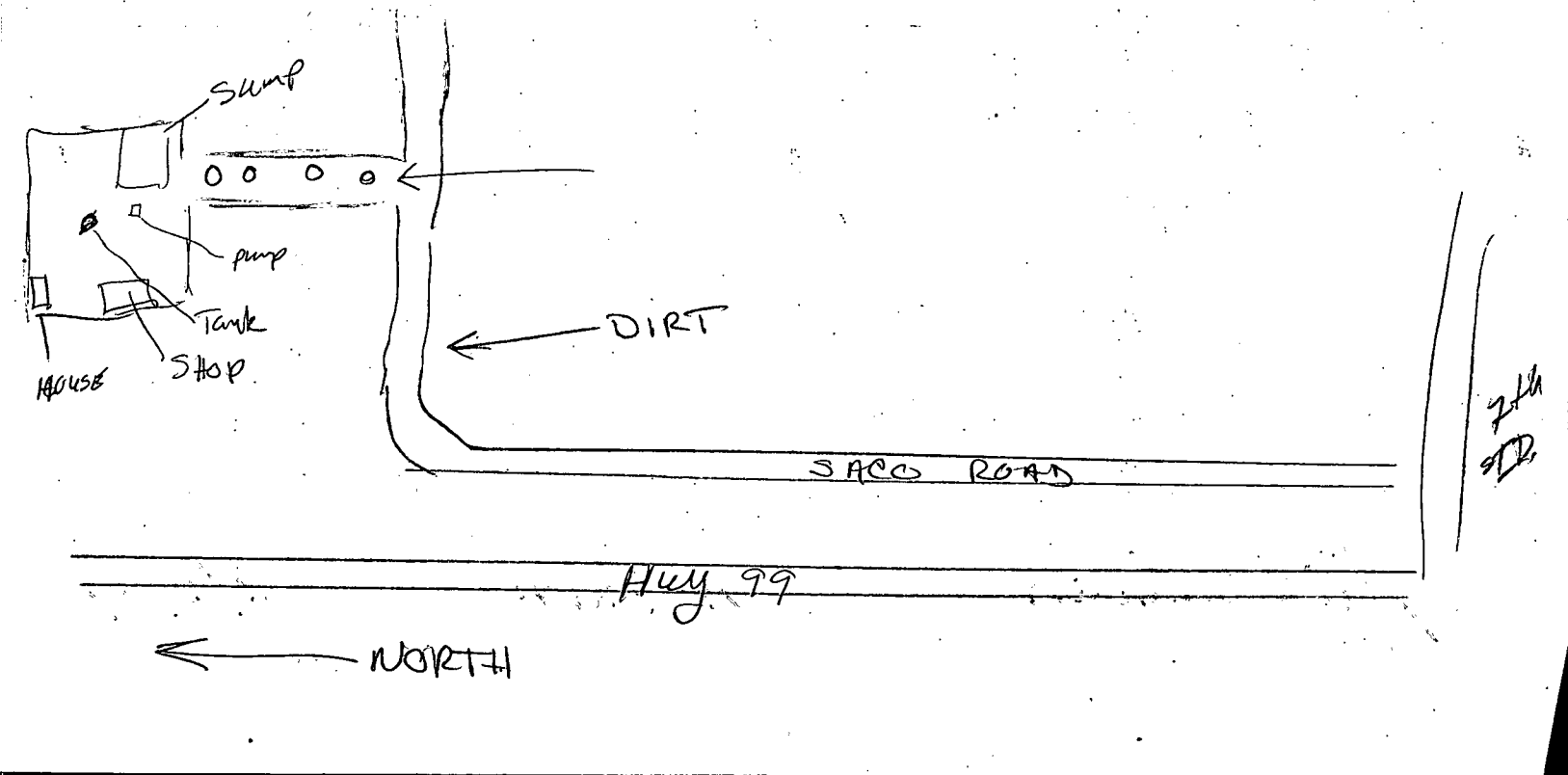
(Form #HMMP-140)

PROVIDE DRAWING OF PHYSICAL L JT OF FACIL___ USING SPACE PRC ED BELOW.

ALL OF THE FOLLOWING INFORMATION MUST BE INCLUDED IN ORDER FOR APPLICATION TO BE PROCESSED:

- ✓ TANK(S), PIPING & DISPENSER(S), INCLUDING LENGTHS AND DIMENSIONS
- ✓ PROPOSED SAMPLING LOCATIONS DESIGNATED BY THIS SYMBOL "⊗"
- ✓ NEAREST STREET OR INTERSECTION
- ✓ ANY WATER WELLS OR SURFACE WATERS WITHIN 100' RADIUS OF FACILITY
- ✓ NORTH ARROW





SMC Laboratory

Analytical Chemistry



Client Name: CALPI, Inc.
Address : P.O. Box 6278
Bakersfield, Ca. 93386

Date samples received :12-05-89
Date analysis completed: 12-06-89
Date of report :12-08-89

Laboratory No. 3361 through 3368

RESULTS OF ANALYSIS

#3361 ID:1	ugm/gm	MDL, ugm/gm
Benzene	61	0.1
Toluene	340	0.1
Ethylbenzene	130	0.1
p-Xylene	160	0.1
m-Xylene	350	0.1
o-Xylene	240	0.1
Isopropylbenzene	36	0.1
TPH (Gasoline)	3600	1.0

2' @ N End of Tank

#3362 ID:2	ugm/gm	MDL, ugm/gm
Benzene	170	0.1
Toluene	890	0.1
Ethylbenzene	310	0.1
p-Xylene	380	0.1
m-Xylene	830	0.1
o-Xylene	510	0.1
Isopropylbenzene	85	0.1
TPH (Gasoline)	9700	1.0

6' @ N End of Tank

Method of Analysis for BTX/TPH (Gasoline): 3810/8020 (FID)
Method of Analysis for TPH (Diesel): 3540/8020 (FID)
MDL = Minimum Detection Level
TPH = Total Petroleum Hydrocarbons
ugm/gm = micrograms per gram
ND = Not detected

Stan Comer
Stan Comer

RECEIVED DEC 1 1 1989

3155 Pegasus Drive • Bakersfield, CA 93308 • (805) 393-3597
P.O. Box 80835 • Bakersfield, CA 93380 • FAX (805) 393-3623

Laboratory No. 3361 through 3368

RESULTS OF ANALYSIS

#3363 ID:3	ugm/gm	MDL, ugm/gm
Benzene	.22	0.1
Toluene	.35	0.1
Ethylbenzene	.13	0.1
p-Xylene	.25	0.1
m-Xylene	.42	0.1
o-Xylene	.34	0.1
Isopropylbenzene	ND	0.1
TPH (Gasoline)	6.4	1.0

2 '@ 5 END OF TANK

#3364 ID:4	ugm/gm	MDL, ugm/gm
Benzene	5.2	0.1
Toluene	29	0.1
Ethylbenzene	23	0.1
p-Xylene	29	0.1
m-Xylene	53	0.1
o-Xylene	64	0.1
Isopropylbenzene	17	0.1
TPH (Gasoline)	1300	1.0

6 '@ 5 END OF TANK

Method of Analysis for BTX/TPH (Gasoline): 3810/8020 (FID)
Method of Analysis for TPH (Diesel): 3540/8020 (FID)
MDL = Minimum Detection Level
TPH = Total Petroleum Hydrocarbons
ugm/gm = micrograms per gram
ND = Not detected

Stan Comer
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Laboratory No. 3361 through 3368

RESULTS OF ANALYSIS

Line Mid Point

#3365 ID:5	ugm/gm	MDL, ugm/gm
Benzene	ND	0.1
Toluene	ND	0.1
Ethylbenzene	ND	0.1
p-Xylene	ND	0.1
m-Xylene	ND	0.1
o-Xylene	ND	0.1
Isopropylbenzene	ND	0.1
TPH (Gasoline)	ND	1.0

2'

#3366 ID:6	ugm/gm	MDL, ugm/gm
Benzene	ND	0.1
Toluene	ND	0.1
Ethylbenzene	ND	0.1
p-Xylene	ND	0.1
m-Xylene	ND	0.1
o-Xylene	ND	0.1
Isopropylbenzene	ND	0.1
TPH (Gasoline)	ND	1.0

6'

Method of Analysis for BTX/TPH (Gasoline): 3810/8020 (FID)
Method of Analysis for TPH (Diesel): 3540/8020 (FID)
MDL = Minimum Detection Level
TPH = Total Petroleum Hydrocarbons
ugm/gm = micrograms per gram
ND = Not detected

Stan Comer

Stan Comer

RECEIVED DEC 1 1 1989

Laboratory No. 3361 through 3368

RESULTS OF ANALYSIS

#3367 ID:7	ugm/gm	MDL,ugm/gm
Benzene	.13	0.1
Toluene	.82	0.1
Ethylbenzene	.29	0.1
p-Xylene	.41	0.1
m-Xylene	1.0	0.1
o-Xylene	.67	0.1
Isopropylbenzene	ND	0.1
TPH (Gasoline)	15	1.0

DISPENSER

2'

#3368 ID:8	ugm/gm	MDL,ugm/gm
Benzene	ND	0.1
Toluene	ND	0.1
Ethylbenzene	ND	0.1
p-Xylene	ND	0.1
m-Xylene	ND	0.1
o-Xylene	ND	0.1
Isopropylbenzene	ND	0.1
TPH (Gasoline)	ND	1.0

6'

Method of Analysis for BTX/TPH (Gasoline): 3810/8020 (FID)
Method of Analysis for TPH (Diesel): 3540/8020 (FID)
MDL = Minimum Detection Level
TPH = Total Petroleum Hydrocarbons
ugm/gm = micrograms per gram
ND = Not detected

Stan Comer

Stan Comer

RECEIVED DEC 1 1 1989

CALPI INC.

A MULTI-DISCIPLINE CORPORATION PROVIDING A BROAD SPECTRUM OF ENVIRONMENTAL, PETROLEUM AND INDUSTRIAL SERVICES

Chain of Custody Record

DATE: 12/4/89 PAGE 1 OF 1

TO SMC LAB P.O.# 1367FJ

ADDRESS CALPI, Inc.
P O BOX 6278
BAKERSFIELD CA 93386
(805) 589-5648

PROJECT MALIBU VINEYARDS #3193

SAMPLERS Signature: Frank W Jones

Printed Name FRANK W. JONES

SAMPLE NO	DATE	TIME	LOCATION	CAM METALS (18)	PR. POLLUTANT METALS (13)	TPH-DIESEL	OIL & GREASE	TOTAL PETROLEUM HYDROCARBONS-GAS	HALOGENATED VOLATILE ORGANICS	BTX	VOLATILE ORGANICS (601)	VOLATILE ORGANICS (602)	TOTAL LEAD	OTHER	NUMBER OF CONTAINERS	OBSERVATIONS/ COMMENTS
														SMC #		
1	12/4/89	5:20P	2' N. TANK					X		X				3361		COPPER TUBE
2	12/4/89	5:30P	6' N TANK					X		X				3362		" "
3	12/4/89	5:10P	2' S. TANK					X		X				3363		" "
4	12/4/89	5:15P	6' S TANK					X		X				3364		" "
5	12/4/89	5:00P	2' LINE					X		X				3365		" "
6	12/4/89	5:05P	6' LINE					X		X				3366		" "
7	12/4/89	4:50P	2' DISPENSOR					X		X				3367		" "
8	12/4/89	4:55P	6' DISPENSOR					X		X				3368		" "

RELINQUISHED BY	DATE	RECEIVED BY	DATE	RELINQUISHED BY	DATE	RECEIVED BY	DATE
Signature: Frank Jones	12/5/89	Signature: Brian Thompson	12/5/89	Signature		Signature	
Printed Name: FRANK JONES	TIME: 0915	Printed Name: BRIAN THOMPSON	TIME: 0915	Printed Name	TIME	Printed Name	TIME
Company: CALPI, INC		Company: SMC LAB		Company		Company	
RELINQUISHED BY	DATE	RECEIVED BY	DATE	RELINQUISHED BY	DATE	RECEIVED BY (laboratory)	DATE
Signature		Signature		Signature		Signature	
Printed Name	TIME	Printed Name	TIME	Printed Name	TIME	Printed Name	TIME
Company		Company		Company		Company	

TOTAL NUMBER OF CONTAINERS: 8

METHOD OF SHIPMENT: Frank Jones

SPECIAL SHIPMENT/HANDLING OR STORAGE REQUIREMENTS

DRY ICE IN CHEST.
TANK L/C GASOLINE

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT

EMERGENCY ☐ YES ☒ NO

HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED? ☐ YES ☒ NO

REPORT DATE: 01/09/90 CASE #: 390044

FOR LOCAL AGENCY USE ONLY
I HEREBY CERTIFY THAT I AM A DESIGNATED GOVERNMENT EMPLOYEE AND THAT I HAVE REPORTED THIS INFORMATION TO LOCAL OFFICIALS PURSUANT TO SECTION 25180.7 OF THE HEALTH AND SAFETY CODE.
SIGNED: B. Pitts DATE: 1-9-90

REPORTED BY
NAME OF INDIVIDUAL FILING REPORT: BRIAN PITTS
PHONE: (805) 861-3636
SIGNATURE: B. Pitts
REPRESENTING ☐ OWNER/OPERATOR ☐ REGIONAL BOARD ☒ LOCAL AGENCY ☐ OTHER
COMPANY OR AGENCY NAME: KERN CO. ENV. HEALTH
ADDRESS: 2700 M ST. (STREET) BAKERSFIELD (CITY) CA (STATE) 93301 (ZIP)

RESPONSIBLE PARTY
NAME: MALIBU VINYARD ☐ UNKNOWN
CONTACT PERSON: NICK ZANINOVICH
PHONE: (805) 397-2445
ADDRESS: P.O. Box 1266 (STREET) DELANO (CITY) CA (STATE) 93215 (ZIP)

SITE LOCATION
FACILITY NAME (IF APPLICABLE): MALIBU VINYARD
OPERATOR: NICK ZANINOVICH
PHONE: (805) 397-2445
ADDRESS: NEAR IMPERIAL & SACO ROADS (STREET) CITY: BAKERSFIELD COUNTY: KERN ZIP:
CROSS STREET
TYPE OF AREA ☐ COMMERCIAL ☐ INDUSTRIAL ☒ RURAL ☐ RESIDENTIAL ☐ OTHER
TYPE OF BUSINESS ☐ RETAIL FUEL STATION ☒ FARM ☐ OTHER

IMPLEMENTING AGENCIES
LOCAL AGENCY AGENCY NAME: KERN CO. ENVIRONMENTAL HEALTH
CONTACT PERSON: BRIAN PITTS
PHONE: (805) 861-3636
REGIONAL BOARD: CENTRAL VALLEY
PHONE: (209) 445-5569

SUBSTANCES INVOLVED
(1) NAME: GASOLINE QUANTITY LOST (GALLONS): ☒ UNKNOWN
(2) ☐ UNKNOWN

DISCOVERY/ABATEMENT
DATE DISCOVERED: 12/04/89
HOW DISCOVERED ☐ INVENTORY CONTROL ☐ SUBSURFACE MONITORING ☐ NUISANCE CONDITIONS ☐ TANK TEST ☒ TANK REMOVAL ☐ OTHER
DATE DISCHARGE BEGAN ☒ UNKNOWN
HAS DISCHARGE BEEN STOPPED? ☒ YES ☐ NO IF YES, DATE
METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY)
☐ REMOVE CONTENTS ☐ REPLACE TANK ☒ CLOSE TANK ☐ REPAIR TANK ☐ REPAIR PIPING ☐ CHANGE PROCEDURE ☐ OTHER

SOURCE/CAUSE
SOURCE OF DISCHARGE: ☒ TANK LEAK ☐ UNKNOWN ☐ PIPING LEAK ☐ OTHER
TANKS ONLY/CAPACITY: 1000 GAL. AGE: ? YRS ☐ UNKNOWN
MATERIAL: ☐ FIBERGLASS ☒ STEEL ☐ OTHER
CAUSE(S): ☐ OVERFILL ☐ RUPTURE/FAILURE ☒ CORROSION ☐ UNKNOWN ☐ SPILL ☐ OTHER

CASE TYPE
CHECK ONE ONLY
☒ UNDETERMINED ☐ SOIL ONLY ☐ GROUNDWATER ☐ DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)

CURRENT STATUS
CHECK ONE ONLY
☒ SITE INVESTIGATION IN PROGRESS (DEFINING EXTENT OF PROBLEM) ☐ CLEANUP IN PROGRESS ☐ SIGNED OFF (CLEANUP COMPLETED OR UNNECESSARY) ☐ NO ACTION TAKEN ☐ POST CLEANUP MONITORING IN PROGRESS ☐ NO FUNDS AVAILABLE TO PROCEED ☐ EVALUATING CLEANUP ALTERNATIVES

REMEDIAL ACTION
CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS)
☐ CAP SITE (CD) ☐ EXCAVATE & DISPOSE (ED) ☐ REMOVE FREE PRODUCT (FP) ☐ ENHANCED BIO DEGRADATION (IT)
☐ CONTAINMENT BARRIER (CB) ☐ EXCAVATE & TREAT (ET) ☐ PUMP & TREAT GROUNDWATER (GT) ☐ REPLACE SUPPLY (RS)
☐ TREATMENT AT HOOKUP (HU) ☐ NO ACTION REQUIRED (NA) ☒ OTHER (OT)

COMMENTS

HSC 05 (4/87)

INSTRUCTIONS

EMERGENCY
Indicate whether emergency response personnel and equipment were involved at any time. If so, a Hazardous Material Incident Report should be filed with the State Office of Emergency Services (OES) at 2800 Meadowview Road, Sacramento, CA 95832. Copies of the OES report form may be obtained at your local underground storage tank permitting agency. Indicate whether the OES report has been filed as of the date of this report.

LOCAL AGENCY ONLY
To avoid duplicate notification pursuant to Health and Safety Code Section 25180.7, a designated government employee should sign and date the form in this block. A signature here does not mean that the leak has been determined to pose a significant threat to human health or safety, only that notification procedures have been followed if required.

REPORTED BY
Enter your name, telephone number, and address. Indicate which party you represent and provide company or agency name.

RESPONSIBLE PARTY
Enter name, telephone number, contact person, and address of the party responsible for the leak. The responsible party would normally be the tank owner.

SITE LOCATION
Enter information regarding the tank facility and surrounding area. At a minimum, you must provide the facility name and full address.

IMPLEMENTING AGENCIES
Enter names of the local agency and Regional Water Quality Control Board involved.

SUBSTANCES INVOLVED
Enter the name and quantity lost of the hazardous substance involved. Room is provided for information on two substances if appropriate. If more than two substances leaked, list the two of most concern for cleanup.

DISCOVERY/ABATEMENT
Provide information regarding the discovery and abatement of the leak.

SOURCE/CAUSE
Indicate source(s) of leak. Provide details on tank age, capacity and material if known. Check box(es) indicating cause of leak.

CASE TYPE
Indicate the case type category for this leak. Check one box only. Case type is based on the most sensitive resource affected. For example, if both soil and ground water have been affected, case type will be "Ground Water". Indicate "Drinking Water" only if one or more municipal or domestic water wells have actually been affected. A "Ground Water" designation does not imply that the affected water cannot be, or is not, used for drinking water, but only that water wells have not yet been affected. It is understood that case type may change upon further investigation.

CURRENT STATUS
Indicate the category which best describes the current status of the case. Check one box only. The response should be relative to the case type. For example, if case type is "Ground Water", then "Current Status" should refer to the status of the ground water investigation or cleanup, as opposed to that of soil.

IMPORTANT: THE INFORMATION PROVIDED ON THIS FORM IS INTENDED FOR GENERAL STATISTICAL PURPOSES ONLY AND IS NOT TO BE CONSTRUED AS REPRESENTING THE OFFICIAL POSITION OF ANY GOVERNMENTAL AGENCY

REMEDIAL ACTION
Indicate which actions have been used to cleanup or remediate the leak. Descriptions of options follow:

Cap Site - install horizontal impermeable layer to reduce rainfall infiltration.
Containment Barrier - install vertical dike to block horizontal movement of contaminant.
Excavate and Dispose - remove contaminated soil and dispose in approved site.
Excavate and Treat - remove contaminated soil and treat (includes spreading or land farming).
Remove Free Product - remove floating product from water table.
Pump and Treat Groundwater - generally employed to remove dissolved contaminants.
Enhanced Biodegradation - use of any available technology to promote bacterial decomposition of contaminants.
Replace Supply - provide alternative water supply to affected parties.
Treatment at Hookup - install water treatment devices at each dwelling or other place of use.
No Action Required - incident is minor, requiring no remedial action.

COMMENTS - Use this space to elaborate on any aspects of the incident.
SIGNATURE - Sign the form in the space provided.
DISTRIBUTION

If the form is completed by the tank owner or his agent, retain the last copy and forward the remaining copies in tact to your local tank permitting agency for distribution.

1. Original - Local Tank Permitting Agency
2. State Water Resources Control Board, Division of Water Quality, Underground Tank Program, P. O. Box 100, Sacramento, CA 95801
3. Regional Water Quality Control Board
4. County Board of Supervisors or designee to receive Proposition 65 notifications.
5. Owner/responsible party.

GARY J. WICKS
Agency Director
(805) 861-3502

STEVE McCALLEY
Director

2700 M Street, Suite 300
Bakersfield, CA 93301
Telephone (805) 861-3636
Telecopier (805) 861-3429

RESOURCE MANAGEMENT AGENCY

DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES

January 18, 1990

Nick Zaninovich
Malibu Vineyards
P. O. Box 1266WY
Delano, CA 93215

SUBJECT: Location : Imperial and Saco Roads
Bakersfield, CA 93308
Known As : Malibu Vineyards
PERMIT # : 390044

Dear Mr. Zaninovich:

This letter is an official notice to inform you that the property described above has been determined by Kern County Environmental Health to be the site of an unauthorized release of hazardous materials from an underground storage tank. This notice is sent to you because our records indicate that you are a responsible party for this property.

As a responsible party, you must provide for all studies and work relating to the above described property and the cost for oversight of these activities. California Health and Safety Code Chapter 6.7 and Kern County Ordinance Code Chapter 8.48 require a determination of the threat to the environment as a result of this release. THE RESPONSIBLE PARTY SHALL, ON A TIMELY BASIS, DEVELOP A SITE CHARACTERIZATION, FEASIBILITY STUDY AND REMEDIAL ACTION PLAN FOR KERN COUNTY ENVIRONMENTAL HEALTH'S REVIEW AND APPROVAL BEFORE THE WORK IS INITIATED. Enclosed you will find attachment "A", Handbook UT-35, which states the minimum required site work plan activities, the necessary requirements for selecting environmental contractors qualified to perform this work, a glossary of terms, example illustrations, and a section discussing the answers to commonly asked questions.

According to the criteria listed below and in attachment "C", your site has been designated as environmentally sensitive. All environmentally sensitive sites are automatically enrolled into a State contract program for recovery of oversight costs. The environmental sensitivity criteria for sites are as follows:

1. Highest historic ground water is within 100 feet of ground surface, or
2. Nearest surface water in unlined conveyance is within 75 feet of tank(s), or
3. Nearest agricultural or domestic water well is within 75 feet of tank(s), or

P 540 625 716

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to Malibu Vineyards Nick Zaninovich	
Street and No. P.O. Box 1266 WY	
P.O., State and ZIP Code Delano, CA. 93215	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$
Postmark or Date	

PS Form 3800, June 1985

☆U.S.G.P.O. 1989-234-555

4. Facility is located in a designated aquifer recharge area, or
5. Permitting Authority determines possible adverse environmental impact due to facility proximity to unique wildlife habitat areas.

The cost incurred by Kern County Environmental Health for the oversight of the work for the site characterization, feasibility study, remediation action plan, site remediation, and ongoing monitoring is not covered by any fees or permits. These costs will be recovered by Kern County Environmental Health under the terms of the State contract described below. The contract only pertains to costs associated with oversight.

STATE CONTRACT

The State Leaking Underground Storage Tank Pilot Program provides a mechanism for the State to reimburse the County for County oversight. The County will conduct the necessary oversight and bill the State Water Resources Control Board under this State contract. The State will then charge you, a responsible party, for both the costs incurred by the County and the State, pertaining to your site, under the State terms explained below:

> Whereas the Legislature has appropriated funds from the California Hazardous Substance Clean-up Fund to pay the local and state agency administrative and oversight costs associated with the cleanup of releases from underground storage tanks; and Whereas the direct and indirect costs of overseeing removal or remedial action at the above site are funded, in whole or in part, from the Hazardous Substance Cleanup Fund; and Whereas the above individual(s) or entity(ies) have been identified as the party or parties responsible for investigation and cleanup of the above site; YOU ARE HEREBY NOTIFIED that pursuant to Section 25360 of the Health and Safety code, the Above Responsible Party or Parties shall reimburse the State Water Resources Control Board for all direct and indirect costs incurred by any and all state and local agencies while overseeing the cleanup of the above underground storage tank site, and the above Responsible Party or Parties shall make full payment of such costs within 30 days of receipt of a detailed invoice from the State Water Resources Control Board.

If you should have any questions regarding this matter, please contact Susan Gonzales at (805) 861-3636.

Sincerely,

Steve McCalley, Director
Environmental Health Services Department

SMC:cas

attachments
\390044.clt

390044

SITE CHARACTERIZATION STUDY

PHASE I

MALIBU VINEYARDS SITE

SECTION 30, T.28S., R.27E., M.D.B.& M.

KERN COUNTY, CALIFORNIA

AUGUST 1990

DUANE R. SMITH
AND ASSOCIATES
Consulting Geologists
7201 Fruitvale Extension
Bakersfield, California 93308
(805) 589-7861

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Exhibits:

Figure 1	Location Map
Figure 2	Site Map
Figure 3	Areal Extent of Contaminant Plume at 30 Foot Depth
Figure 4	Cross Section A-A'
Table 1	Depth to Groundwater, Fall 1977 Through Spring 1989
Appendix A	Analytical Results and Chain of Custody Records
Appendix B	Logs of Test Holes

SITE CHARACTERIZATION STUDY

PHASE I

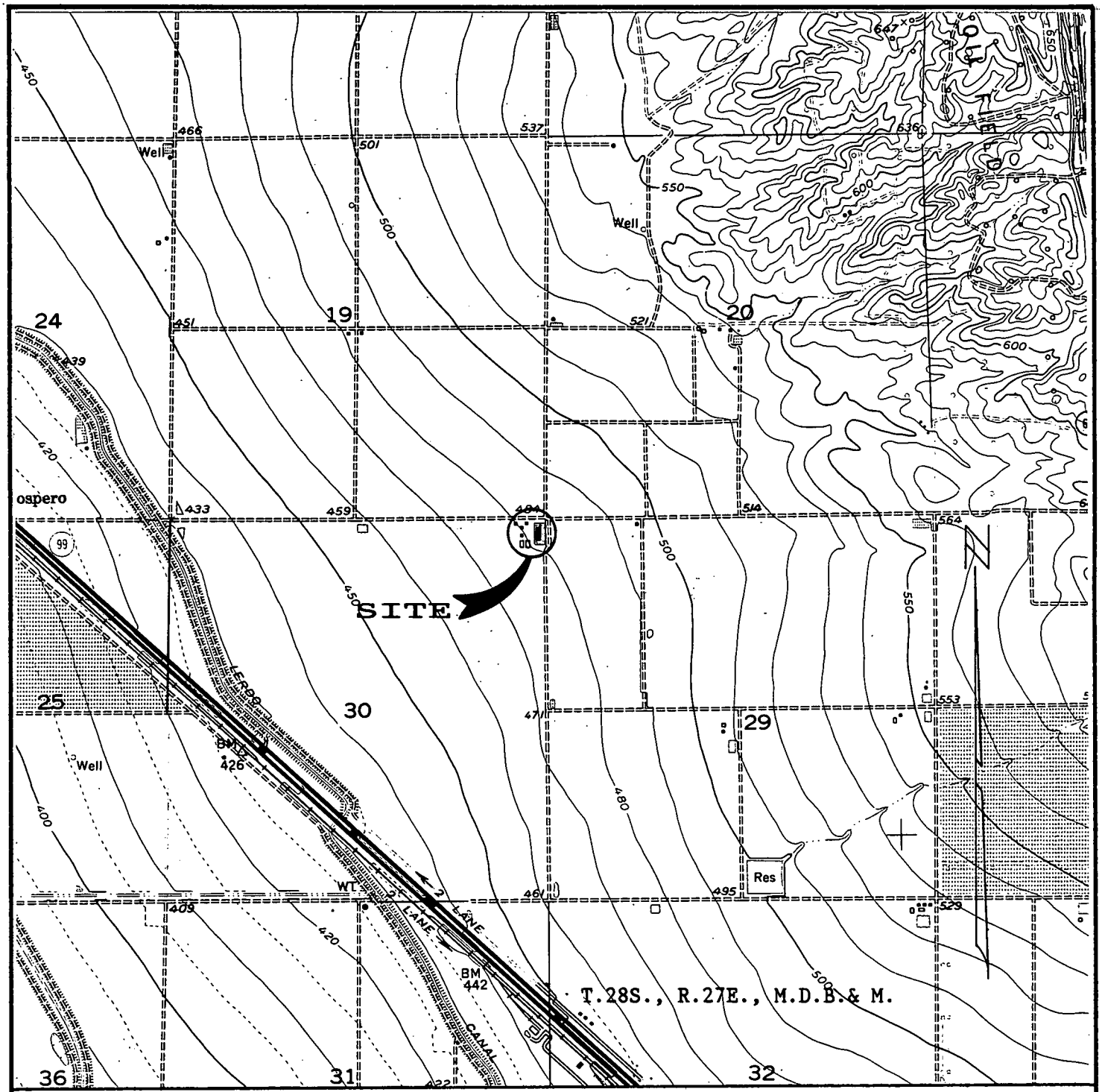
MALIBU VINEYARDS SITE

INTRODUCTION

In accordance with a request by Mr. Frank Jones of Calpi, Inc., a phase I site characterization study has been performed for the Malibu Vineyards site located in the northeast quarter of Section 30, T.28S., R.27E., M.D.B.& M. (see Figure 1) in Kern County, California. The general area is farmland. Prior to agricultural development, the area was undeveloped.

The purpose of this study is to determine the degree and extent of soil contamination resulting from unauthorized releases of gasoline into the subsurface at the site. This investigation included an inspection of the site, drilling and logging of 3 test holes, chemical analyses of selected soil samples, research of available materials, and the preparation of this report by Mr. Duane R. Smith, Registered Geologist No. 3584 and Mr. Thomas F. Gutcher, Staff Geologist.

The geological investigation reported herein has been conducted in accordance with generally recognized and current state-of-the-art geological procedures. The geological factors that were considered are outlined in this report. Other geological factors



LOCATION MAP
MALIBU VINEYARDS SITE
SECTION 30, T.28S., R.27E., M.D.B.& M.
KERN COUNTY, CALIFORNIA

Source of Base Map: U.S.G.S. Oildale 7½ Minute Topographic Quadrangle, 1968.

Figure 1

were not considered inasmuch as they were not deemed relevant to the intended land use and scope of this investigation. This investigation was conducted to the best of the investigative geologists' abilities in accordance with the foregoing limitations.

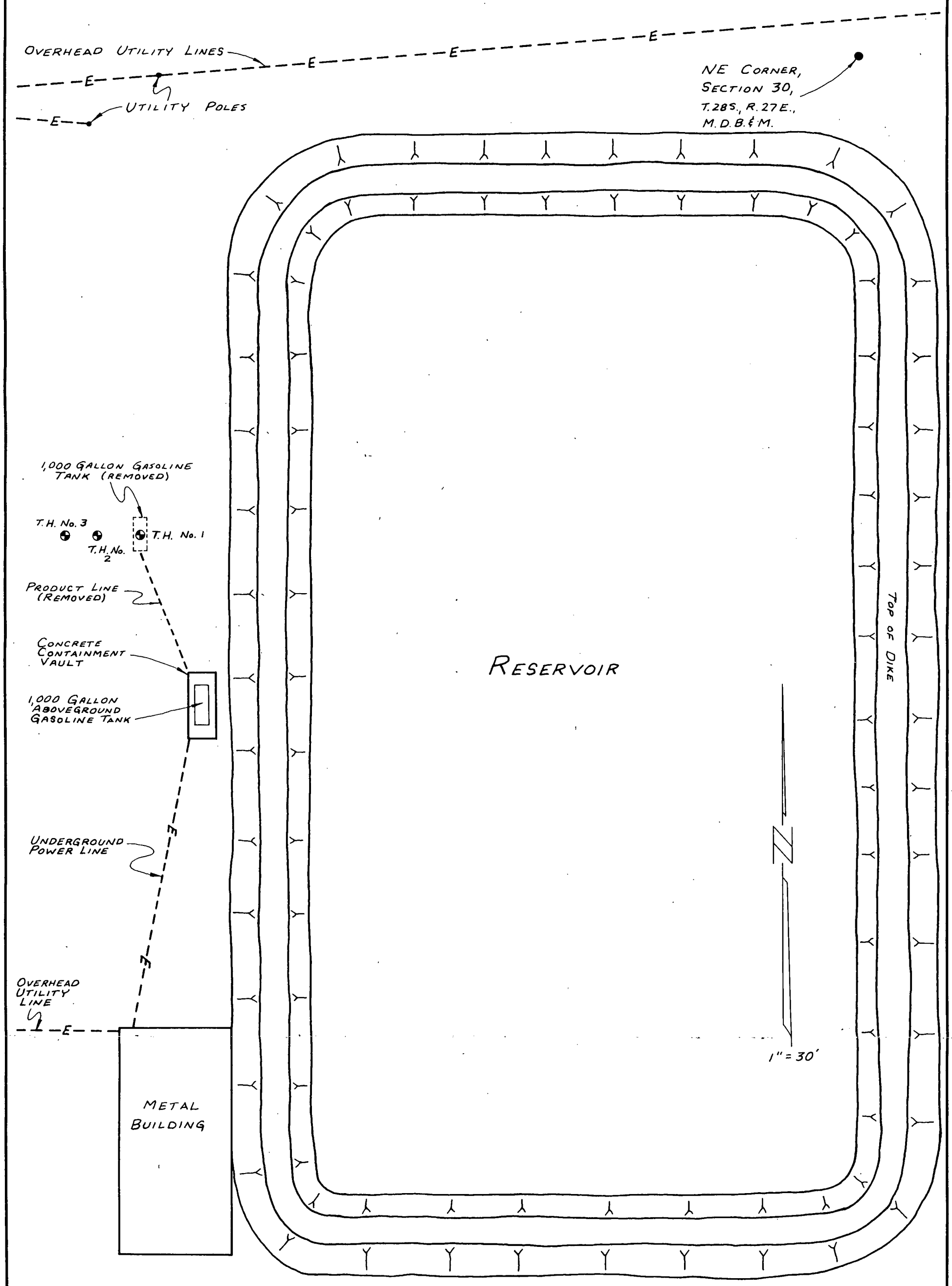
SITE BACKGROUND

One underground tank was removed from the property on December 5, 1989. A 1,000 gallon gasoline tank was situated on the property approximately as shown on Figure 2. The dispenser was located in the center of the current location of the aboveground tank (see Figure 2). The product line ran directly between the tank and the dispenser as shown on Figure 2. The tank was made of steel and reportedly was in use for 15 to 18 years. The tank was rusted and several holes in the north end of the tank were observed upon removal.

The site foreman reports no discrepancies or reportable variations in inventory monitoring, failed tightness tests, repairs to the tank or piping, or past leaks.

The analytical results of the preliminary site assessment are included in Appendix A, pages A-1 through A-4. Eight soil samples were collected and analyzed for T.P.H. gasoline and B.T.X.& E. Sample Nos. 1 and 2 were collected at depths of 2

SITE MAP
MALIBU VINEYARDS SITE
SECTION 30, T.28S., R.27E., M.D.B.& M.
KERN COUNTY, CALIFORNIA



Note: The original dispenser was located in the center of the current location of the aboveground tank.

TEST HOLE LOCATION - ⊕

DUANE R. SMITH & ASSOCIATES - AUGUST 1990

Figure 2

feet and 6 feet beneath the bottom of the north end of the tank. Sample No. 1 reportedly contained 3,600 ppm T.P.H. gasoline and high levels of B.T.X.& E. Sample No. 2 reportedly contained 9,700 ppm T.P.H. gasoline and high levels of B.T.X.& E. Sample Nos. 3 and 4 were collected at depths of 2 feet and 6 feet beneath the bottom of the south end of the tank. Sample No. 3 reportedly contained 6.4 ppm T.P.H. gasoline and low levels of B.T.X.& E. Sample No. 4 reportedly contained 1,300 ppm T.P.H. gasoline and moderate levels of B.T.X.& E. Sample Nos. 5 and 6 were collected at depths of 2 feet and 6 feet beneath the product line halfway between the tank and the dispenser. No T.P.H. gasoline or B.T.X.& E. were detected in either sample. Sample Nos. 7 and 8 were collected at depths of 2 feet and 6 feet beneath the dispenser. Sample No. 7 reportedly contained 15 ppm T.P.H. gasoline and low levels of B.T.X.& E. No T.P.H. gasoline or B.T.X.& E. were detected in Sample No. 8.

SITE GEOLOGY

According to the Geologic Map of California, Bakersfield Sheet, the site is situated over Pleistocene nonmarine sedimentary deposits composed of slightly consolidated and dissected fan deposits. In general, these sediments consist of silty sand and gravel.

The sediments encountered in the three test holes, to a depth of 40 feet, generally consist of a medium brown sandy silt. The sand is predominantly medium grained, but ranges from fine to very coarse grained. Below 40 feet, the sediments are composed of sand, silty sand, and sandy silt with brown or grey coloring. Gravel is common to abundant below 50 feet. Cobbles are common below 50 feet. The sediments above about 10 feet are unconsolidated while those below about 10 feet are firm to very firm and appear to be slightly cemented. The hardness of the sediments made drilling conditions very difficult. Detailed descriptions are shown on the test hole logs in Appendix B.

According to the General Soil Map of Kern County, published by the Soil Conservation Service, U.S.D.A., the site is underlain by soils of the Delano-Adelante association. In general, "this association consists of well drained moderately fine textured soils developed on alluvial fans from mixed rock sources."

Based on the 1988 Water Supply Report, published by the Kern County Water Agency, the depth to primary groundwater beneath the site is approximately 325 feet. No perched groundwater was known to exist beneath the site, however, perched water was encountered in T.H. No. 1 at a depth of about 100 feet (see Appendix B). The perched water is due to leakage from the nearby reservoir (see Figures 1 and 2). The reservoir is, in effect, acting as a source of groundwater recharge. The direction of groundwater

flow beneath the underground storage tank location, in the perched water zone, is probably roughly due west (flowing away from the reservoir). After approximately 30 minutes, the water level inside the augers rose to a depth of about 85 feet, indicating significant hydraulic head (see Appendix B).

Was sump full? level before & after

Based on historic water depth data, collected for the period from the Fall of 1977 to the Spring of 1989, the depth to primary groundwater beneath the site has fluctuated between about 250 feet and 420 feet beneath the surface (see Table 1). Over the past 5 years the depth to primary groundwater has ranged from about 280 to 350 feet. The average depth to primary groundwater beneath the site between the Fall of 1977 and the Spring of 1989 was 323 feet.

12 yrs

SOIL SAMPLING

On May 31, June 5, and June 6, 1990 three test holes (T.H. Nos. 1, 2, and 3 on Figure 2) were drilled through and around the former location of the gasoline tank. Test Hole No. 1 was drilled through the center of the tank location to a depth of 100 feet. Test Hole No. 2 was drilled 13 feet west of T.H. No. 1 to a depth of 50 feet. Test Hole No. 3 was drilled 23 feet west of T.H. No. 1 to a depth of 50 feet. Soil samples were collected at 5 foot intervals starting at 10 feet below the surface. Sample

DEPTH TO GROUNDWATER
FALL 1977 THROUGH SPRING 1989
MALIBU VINEYARDS SITE

DATE RECORDED	DEPTH TO GROUNDWATER	SOURCE
Fall 1977	310'	1977
Spring 1979	250'	1978
Spring 1981	350'	1980
Spring 1982	420'	1981
Spring 1983	295'	1982
Spring 1984	300'	1983
Spring 1985	330'	1984
Spring 1986	340'	1985
Spring 1987	280'	1986
Spring 1988	350'	1987
Spring 1989	325'	1988

Source:

Kern County Water Agency, Water Supply Report, year of report listed.

Table 1

recovery was poor due to the presence of gravel and cobbles at several sample depths.

Fifteen soil samples were submitted for chemical analyses. The samples were analyzed for T.P.H. gasoline and B.T.X.& E. by SMC Laboratory in Bakersfield. The analytical methods utilized by SMC Laboratory are listed on the laboratory reports included in Appendix A. The quality assurance and quality control of the laboratory are available from SMC Laboratory on request. The analytical results of the fifteen samples submitted for analyses along with the appropriate chain of custody records are included in Appendix A, pages A-6 through A-14.

Soil samples were collected using a split-spoon sampler driven into the soil utilizing a truck-mounted hollow stem auger rig (Mobile Drill B-53). The split-spoon sampler contains three two and one-half inches diameter by six inches long brass tubes.

The sampler was driven through the proper sampling interval after the hole was drilled with the hollow stem auger. The sampler was then removed from the drilling equipment and the brass tubes removed from the sampler.

The ends of one tube from each sample depth were covered with Teflon seals, polyethylene caps, and then sealed with duct tape. The tube was then labeled and placed in a polyethylene sample bag

and the bag sealed and labeled. Each bagged tube was immediately placed on blue ice for delivery to SMC Laboratory.

Another soil sample from each sample depth was retained for field screening and soil descriptions. Field screening consisted of a headspace reading for hydrocarbon vapors with an Hnu PID meter calibrated to a benzene standard. In addition to the headspace readings, hydrocarbon odors, if detected, were noted.

Each set of augers was steam cleaned after drilling each borehole to avoid cross contamination. The sampling equipment was scrubbed, washed, and thoroughly rinsed between each sample collection. Contaminated drill cuttings, as identified by field screening, were placed in DOT drums and retained on-site.

RESULTS OF SITE CHARACTERIZATION

Appendix A shows the analytical results of the fifteen samples submitted for analyses and the corresponding chain of custody records. Appendix B shows the logs of the three test holes. The 15, 30, 50, 65, 85, and 95 foot samples from T.H. No. 1 were analyzed. The 15, 30, and 50 foot samples from T.H. No. 2 were analyzed. The 10, 25, 30, 35, 42, and 50 foot samples from T.H. No. 3 were analyzed. Sampling difficulties prevented collection of a 40 foot sample from T.H. No. 3. A sample was collected at 42 feet in place of the 40 foot sample.

The 15 foot sample from T.H. No. 1 reportedly contained 4,700 ppm T.P.H. gasoline and high levels of B.T.X.& E. The 30 foot sample from T.H. No. 1 reportedly contained 4,400 ppm T.P.H. gasoline and high levels of B.T.X.& E. The 50 foot sample from T.H. No. 1 reportedly contained 2,100 ppm T.P.H. gasoline and moderate levels of B.T.X.& E. The 65 foot sample from T.H. No. 1 reportedly contained 310 ppm T.P.H. gasoline and minor amounts of B.T.X.& E. The 85 foot sample from T.H. No. 1 reportedly contained 1,200 ppm T.P.H. gasoline and moderate levels of B.T.X.& E. The 95 foot sample from T.H. No. 1 reportedly contained 190 ppm T.P.H. gasoline and minor amounts of B.T.X.& E. The analytical results of the selected samples from T.H. No. 1 are included in Appendix A, pages A-6 through A-8.

The 15 foot sample from T.H. No. 2 reportedly contained 250 ppm T.P.H. gasoline and minor amounts of B.T.X.& E. The 30 foot sample from T.H. No. 2 reportedly contained 1,100 ppm T.P.H. gasoline and moderate levels of B.T.X.& E. The 50 foot sample from T.H. No. 2 reportedly contained 660 ppm T.P.H. gasoline and minor amounts of B.T.X.& E. Test Hole No. 2 was a perimeter boring drilled to delineate the edge of the contaminant plume and was therefore not extended below the vertical extent of contamination. The analytical results of the selected samples from T.H. No. 2 are included in Appendix A, page A-9.

No T.P.H. gasoline or B.T.X.& E. were detected in the 10 or 25 foot samples from T.H. No. 3. The 30 foot sample from T.H. No. 3 reportedly contained 2.7 ppm T.P.H. gasoline. No B.T.X.& E. were detected in this sample. No T.P.H. gasoline or B.T.X.& E. were detected in the 35, 42, or 50 foot samples from T.H. No. 3. The analytical results of the selected samples from T.H. No. 3 are included in Appendix A, pages A-10 and A-11.

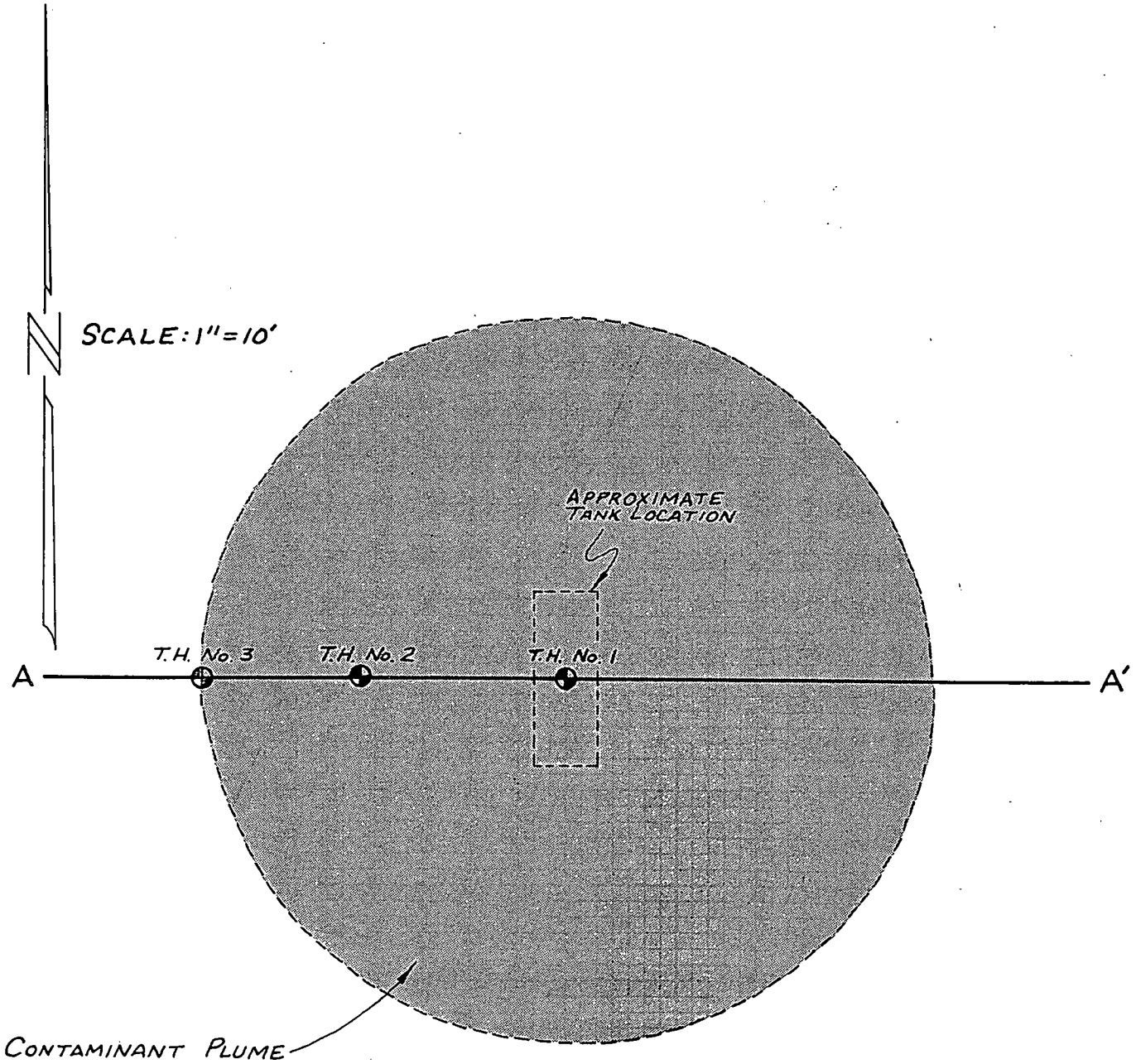
Free groundwater was encountered in T.H. No. 1 at a depth of about 100 feet. The source of this water is leakage from a nearby reservoir. No assessment of potential groundwater contamination was included in this investigation.

CONCLUSIONS

Figure 3 shows the location of cross section A-A' through T.H. Nos. 1, 2, and 3. Figure 3 also shows the approximate areal extent of the contaminant plume at a depth of 30 feet. Cross section A-A' is shown on Figure 4 and depicts a vertical profile of the contaminant plume.

Migration of contaminants beneath the tank appears to have been controlled primarily by the influence of gravity. This is to be expected because the soils beneath the site are fairly permeable and no significant permeability barriers were encountered within the zone of contamination. Capillary action in the soil has

AREAL EXTENT OF CONTAMINANT PLUME AT 30 FOOT DEPTH MALIBU VINEYARDS SITE



NOTES FOR CROSS SECTION A - A' (Figure 4)

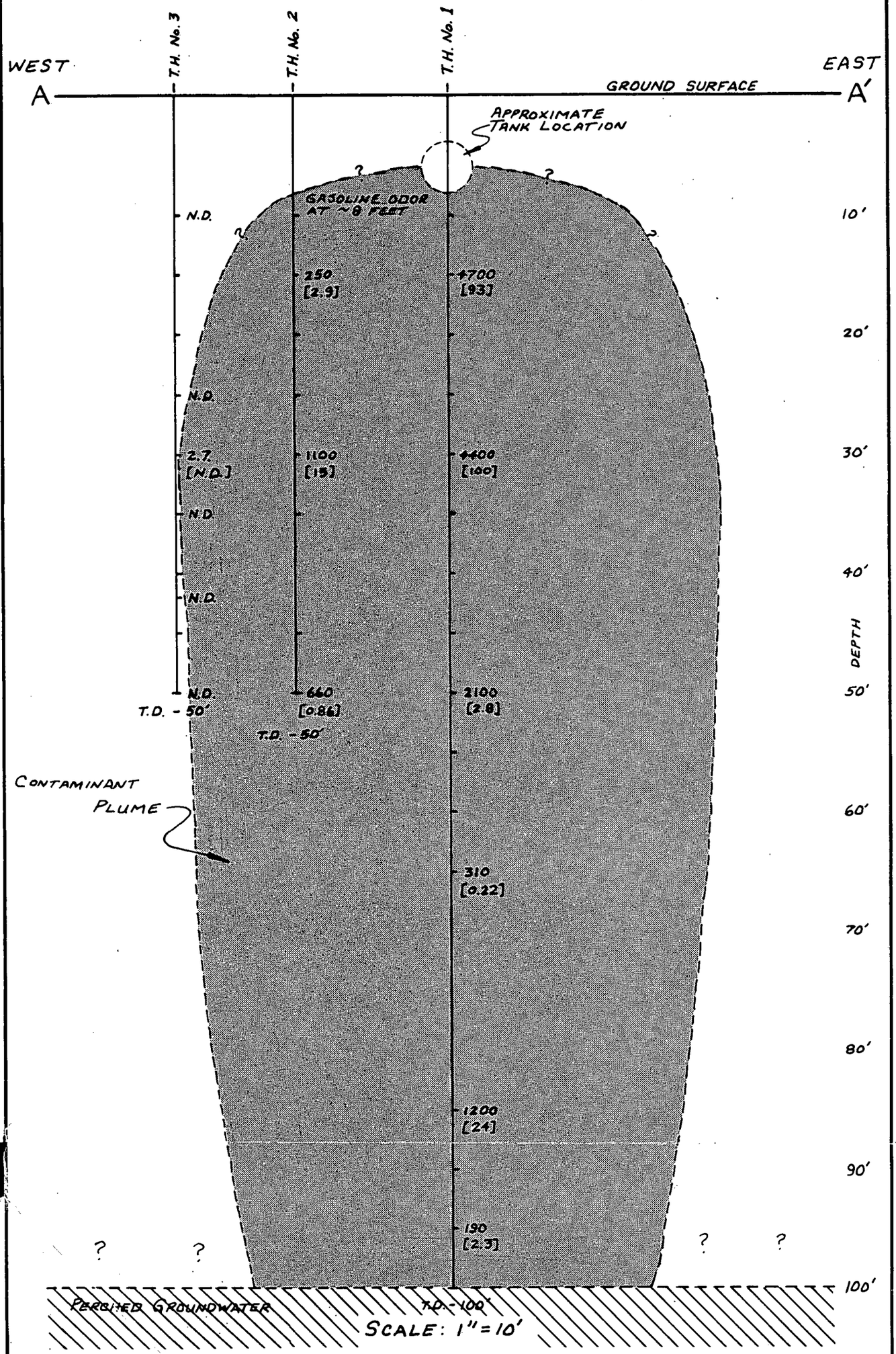
1. All values listed are ppm T.P.H. gasoline except values in brackets [] which are ppm benzene.
2. N.D. refers to None Detected for all constituents tested except for [N.D.] which refers to None Detected for benzene only.
3. Poor recovery prevented analysis of some samples; see Logs of Test Holes for details (Appendix B).

Test Hole Location - ⊕

D. R. SMITH & ASSOCIATES - AUGUST 1990

Figure 3

CROSS SECTION A - A'
MALIBU VINEYARDS SITE



See Figure 3 for NOTES FOR CROSS SECTION A - A'

D. R. SMITH & ASSOCIATES - AUGUST 1990

Figure 4

caused some horizontal migration, but vertical migration was dominant.

The vertical extent of the contaminant plume is limited by the perched groundwater at a depth of about 100 feet (see Figure 4). The maximum areal extent of the contaminant plume is estimated to be about 46 feet in diameter and is present at a depth of about 30 feet (see Figures 3 and 4).

Since the sediments beneath the site are relatively homogenous at any given depth (see Appendix B), the contaminant plume is assumed to be symmetrical. Therefore, a horizontal slice through the plume is circular as shown on Figure 3. It is estimated that the vadose zone contaminant plume consists of roughly 4,600 cubic yards of soil. This value is determined by calculating the volumes of horizontally-oriented circular disks of various radii which approximate the shape of the plume.

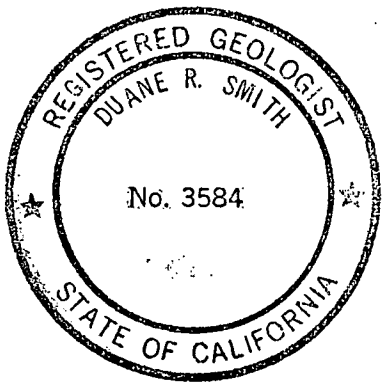
The areal extent of the contaminant plume, just above the perched groundwater, is uncertain. Increased moisture in the vadose zone and fluctuations in the water level can lead to enhanced lateral migration of contaminants. Therefore, it is possible that areal extent of contamination, just above the perched groundwater, is much greater than that shown on Figure 4.

The assessment of potential groundwater contamination is beyond the scope of this phase I investigation. It seems probable, based on the data from T.H. No. 1, that groundwater quality beneath the former storage tank location has been impaired.

RECOMMENDATIONS

Additional investigation is necessary to assess possible groundwater contamination. The additional investigation (phase II) should include the emplacement of one upgradient and two downgradient groundwater monitoring wells. Water samples should be collected from the monitoring wells and analyzed at the parts per billion level. A complete work plan for the phase II investigation should be prepared prior to commencement of the additional investigation.

Recommendations for remediation of the vadose zone contamination are not included in this report because of the uncertain status of the perched groundwater. If the perched groundwater is found to be contaminated, a remediation plan addressing both the groundwater and vadose zone will be required. Therefore, recommendations for remediation would be premature at this stage.



Submitted by:

Duane R. Smith

Duane R. Smith
Registered Geologist
State of California No. 3584

Thomas F. Gutcher

Thomas F. Gutcher
Staff Geologist

SITE CHARACTERIZATION STUDY
PHASE I
MALIBU VINEYARDS SITE

MALIBU1.CHA

APPENDIX A

ANALYTICAL RESULTS
AND
CHAIN OF CUSTODY RECORDS

SMC Laboratory

Analytical Chemistry

Client Name:CALPI, Inc.
Address :P.O. Box 6278
Bakersfield, Ca. 93386

Date samples received :12-05-89
Date analysis completed:12-06-89
Date of report :12-08-89

Laboratory No. 3361 through 3368

RESULTS OF ANALYSIS

#3361 ID:1	ugm/gm	MDL,ugm/gm
Benzene	61	0.1
Toluene	340	0.1
Ethylbenzene	130	0.1
p-Xylene	160	0.1
m-Xylene	350	0.1
o-Xylene	240	0.1
Isopropylbenzene	36	0.1
TPH (Gasoline)	3600	1.0

#3362 ID:2	ugm/gm	MDL,ugm/gm
Benzene	170	0.1
Toluene	890	0.1
Ethylbenzene	310	0.1
p-Xylene	380	0.1
m-Xylene	830	0.1
o-Xylene	510	0.1
Isopropylbenzene	85	0.1
TPH (Gasoline)	9700	1.0

Method of Analysis for BTX/TPH (Gasoline): 3810/8020 (FID)
Method of Analysis for TPH (Diesel): 3540/8020 (FID)
MDL = Minimum Detection Level
TPH = Total Petroleum Hydrocarbons
ugm/gm = micrograms per gram
ND = Not detected

Stan Comer
Stan Comer

RECEIVED DEC 1 1 1989

3155 Pegasus Drive • Bakersfield, CA 93308 • (805) 393-3597
P.O. Box 80835 • Bakersfield, CA 93380 • FAX (805) 393-3623

DUANE R. SMITH AND ASSOCIATES
Consulting Geologists
7201 Fruitvale Extension
Bakersfield, California 93308
(805) 589-7861

August 16, 1990

Mr. Joe Canas
Department of Environmental Health Services
Resource Management Agency, County of Kern
2700 M Street, Suite 300
Bakersfield, California 93301

Dear Mr. Canas:

Enclosed please find one (1) copy of the Site Characterization Study, Phase I, Malibu Vineyards Site, Kern County, California.

If you have any questions, please feel free to call.

Yours truly,

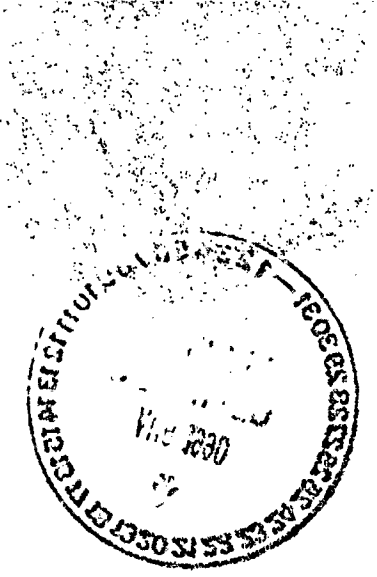
Thomas F. Gutcher

Thomas F. Gutcher
Staff Geologist

TFG/tg

Enclosure





Laboratory No. 3361 through 3368

RESULTS OF ANALYSIS

#3363 ID:3	ugm/gm	MDL, ugm/gm
Benzene	.22	0.1
Toluene	.35	0.1
Ethylbenzene	.13	0.1
p-Xylene	.25	0.1
m-Xylene	.42	0.1
o-Xylene	.34	0.1
Isopropylbenzene	ND	0.1
TPH (Gasoline)	6.4	1.0

#3364 ID:4	ugm/gm	MDL, ugm/gm
Benzene	5.2	0.1
Toluene	29	0.1
Ethylbenzene	23	0.1
p-Xylene	29	0.1
m-Xylene	53	0.1
o-Xylene	64	0.1
Isopropylbenzene	17	0.1
TPH (Gasoline)	1300	1.0

Method of Analysis for BTX/TPH (Gasoline): 3810/8020 (FID)
Method of Analysis for TPH (Diesel): 3540/8020 (FID)
MDL = Minimum Detection Level
TPH = Total Petroleum Hydrocarbons
ugm/gm = micrograms per gram
ND = Not detected

Stan Comer
Stan Comer

RECEIVED DEC 1 1 1989

Laboratory No. 3361 through 3368

RESULTS OF ANALYSIS

#3365 ID:5	ugm/gm	MDL,ugm/gm
Benzene	ND	0.1
Toluene	ND	0.1
Ethylbenzene	ND	0.1
p-Xylene	ND	0.1
m-Xylene	ND	0.1
o-Xylene	ND	0.1
Isopropylbenzene	ND	0.1
TPH (Gasoline)	ND	1.0

#3366 ID:6	ugm/gm	MDL,ugm/gm
Benzene	ND	0.1
Toluene	ND	0.1
Ethylbenzene	ND	0.1
p-Xylene	ND	0.1
m-Xylene	ND	0.1
o-Xylene	ND	0.1
Isopropylbenzene	ND	0.1
TPH (Gasoline)	ND	1.0

Method of Analysis for BTX/TPH (Gasoline): 3810/8020 (FID)
Method of Analysis for TPH (Diesel): 3540/8020 (FID)
MDL = Minimum Detection Level
TPH = Total Petroleum Hydrocarbons
ugm/gm = micrograms per gram
ND = Not detected

Stan Comer

Stan Comer

RECEIVED DEC 1 1 1989

Laboratory No. 3361 through 3368

RESULTS OF ANALYSIS

#3367 ID:7	ugm/gm	MDL,ugm/gm
Benzene	.13	0.1
Toluene	.82	0.1
Ethylbenzene	.29	0.1
p-Xylene	.41	0.1
m-Xylene	1.0	0.1
o-Xylene	.67	0.1
Isopropylbenzene	ND	0.1
TPH (Gasoline)	15	1.0

#3368 ID:8	ugm/gm	MDL,ugm/gm
Benzene	ND	0.1
Toluene	ND	0.1
Ethylbenzene	ND	0.1
p-Xylene	ND	0.1
m-Xylene	ND	0.1
o-Xylene	ND	0.1
Isopropylbenzene	ND	0.1
TPH (Gasoline)	ND	1.0

Method of Analysis for BTX/TPH (Gasoline): 3810/8020 (FID)
Method of Analysis for TPH (Diesel): 3540/8020 (FID)
MDL = Minimum Detection Level
TPH = Total Petroleum Hydrocarbons
ugm/gm = micrograms per gram
ND = Not detected

Stan Comer

Stan Comer

RECEIVED DEC 1 1 1989

CALPI INC.

A MULTI-DISCIPLINE CORPORATION PROVIDING A BROAD SPECTRUM OF ENVIRONMENTAL, PETROLEUM AND INDUSTRIAL SERVICES

Chain of Custody Record

DATE: 12/4/89 PAGE 1 OF 1

TO SMC LAB P.O.# 1367FJ

ADDRESS CALPI, Inc.
P O BOX 6278
BAKERSFIELD CA 93386
(805) 589-5648

PROJECT MALIBU VINEYARDS #3193

SAMPLERS Signature: Frank W Jones

Printed Name FRANK W. JONES

SAMPLE NO	DATE	TIME	LOCATION	CAM METALS (18)	PR. POLLUTANT METALS (13)	TPH-DIESEL	OIL & GREASE	TOTAL PETROLEUM HYDROCARBONS-GAS	HALOGENATED VOLATILE ORGANICS	BTX	VOLATILE ORGANICS (601)	VOLATILE ORGANICS (602)	TOTAL LEAD	OTHER: SMC #	NUMBER OF CONTAINERS	OBSERVATIONS/ COMMENTS
1	12/4/89	5:20P	2' N. TANK					X		X				3361		COPPER TUBE
2	12/4/89	5:30P	6' N TANK					X		X				3362		" "
3	12/4/89	5:10P	2' S. TANK					X		X				3363		" "
4	12/4/89	5:15P	6' S TANK					X		X				3364		" "
5	12/4/89	5:00P	2' LINE					X		X				3365		" "
6	12/4/89	5:05P	6' LINE					X		X				3366		" "
7	12/4/89	4:50P	2' DISPENSOR					X		X				3367		" "
8	12/4/89	4:55P	6' DISPENSOR					X		X				3368		" "

RELINQUISHED BY	DATE	RECEIVED BY	DATE	RELINQUISHED BY	DATE	RECEIVED BY	DATE
Signature: Frank Jones	12/5/89	Signature: Brian Thompson	12/5/89	Signature		Signature	
Printed Name: FRANK JONES	TIME: 0915	Printed Name: SMC LAB	TIME: 1915	Printed Name	TIME	Printed Name	TIME
Company: CAL PI, INC		Company		Company		Company	
RELINQUISHED BY	DATE	RECEIVED BY	DATE	RELINQUISHED BY	DATE	RECEIVED BY (laboratory)	DATE
Signature		Signature		Signature		Signature	
Printed Name	TIME	Printed Name	TIME	Printed Name	TIME	Printed Name	TIME
Company		Company		Company		Company	

TOTAL NUMBER OF CONTAINERS: 8

METHOD OF SHIPMENT: Frank Jones

SPECIAL SHIPMENT/HANDLING OR STORAGE REQUIREMENTS:

DRY ICE IN CHEST

TANK L/C GASOLINE

A-5

SMC Laboratory — Analytical Chemistry

Client Name: D.R. Smith & Associates
Address : 7201 Fruitvale Ext.
Bakersfield, CA 93308

Date samples received : 06/01/90
Date analysis completed: 06/01/90
Date of report : 06/04/90

Project Name: Malibu Vine Yards
P.O.#: 03-0503-90

Laboratory No. 1795 through 1798

RESULTS OF ANALYSIS

#1795 ID: #2 (TH-1 @ 15')	ugm/gm	MDL,ugm/gm
Benzene	93	0.1
Toluene	400	0.1
Ethylbenzene	120	0.1
p-Xylene	130	0.1
m-Xylene	270	0.1
o-Xylene	190	0.1
Isopropylbenzene	4.8	0.1
TPH (Gasoline)	4,700	1.0

Method of Analysis for BTX/TPH (Gasoline): 3810/8020 (FID)
MDL = Minimum Detection Level
TPH = Total Petroleum Hydrocarbons
ugm/gm = micrograms per gram (parts per million)
ND = Not detected

Stan Cooper, Lab Manager

Brian Thompson
Laboratory Supervisor

3155 Pegasus Drive • Bakersfield, CA 93308 • (805) 393-3597
P.O. Box 80835 • Bakersfield, CA 93380 • FAX (805) 393-3623

Laboratory No. 1795 through 1798

RESULTS OF ANALYSIS

#1796 ID: #5 (TH-1 @ 30')	ugm/gm	MDL,ugm/gm
Benzene	100	0.1
Toluene	340	0.1
Ethylbenzene	94	0.1
p-Xylene	120	0.1
m-Xylene	260	0.1
o-Xylene	160	0.1
Isopropylbenzene	21	0.1
TPH (Gasoline)	4,400	1.0

#1797 ID: #9 (TH-1 @ 50')	ugm/gm	MDL,ugm/gm
Benzene	2.8	0.1
Toluene	20	0.1
Ethylbenzene	32	0.1
p-Xylene	40	0.1
m-Xylene	68	0.1
o-Xylene	77	0.1
Isopropylbenzene	27	0.1
TPH (Gasoline)	2,100	1.0

#1798 ID: #12 (TH-1 @ 65')	ugm/gm	MDL,ugm/gm
Benzene	.22	0.1
Toluene	.42	0.1
Ethylbenzene	2.4	0.1
p-Xylene	2.7	0.1
m-Xylene	3.3	0.1
o-Xylene	7.7	0.1
Isopropylbenzene	3.8	0.1
TPH (Gasoline)	310	1.0

Method of Analysis for BTX/TPH (Gasoline): 3810/8020 (FID)
MDL = Minimum Detection Level
TPH = Total Petroleum Hydrocarbons
ugm/gm = micrograms per gram (parts per million)
ND = Not detected

Brian Thompson
Laboratory Supervisor

SMC Laboratory — Analytical Chemistry

Client Name: D.R. Smith & Associates
Address : 7201 Fruitvale Ext.
Bakersfield, CA 93308

Date samples received : 06/06/90
Date analysis completed: 06/12/90
Date of report : 06/13/90

Project Name: Malibu Vine Yards
P.O. #: 03-0503-90

Laboratory No. 1853 through 1863

RESULTS OF ANALYSIS

#1853 ID: 13 (T.H. No. 1 @ 85')	ugm/gm	MDL,ugm/gm
Benzene	24	0.1
Toluene	72	0.1
Ethylbenzene	28	0.1
p-Xylene	34	0.1
m-Xylene	69	0.1
o-Xylene	50	0.1
Isopropylbenzene	11	0.1
TPH (Gasoline)	1,200	1.0

#1854 ID: 15 (T.H. No. 1 @ 95')	ugm/gm	MDL,ugm/gm
Benzene	2.3	0.1
Toluene	7.8	0.1
Ethylbenzene	3.7	0.1
p-Xylene	4.8	0.1
m-Xylene	10	0.1
o-Xylene	6.8	0.1
Isopropylbenzene	1.1	0.1
TPH (Gasoline)	190	1.0

Method of Analysis for BTX/TPH (Gasoline): 3810/8020 (FID)
MDL = Minimum Detection Level
TPH = Total Petroleum Hydrocarbons
ugm/gm = micrograms per gram (parts per million)
ND = Not detected

Stan Comer
Stan Comer
Laboratory Manager

3155 Pegasus Drive • Bakersfield, CA 93308 • (805) 393-3597
P.O. Box 80835 • Bakersfield, CA 93380 • FAX (805) 393-3623

Laboratory No. 1853 through 1863

RESULTS OF ANALYSIS

#1855 ID: 18 (T.H. No. 2 @ 15')	ugm/gm	MDL,ugm/gm
Benzene	2.9	0.1
Toluene	8.8	0.1
Ethylbenzene	5.7	0.1
p-Xylene	5.9	0.1
m-Xylene	11	0.1
o-Xylene	10	0.1
Isopropylbenzene	2.0	0.1
TPH (Gasoline)	250	1.0

#1856 ID: 21 (T.H. No. 2 @ 30')	ugm/gm	MDL,ugm/gm
Benzene	15	0.1
Toluene	49	0.1
Ethylbenzene	19	0.1
p-Xylene	24	0.1
m-Xylene	48	0.1
o-Xylene	37	0.1
Isopropylbenzene	7.2	0.1
TPH (Gasoline)	1,100	1.0

#1857 ID: 25 (T.H. No. 2 @ 50')	ugm/gm	MDL,ugm/gm
Benzene	.86	0.1
Toluene	1.7	0.1
Ethylbenzene	5.4	0.1
p-Xylene	5.2	0.1
m-Xylene	6.0	0.1
o-Xylene	15	0.1
Isopropylbenzene	6.9	0.1
TPH (Gasoline)	660	1.0

Method of Analysis for BTX/TPH (Gasoline): 3810/8020 (FID)
MDL = Minimum Detection Level
TPH = Total Petroleum Hydrocarbons
ugm/gm = micrograms per gram (parts per million)
ND = Not detected

Stan Comer
Stan Comer
Laboratory Manager

Laboratory No. 1853 through 1863

RESULTS OF ANALYSIS

#1858 ID: 26 (T.H. No. 3 @ 10')	ugm/gm	MDL, ugm/gm
Benzene	ND	0.1
Toluene	ND	0.1
Ethylbenzene	ND	0.1
p-Xylene	ND	0.1
m-Xylene	ND	0.1
o-Xylene	ND	0.1
Isopropylbenzene	ND	0.1
TPH (Gasoline)	ND	1.0

#1859 ID: 29 (T.H. No. 3 @ 25')	ugm/gm	MDL, ugm/gm
Benzene	ND	0.1
Toluene	ND	0.1
Ethylbenzene	ND	0.1
p-Xylene	ND	0.1
m-Xylene	ND	0.1
o-Xylene	ND	0.1
Isopropylbenzene	ND	0.1
TPH (Gasoline)	ND	1.0

#1860 ID: 30 (T.H. No. 3 @ 30')	ugm/gm	MDL, ugm/gm
Benzene	ND	0.1
Toluene	ND	0.1
Ethylbenzene	ND	0.1
p-Xylene	ND	0.1
m-Xylene	ND	0.1
o-Xylene	ND	0.1
Isopropylbenzene	ND	0.1
TPH (Gasoline)	2.7	1.0

Method of Analysis for BTX/TPH (Gasoline): 3810/8020 (FID)
MDL = Minimum Detection Level
TPH = Total Petroleum Hydrocarbons
ugm/gm = micrograms per gram (parts per million)
ND = Not detected

Stan Comer
Stan Comer
Laboratory Manager

Laboratory No. 1853 through 1863

RESULTS OF ANALYSIS

#1861 ID: 31 (T.H. No. 3 @ 35')	ugm/gm	MDL,ugm/gm
Benzene	ND	0.1
Toluene	ND	0.1
Ethylbenzene	ND	0.1
p-Xylene	ND	0.1
m-Xylene	ND	0.1
o-Xylene	ND	0.1
Isopropylbenzene	ND	0.1
TPH (Gasoline)	ND	1.0

#1862 ID: 33 (T.H. No. 3 @ 42')	ugm/gm	MDL,ugm/gm
Benzene	ND	0.1
Toluene	ND	0.1
Ethylbenzene	ND	0.1
p-Xylene	ND	0.1
m-Xylene	ND	0.1
o-Xylene	ND	0.1
Isopropylbenzene	ND	0.1
TPH (Gasoline)	ND	1.0

#1863 ID: 35 (T.H. No. 3 @ 50')	ugm/gm	MDL,ugm/gm
Benzene	ND	0.1
Toluene	ND	0.1
Ethylbenzene	ND	0.1
p-Xylene	ND	0.1
m-Xylene	ND	0.1
o-Xylene	ND	0.1
Isopropylbenzene	ND	0.1
TPH (Gasoline)	ND	1.0

Method of Analysis for BTX/TPH (Gasoline): 3810/8020 (FID)
MDL = Minimum Detection Level
TPH = Total Petroleum Hydrocarbons
ugm/gm = micrograms per gram (parts per million)
ND = Not detected

Stan Comer
Stan Comer
Laboratory Manager

CHAIN OF CUSTODY RECORD

Location of Sampling	Collector	Client
Name:	Name: Tom Gutcher	Name: Frank Jones
Company: Malibu Vineyards	Company: D.R. Smith & Associates	Company: CALPI, Inc
Address: Section 30, T.28S., R27E, MDB&M, Kern County, Calif	Address: 7201 Fruitvale Ext. Bakersfield, CA 93308	Address: P.O. Box 6278 Bakersfield, CA 93386
Telephone: ( )	Telephone: (805) 589-7861	Telephone: (805) 589-5648
Bill to Property Owner ( )	Bill to Collector ( )	Bill to Client (X) P.O.# 03-0503-90

Sampling Method: Split Spoon Sample Type: Soil Preservation Methods: Keep Cold

Sample No.	Date	Time	Description	Analysis Requested	Laboratory No.
2	05/31/90	0925	T.H. No. 1-15'	T.P.H. Gasoline, B.T.X. & E.	1795
5	"	1200	T.H. No. 1-30'	" " "	1796
9	"	1355	T.H. No. 1-50'	" " "	1797
12	"	1532	T.H. No. 1-65'	" " "	1798

Relinquished By: Tom Gutcher	Company: D.R. Smith & Assoc.	Date: 06/01/90
Received By: Mary Khadjadorian	Company: SMC Lab Samples Cold & Sealed	Date: 06/01/90 11:25
Relinquished By:	Company:	Date:
Received By:	Company:	Date:
Relinquished By:	Company:	Date:
Received By:	Company:	Date:

DUANE R. SMITH AND ASSOCIATES Sheet 1 of 1

CHAIN OF CUSTODY RECORD

Location of Sampling	Collector	Client
Name:	Name: Tom Gutcher	Name: Frank Jones
Company: Malibu Vineyards	Company: D.R. Smith & Associates	Company: CALPI, Inc.
Address: Section 30, T.28S., R.27E., MDB&M, Kern County, CA	Address: 7201 Fruitvale Ext. Bakersfield, CA 93308	Address: P.O. Box 6278 Bakersfield, CA 93386
Telephone: ( )	Telephone: (805) 589-7861	Telephone: (805) 589-5648
Bill to Property Owner ( )	Bill to Collector ( )	Bill to Client (X P.O.# 03-0503-90

Sampling Method: Split Spoon Sample Type: Soil Preservation Methods: Keep Cold

Sample No.	Date	Time	Description	Analysis Requested	Laboratory No.
13	06/05/90	0937	T.H. No. 1 - 85'	T.P.H. Gasoline, B.T.X.&E.	1853
15	"	1014	T.H. No. 1 - 95'	" " "	1854
18	"	1408	T.H. No. 2 - 15'	" " "	1855
21	"	1529	T.H. No. 2 - 30'	" " "	1856
25	"	1641	T.H. No. 2 - 50'	" " "	1857
26	06/06/90	0829	T.H. No. 3 - 10'	" " "	1858
29	"	0913	T.H. No. 3 - 25'	" " "	1859
30	"	0929	T.H. No. 3 - 30'	" " "	1860

Relinquished By: Tom Gutcher	Company: D.R. Smith & Assoc.	Date: 06/06/90
Received By: Mary Khachadoorian	Company: SMC Lab / Cold & sealed	Date: 06/06/90 1:45
Relinquished By:	Company:	Date:
Received By:	Company:	Date:
Relinquished By:	Company:	Date:
Received By:	Company:	Date:

DUANE R. SMITH AND ASSOCIATES

CHAIN OF CUSTODY RECORD

Location of Sampling	Collector	Client
Name:	Name: Tom Gutcher	Name: Frank Jones
Company: Malibu Vineyards	Company: D.R. Smith & Associates	Company: CALPI, Inc.
Address: Section 30, T. 28S, R. 27E, MDB&M, Kern County, CA	Address: 7201 Fruitvale Ext. Bakersfield, CA 93308	Address: P.O. Box 6278 Bakersfield, CA 93386
Telephone: ( )	Telephone: (805) 589-7861	Telephone: (805) 589-5648
Bill to Property Owner ( )	Bill to Collector ( )	Bill to Client (X) P.O.# 03-0503-90

Sampling Method: Split Spoon Sample Type: Soil Preservation Methods: Keep Cold

Sample No.	Date	Time	Description	Analysis Requested	Laboratory No.
31	06/06/90	1033	T.H. No. 3-35'	T.P.H. Gasoline, B.T.X.&E.	1861
33	"	1052	T.H. No. 3-42'	" " "	1862
35	"	1116	T.H. No. 3-50'	" " "	1863

Relinquished By: Tom Gutcher Company: D.R. Smith & Associates Date: 06/06/90

Received By: Mary Khadjadour Company: SMC Lab / Cold & sealed Date: 06/06/90 1:45

Relinquished By: Company: Date:

Received By: Company: Date:

Relinquished By: Company: Date:

Received By: Company: Date:

DUANE R. SMITH AND ASSOCIATES Sheet 2 of 2

APPENDIX B

LOGS OF TEST HOLES

LOG OF TEST HOLE

D. R. SMITH & ASSOCIATES

LOCATION: MALIBU VINEYARDS

TEST HOLE IDENTIFICATION: T.H. NO. 1

DATE DRILLED: 05/31/90 ELEVATION: 480±'

RIG TYPE: MOBILE DRILL B-53 AUGER RIG

Depth (feet)	Lithologic Column	Sample Depths	Meter Reading (ppm)	Total Petroleum Hydrocarbons ppm gasoline (X) / ppm diesel	Lithologic Description
0					Backfill, silt, brown, very sandy, fine to coarse grained, loose, slightly moist, gasoline odor.
10		*	960		Silt, medium brown, sandy, medium to coarse grained, buff mottling common, firm, dry, gasoline odor.
					tough drilling
15		⊛	2000+	4700	strong gasoline odor
20		*	820		strong gasoline odor
25		*	510		gravel rare, gasoline odor
					rig down about 1/2 hour
30		⊛	520	4400	very sandy, medium to very coarse grained, strong gasoline odor
35		*	440		minor sand content, fine to medium grained, moist, gasoline odor
40		*	620		Sand, brown, very silty, fine to very coarse grained, predominantly medium, poorly sorted, firm, moist, strong gasoline odor.

Total Depth:

* - Sample Depth ⊛ - Sample Analyzed

LOG OF TEST HOLE

D. R. SMITH & ASSOCIATES

LOCATION: MALIBU VINEYARDS

TEST HOLE IDENTIFICATION: T.H. NO. 1

DATE DRILLED: 05/31/90 ELEVATION: 480±'

RIG TYPE: MOBILE DRILL B-53 AUGER RIG

Depth (feet)	Lithologic Column	Sample Depths	Meter Reading (ppm)	Total Petroleum Hydrocarbons ppm gasoline (X) / ppm diesel	Lithologic Description
40					gravel common
45		*	440		Sand, grey, very fine to medium grained, coarse sand rare, loose, moist, strong gasoline odor.
					Sand, brown, very silty, fine to very coarse grained, predominantly medium, poorly sorted, firm, moist, strong gasoline odor.
50		⊛	500	2100	Sand, grey, very fine to very coarse grained, very poorly sorted, subangular to subrounded, loose, moist, strong gasoline odor.
55		*	510		gravel abundant, cobbles common, strong gasoline odor
60		*	300		very silty, strong gasoline odor
65		⊛	500	310	alternating silty and non-silty layers, strong gasoline odor cobbles abundant POOH to change drill bit
70					no sample - rocks
75					no sample - rocks
80					rig failed at 79' - drilling to continue 6/5

Total Depth:

* - Sample Depth ⊛ - Sample Analyzed

LOG OF TEST HOLE

D. R. SMITH & ASSOCIATES

LOCATION: MALIBU VINEYARDS

TEST HOLE IDENTIFICATION: T.H. NO. 1

DATE DRILLED: 06/05/90 ELEVATION: 480±'

RIG TYPE: MOBILE DRILL B-53 AUGER RIG

Depth (feet)	Lithologic Column	Sample Depths	Meter Reading (ppm)	Total Petroleum Hydrocarbons ppm gasoline (X) / ppm diesel	Lithologic Description
80					
85		⊛	945	▼ 1200	Silt, brown, very sandy, fine to very coarse grained, gravel common, slightly indurated, moist, gasoline odor.
					cobbles common
90		*	870		insufficient sample for laboratory analysis, gasoline odor
95		⊛	510	190	greenish-brown color, gasoline odor
100				▽	unable to obtain sample, drilling terminated
					Free groundwater encountered at 100'.
					SWL at about 85' after 30 minutes.
105					
110					▼ - Indicates Standing Water Level (SWL) after 30 minutes.
					▽ - Indicates depth of first water.
115					
120					

Total Depth: 100' * - Sample Depth ⊛ - Sample Analyzed Sheet 3 of 3

LOG OF TEST HOLE

D. R. SMITH & ASSOCIATES

LOCATION: MALIBU VINEYARDS

TEST HOLE IDENTIFICATION: T.H. NO. 2

DATE DRILLED: 06/05/90 ELEVATION: 480±'

RIG TYPE: MOBILE DRILL B-53 AUGER RIG

Depth (feet)	Lithologic Column	Sample Depths	Meter Reading (ppm)	Total Petroleum Hydrocarbons ppm gasoline (X) / ppm diesel	Lithologic Description
0					Silt, medium brown, sandy, fine to medium grained, buff mottling common, unconsolidated, slightly moist, no hydrocarbon odor.
5					gasoline odor
10		*	760		firm, gasoline odor
15		⊛	660	250	medium to coarse grained sand, very firm, cemented, strong gasoline odor
20		*	795		gravel common, well indurated, strong gasoline odor
					POOH to change drill bit
25		*	645		strong gasoline odor
30		⊛	605	1100	very sandy, medium to very coarse grained, strong gasoline odor
35		*	650		gasoline odor
40			---		6" recovery - no meter reading

Total Depth:

* - Sample Depth ⊛ - Sample Analyzed

LOG OF TEST HOLE

D. R. SMITH & ASSOCIATES

LOCATION: MALIBU VINEYARDS

TEST HOLE IDENTIFICATION: T.H. NO. 2

DATE DRILLED: 06/05/90 ELEVATION: 480±'

RIG TYPE: MOBILE DRILL B-53 AUGER RIG

Depth (feet)	Lithologic Column	Sample Depths	Meter Reading (ppm)	Total Petroleum Hydrocarbons ppm gasoline (X) / ppm diesel	Lithologic Description
40					
45		*	710		Sand, grey, very fine to medium grained, coarse sand rare, loose, slightly moist, strong gasoline odor.
50		⊛	665	660	gasoline odor
55					
60					
65					
70					
75					
80					

Total Depth: 50'

* - Sample Depth ⊛ - Sample Analyzed

Sheet 2 of 2

LOG OF TEST HOLE

D. R. SMITH & ASSOCIATES

LOCATION: MALIBU VINEYARDS
TEST HOLE IDENTIFICATION: T.H. NO. 3
DATE DRILLED: 06/06/90 ELEVATION: 480±'
RIG TYPE: MOBILE DRILL B-53 AUGER RIG

Depth (feet)	Lithologic Column	Sample Depths	Meter Reading (ppm)	Total Petroleum Hydrocarbons ppm gasoline (X) / ppm diesel	Lithologic Description
0					Sand, light brown, silty, fine to very coarse grained, gravel rare, poorly sorted, loose, very slightly moist, no hydrocarbon odor.
10		⊛	3.1	None Detected	no hydrocarbon odor
15		*	10.0		Silt, medium brown, sandy, medium to coarse grained, buff mottling common, very firm, cemented, very slightly moist, no hydrocarbon odor.
20		*	2.3		no hydrocarbon odor
25		⊛	1.8	None Detected	no hydrocarbon odor
30		⊛	19.3	2.7	very sandy, medium to very coarse grained, slightly moist, faint gasoline odor
35		⊛	9.3	None Detected	no hydrocarbon odor
40		*	8.1		sampling difficulties - no laboratory sample, no hydrocarbon odor

Total Depth:

* - Sample Depth ⊛ - Sample Analyzed

LOG OF TEST HOLE

D. R. SMITH & ASSOCIATES

LOCATION: MALIBU VINEYARDS

TEST HOLE IDENTIFICATION: T.H. NO. 3

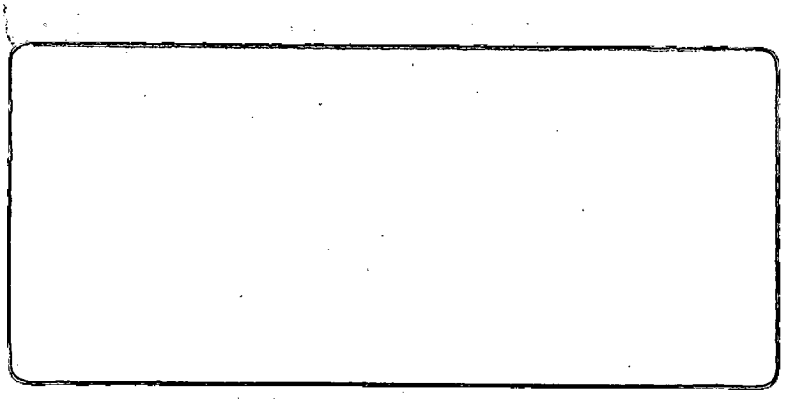
DATE DRILLED: 06/06/90 ELEVATION: 480±'

RIG TYPE: MOBILE DRILL B-53 AUGER RIG

Depth (feet)	Lithologic Column	Sample Depths	Meter Reading (ppm)	Total Petroleum Hydrocarbons ppm gasoline (X) / ppm diesel	Lithologic Description
40					no hydrocarbon odor
		⊛	1.2	None Detected	Sand, light grey to tan, very fine to very coarse grained, gravel abundant, cobbles rare, poorly sorted, subangular to subrounded, loose, dry, no hydrocarbon odor.
45		*	2.6		
50		⊛	2.1	None Detected	gravel rare, cobbles absent, no hydrocarbon odor
55					
60					
65					
70					
75					
80					

Total Depth: 50'

* - Sample Depth ⊛ - Sample Analyzed



groundwater resources inc.

RANDALL L. ABBOTT
Agency Director
(805) 861-3502

STEVE McCALLEY
Director

2700 M Street, Suite 300
Bakersfield, CA 93301
Telephone (805) 861-3636
Telecopier (805) 861-3429

RESOURCE MANAGEMENT AGENCY

DEPARTMENT OF ENVIRONMENTAL HEALTH SERVICES

September 4, 1990

Nick Zaninovich
Malibu Vineyards
P.O. Box 1266
Delano, CA 93215

Re: Required Site Characterization of Groundwater Contamination.

Dear Mr. Zaninovich:

This Department has completed the review of the soil site characterization at the Malibu Vineyards facility located near the intersection of Imperial and Saco Road in Bakersfield, California.

The study results indicate soil contamination has migrated a minimum of 100 feet and may have impacted perched groundwater. Further characterization is required to fully delineate the extent of soil and groundwater contamination. An additional workplan must now be prepared for our review. In accordance with Kern County Environmental Health Services Department Handbook UT-35 a groundwater investigation workplan must be prepared for our review within 30 days of this notice.

Should you have any questions regarding the above matters, I may be contacted at (805) 861-3636, Ext. 588.

Sincerely,

Joe Canas
Hazardous Materials Specialist II
Hazardous Materials Management Program

JC:ch
canas\malibu.let

WATER RESOURES CONTROL BOARD
DIVISION OF WATER QUALITY
UST CLEANUP PROGRAM
SITE SPECIFIC QUARTERLY REPORT

CONTRACTOR NO: 15000 SOURCE OF FUNDS: S SUBSTANCE: 8006619

SITE NO: 390044 FEDERAL EXEMPT: N PETROLEUM: Y

SITE NAME: MALIBU VINEYARDS DATE REPORTED: 12/08/89

ADDRESS: IMPERIAL AND SACO ROADS DATE CONFIRMED: 12/08/89

CITY/ZIP: BAKERSFIELD, CA 93308 CATEGORY: R

SITE STATUS

CASE TYPE: S CONTRACT STATUS: 4 EMERGENCY RESPONSE:

RP SEARCH: S DATE UNDERWAY: 12/08/89 DATE COMPLETED: 12/08/89

PRELIMINARY ASSESSMENT: C DATE UNDERWAY: 12/05/80 DATE COMPLETED: 01/08/90

REMEDIAL INVESTIGATION: DATE UNDERWAY: / / DATE COMPLETED: / /

REMEDIAL ACTION: DATE UNDERWAY: / / DATE COMPLETED: / /

POST REMEDIAL ACTION MONITORING DATE UNDERWAY: / / DATE COMPLETED:

ENFORCEMENT ACTION TAKEN: TYPE: DATE TAKEN:

RAP REQUIRED: DATE APPROVED:

CASE CLOSED: DATE CLOSED: / /

DATE EXCAVATION STARTED: REMEDIAL ACTIONS TAKEN:

RESPONSIBLE PARTY

CONTACT NAME: NICK ZANINOVICH SPECIALIST: C

COMPANY NAME: MALIBU VINEYARDS SENSITIVITY: ES

ADDRESS: P. O. BOX 1266WY VERIFIED ( )

CITY/STATE: DELANO, CA 93215 DATE OF REPORT: 01/10/90

RESNA/GROUNDWATER
RESOURCES, INC.
Working to Restore Nature

1500 SO. UNION AVE.
BAKERSFIELD, CALIFORNIA 93307

General Engineering Contractor
Class A/Haz License No. 520768

RECEIVED
FEB 11 1991

MALIBU VINEYARDS
Section 30, T.28S., R.27E.
Kern County, California

SITE ASSESSMENT REPORT
February 8, 1991

MAILING ADDRESS: P. O. BOX 9383, BAKERSFIELD, CA 93389 (805) 835-7700
FAX (805) 835-7717

MALIBU VINEYARDS
Section 30, T.28S., R.27E.
Kern County, California

SITE ASSESSMENT REPORT
February 8, 1991

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- 4.2 Site Hydrogeology
- 4.3 Soil Samples, Results of Analyses
- 4.4 MW Water Samples, Results of Analyses

5.0 INTERPRETATION AND DISCUSSION OF FINDINGS
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- 5.2 Relationship of the Vadose Plume to Groundwater
- 5.3 Gasoline Concentrations in Water Samples

6.0 RECOMMENDATIONS
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- 6.2 No Action Recommendation

7.0 REFERENCES
8.0 LIMITATIONS

ILLUSTRATIONS

Plate 1 Location Map
Plate 2 Plot Plan
Plate 3 Cross-Section A-B
Plate 4 Log of Boring

APPENDICES

Appendix A Chain of Custody and Laboratory Analysis
Appendix B Sampling Protocol

1.0 INTRODUCTION

Lucich Farms has retained Groundwater Resources, Inc. (GRI), a RESNA Industries company, to perform a site assessment at the Malibu Vineyards equipment facility located at the northeast corner of Section 30, T. 28 S., R. 27 E., two miles north of 7th Standard Road and 1.5 miles west of Hwy 65, north of Bakersfield. The work is in response to a request from the Kern County Department of Environmental Health Services (DEHS).

2.0 BACKGROUND AND PREVIOUS WORK

On December 5, 1989 a 1,000 gallon underground gasoline storage tank was removed from the above referenced site. The analytical report for the samples collected during the removal indicated that significant levels of hydrocarbons were present in the soil below the tank location. A Phase I Site Characterization was performed by Duane R. Smith and Associates in August 1990. The results from that report indicated that soil contamination was present below the tank location to a depth of at least 100 feet with a lateral extent of approximately 25 feet. Groundwater in the region was reported to be greater than 300 feet below grade. Perched groundwater, however, was discovered while drilling the borings for the site characterization. The water level in the deepest boring was measured at a depth of 85 feet. The presence of perched groundwater has been associated with the large unlined water reservoir located directly east of the tank location. The Phase I Site Characterization Study recommended additional work to assess possible groundwater contamination. On September 4, 1990 a letter was issued by the Kern County Department of Environmental Health Services requesting additional work to delineate the extent of soil and groundwater contamination. The drilling and well construction work described in this report was performed November 28 through December 4, 1990.

3.0 PROCEDURES

3.1 Drilling and Soil Sampling

Three test holes were drilled and sampled on the site using a 10-inch diameter air-percussion drill. Each of the test holes was immediately converted into a groundwater monitoring well. The drilling was done by Layne Environmental Services of Fontana, California. MW-1 was drilled at the center of the former tank location to best determine the presence of contaminated groundwater directly below the suspected source. MW-2 and MW-3 were located to facilitate the determination of a water table gradient if water should be encountered.

why not from cores

Cores were taken with a split spoon sampler driven by steel rods with a hydraulic hammer at the surface. Field screening of the cores was done with an HNU photoionization detector (PID). The lower brass tube in each core was sealed in the sleeve with teflon lined plastic end-caps and integrity tape and chilled for transportation to a State certified laboratory. A lithologic description of the samples and cuttings was recorded on the boring log. The core-sampler was washed and rinsed after each use to avoid cross contamination. The cored samples were carried with a chain of custody to SMC Laboratory in Bakersfield.

Descriptions of the cuttings were obtained by grab-sampling the cuttings immediately after they were carried to the surface by the circulation air. PID readings of the grab samples were taken at intervals of 10 to 15 feet when possible.

3.2 Monitoring Well Construction and Sampling

Each monitoring well was constructed inside of the inner barrel of the 10-inch diameter air-drill string. Four-inch diameter, schedule 40 PVC casing was put in place and the sand-pack and bentonite seal were poured between the drill pipe and the PVC to fill the drill-hole annulus as the drill pipe was withdrawn from the hole. Slot size of the screen interval is .020 inches and the sand size is #2/12. The placement of each seal was witnessed by the DEHS, after which the upper part of the well, above the seal, was filled with neat cement-slurry, tremied to the surface. For protection a traffic box was set in concrete over each well-head with the surface sloping away from the well to turn away surface-runoff water. Well construction is diagrammed on the Boring Logs, Plate 4.

A summary of the casing placement is as follows:

Well #	Amount of screen (ft)	Top & bottom of screen (ft)	Screen below water (ft)
MW-1	100	129 to 29	10
MW-2	40	129 to 89	18
MW-3	20	130 to 110	14

On December 17, 1990 the wells were measured for depth to water, each well was purged about three well volumes (150 gallons) and samples were taken for laboratory analysis. Purging and sampling was done with a submerged piston pump, actuated by an air supply which is isolated from the water. A split sample was taken from the pumped water-stream, which flowed at about 3.5 gpm, at the end of the purging. The pump was decontaminated inside and outside before each sampling to prevent cross-contamination between wells. Samples were labeled and chilled for transporting to SMC Laboratory under chain of custody.

4.0 FINDINGS

4.1 Regional Hydrogeology

The site is located on Pleistocene nonmarine sediments comprised of slightly consolidated and dissected older fan deposits at the east margin of the Sierra Nevada (1). An open-file report of an hydrogeologic study of this Kern River alluvial fan area describes the sediments under this site as unconsolidated medium sand underlain by a basal gravel lentil. The gravel lentil is mapped in outcrop 1.5 miles northeast, dipping southwest 1.25 degrees (2 ft/100 ft), and occurring beneath the Malibu Vineyards site at a depth of about 50 feet. Specific yield is about 15 percent and permeability (conductivity) is between 100 and 10000 (2).

4.2 Site Hydrogeology

The upper 50 feet of sediments at this site are tan, silty sand, becoming siltier and clayey with increasing depth. Thin clay beds become common below 50 feet along with pebble and cobble beds in a silty clay matrix, which is the top of the gravel lentil described above. Each of the holes bottomed in sandy silt or clayey, silty sand.

Water was first encountered in MW-1 at about 122 feet preceded by a temporary lack of cuttings after which a slug of muddy water and cuttings was blown to the surface. No gasoline rainbows or odors were observed in the water and no sample

of the muddy water was taken for analysis. The hole was advanced to 129 feet continuously accompanied by a slurry of water and cuttings. About half an hour after drilling stopped at total depth, the water rose to 119 feet from the surface.

In MW-2 the water did not appear while drilling until the total depth of 130 feet was reached. The deepest cuttings were observed to be less than saturated but after 15 minutes passed the volume of water removed to clean out the hole was about 150 gallons. There were no indications of gasoline contamination in the water.

Wet cuttings from MW-3 were blown to the surface from thin intervals at depths of 110 feet and 120 feet while drilling. Water accompanied the cuttings from 129 feet. About 16 hours later, on the following day, the water was measured at 116 feet.

Depth to water has been measured and recorded in each of the three wells since December 17, 1990. Both measurements are tabulated as follows:

	MW-1			MW-2			MW-3		
Date	Depth	Elevation	Difference	Depth	Elevation	Difference	Depth	Elevation	Difference
12/17/90	112.19	367.81		110.83	368.25		109.78	370.06	
01/07/91	112.39	367.61	-.20	111.06	368.02	-.23	110.85	368.99	-1.07
01/13/91	(Pond drained)								
01/15/91	112.49	367.51	-.10	111.18	367.90	-.12	111.14	368.70	-.29
01/22/91	112.57	367.43	-.08	111.26	367.82	-.08	111.23	368.61	-.09
02/01/91	112.79	367.21	-.22	111.47	367.61	-.21	112.64	368.20	-.41

The relative depth to water in the three wells stayed the same, with MW-1 being the lowest and MW-3 the highest, but the levels dropped by different amounts in each well.

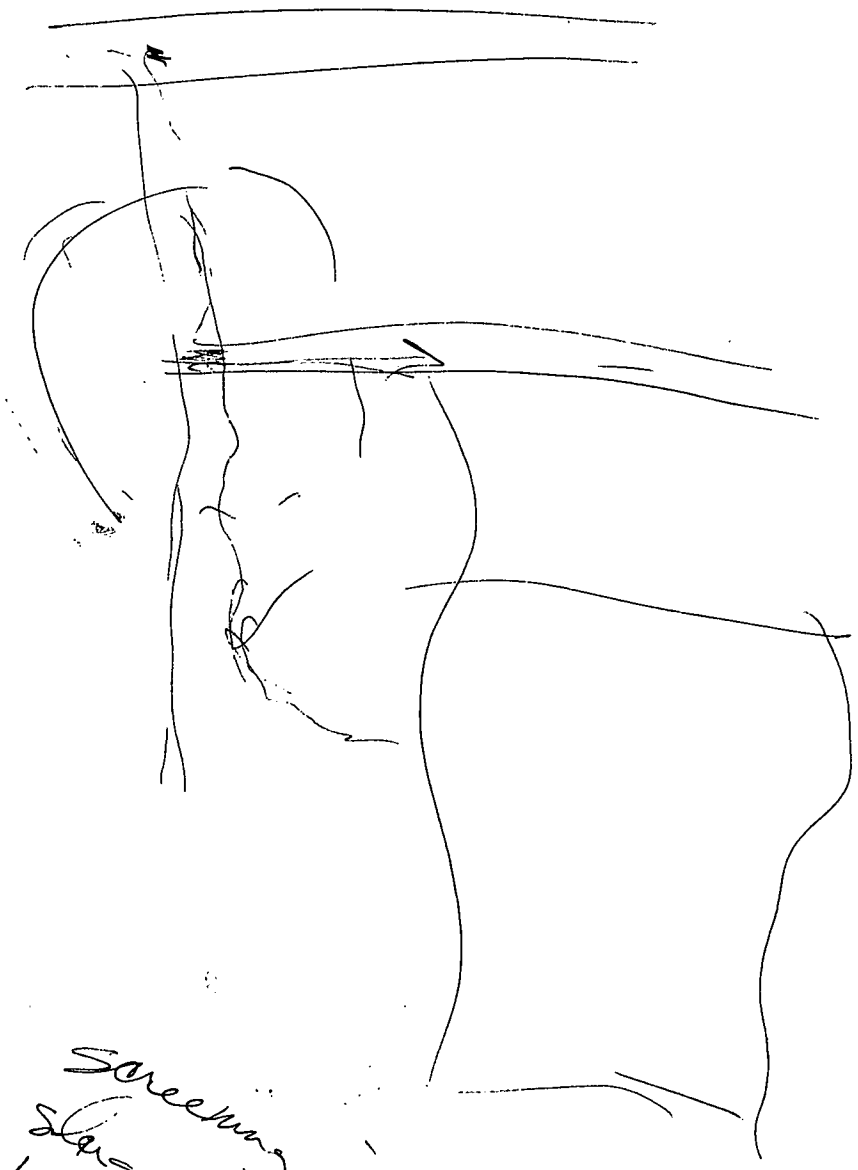
4.3 Soil Samples, Results of Analyses

Cored Samples from 50 feet, 90 feet, and 115 feet in MW-1 were taken for lab analyses.

Table 1
Concentrations reported in ugm/gm (ppm)

Sample No.	Benzene	TPH(gasoline)
MW1-50	.008	8.8
MW1-90	1.7	55
MW1-115	ND	ND

The complete laboratory report is in Appendix A.



screening intervals ?
slug test
H_2O Q

4.4 MW Water Samples, Results of Analyses

Table 2
Concentrations reported in ugm/L (ppb)

	(Sampled 12/17/90)		*(Sampled 1/22/91)*	
Well No.	**Benzene**	**TPH(gas)**	**Benzene**	**TPH(gas)**
MW-1	140	3600	840	15,000
MW-2	ND	ND	ND	ND
MW-3	ND	ND	ND	ND

112 feet

The complete laboratory report is in Appendix A.

5.0 INTERPRETATION AND DISCUSSION OF FINDINGS

5.1 The Occurrence and Movement of Groundwater

The soil at this site is heterogeneous to the extent that in a ten-foot interval of drilling several distinguishable texture changes may occur. Clayey beds becoming common below 50 feet, singly and in bundles, are acting as barriers to the vertical movement of percolating water below the irrigation pond to the east of the work site (Cross-Section A-B, Plate 3). Each horizontal, clayey barrier forces the water to move laterally until it reaches the edge of a clayey terrace where it can cascade to the next step in its descent. In this way, the percolating pond-water moved into the area of MW-1 at a depth of about 122 feet. In stair-step fashion, the water moved by different paths to 129 feet in MW-2 and 110 feet in MW-3. The large change in depth to water observed 2/1/91 is due to draining the pond 1/13/91.

The three wells are not in direct hydraulic communication as is shown by the lowering of water in the wells at different rates. If they were hydraulically connected and with the assumption that the pond is the source of the water, the elevations of water in the wells suggest an impossibility, that the hydraulic gradient is from west to east, from the wells toward the pond. The large change in depth to water in all MWs observed 2/1/91 show they share a common source, the pond, which was drained dry 1/13/91. In less than three weeks the MWs are reflecting the loss of water from the pond.

5.2 Relationship of the Vadose Plume to Groundwater

The lateral extent of the vadose plume remains the same as was reported in the previous assessment work. The base of the contamination is in the clay beds at 110 feet to 115 feet in MW-1. Described as a cylinder 45 feet in diameter and 100 feet in height, the plume volume is 5887.5 cubic yards. Because clean water was sampled in MW-2 and MW-3 it is apparent that the water did not move laterally from below the pond through the vadose plume en route to those more distant wells. Furthermore, the dynamics of water entry into MW-1 suggests that the water which entered the well at total depth could have been clean initially and that the gasoline contamination could have been the result of its rising to be in contact with the vadose plume at 110 to 115 feet. A clean, unsaturated core was taken from three to four feet deeper than the subsequent rise of contaminated water in MW-1.

The tendency for the water to rise in MW-1 and MW-2 and seek a level higher than first occurrence while drilling may mean that thin , saturated beds were penetrated at shallower depths without being identified. Or it may be an indication of semi-confined water moving under hydraulic head. The observation of water rising to 85 feet in T.H. No. 1 was reported during previous assessment work by Duane Smith and Associates. The change of standing-water levels in the three MWs indicates a dynamic situation in which each of the three unrelated water levels is influenced by the percolation rate below the irrigation pond. It is predictable that in the absence of percolation from the pond there would be no groundwater in the MWs at this site.

5.3 Gasoline Concentrations in Water Samples

The amount of gasoline constituents reported in MW-1 water samples collected 12/17/90 and 1/22/91 differed by a noticeable amount, the latter sample having four to six times more BTEX-TPH than the earlier one. This is caused by the movement of water into the vadose plume. Laboratory procedures and calculations have been checked to verify this indication that the water in MW-1 contained more gasoline the second time it was sampled.

As discussed above, the rise of water from 122 feet, where it was first encountered, to 112 feet, where the level stabilized, indicates some hydraulic head induced by the water percolating from the irrigation pond. While the water rose in MW-1 it came in contact with unsaturated soil in the vadose plume which should cause an increase in hydrocarbon concentration the water.

6.0 RECOMMENDATIONS

GRI recommends action be taken as described in paragraph 6.1, below, which is no remediation of the vadose plume, seal the pond and monitor the groundwater wells to determine a further course of action for the site.

6.1 No Remediation. Seal the Pond. Monitor the Wells.

Sealing of the pond will eliminate the presence of groundwater which might come in contact with gasoline in the soil, and for the following reasons no remediation of the vadose plume will be required. The vadose plume is situated in a rarely occupied area of the vineyard facility so that there would be no regular exposure of the workers to possible surface emissions. The nearest regularly occupied spot is an employee's residence approximately 150 feet northwest of MW-1, in the prevailing up-wind direction. A crown or gradient in the ground surface over the vadose plume is recommended to assure that no ponding of surface-runoff water would occur to cause percolation through the plume.

Sealing the bottom of the pond would stop the generation of a contaminated groundwater plume by preventing the water from percolating in contact with the vadose plume where it acquires dissolved gasoline constituents. There would also

be a calculable positive economic effect if irrigation water were to be retained in the pond. The costs of lining the pond range from about $20,000 for installation of a bentonite clay liner to $35,000 for a heavy plastic liner.

In order to gain more information about the groundwater plume, monitoring the water levels and the hydrocarbon concentration levels in the water is recommended. Information gained will suggest the mobility of the plume and the possible risk level. Reports of findings with a recommendation regarding further action or no action will be made quarterly for one year to the DEHS.

Good

6.2 No Action Recommendation

No action is recommended for the vadose plume because the remote location of the site renders the gasoline in the soil a low risk to possible biological receptors. The taking of no action is not recommended for the groundwater plume, however, because the groundwater contamination has not been characterized. The usual information, such as the presence of gasoline contamination in water from one of the wells, and water-levels from the three wells indicate that the groundwater system is complex. There is no feasible, conventional way, however, to assess the size and shape, or the amount and distribution or the fate of the groundwater plume; therefore, the recommendation of paragraph 6.1 is made.

7.0 REFERENCES

does this mean to drain the area

(1) Geologic Map of California, Bakersfield Sheet, Scale 1:250,000. 1965. Division of Mines and Geology, Ferry Building, San Francisco.

(2) Groundwater Geology and Hydrology of the Kern River Alluvial-Fan Area, California. By R. H. Dale, James J. French, and G. V. Gordon. 1966. Figures 7 and 10. Open-File Report #66-21. U.S. Geological Survey, Water Resources Division, Menlo Park, California.

8.0 LIMITATIONS

This report was prepared for the exclusive use of Malibu Vineyards as it relates to the property described. The discussion and conclusions presented in this report are based on:

- The test borings performed at this site.
- The observations of field personnel.
- The results of laboratory tests performed by SMC Laboratory, Bakersfield, California.
- Our understanding of the regulations of Kern County and the California Regional Water Quality Control Board.

Possible variations in the soil or groundwater conditions which may exist beyond the points explored in this investigation might effect the validity of this report unless those variations or conditions come to our attention and are reviewed and assimilated into the conclusions and recommendations of this

report. Also, changes in the hydrologic conditions found could occur with time due to variations in rainfall, temperature, regional water usage, or other factors, any of which could effect this report.

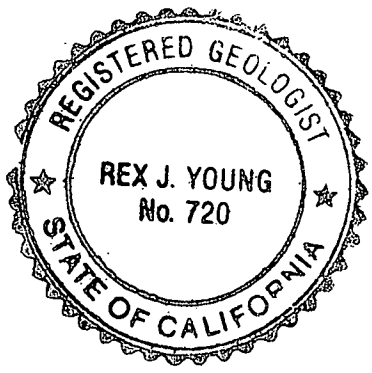
The services performed by GRI have been conducted in a manner consistent with the levels of care and skill ordinarily exercised by professionals currently practicing under similar conditions in California. The absence of contamination on or beneath the property cannot be guaranteed by this report. GRI is not responsible for any contamination or hazardous material found on the property. No other warranty expressed or implied, is made.

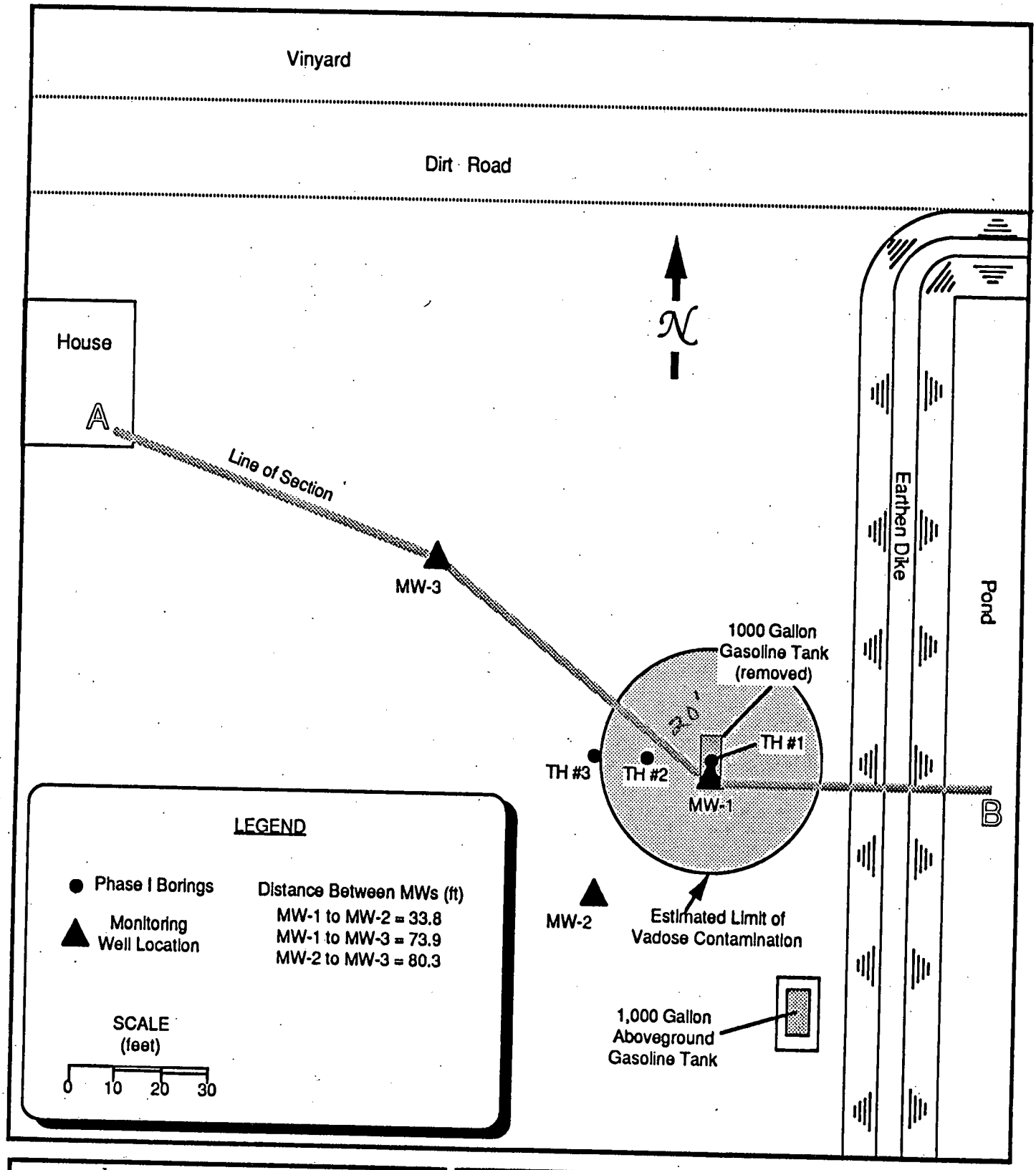
Respectfully submitted,

GROUNDWATER RESOURCES INC.

Rex J. Young, R.G. #720
Principal Geologist

RJY:tab:macpvt





groundwater resources, inc.

environmental/geotechnical services

MALIBU VINEYARDS

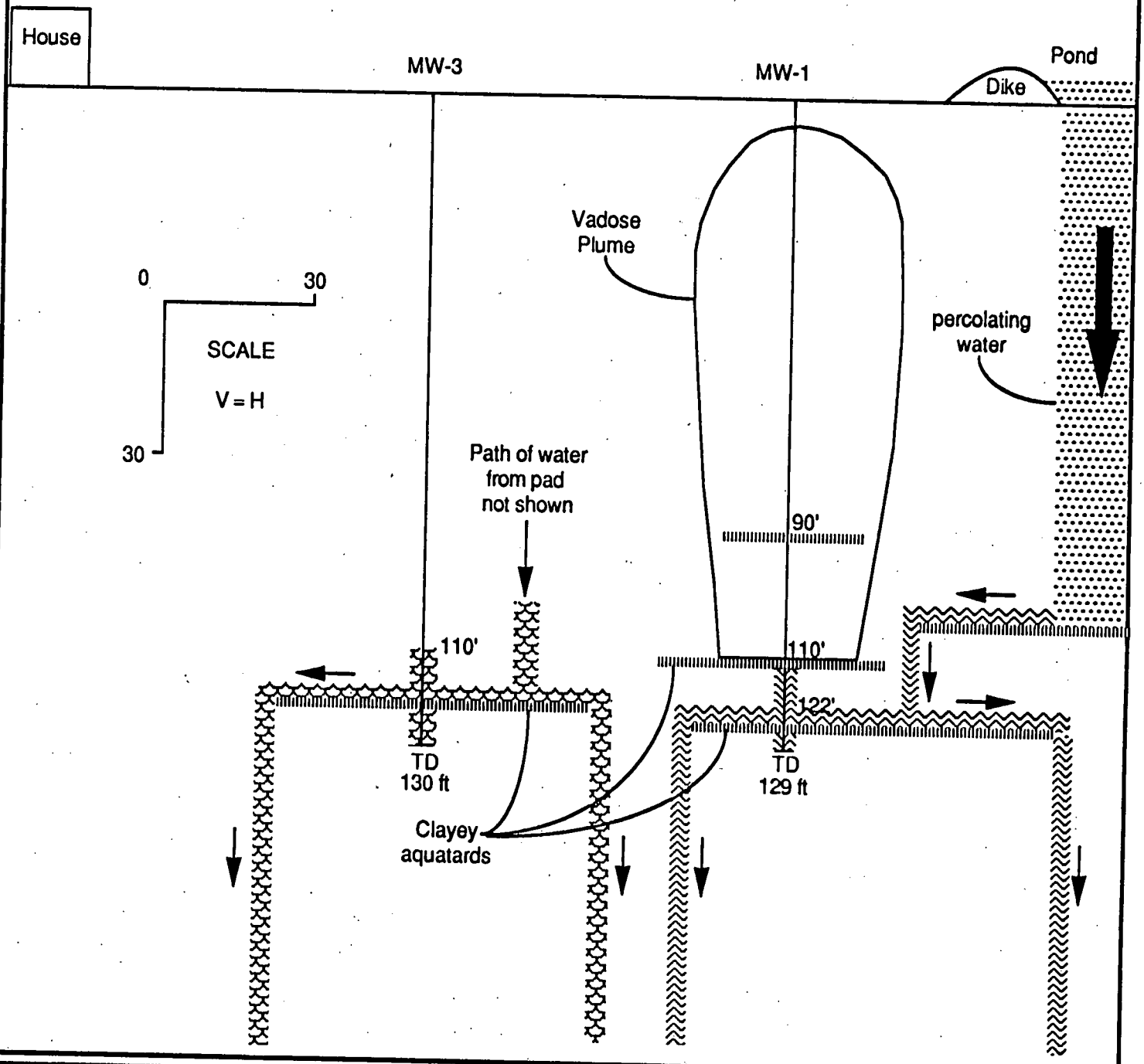
SECTION 30, T.28S, R.27E., MDB&M

KERN COUNTY, CALIFORNIA

PLOT PLAN

PLATE

2



groundwater resources, inc.

environmental/geotechnical services

Project Number : 1430-3

1/10/91

MALIBU VINYARDS

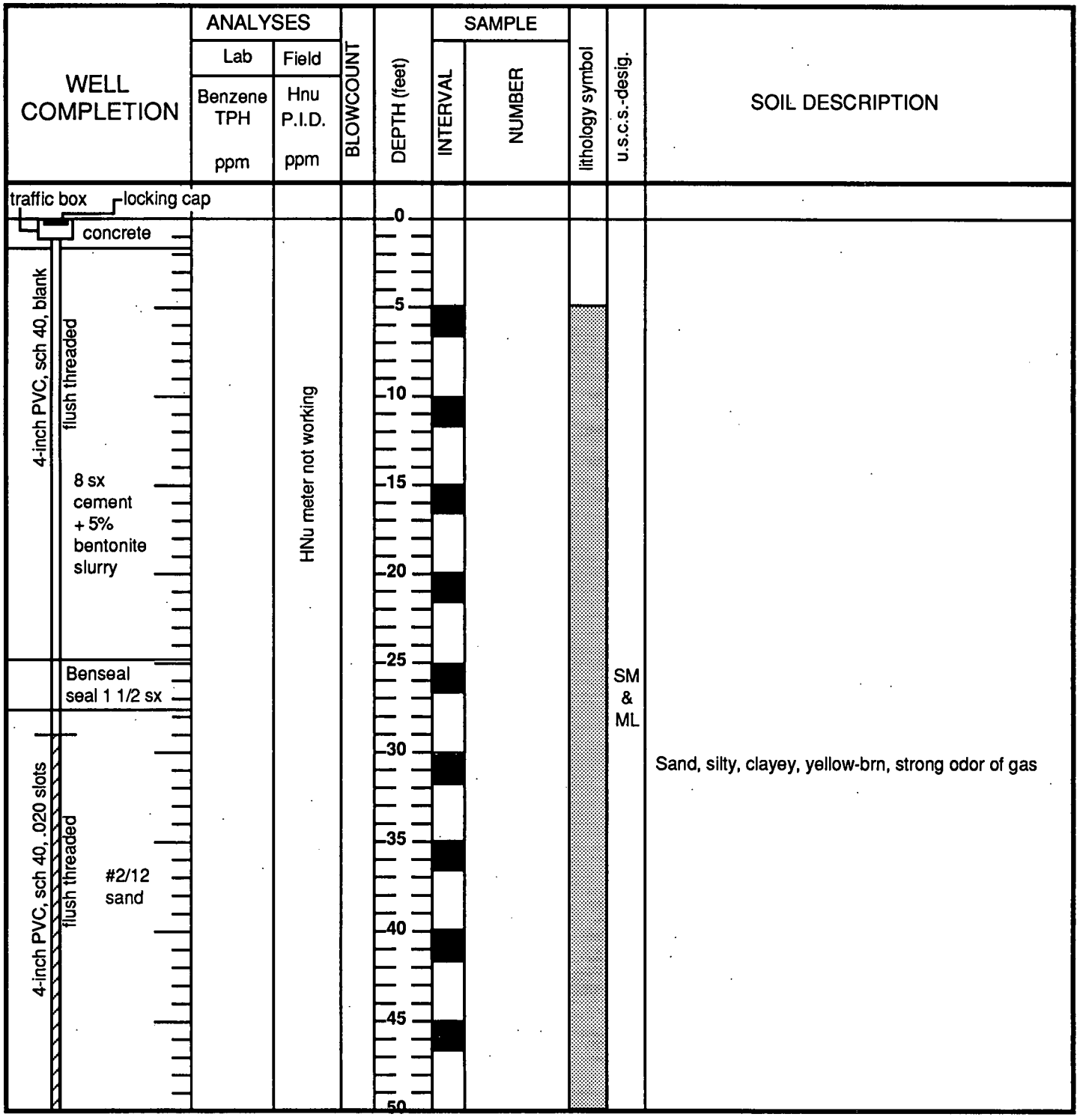
SECTION 30, T.28S.,R.27 E., MDB&M

KERN COUNTY, CALIFORNIA

CROSS SECTION A-B

PLATE

3



LOGGED BY: GJC
DATE DRILLED: 11/28/90
TOTAL DEPTH: 129 feet
DRILLING COMPANY: Layne Environmental (Air Percussion)

DIAMETER OF BORING: 10"
WATER ENCOUNTERED AT: 119 FEET
SAMPLING METHOD: Modified Split Spoon

GROUNDWATER RESOURCES, INC.
(805)835-7700
environmental/geotechnical services

PROJECT NUMBER: 1430-3

BORING LOCATION: CENTER OF UFT LOCATION

PROJECT NAME: MALIBU VINEYARDS

LOG OF BORING MW-1

PLATE 4

WELL COMPLETION	ANALYSES Lab Benzene TPH ppm	ANALYSES Field Hnu P.I.D. ppm	BLOWCOUNT	DEPTH (feet)	SAMPLE INTERVAL	SAMPLE NUMBER	lithology symbol	u.s.c.s.-desig.	SOIL DESCRIPTION
4-inch PVC, sch 40, .020 slots; #2/12 sand	.008 8.8	meter working, calibrated HNu		50 55 60 65 70 75 80 85 90 95 100		MW-1-50 MW-1-90		SP SW CL SW	Sand, med. to fine grain, damp, light tan, strong odor of gasoline, pebbles to 2" diameter Cobbles, silty sand, yellow-brn, med odor, no stain Cuttings, dry powdered rock (sampler came up empty, try again at 90 feet Cuttings, sand, clayey, getting wet, faint odor, no stain Cobbles, 1 to 3 inch, suspended in clayey silt, wet, faint odor
	90								
	1.7 55	300							

LOGGED BY: GJC
DATE DRILLED: 11/28/90
TOTAL DEPTH: 129 feet
DRILLING COMPANY: Layne Environmetnal (Air Percussion)

DIAMETER OF BORING: 10 inch
WATER ENCOUNTERED AT: 119 feet
SAMPLING METHOD: Modified Split Spoon

GROUNDWATER RESOURCES, INC.
(805)835-7700
environmental/geotechnical services

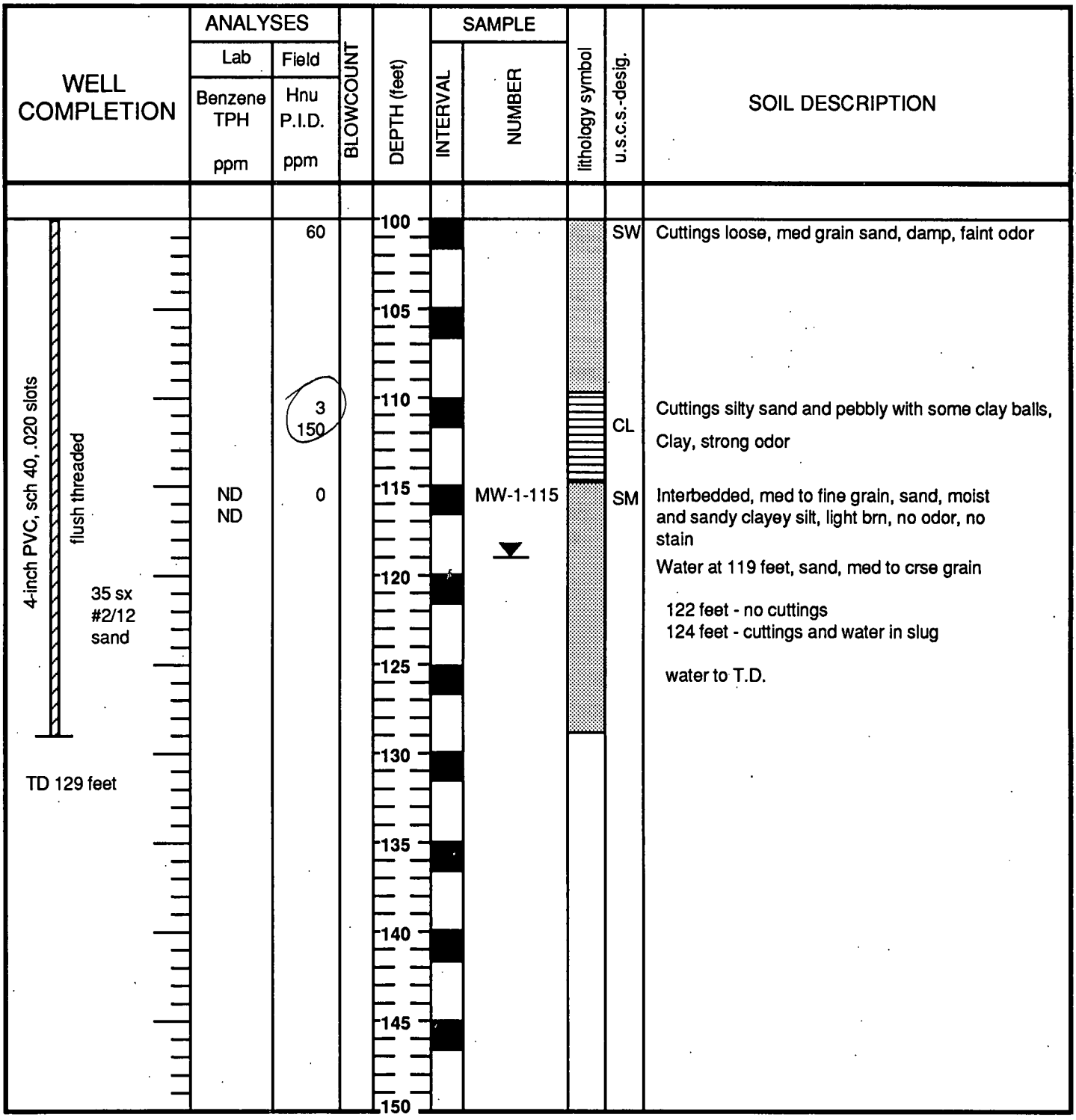
PROJECT NUMBER: 1430-3

BORING LOCATION: CENTER OF UFT LOCATION

PROJECT NAME: MALIBU VINEYARDS

LOG OF BORING MW-1

PLATE 4



LOGGED BY: GJC
DATE DRILLED: 11/28/90
TOTAL DEPTH: 129 feet
DRILLING COMPANY: Layne Environmental (Air Percussion)

DIAMETER OF BORING: 10 Inches
WATER ENCOUNTERED AT: 119 feet
SAMPLING METHOD: Modified Split Spoon

GROUNDWATER RESOURCES, INC.
(805)835-7700
environmental/geotechnical services

PROJECT NUMBER: 1430-3

BORING LOCATION: CENTER OF UFT LOCATION

PROJECT NAME: MALIBU VINEYARDS

LOG OF BORING MW-1

PLATE 4

WELL COMPLETION	ANALYSES Lab Benzene TPH ppm	ANALYSES Field Hnu P.I.D. ppm	BLOWCOUNT	DEPTH (feet)	SAMPLE INTERVAL	SAMPLE NUMBER	lithology symbol	u.s.c.s.-desig.	SOIL DESCRIPTION
traffic box, locking cap, concrete; 4-inch PVC, sch 40, blank; flush threaded; cement + 4% bentonite slurry				0, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50					
		9						SM	Sand, tan, med, silty, clayey, damp, no odor
		1.5						ML	Sand, lt orange-brn, med to fine, very clayey, damp, no odor

LOGGED BY: RJY
DATE DRILLED: 11/29/90
TOTAL DEPTH: 130 feet
DRILLING COMPANY: Layne Environmental (Air Percussion)

DIAMETER OF BORING: 10"
WATER ENCOUNTERED AT: 111 FEET
SAMPLING METHOD: Modified Split Spoon

GROUNDWATER RESOURCES, INC.
(805)835-7700
environmental/geotechnical services

PROJECT NUMBER: 1430-3

BORING LOCATION: 30 FEET S.W. OF MW-1

PROJECT NAME: MALIBU VINEYARDS

LOG OF BORING MW-2

PLATE 4

WELL COMPLETION	ANALYSES Lab Benzene TPH ppm	ANALYSES Field Hnu P.I.D. ppm	BLOWCOUNT	DEPTH (feet)	SAMPLE INTERVAL	SAMPLE NUMBER	lithology symbol	u.s.c.s.-desig.	SOIL DESCRIPTION
4-inch PVC, sch 40, .020 slots; flush threaded; cement + 4% bentonite slurry; bentonite; #2-12 sand		1		50				ML	Sand, brn, med to fine, silty, slightly clayey, damp, no odor
								CL	Small clay balls indicating clay layers, com pebbles
				55					
		.5		60				SP	Sand, yellow-tan, med to crse, loose, damp, no odor
				65					
		1		70					Sand, as above
		.5		75				SW	Sand, very crse, pebbly, as above, no odor, gravel beds, cobbles to 4 inches
		.5		80					Sand, very crse, as above, no odor
		.5		85				CL	Sand, pebbles, as above, large gravelly clay balls
		.5		90					Sand and gravel, and clay balls, moist, no odor
				95				SW	
				100					

LOGGED BY: RJY
DATE DRILLED: 11/29/90
TOTAL DEPTH: 130 feet
DRILLING COMPANY: Layne Environmental (Air Percussion)

DIAMETER OF BORING: 10 inch
WATER ENCOUNTERED AT: 111 feet
SAMPLING METHOD: Modified Split Spoon

GROUNDWATER RESOURCES, INC.
(805)835-7700
environmental/geotechnical services

PROJECT NUMBER: 1430-3

BORING LOCATION: 30 FEET S.W. OF MW-1

PROJECT NAME: MALIBU VINEYARDS

LOG OF BORING MW-2

PLATE 4

WELL COMPLETION	ANALYSES Lab Benzene TPH ppm	ANALYSES Field Hnu P.I.D. ppm	BLOWCOUNT	DEPTH (feet)	SAMPLE INTERVAL	SAMPLE NUMBER	lithology symbol	u.s.c.s.-desig.	SOIL DESCRIPTION
4-inch PVC, sch 40, .020 slots, flush threaded; #2/12 sand; TD 130 feet		.5		100				SW	Sand, tan, med to crse, some pebbles, damp, no odor
				105					
				110					
		.5		115				SW	Sand, tan, very crse, gravelly, very clayey, very moist, no odor
		0		120				CL	Clay, brn, sandy, moist, low plast, no odor
				125					
		0		130		▼		SM	Sand, tan, crse, slightly clayey, very moist, no odor
				135					
				140					
				145					
				150					

LOGGED BY: RJY
DATE DRILLED: 11/29/90
TOTAL DEPTH: 130 feet
DRILLING COMPANY: Layne Environmental (Air Percussion)

DIAMETER OF BORING: 10 Inches
WATER ENCOUNTERED AT: 111feet
SAMPLING METHOD: Modified Split Spoon

GROUNDWATER RESOURCES, INC.
(805)835-7700
environmental/geotechnical services

PROJECT NUMBER: 1430-3

BORING LOCATION: 30 FEET S.W. OF MW-1

PROJECT NAME: MALIBU VINEYARDS

LOG OF BORING MW-2

PLATE 4

APPENDIX A

Chain of Custody
and
Laboratory Results

GROUNDWATER RESOURCES INC.

A RESNA Company

P.O Box 9383
Bakersfield, California
Telephone: (805) 835-7700
Tele-Fax: (805) 835-7717

CHAIN OF CUSTODY RECORD

LAB DESTINATION: SMC Laboratory

PROJECT NUMBER: 1430-3

P.O. NUMBER: 5369-G

SAMPLER(S): (Signature) [signature]

PROJECT CONTACT: Rex Young

COUNTY: KERN

LAB NUMBER	SAMPLE NUMBER	DATE	TIME	SAMPLE LOCATION	CONDITION ON RECEIPT	ANALYSIS REQUESTED	SAMPLE TYPE	CONTAINER TYPE
4631	MW-1	12/17/90	4:30	MW-1	Cold/Sealed	BTEX-TPH gasoline	water	glass
4632	MW-2	"	3:45	MW-2		" "	"	"
4633	MW-3	"	2:25	MW-3		" "	"	"

SPECIAL INSTRUCTIONS: use DHS approved methods

POSSIBLE SAMPLE HAZARDS:

1. Relinquished by: [signature] Date/Time: 12-18-90 9:00 Received by: Rex J Young Date/Time: 12/18/90 9:00 AM
1. Relinquished by: Rex J Young 10:30 Date/Time: 12/18/90 10:35 Received by: T. Ward Date/Time: 12/18/90 10:35
1. Relinquished by: Date/Time: Received by: Date/Time:

CCR (Rev 7/90)

WHITE: LABORATORY PINK: JOB FILE YELLOW: SAMPLE TRIP

SMC Laboratory

Analytical Chemistry

Client Name: Groundwater Resources, Inc.
Address : 1500 South Union Ave.
Bakersfield, CA 93307

Attention : Mr. Rex Young

Date samples received : 12-18-90
Date analysis completed: 12-21-90
Date of report : 12-21-90

Project Name: Kern
Project # : 1430-3
P.O. # : 5369-G

RESULTS OF ANALYSIS: (WATER)

#4631 ID: MW-1	ugm/L	MDL, ugm/L
Benzene	140.	0.5
Toluene	650.	0.5
Ethylbenzene	11.	0.5
p-Xylene	240.	0.5
m-Xylene	440.	0.5
o-Xylene	410.	0.5
Isopropylbenzene	ND	0.5
TPH (Gasoline)	3600.	50.0

Method of Analysis for BTX/TPH (Gasoline): purge & trap 5030/8020 (PID)
MDL = Minimum Detection Level
TPH = Total Petroleum Hydrocarbons
ugm/L = micrograms per liter (ppb)
ND = None Detected

Stan Comer
Stan Comer
Analytical Chemist

3155 Pegasus Drive • Bakersfield, CA 93308 • (805) 393-3597
P.O. Box 80835 • Bakersfield, CA 93380 • FAX (805) 393-3623

RESULTS OF ANALYSIS

#4632 ID: MW-2	ugm/L	MDL,ugm/L
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
p-Xylene	ND	0.5
m-Xylene	ND	0.5
o-Xylene	ND	0.5
Isopropylbenzene	ND	0.5
TPH (Gasoline)	ND	50.0

#4633 ID: MW-3	ugm/L	MDL,ugm/L
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene	ND	0.5
p-Xylene	ND	0.5
m-Xylene	ND	0.5
o-Xylene	ND	0.5
Isopropylbenzene	ND	0.5
TPH (Gasoline)	ND	50.0

Stan Comer
Analytical Chemist

SMC Laboratory

Analytical Chemistry

Client Name: Groundwater Resources, Inc.
Address : 1500 South Union Ave.
Bakersfield, CA 93307

Attention : Gary Cawthon

Date samples received : 12-06-90
Date analysis completed: 12-11-90
Date of report : 12-11-90

Project Name/#: Kern/1430-3 P.O. #: 5283-G

RESULTS OF ANALYSIS: (SOIL)

# 4451 ID: MW1-50	ugm/gm	MDL, ugm/gm
Benzene	.008	0.005
Toluene	.056	0.005
Ethylbenzene	.011	0.005
p-Xylene	.013	0.005
m-Xylene	.017	0.005
o-Xylene	.078	0.005
Isopropylbenzene	.039	0.005
TPH (Gasoline)	8.8	1.0

# 4452 ID: MW1-90	ugm/gm	MDL, ugm/gm
Benzene	1.7	0.005
Toluene	2.2	0.005
Ethylbenzene	1.1	0.005
p-Xylene	.45	0.005
m-Xylene	1.3	0.005
o-Xylene	.52	0.005
Isopropylbenzene	.090	0.005
TPH (Gasoline)	55.	1.0

# 4453 ID: MW1-115	ugm/gm	MDL, ugm/gm
Benzene	ND	0.005
Toluene	ND	0.005
Ethylbenzene	ND	0.005
p-Xylene	ND	0.005
m-Xylene	ND	0.005
o-Xylene	ND	0.005
Isopropylbenzene	ND	0.005
TPH (Gasoline)	ND	1.0

Method of Analysis: 3810/8020 (FID)
MDL = Minimum Detection Level
TPH = Total Petroleum Hydrocarbons
ugm/gm = micrograms per gram (ppm)
ND = None Detected

Stan Comer

Stan Comer
Analytical Chemist

3155 Pegasus Drive • Bakersfield, CA 93308 • (805) 393-3597
P.O. Box 80835 • Bakersfield, CA 93380 • FAX (805) 393-3623

GROUNDWATER RESOURCES INC.

A RESNA Company

P.O Box 9383
Bakersfield, California
Telephone: (805) 835-7700
Tele-Fax: (805) 835-7717

CHAIN OF CUSTODY RECORD

LAB DESTINATION: SMC

PROJECT NUMBER: 1430-3

P.O. NUMBER: 5283-G

SAMPLER(S): (Signature) Gary J. Cawthon

PROJECT CONTACT: Gary Cawthon

COUNTY: Kern

LAB NUMBER	SAMPLE NUMBER	DATE	TIME	SAMPLE LOCATION	CONDITION ON RECEIPT	ANALYSIS REQUESTED	SAMPLE TYPE	CONTAINER TYPE
4451	MW1-50	11/28/90	10:40	MW-1	Cool/Intact	BTXE-TPH(Gas)	Soil	Brass
4452	MW1-90	11/28/90	12:25			"	"	"
4453	MW1-115	11/28/90	15:05			"	"	"

SPECIAL INSTRUCTIONS: State DOHS LUFT Method - (Call Customer when done

POSSIBLE SAMPLE HAZARDS:

1. Relinquished by: Gary J. Cawthon Date/Time: 12/6/90 4:00 Received by: John Burnett Date/Time: 12/6/90 4:00
1. Relinquished by: John Burnett Date/Time: 12/6/90 4:20 Received by: J. Adam Date/Time: 12/6/90 4:23
1. Relinquished by: _____ Date/Time: _____ Received by: _____ Date/Time: _____

CCR (Rev 7/90)

WHITE: LABORATORY PINK: JOB FILE YELLOW: SAMPLE TRIP

SMC Laboratory

Analytical Chemistry

Client Name: Groundwater Resources, Inc.
Address : 1500 South Union Ave.
Bakersfield, CA 93307

Attention : Gary Cawthon

Date samples received : 12-06-90
Date analysis completed: 12-11-90
Date of report : 12-11-90

Project Name/#: Kern/1430-3 P.O. #: 5283-G

RESULTS OF ANALYSIS:

# 4451 ID: MW1-50	ugm/gm	MDL, ugm/gm
Benzene	.008	0.005
Toluene	.056	0.005
Ethylbenzene	.011	0.005
p-Xylene	.013	0.005
m-Xylene	.017	0.005
o-Xylene	.078	0.005
Isopropylbenzene	.039	0.005
TPH (Gasoline)	8.8	1.0

# 4452 ID: MW1-90	ugm/gm	MDL, ugm/gm
Benzene	1.7	0.005
Toluene	2.2	0.005
Ethylbenzene	1.1	0.005
p-Xylene	.45	0.005
m-Xylene	1.3	0.005
o-Xylene	.52	0.005
Isopropylbenzene	.090	0.005
TPH (Gasoline)	55.	1.0

# 4453 ID: MW1-115	ugm/gm	MDL, ugm/gm
Benzene	ND	0.005
Toluene	ND	0.005
Ethylbenzene	ND	0.005
p-Xylene	ND	0.005
m-Xylene	ND	0.005
o-Xylene	ND	0.005
Isopropylbenzene	ND	0.005
TPH (Gasoline)	ND	1.0

Method of Analysis: 3810/8020 (FID)
MDL = Minimum Detection Level
TPH = Total Petroleum Hydrocarbons
ugm/gm = micrograms per gram (ppm)
ND = None Detected

Stan Comer

Stan Comer
Analytical Chemist

3155 Pegasus Drive • Bakersfield, CA 93308 • (805) 393-3597
P.O. Box 80835 • Bakersfield, CA 93380 • FAX (805) 393-3623

APPLIED ANALYTICAL

Environmental Laboratories
13844 Alton Pkwy.-Suite 140
Irvine, CA 92718
(714) 472-1020

ANALYSIS REPORT

Attention: Gary J. Cawthon
Groundwater Resources, Inc.
P.O. Box 9383
Bakersfield, CA 93307

Date Sampled: 01-22-91
Date Received: 01-23-91
Date Analyzed: 01-31-91
Date Reported: 02-04-91

Project: 1430-2 Malibu Vineyards

Matrix: Water

Detection limit (ug/L)	Benzene 0.30	Toluene 0.30	Ethyl-benzene 0.30	Total Xylenes 0.50	TPH 50
Sample description					
MW3 2-101-242*	<0.30	<0.30	<0.30	<0.50	<50
MW2 2-101-243*	<0.30	<0.30	<0.30	<0.50	<50
MW1 2-101-244*	840	3,300	72	3,000	15,000

TPH = total petroleum hydrocarbons as gasoline.
ug/L = Micrograms per liter = ppb = parts per billion.
* = Laboratory identification number.

ANALYTICAL PROCEDURES

BTEX– Benzene, toluene, ethylbenzene, and total xylene isomers are measured in accordance with EPA Method 5030 followed by analysis using EPA Method 8020.
TPH– Total petroleum hydrocarbons as gasoline are measured in accordance with EPA Method 5030, followed by modified EPA 8015.

GROUNDWATER RESOURCES INC.

A RESNA Company

P.O Box 9383
Bakersfield, California
Telephone: (805) 835-7700
Tele-Fax: (805) 835-7717

CHAIN OF CUSTODY RECORD

LAB DESTINATION: AAL

PROJECT NUMBER: 1430-3

P.O. NUMBER:

PROJECT CONTACT: Gary J. Cawthon

SAMPLER(S): (Signature) Gary J. Cawthon

COUNTY: Kern

LAB NUMBER	SAMPLE NUMBER	DATE	TIME	SAMPLE LOCATION	CONDITION ON RECEIPT	ANALYSIS REQUESTED	SAMPLE TYPE	CONTAINER TYPE
2-101-242	MW3	1/22/91	1105			BTXE, TPH(G)	water	VOA
2-101-243	MW2	1/22/91	1254			" "	"	"
2-101-244	MW1	1/22/91	1321			" "	"	"

SPECIAL INSTRUCTIONS: BTXE, TPH(G) by DOHS-LUFT METHOD

POSSIBLE SAMPLE HAZARDS:

1. Relinquished by: Gary J. Cawthon Date/Time: 1-23-91 Received by: Date/Time: 1-23-91 (11:32)
1. Relinquished by: Date/Time: Received by: Date/Time: 1-25-91
1. Relinquished by: Date/Time: Received by: Date/Time:

CCR (Rev 7/90)

WHITE: LABORATORY PINK: JOB FILE YELLOW: SAMPLE TRIP

APPENDIX B

Sampling Protocol

RESNA/GROUNDWATER
RESOURCES, INC.
Working to Restore Nature

1500 SO. UNION AVE.
BAKERSFIELD, CALIFORNIA 93307

General Engineering Contractor
Class A/Haz License No. 520768

SAMPLING PROTOCOL
GROUNDWATER RESOURCES INC.

1500 So. Union Avenue
Bakersfield, California
(805) 835-7700

A *RESNA* Company

MAILING ADDRESS: P. O. BOX 9383, BAKERSFIELD, CA 93389 (805) 835-7700
FAX (805) 835-7717

TEST BORING PROCEDURES

Not Applicable

I. Soil Sampling Protocol

The following procedures are following during soil sampling operations utilizing the hollow stem auger drilling technique.

A. Hollow Stem Auger

1. Soil borings drilled by the hollow stem auger utilize continuous flight hollow stem augers.

2. Augers, samplers and all downhole equipment are steam cleaned prior to use. In the field steam cleaning is done between borings to minimize the potential for cross-contamination.

3. A G.R.I. geologist observes the work, visually logs the soils, and collects samples at appropriate intervals.

4. The Unified Soils Classification System is utilized to classify soils encountered. Additional geological observations are noted as appropriate.

5. Soil samples destined for laboratory analysis are collected by a modified California Split Spoon. This sampler uses three, six inch long, by two and one-half inch diameter (o.d.) tubes.

   Various tubes can be utilized to accommodate the type of analysis necessary:

Brass	All organics and general analyses (not to be used for copper or zinc analysis)
Stainless Steel	All organics and metals analyses for Steel copper and zinc (not to be used for chrome or nickel analyses)
Plastic	All metals analyses (not to be used for organics)

6. The tubes are cleaned and prepared in the G.R.I. laboratory. Tubes are scrubbed, inside and outside, with a brush and TSP, rinsed, dryed, and packed in clean containers with seals. Tubes are delivered to the drilling site in these closed containers to preserve the state of cleanliness.

7. After the sample(s) have been removed from the sampler, the sampler is completely disassembled and scrubbed in TSP and tap water. It is then rinsed in clean tapwater and reassembled with three clean tubes.

8. Dirty tubes are field washed in TSP solution, rinsed with water, and reused.

9. The sampler is driven by a 140 pound hammer with a 30 inch free fall. Blow counts are recorded as number of blows per inch of drive.

10. The sampler is driven 18 inches at each sampling interval. The first (or lowest) tube is generally retained as the sample for analysis. The other two tubes are retained for back-up or split samples.

TEST BORING PROCEDURES
(continued)

11. A sand catcher is used in the sampler where loose soils are anticipated. This will prevent the soil from falling out of the sampler.

12. After retrieval, the sample is visually logged and immediately sealed with aluminum foil lined caps, labeled, and chilled. Clean ice chests and chemical ice ("blue ice") are used to keep the samples cold until delivered to the chemical laboratory. Teflon seals are also available for field samples.

13. Samples are delivered to the laboratory the same day they are taken, if physically possible. If the samples must be held until the next day, they are kept chilled in a secure location at the G.R.I. facility.

14. Sample control is maintained by a Chain of Custody form which accompanies the sample. The form documents the time, date, and responsible person during each step in the transportation process.

MONITORING WELL SAMPLING PROTOCOL

II. Groundwater Sampling

A. All equipment that is used in a monitoring well for purging, sampling, or depth measurement is decontaminated by steam cleaning or a TSP wash and rinse procedure prior to use and before re-using when more than one sample is collected.

B. Purge Volume Determination

The following procedure is followed to determine the appropriate purging volume prior to well sampling.

1. The depth-to-water is measured by a clean, electric level indicator. Measurement datum is the top of well protector.

2. Depth to the bottom of the well is measured by a clean tape and plumb bob. If possible, this is compared to the well construction log to determine inconsistencies, i.e. damaged casing, sediment in casing, etc.

3. Water volume is calculated by using the total water depth and the inside diameter of the casing.

C. Well Purging and Sampling

1. Prior to sampling, a minimum of three to five well volumes are purged from each well to ensure that water sampled is representative of the groundwater within the formation.

2. Measurements of H, conductivity and temperature are taken at frequent intervals during the purge. Stabilization of these values indicates that representative formation fluids are being removed from the well.

MONITORING WELL SAMPLING PROTOCOL
(continued)

3. In the event that the well is pumped dry, and alternate procedure will be followed. Once a well is pumped dry, the water that enters the well during recovery is, by definition, representative formation water. The well will, therefore, be pumped dry and allowed to recover to 80% or more of the original water level.

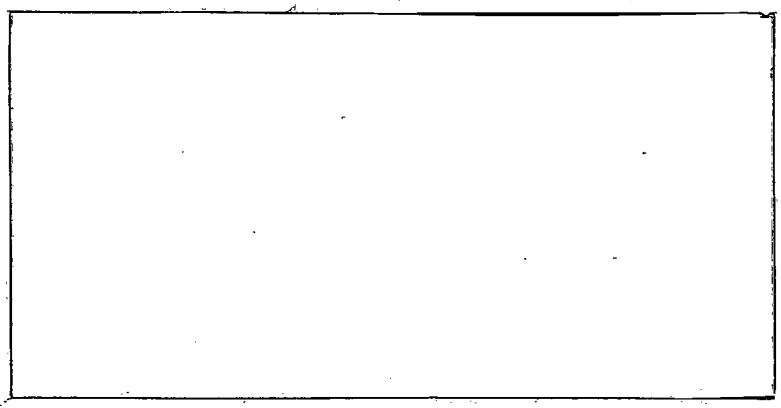
4. Purge water is pumped directly into barrels on site until the proper method of disposal is determined.

5. Samples are pumped or poured from a bailer into sampling bottles prepared by a state certified laboratory contracted for the particular job and placed in refrigerated coolers for transport to the laboratory.

6. Samples are delivered by courier, directly to the lab on the same day of sampling, whenever practical. If next day delivery is necessary, the samples are kept refrigerated at 4 degrees C overnight and delivered to the laboratory the following morning.

7. Samples are accompanied by a Chain of Custody form which documents the time, date and responsible person during each step of the transportation process.

8. The G.R.I. coded sample numbering system allows identification of sample and client to G.R.I., while not revealing the client to anyone else.



RESNA

Working to Restore Nature

COPY

RESNA
Working to Restore Nature

1500 So. Union Avenue
Bakersfield, California 93307
Phone: (805) 835-7700
FAX: (805) 835-7717

MALIBU VINEYARDS
Section 30, T. 28S., R. 27E.
Kern County, California

GROUNDWATER MONITORING STATUS REPORT
March 5, 1993

Report Prepared for:
MALIBU VINEYARDS
c/o Lucich Farms
Mr. Michael C. Anderson
P.O. Box 1266
Delano, California 93216

By:
RESNA INDUSTRIES, INC.

REGISTERED GEOLOGIST
REX J. YOUNG
No. 720
STATE OF CALIFORNIA

Rex J. Young

Rex J. Young, R.G. #720
Project Manager

Robert J. Becker

Robert J. Becker, R.G. #5076
Professional Services Supervisor

REGISTERED GEOLOGIST
ROBERT J. BECKER
No. 5076
REN_____
STATE OF CALIFORNIA

RECEIVED
MAR - 9 1993

RESNA
Working to Restore Nature

1500 So. Union Avenue
Bakersfield, California 93307
Phone: (805) 835-7700
FAX: (805) 835-7717

LETTER OF TRANSMITTAL

TO: Mr. Michael C. Anderson
Malibu Vineyards
c/o Lucich Farms
P.O. Box 1266
Delano, CA 93216

DATE: March 5, 1993

RE: Groundwater Monitoring Status
Section 30, T. 28S, R. 27E.
Kern County, California

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following:

- ☐ Site Assessment Report
- ☐ Workplan for Site Assessment
- ☐ Preacquisition Site Assessment
- ☐ Closure Report
- ☐ Proposal
- ☐ _____

THESE ARE TRANSMITTED as checked below:

- ☐ For approval
- ☒ For your use
- ☐ FOR BIDS DUE_____19__
- ☐ As requested
- ☐ For review and comment
- ☐ _____

REMARKS _____

COPY TO: Ms. Dolores Gough-KCDEHS

SIGNED: Robert J. Becker

Robert J. Becker, R.G. #5076
Professional Services Supervisor

* ~~Appd~~ to remediate vadose zone

* Can reduce monitoring to 2x/year instead of quarterly.

TABLE OF CONTENTS

SECTION	DESCRIPTION	PAGE
	EXECUTIVE SUMMARY	1
1.0	INTRODUCTION	2
2.0	SCOPE AND OBJECTIVES	2
3.0	MONITORING PROCEDURES	2
4.0	LABORATORY ANALYSES OF WATER SAMPLES	2
5.0	ELEVATION OF WATER IN MONITORING WELLS	4
6.0	DISCUSSION AND RECOMMENDATIONS	4

ILLUSTRATIONS

Plate 1	Location Map
Plate 2	Plot Plan
Plate 3	Time Vs. Elevation

APPENDICES

Appendix A Laboratory Analyses and Chain Of Custody

* if it takes 10 yrs. ~~for~~ well to get dry, then we won't want
* conc. in GW is lower because it's in the soil
* GW goes up it will recontaminate / increase contam. in GW
* GW goes down, carries contam. down.

EXECUTIVE SUMMARY

Three monitoring wells at the Malibu Vineyards site were measured and sampled by RESNA Industries Inc. personnel on February 12, 1993. Results of chemical analyses of the most recent samples continue to show gasoline constituents in the water from MW-1. Very low concentrations of a gasoline constituent, Xylene, were detected in the water samples from MW-2 and MW-3. Water levels continue to drop in the three wells at the present rate of approximately one foot per year. A reduced monitoring schedule is recommended. This report is to be submitted to the Department of Environmental Health Services.

1.0 INTRODUCTION

This report contains a status summary of conditions and findings regarding three groundwater monitoring wells at the Malibu Vineyards facility from the date of the first sampling December 17, 1990, to the present. The monitoring work performed by *RESNA Industries Inc. (RESNA)* is in compliance with a request by the Kern County Department of Environmental Health Services (DEHS) in a letter from Mr. Joe Canas to *RESNA* (then *Groundwater Resources Inc.*) dated November 7, 1991.

2.0 SCOPE AND OBJECTIVES

RESNA was contracted to monitor the three wells on a quarterly basis, as follows:

Perform depth-to-water measurements.

Collect water samples from each well and deliver them to a certified laboratory for analysis.

Prepare a report of findings at six month intervals.

The DEHS requested the monitoring to be continued until the groundwater level drops below the bottom of each well or until contamination is no longer detected in any of the wells, after which a determination on the necessity to perform mitigation of the vadose zone will be evaluated.

3.0 MONITORING PROCEDURES

During this monitoring event, the stabilized water-depth was measured in each well with an electrical measuring tape and the depths were recorded on site. During sampling, which followed depth measurement, the three wells were each purged of approximately four well volumes of water and samples were taken for laboratory analysis. Purging was done with a submersible turbine pump. Split samples (two simultaneous samples) were taken from each well with a bailer following purging. The pump was decontaminated inside and outside after each well-purging to prevent cross-contamination between wells. Samples were labeled and chilled for transporting to the laboratory under chain of custody.

4.0 LABORATORY ANALYSES OF WATER SAMPLES

A tabulation of the results of laboratory analyses of water samples is as follows (see Appendix A for laboratory reports):

TABLE 1
Groundwater Samples
Results of Laboratory Analysis (µg/L)

	Date	Benzene	Toluene	Ethylbenzene	Xylenes	TPH(g)
MW-1						
	12/17/90	140	650	11	1090	3600
	01/22/91	840	3300	72	3000	15000
	06/17/91	370	1100	24	1910	6700
	08/16/91	89	18	<0.3	470	3600
	03/06/92	37	170	6.7	230	7500
	07/19/92	0.4	2.0	<0.3	2.0	<50
	10/26/92	10	42	1.4	76	480
	02/12/93	19	160	7.1	120	810
MW-2						
	12/17/90	<0.5	<0.5	<0.5	<0.5	<50
	01/22/91	<0.3	<0.3	<0.3	<0.5	<50
	06/17/91	0.94	<0.5	<0.5	<0.5	64
	08/16/91	<0.3	<0.3	<0.3	<0.5	<50
	03/06/92	1.1	3.6	<0.5	3.0	86
	07/17/92	<0.3	<0.3	<0.3	<0.5	<50
	10/26/92	<0.5	<0.5	<0.5	<1.5	<50
	02/12/93	<0.5	<0.5	<0.5	2.0	<50
MW-3						
	12/17/90	<0.5	<0.5	<0.5	<0.5	<50
	01/22/91	<0.3	<0.3	<0.3	<0.5	<50
	06/17/91	0.95	0.28	<0.5	<0.5	58
	08/16/91	<0.3	<0.3	<0.3	<0.5	<50
	03/06/92	1.5	1.7	<0.5	1.8	<50
	07/17/92	<0.3	<0.3	<0.3	<0.5	<50
	10/26/92	<0.5	<0.5	<0.5	<1.5	<50
	02/12/93	<0.5	<0.5	<0.5	2.9	<50
Travel Blank						
	06/17/91	0.67	<0.5	<0.5	<0.5	<50
	03/06/92	<0.5	<0.5	<0.5	<0.5	<50
	07/17/92	<0.3	<0.3	<0.3	<0.5	<50
	10/26/92	<0.5	<0.5	<0.5	<1.5	<50
	02/12/93	<0.5	<0.5	<0.5	<1.5	<50

Concentrations are expressed in ugm/L (micrograms per liter). MDL (minimum detection level) for constituents is 0.5 µgm/L. MDL for TPH (Total Petroleum Hydrocarbons) is 50.0 µgm/L. ND = None Detected.

5.0 ELEVATION OF WATER IN MONITORING WELLS

Table 2 is a chronological tabulation of water depths, elevations and increments of change. Plate 3 is a graph of Time vs. Elevation of Groundwater in Monitoring Wells, showing the rate-of-decline curve becoming increasingly flat with the passage of time.

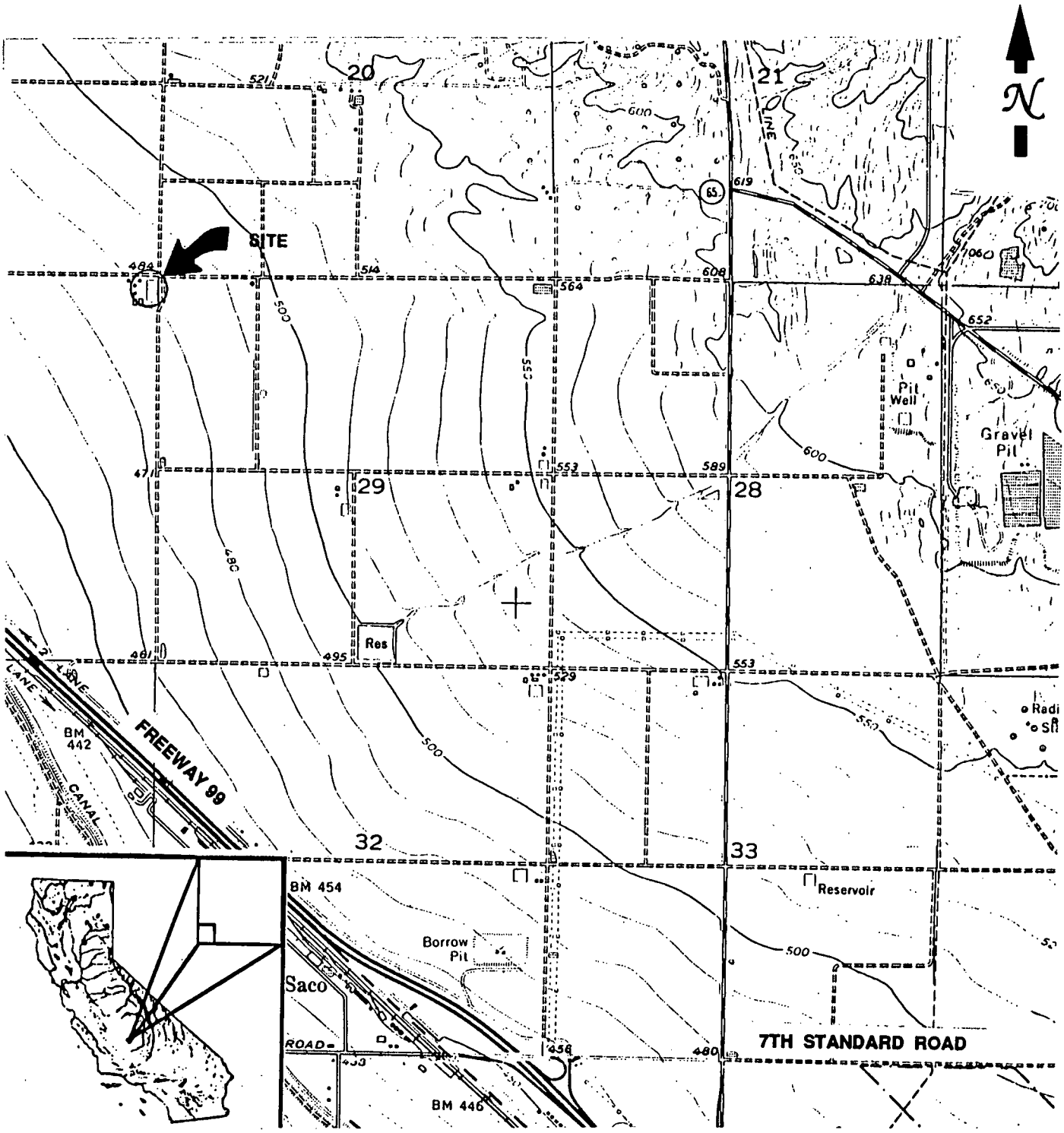
TABLE 2
MONITORING WELL DATA

	MW-1 480 ft above sea level			MW-2 479.08 above sea level			MW-3 479.84 above sea level		
DATE	DEPTH	ELEVATION	DIFFERENCE	DEPTH	ELEVATION	DIFFERENCE	DEPTH	ELEVATION	DIFFERENCE
12-17-90	112.19	367.81		110.83	368.25		109.78	370.06	
01-07-91	112.39	367.61	-.20	111.06	368.02	-.23	110.85	368.99	-1.07
01-13-91	*Pond drained*								
01-15-91	112.49	367.51	-.10	111.18	367.90	-.12	111.14	368.70	-.29
01-22-91	112.57	367.43	-.08	111.26	367.82	-.08	111.23	368.61	-.09
02-01-91	112.79	367.21	-.22	111.47	367.61	-.21	112.64	368.20	-.41
02-15-91	112.83	367.17	-.04	111.52	367.56	-.05	112.75	368.09	-.11
02-16-91	*Pond re-filled with PVC lines in place.*								
04-04-91	*Pond drained for repair.*								
04-07-91	*Pond filled.*								
04-17-91	*Pond drained for repair.*								
04-19-91	*Pond filled.*								
06-17-91	115.15	364.85	-2.32	113.85	365.15	-2.33	115.35	364.49	-3.60
06-26-91	115.21	364.79	-.06	113.93	365.15	-.08	115.47	364.37	-.12
07-15-91	115.60	364.40	-.39	114.33	364.75	-.40	115.85	363.99	-.38
07-26-91	115.76	364.24	-.16	114.50	364.58	-.17	116.02	363.82	-.17
08-16-91	116.10	363.90	-.34	114.83	364.25	-.33	116.35	363.49	-.33
03-06-92	117.56	362.44	-1.46	116.34	362.74	-1.51	117.82	362.02	-1.47
07-17-92	118.70	361.30	-1.14	117.46	361.62	-1.12	118.95	360.89	-1.13
10-06-92	119.22	360.78	-.52	118.03	361.05	-.58	119.43	360.41	-.48
10-26-92	119.30	360.70	-.08	118.05	361.03	-.02	119.45	360.39	-.02
02-12-93	119.60	360.40	-.30	118.39	360.69	-.34	119.80	360.04	-.35

6.0 DISCUSSION AND RECOMMENDATIONS

Ground water levels in the monitoring wells are dropping continuously at the present rate of approximately one foot per year which, if projected, will require ten years from this date to reach the bottoms of the wells. With the passage of time, however, the water level is dropping at a decreasing rate, which suggests that more than ten years will pass before the wells become dry.

Water samples from MW-2 and MW-3 have low, but reportable, concentrations of gasoline constituents this month, as was the situation one time in 1991 and again in 1992. The level of concentration of gasoline in MW-1 was reported to be 19 ppb, slightly greater than it was in the previous quarterly sampling. These small fluctuations are interpreted to be the norm in the reported concentrations of gasoline in the water samples, as shown in Table 1.



RESNA
Working to Restore Nature

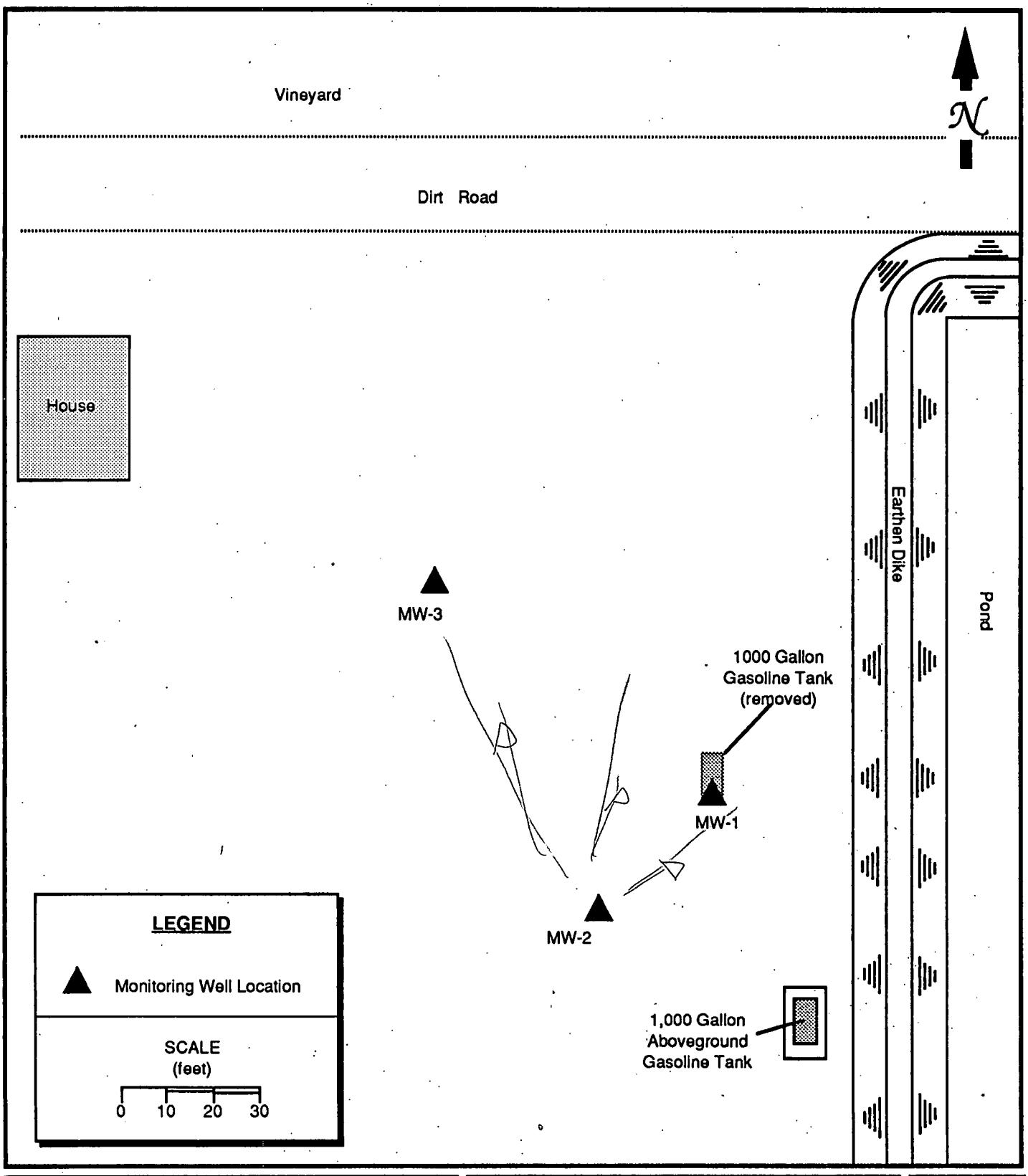
DATE: 03/24/92
PROJECT NUMBER: 3731-3

MALIBU VINEYARDS

SECTION 30, T.28S, R.27E., MDB&M
KERN COUNTY, CALIFORNIA

LOCATION MAP

PLATE
1



RESNA

Working to Restore Nature

DATE: 3/5/93
PROJECT NUMBER: 5682-3

MALIBU VINEYARDS

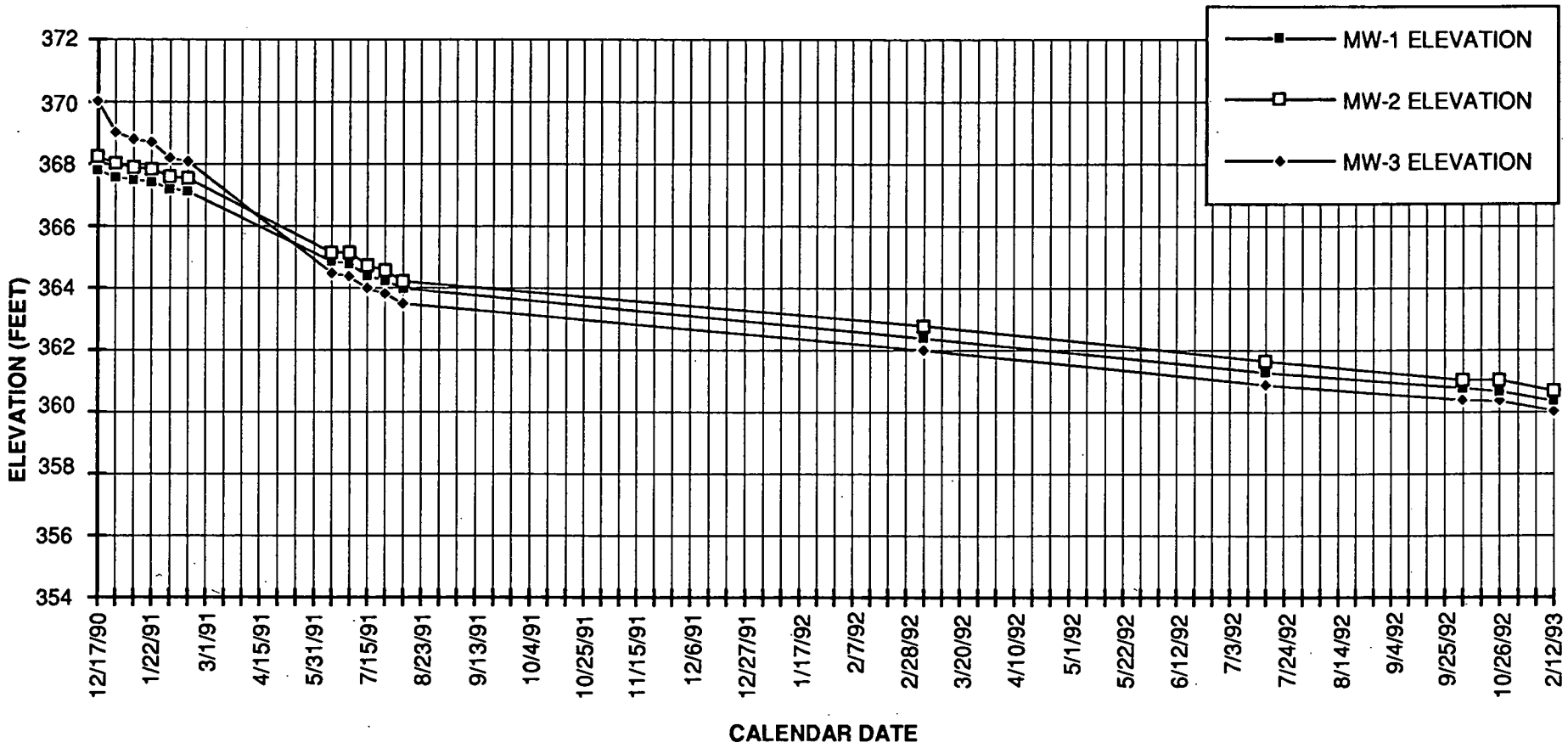
SECTION 30, T.28S, R.27E., MDB&M

KERN COUNTY, CALIFORNIA

PLOT PLAN

PLATE

2



PLATE

3

MALIBU VINEYARDS

Section 30, T.28S., R.27E.
Kern County, California

TIME VS. ELEVATION

RESNA
Working to Restore Nature

DATE: 3/5/93
PROJECT NUMBER: B 5682-32

APPENDIX A

Laboratory Analyses and Chain of Custody

RESNA

Project Name: Malibu Vineyard
Project No. : B5682-32

February 22, 1993

Mr. Young
RESNA Industries
1500 S. Union Ave.
Bakersfield, CA 93307

Dear Mr. Young:

Enclosed please find the analytical results for the water samples received by RESNA Environmental Laboratories on 02-17-93.

RESNA Environmental Laboratories maintains a strict Quality Assurance/Quality Control (QA/QC) program designed to meet or exceed EPA requirements. Analytical data presented in this report met QA/QC criteria.

The specific analytical methods used and cited in this report are approved by the State of California's Department of Health Services (DOHS) under certificate numbers 1078 and 1697.

If you have any questions regarding these analyses, or if we can be of further assistance, please give us a call.

Sincerely,
RESNA Environmental Laboratories

Alfred Biggs

Alfred Biggs
Senior Chemist

RECEIVED
FEB 26 1993

RESNA

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

PROJECT NO.	PROJECT NAME/SITE	P.O. #:
B5682-32 ~~B5682-300~~	Malibu Vineyards	A 4676

SAMPLERS (SIGN) Tim Moore (PRINT) Tim Moore

SAMPLE IDENTIFICATION	DATE	TIME	COMP	GRAB	PRES. USED	ICED	NO. CONTAINERS	SAMPLE TYPE	BTEX (602/8020)	TPHg (8015)	TPHd (8015)	TOG 418.1/5520	601/8010	624/8240	625/8270	REMARKS
MW-3	2/12/93	11:40		X	HCl	X	2	GW	X	X						WZ-302-050
MW-2	↓	11:50		X	↓	X	2	↓	↓	↓						WZ-302-051
MW-1	↓	12:40		X	↓	X	2	↓	↓	↓						WZ-302-052
TB	↓					X	1		↓	↓	if other is reported					WZ-302-053

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	LABORATORY:	PLEASE SEND RESULTS TO:
Tim Moore	2/12/93		Sealed w/ Tape	Resna-Irvine	Resna Ind. c/o Rex Young 1500 S. Union Ave. Bakersfield, Ca. 93307
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:		
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	REQUESTED TURNAROUND TIME: Normal	
RELINQUISHED BY:	DATE 2-17-93	TIME 2:30P	RECEIVED BY LABORATORY: [illegible]	RECEIPT CONDITION: [illegible]	PROJECT MANAGER: R. Young

RESNA

ANALYSIS REPORT

Attention: Rex Young
RESNA Industries
1500 S. Union Ave.
Bakersfield, CA 93307

Date Sampled: 02-12-93
Date Received: 02-17-93
Date Analyzed: 02-18-93
Date Reported: 02-22-93

Project: B5682-32

Matrix: Water

Detection limit (ug/L)	Benzene 0.5	Toluene 0.5	Ethyl-benzene 0.5	Total Xylenes 1.5	TPH 50
Sample description					
MW-3 W2-302-050*	ND	ND	ND	2.9	ND
MW-2 W2-302-051*	ND	ND	ND	2.0	ND
MW-1 W2-302-052*	19	160	7.1	120	810
TB W2-302-053*	ND	ND	ND	ND	ND

TPH = total petroleum hydrocarbons as gasoline.
ug/L = Micrograms per liter = ppb = parts per billion.
* = Laboratory identification number.
ND = Analytes not detected at or above method detection limit.

ANALYTICAL PROCEDURES

BTEX-- Benzene, toluene, ethylbenzene, and total xylene isomers are measured in accordance with EPA Method 5030 followed by analysis using EPA Method 8020.
TPH-- Total petroleum hydrocarbons as gasoline are measured in accordance with EPA Method 5030, followed by modified EPA 8015.

RESNA

QUALITY ASSURANCE/QUALITY CONTROL REPORT

Attention: Rex Young
RESNA Industries
1500 S. Union Ave.
Bakersfield, CA 93307

Date Analyzed: 02-18-93
Matrix: Water
Site: Malibu Vineyard

Project: B5682-32

	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHg	TPHd
	ppb	ppb	ppb	ppb	ppb	ppb
Detection limit	0.5	0.5	0.5	1.5	50	50
Blank	ND	ND	ND	ND	ND	NR

	Benzene %	Toluene %	Ethyl-benzene %	Total Xylenes %	TPHg %	TPHd %
Standard	110	106	121	102	107	NR
MS	114	109	124	105	125	NR
MSD	119	111	126	107	106	NR
RPD	4.29	1.82	1.60	1.89	16.5	NR

All surrogate recovery within range.

ppb = parts per billion = ug/L = Micrograms per liter.
ND = Not detected. Compound(s) may be present at concentrations below the detection limit.
NR = Analysis not requested.
MS = Matrix Spike
MSD = Matrix Spike Duplicate
RPD = Relative Percent Difference

	Acceptable Range
Standard	85-115%
Blank	ND
MS/MSD	70-130%
RPD	<25%
Surrogate	75-125%

RESNA Industries Inc.

DRAFT

COUNTY OF KERN
ENVIRONMENTAL HEALTH SERVICES DEPARTMENT

O F F I C E M E M O

TO: ~~Joe Canas~~ Mike Chapman DATE: December 8, 1993

FROM: ~~Dolores~~ Joe Canas

SUBJECT: Malibu Vineyards

RESNA's recommendation to perform no remedial action other than capping was previously denied because not enough information regarding the aquifer (first groundwater) beneath the site was provided. The information which include but not limited to water quality, sustainable yield, are needed to determine the course of action not only for groundwater but also for the vadose zone. Since contamination in the vadose zone was found to extend to 100 feet below grade, it could be a source for additional contamination in groundwater.

My recommendation is to determine relevant characteristics and properties of the aquifer to evaluate its designation and potential beneficial uses. The data obtained will provide justification to perform remedial action, and to what degree ~~will~~ remedial efforts be. regd. for both soil & gw.

If aquifer testing results indicate that aquifer is exempt pursuant to the provisions of Resolution 89-098, then the Department will have more flexibility in whether to require cleanup or not. If it is demonstrated that contamination is stable and the potential for contaminants to impact useable aquifer is unlikely, remediation may not be needed.

If the results justify active remediation, I recommend to remediate the vadose zone first and continue to sample groundwater on a semi-annual basis. Following completion of vadose zone remediation, groundwater will be monotored on a quarterly basis for a year. These results will determine if groundwater cleanup is necessary.

The response that was prepared after the meeting indicates that we require vadose zone remediation no matter what the aquifer is like. Only groundwater remediation can be waived if it meets Resolution 89-098. If we proceed with the case this way, we don't have to wait for the next groundwater monitoring event to determine the next course of action for the groundwater. They can start vadose remediation and determine the aquifer characteristics concurrently with soil remediation activities.

RESNA
Working to Restore Nature

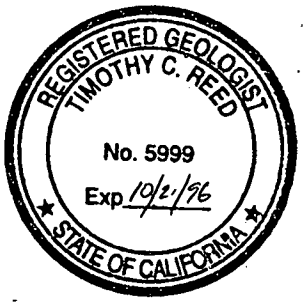
1500 So. Union Avenue
Bakersfield, California 93307
Phone: (805) 835-7700
FAX: (805) 835-7717

AQUIFER TEST AND SITE CLOSURE REPORT

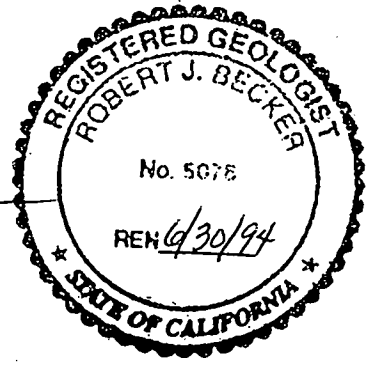
Malibu Vineyards
Section 30, T.28S., R 27E.
Kern County, California

Prepared for

Malibu Vineyards
c/o Lucich Farms
Mr. Kyle Burdick
P.O. Box 1266
Delano, California 93216



Timothy C. Reed, R.G. 5999
Project Geologist



Robert J. Becker, R. G. 5076
So. Field Professional Services Manager

April 29, 1994
RESNA Report 0B5682.32

RESNA
Working to Restore Nature

1500 South Union Avenue
Bakersfield , Ca. 93307
Phone: (805) 835-7700
Fax: (805) 835-7717

LETTER OF TRANSMITTAL

JUN - 3 1994

TO: Ms. Delores Gough	DATE: June 2, 1994
Kern County Department of Environmental	RE: Aquifer Test and Site Closure
Health Services	Report- Malibu Vineyards
2700 M Street, Suite 300	0B5682.32
Bakersfield, California 93301	

WE ARE SENDING YOU ☒ Enclosed ☐ Under separate cover via _____ the following:

- ☐ Site Assessment Report
- ☐ Closure Report
- ☐ Workplan for Site Assessment
- ☐ Proposal
- ☐ Preacquisition Site Assessment
- ☒ As above.

THESE ARE TRANSMITTED as checked below:

- ☐ For approval
- ☐ As requested
- ☒ For your use
- ☐ For review and comment
- ☐ FOR BIDS DUE_____19___
- ☐ _____

REMARKS _____

COPY TO: _____

SIGNED: Tim Reed

Timothy C. Reed, R.G. 5999

RESNA
Working to Restore Nature

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2.0 SITE DESCRIPTION 1

3.0 PREVIOUS WORK 2

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- 4.2 Site Geology and Hydrogeology 3
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Plate 3:	Groundwater Gradient Map
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Plate 6:	Time vs. Groundwater Elevation
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APPENDICES

Appendix A: Groundwater Discharge Velocity Calculations and Pump Test Models

Appendix B: Laboratory Analyses Result

RESNA
Working to Restore Nature

1500 So. Union Avenue
Bakersfield, California 93307
Phone: (805) 835-7700
FAX: (805) 835-7717

AQUIFER TEST AND SITE CLOSURE REPORT

Malibu Vineyards
Section 30, T. 28S., R. 27E.
Kern County, California

For Malibu Vineyards

1.0 INTRODUCTION

This report is a compilation of the environmental assessments and ground water monitoring work performed at the Malibu Vineyards property located north of Bakersfield, California. This report will list the site work performed and a summary of the results. Based on the information collected throughout the project and other supplemental data, a recommendation is made for closure of the site.

2.0 SITE DESCRIPTION

The project site is located at the Malibu Vineyards equipment facility located at the northeast corner of Section 30, T.28S, R. 27E., two miles north of 7th Standard Road and 1.5 miles west of Highway 65, north of Bakersfield (Plate 1). The site is located in agricultural land predominately orchards and vineyards. The site contains several equipment barns and a residence. Three ground water monitoring wells are located near the former location of a 1,000 gallon underground gasoline tank. Adjacent to the wells is a large irrigation pond with a plastic lined earthen dike. A 1,000 gallon above ground gasoline tank is located approximately 50 feet south of the former underground tank location (Plate 2).

3.0 PREVIOUS WORK

On December 5, 1989 a 1,000 gallon underground gasoline storage tank was removed from the above referenced site. The analytical report for the samples collected during the removal indicated that significant levels of hydrocarbons were present in the soil below the tank location. A Phase I Site Characterization was performed by Duane R. Smith and Associated in August 1990. The results from that report indicated that soil contamination was present below the tank location to a depth of at least 100 feet with a lateral extent of approximately 45 feet in diameter. Unconfined ground water in the region was reported in the Kern County Water Agency 1990 Annual Report to be greater than 300 feet below grade. Perched ground water, associated with percolation below the unlined water reservoir east of the tank location, was encountered at a depth of 110 feet by Groundwater Resources, now RESNA Industries Inc. (RESNA). This discovery was made during site characterization work and the installation of three monitoring wells, performed November 28 through December 4, 1990. At the request of the Kern County Environmental Health Services Department (KCEHSD), the results of fairly regular monitoring events have been reported since December, 1990. During that time the water elevation in MW-1 has decreased almost eight feet and continues to drop. As of February of 1993 hydrocarbons were detected in MW-1 but MW-2 and MW-3 remain clean. A decision regarding remediation of the vadose plume was deferred by KCEHSD until the perched water levels dropped below the slotted intervals of the MWs, however, since it may take up to ten years for the water to drop that far, and Malibu Vineyards has requested that KCEHSD give Site Closure before that time, KCEHSD requested that a Remediation Feasibility Study of the vadose plume be made. On August 10, 1993 RESNA submitted a Remedial Investigation/Feasibility Study. In the report, RESNA recommended no further action be taken. A letter from the KCEHSD, September 27, 1993 stated that the county could not concur with RESNA's recommendation until specific aquifer characteristics could be established. On February 17-18, 1994 RESNA performed a pump test and collected water samples to help determine aquifer characteristics and water quality.

4.0 GEOLOGY AND HYDROGEOLOGY

4.1 Local Geology and Hydrogeology

The site is located on Pleistocene non marine sediments comprised of slightly consolidated and dissected older fan deposits at the east margin of the Sierra Nevada. An open-file report of an

hydrogeologic study of the Kern River alluvial fan area describes the sediments under this site as unconsolidated medium sand underlain by a basal gravel lentil. The gravel lentil is mapped in outcrop 1.5 miles northeast, dipping southwest 1.25 degrees, and occurring beneath the Malibu Vineyards site at a depth of about 50 feet. Specific yield is estimated to be approximately 15 percent and permeability (conductivity) said to be between 100 and 10,000 Meinzer units.

4.2 Site Geology and Hydrogeology

The upper 50 feet of sediments at this site are tan, silty sand, becoming siltier and clayey with increasing depth. Thin clay beds become common below 50 feet along with pebble and cobble beds in a silty clay matrix. This is the top of the gravel lentil described above. Each of the bore holes bottomed in sandy silt or clayey, silty sand. Water was first encountered in MW-1 at 122 feet. The hole was advanced to 129 feet and drilling was stopped. About half an hour after drilling stopped, the water rose to 119 feet from the surface. Since regional aquifer maps show the depth to unconfined ground water greater that 300 feet for the site, is was assumed that the water encountered was a small perched aquifer associated with leakage from the adjacent irrigation pond.

4.3 Inventory of Groundwater Supply Wells

According to drilling log records for the area surrounding the site, there are six wells within Section 30. These wells were all drilled before 1960 for agricultural use. Very little data was available on each well, however, the depths of the wells had ranged from 250 feet to 830 feet.

A survey to locate any records of domestic water wells in the vicinity of the project site has shown that none can be found within a one mile radius. Water service for this area is provided by the Cawelo Water District. In a telephone conversation with a representative of the water district on April 12, 1994 it was stated that the water provided to their customers comes from surface water sources only.

5.0 GROUND WATER ELEVATION AND GRADIENT

Before beginning the pump test on MW-1, static water elevations were measured from the three monitoring wells. Based on these measurements, the local gradient and direction of flow was calculated for the perched aquifer. As shown on Plate 3, the ground water has a relatively shallow to moderate gradient of approximately 0.77 feet per 100 feet trending almost due north. The

gradient direction approximates the northerly gradient of the regional water table as shown on Plate 4. The recently calculated gradient is also consistent with previous measurements collected since the irrigation pond was drained and lined in 1991. A graph of the calculated gradients shows that the steepness of the gradient is decreasing with time and will eventually flatten out as recharge of the perched aquifer diminishes (Plate 5). The graph on Plate 6 shows that the elevation of the perched water table is also decreasing with time. The most recent measurements demonstrate that the decline curve is becoming asymptotic. Therefore, without drastic changes in recharge conditions, the time calculated for the perched water table to fall below the bottom of the monitoring wells remains over ten years away.

6.0 AQUIFER PUMP TEST

6.1 Pump Test Procedures

A constant flow, time-drawdown pump test was performed on MW-1 to determine some of the perched aquifer characteristics and aid in establishing contaminant fate transport parameters. The test was started around 12:00 PM on February 17 and was stopped at 3:40 AM on February 18 when stabilized readings were recorded. To achieve a constant flow, a two inch variable speed submersible pump was used to extract ground water from MW-1 at a rate of 4.0 gallons per minute (gpm). Drawdown in the pumping well was recorded by a data logger attached to a pressure transducer located just above the pump. Depth to water measurements were collected from MW-2 and MW-3 using an electronic water level indicator. The extracted water was placed in a 5000 gallon tank for subsequent disposal. Three water samples were collected from MW-1 during the test. The other wells were purged and sampled after completion of the test. A total of 3,182 gallons of water was extracted from MW-1. The extracted water was classified as non-hazardous and transported for disposal to Environmental Protection Services in Bakersfield.

6.2 Pump Test Findings

6.2.1 Aquifer Modeling Procedures

Aquifer properties were determined using the data collected from the pump test performed on MW-1. A computer program was used that incorporates the Neuman (1975) model for partially penetrating unconfined aquifers. Due to the lack of precise information concerning the perched

water aquifer, assumptions were made as to aquifer thickness. Analyses were run using an aquifer thickness of 10, 25 and 50 feet. After a best fit model had been established for each well and various aquifer thickness, an equivalence calculation was made to determine a range of possible results. This is important for aquifer data for several reasons. One reason is that the data are by nature taken over a limited time range, and another is that slight variations in flow rate and other considerations mean that the data will contain some noise. This suggests that there are other solutions, some of which do not fit the data quite as well as the best fit model, but which could equally well represent the properties of the aquifer being tested. Therefore, a range of results is listed for each aquifer property including a minimum and maximum.

6.2.2 Aquifer Modeling Results

The results of the modeling gave values for several aquifer properties. These properties include storativity or storage coefficient, transmissivity, specific yield, and anisotropy. Upon review of the all the aquifer models applied, the results using the data from MW-2 with a projected aquifer thickness of 25 feet demonstrated the best fit. Table 1 shows the maximum and minimum values for the aquifer parameters for the best fit model from MW-2.

The results of the best fit model show that the aquifer has a transmissivity of 460.12 ft^2/day and a specific yield of approximately 1.3 percent. The results of all of the models are presented in Appendix A. Since the data between the three monitoring wells are in general agreement and drawdown measurements collected from MW-2 and MW-3 were reasonably proportional with their distance to MW-1, it is apparent that there is communication between the wells and that they all are part of the same perched aquifer.

TABLE 1
AQUIFER PARAMETERS DERIVED FROM PUMP TEST COMPUTER MODEL

	STORATIVITY	TRANSMISSIVITY	SPECIFIC YIELD	ANISOTROPY
Maximum	$1.217X10^{-1}$	760.54	1.423	130.049
Minimum	$8.669x10^{-5}$	35.43	0.003	0.009
Best Fit	$4.169x10^{-3}$	460.12	0.013	0.391
Max. Best Fit	$4.586x10^{-3}$	514.514	0.019	0.439

TABLE 1 (continued)
AQUIFER PARAMETERS DERIVED FROM PUMP TEST COMPUTER MODEL

	STORATIVITY	TRANSMISSIVITY	SPECIFIC YIELD	ANISOTROPY
Min. Best Fit	3.477×10^{-3}	381.044	0.010	0.327

NOTES:

Transmissivity reported in ft^2/day
Anisotropy reported in [sqrt (Kz/Kr)]

7.0 SAMPLE ANALYSIS RESULTS

During the pump test on MW-1, three water samples were collected for analysis. These samples were collected during the beginning (WS-1), middle (WS-2) and end (WS-3) of the test. The first sample was collected after approximately 900 gallons of water was extracted from the aquifer. The second and third sample was collected after 2,700 and 3,100 gallons were extracted from the aquifer, respectively. An additional sample (VT-1) was collected at the conclusion of the test from the tank holding all of the extracted water. All of the samples were analyzed for Benzene, Toluene, Ethylbenzene, Xylene (BTEX) and Total Petroleum Hydrocarbons as gasoline (TPHg). In addition, the first sample collected (WS-1) was analyzed for Purgable Halocarbons and General Minerals. The combined sample (VT-1) was also analyzed for CAM 17 metals and Toxicity. All of the laboratory analysis results are presented in Appendix B.

The results of the analyses show that none of the samples collected contained detectable amounts of any BTEX or TPHg constituents. Only trace amounts of Halogenated Hydrocarbons were detected for 1,2-Dichlorethane (0.54 ppb) and Methylene Chloride (1.6 ppb). Since chlorinated hydrocarbons were never stored in the underground tank, these results are considered anomalous and are possibly false positives. A summary of the results are tabulated in Table 2.

TABLE 2
BRIEF SUMMARY OF RESULTS FOR DETERMINING
GROUND WATER QUALITY

Constituents	Results	Calif. DOHS MCL[1]	U.S. EPA MCL[2]
Benzene	ND	0.001	0.005
Toluene ND	---[3]	1.0	
Ethylbenzene	ND	0.68	0.70
Total Xylene	ND	1.75	10.0
TPHg	ND	---[3]	---[3]
Copper ND	1,000	1,300	
Iron	ND	300	300
Manganese	ND	50	50
Zinc	24	5,000	5,000
Lead	ND	50	15
Nitrate/Nitrite	88.5	45,000	10,000
Chloride	290	250-500-600[4]	250
Sulfate 1,020	250-500-600[4]	250	
Total Dissolved Solids	2,400	500-1000-1500[4]	500

NOTES:

Values in mg/l (ppm)
MCL = Maximum Contaminant Levels
1 California Regional Water Quality Control Board, September 1991 Edition of "Water Quality Goals."
2 Drinking Water Regulations and Health Advisories, U.S. Environmental Protection Agency, April 1992.
3 Unregulated
4 Recommended-Upper-Short Term

Toxicity tests were run on the sample VT-1. These test included the Toxicity Characteristic Leaching Procedure (TCLP) for Volatile Organics (EPA 8240), Metals and Toxicity (Fish Bioassay). The results for the TCLP show that none of the metals or organic compounds exceeded either the Soluble Threshold Limit Concentration (STLC) or the Total Threshold Limit Concentration (TTLC) as set forth in CCR, Title 22, Section 66261. The results of the fish bioassay showed a zero mortality percentage for a 96 hour test.

8.0 CALCULATED GROUND WATER VELOCITY

An approximation for the ground water velocity at the site has been calculated based on the information collected during the aquifer test. Due to various unknown factors such as the actual

aquifer thickness, a range of velocities has been calculated. Using the most recent gradient figure of 0.0077, the ground water at the site has a calculated discharge velocity ranging from 19.1 feet per year to 198 feet per year. Using the best fit model, the ground water discharge velocity is calculated to be 51.7 feet per year. If the actual thickness is greater than the best fit model, then the calculated ground water velocity will be less. Also, as the ground water gradient flattens, the discharge velocity will decrease. It is reasonable to assume that the actual ground water flow at this time is less than 50 feet per year and will decrease as the gradient continues to lessen (see Appendix A for Calculations).

9.0 CONCLUSIONS

Based on the data collected from past soil and ground water assessments, ground water monitoring, and aquifer testing, several factors come to the forefront as to whether any remaining hydrocarbons in the soil or perched aquifer pose a significant threat to public health. These factors are:

1) Has the source of hydrocarbons been mitigated?
2) Is there a health threat from migrating vapors to the surface?
3) Can the perched aquifer become recontaminated?
4) Can any possible ground water plume impact wells used as a drinking source?
5) Is the perched aquifer suitable as a drinking water source?

9.1 Source Mitigation and Potential for Further Ground Water Contamination

With the removal of the underground tank in December 1989, the source of hydrocarbons has been eliminated. Based on the first site characterization study performed by Duane R. Smith and Associates, August 1990, the soil plume extended to approximately 100 feet with the majority of the hydrocarbons above 50 feet. A subsequent assessment by Groundwater Resources, Inc., February 1991, discovered the lower plume boundary between 100 and 115 feet. It was hypothesized at the time that the plume had never reached the ground water, rather, the drilling of assessment borings penetrated an aquitard and allowed the water level to rise in the boring and contact contaminated soil. This would have contaminated only a relatively small area of the ground water. The fact that ground water concentrations have continued to decrease with time tends to support this hypothesis (Table 3). The removal of over 3,000 gallons of water during the pump test may have remediated all of the remaining hydrocarbons in the perched aquifer. The draining

and lining of the pond has also allowed the perched water table to drop, increasing the distance between the soil plume and ground water. Vertical transport of hydrocarbons through the soil plume is contingent on dispersion of the volatile components and surface water percolating through the plume. Dispersion is a relatively slow transport method and percolating surface water can be mitigated by grading the surface to allow precipitation to runoff to another area.

TABLE 3
GROUND WATER ANALYSIS RESULTS

Date	Benzene	Toluene	Ethyl-benzene	Xylenes	TPHg
MW-1					
12/17/90 112.19	140	650	11	1090	3600
1/22/91	840	3300	72	3000	15000
6/17/91	370	1100	24	1910	6700
8/16/91	89	18	<0.3	470	3600
3/6/92	37	170	6.7	230	7500
7/17/92	0.4	2.0	<0.03	2	<50
10/26/92 119.3	10	42	1.4	76	480
2/12/93 119.6	19	160	7.1	120	810
2/18/94	<0.5	<0.5	<0.5	<1.0	<50
MW-2					
12/17/90	<0.5	<0.5	<0.5	<0.5	<50
1/22/91	<0.3	<0.3	<0.3	<0.5	<50
6/17/91	0.94	<0.5	<0.5	<0.5	64
8/16/91	<0.3	<0.3	<0.3	<0.5	<50
3/6/92	1.1	3.6	<0.5	3.0	86
7/17/92	<0.3	<0.3	<0.3	<0.5	<50
10/26/92	<0.5	<0.5	<0.5	<1.5	<50
2/12/93	<0.5	<0.5	<0.5	2.0	<50
2/18/94	<0.5	<0.5	<0.5	<1.0	<50
MW-3					
12/17/90	<0.5	<0.5	<0.5	<0.5	<50
1/22/91	<0.3	<0.3	<0.3	<0.5	<50
6/17/91	0.95	0.28	<0.5	<0.5	58
8/16/91	<0.3	<0.3	<0.3	<0.5	<50
3/6/92	1.5	1.7	<0.5	1.8	<50
7/17/92	<0.3	<0.3	<0.3	<0.5	<50
10/26/92	<0.5	<0.5	<0.5	<1.5	<50
2/12/93	<0.5	<0.5	<0.5	2.9	<50
2/18/94	<0.5	<0.5	<0.5	<1.0	<50

one more not reqd?

NOTES:
Concentrations are expressed in µg/l (ppb)

2.2 Threat to Public from Airborne Emissions

At the time of the tank removal, the tank excavation was backfilled with clean fill material to a depth of approximately seven feet. The soil plume is located in a rarely occupied area of the vineyard facility. The nearest regularly occupied spot is an employee's residence approximately 150 feet northwest of MW-1, in the prevailing up-wind direction. Therefore it can be concluded that there should be no risk to employee's from any surface emissions that may occur.

2.3 Contamination Fate Transport

Assuming an estimated ground water velocity of 50 feet per year for the perched water, the time required for any possible contaminant to reach a domestic water well one mile away would be over 105 years. This assumes that the perched water zone is continuous for that distance. Since the depth to the main unconfined aquifer is greater than 300 feet at the site, any contaminants would first have to migrate vertically over 200 feet. The time necessary for the water to migrate vertically 200 feet and the presence of any intervening clay layers would significantly increase the time for any contaminant to reach a domestic water well.

2.4 Ground Water Quality

Based on the results of analysis completed on the extracted ground water, the perched aquifer shows no sign of hydrocarbon contamination resulting from the underground storage tank. The aquifer was able to produce water at a sustained rate of at least 4.0 gallons per minute. However, the analysis also reported Total Dissolved Solids (TDS) and Sulfate levels exceeding the recommended Maximum Contaminant Levels required by the California Department of Health Services (DOHS) and the United States Environmental Protection Agency (EPA) (see Table 2). The reported TDS level of 2,400 ppm for MW-1 is significantly higher than the main unconfined aquifer. The ground water quality map prepared by the Kern County Water Agency for the unconfined aquifer shows TDS levels between 1000 and 1500 ppm at the site location (Plate 7). Although the perched aquifer is capable of producing water at a rate greater than 200 gallons per day, the quality of the water, based on TDS and sulfide concentrations, precludes its use as a suitable source for drinking water.

9.5 Conclusions

The information presented above demonstrates that: 1) the source of hydrocarbons has been removed; 2) the perched aquifer is considered to be at minimal risk to recontamination; 3) any ground water plume that may occur will not pose a threat to any domestic drinking water wells in the area; 4) the perched aquifer is not considered a suitable source for drinking water due to high TDS and sulfide concentrations; and 5) the site is in a remote agricultural area with minimal public access. The conclusions made from the data collected to date suggest that the hydrocarbons leaked from the former underground storage tank do not pose a public health risk either from migrating vapors to the surface or to possible domestic drinking water sources.

10.0 RECOMMENDATIONS

Since it has been shown that subsurface hydrocarbons at the project site should not be considered a threat to public health, RESNA recommends that no further action be taken at the site. Since the monitoring wells can act as a conduit for vertical migration of surface water and hydrocarbon vapors, RESNA recommends that all monitoring wells be abandoned in a manner approved by the KCEHSD. The surface above the former tank location should be graded to prevent rainfall and surface runoff from accumulating above the soil plume.

11.0 REFERENCES

California Department of Health Services, State of California. October 24, 1990. "*Summary of California Drinking Water Standards.*"

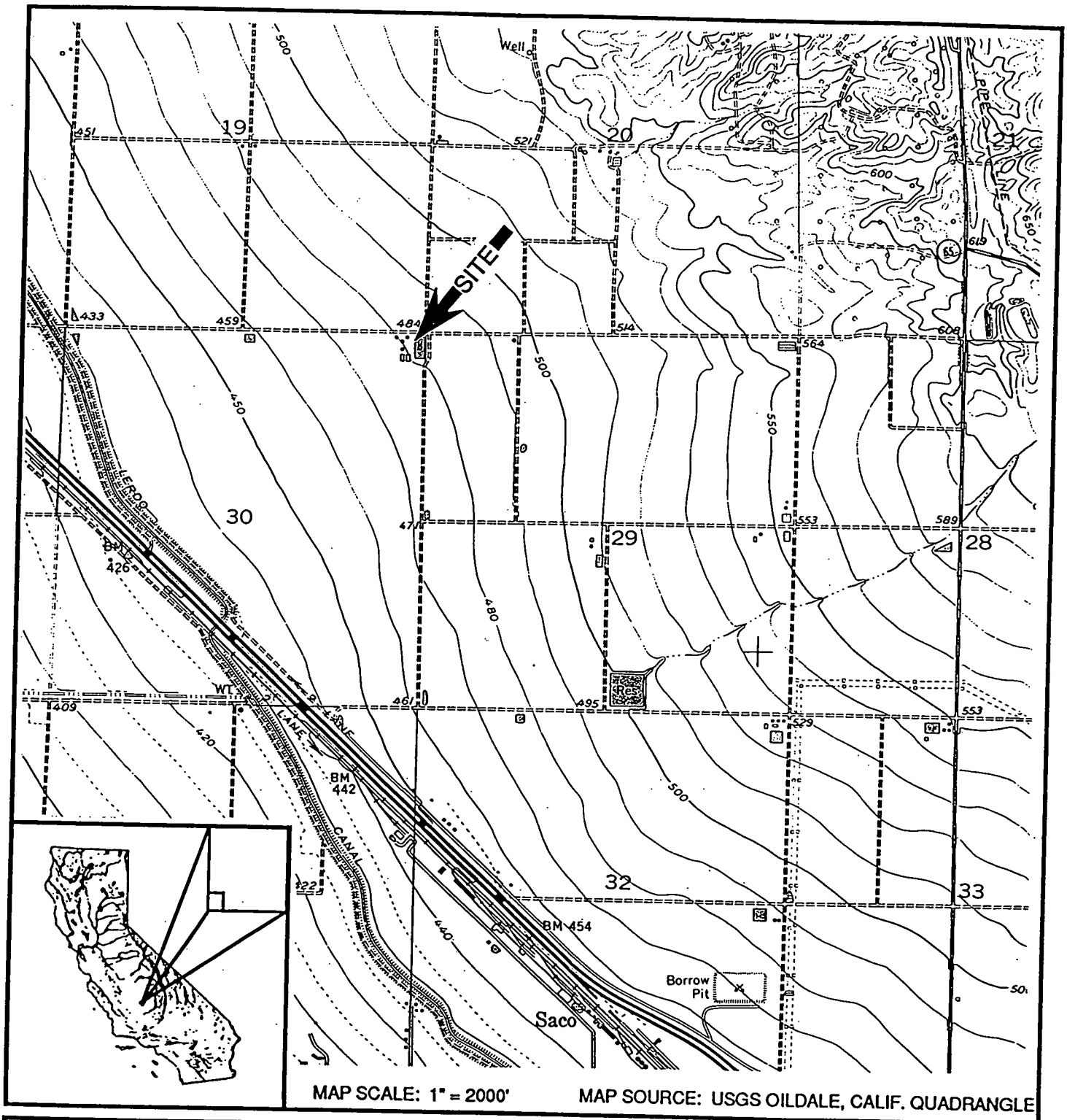
California Regional Water Quality Control Board - Central Valley Region. September 18, 1991. "*A Compilation of Water Quality Goals.*"

Duane R. Smith and Associates, August 1990. "Site Characterization Study, Phase I Malibu Vineyards Site, Section 30, T.28S., R.27E., M.D.B.& M."

Fetter, C. W. Jr., *Applied Hydrogeology*. Columbus, Ohio: Charles E. Merrill Pub. Co., 1980.

Geologic Map of California, Bakersfield Sheet, Scale 1:250,000. 1965. Division of Mines and Geology, Ferry Building, San Francisco.

Groundwater Geology and Hydrology of the Kern River Alluvial-Fan Area, California. R.H. Dale, James J. French, and G. V. Gordon. 1966. Open-File Report #66-21. U.S. Geological Survey, Water Resources Division, Menlo Park, California.



RESNA

Working to Restore Nature

PROJECT NUMBER: OB5682.34

MALIBU VINEYARDS

SECTION 30, T.28S, R.27E., MDB&M

KERN COUNTY, CALIFORNIA

LOCATION MAP

PLATE

1

Groundwater Resources, Inc. February 8, 1991. *"Site Assessment Report, Malibu Vineyards, Section 30, T.28S., R.27E., Kern County, California."* Project 1430-3.

Ground Water Manual, A Water Resources Technical Publication. U.S. Department of the Interior Water and Power Resources Service, John Whiley & Sons, New York, 1981.

Kern County Water Agency, December 1992. "Water Supply Report 1991."

Office of Water, U.S. Environmental Protection Agency. April 1992. *"Drinking Water Regulations and Health Advisories."*

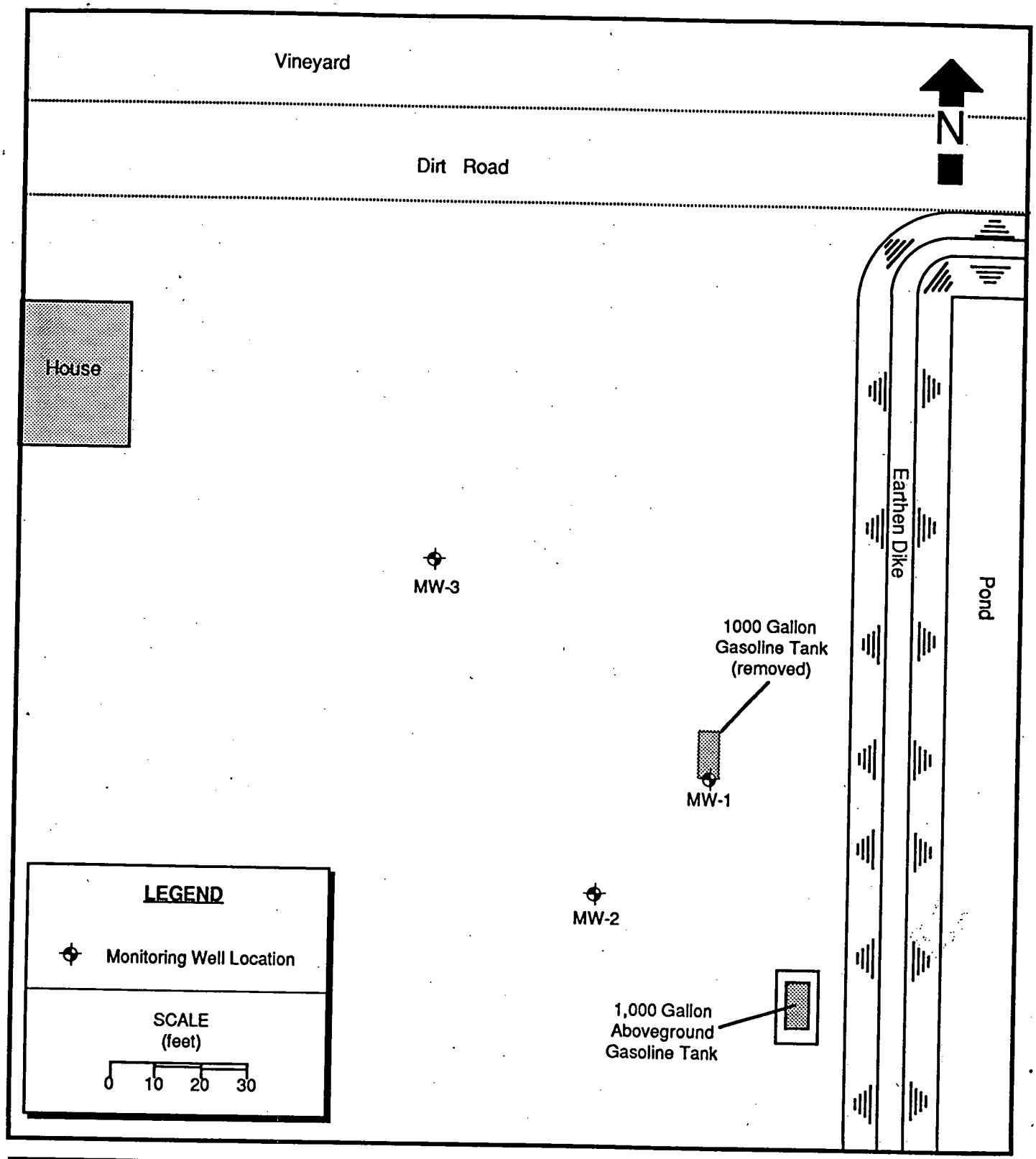
RESNA/Groundwater Resources, Inc. March 24, 1992. *"Groundwater Monitoring Status Report, Malibu Vineyards, Section 30, T.28S., R.27E., Kern County, California."* Project 3731-3.

RESNA Industries Inc. July 29, 1992. *"Groundwater Monitoring Status Report, Malibu Vineyards, Section 30, T.28S., R.27E., Kern County, California."* Project B5682-32.

RESNA Industries Inc. November 13, 1992. *"Groundwater Monitoring Status Report, Malibu Vineyards, Section 30, T.28S., R.27E., Kern County, California."* Project B5682-32.

RESNA Industries Inc. March 5, 1993. *"Groundwater Monitoring Status Report, Malibu Vineyards, Section 30, T.28S., R.27E., Kern County, California."* Project B5682-32.

RESNA Industries Inc. August 10, 1993. *"Remedial Investigation/Feasibility Study, Malibu Vineyards, Section 30, T.28S., R.27E., Kern County, California."* Project B5682-32.



RESNA
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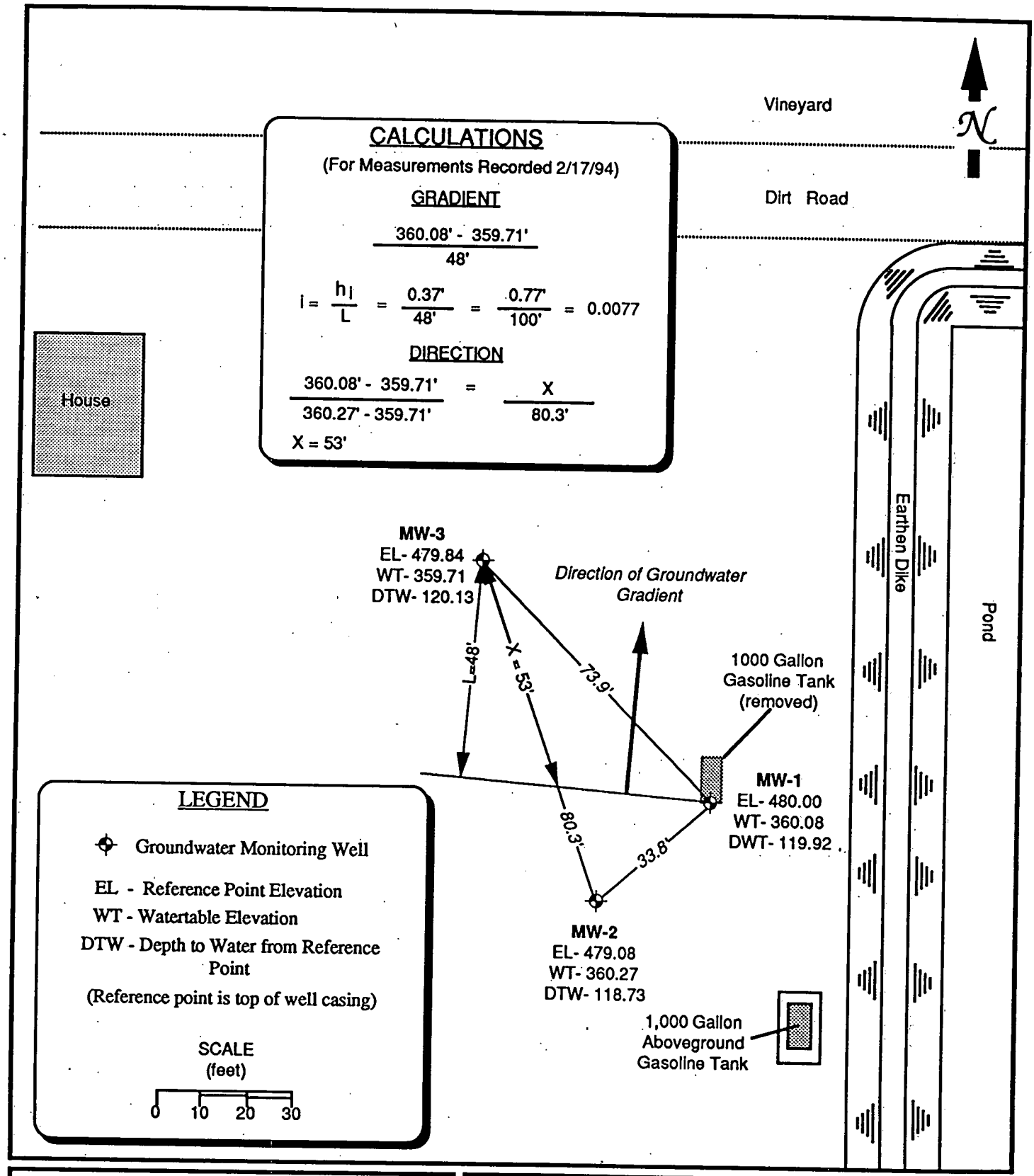
DATE: 08/24/91
PROJECT NUMBER: OB5682.34

MALIBU VINEYARDS

SECTION 30, T.28S, R.27E., MDB&M
KERN COUNTY, CALIFORNIA

PLOT PLAN

PLATE
2



RESNA
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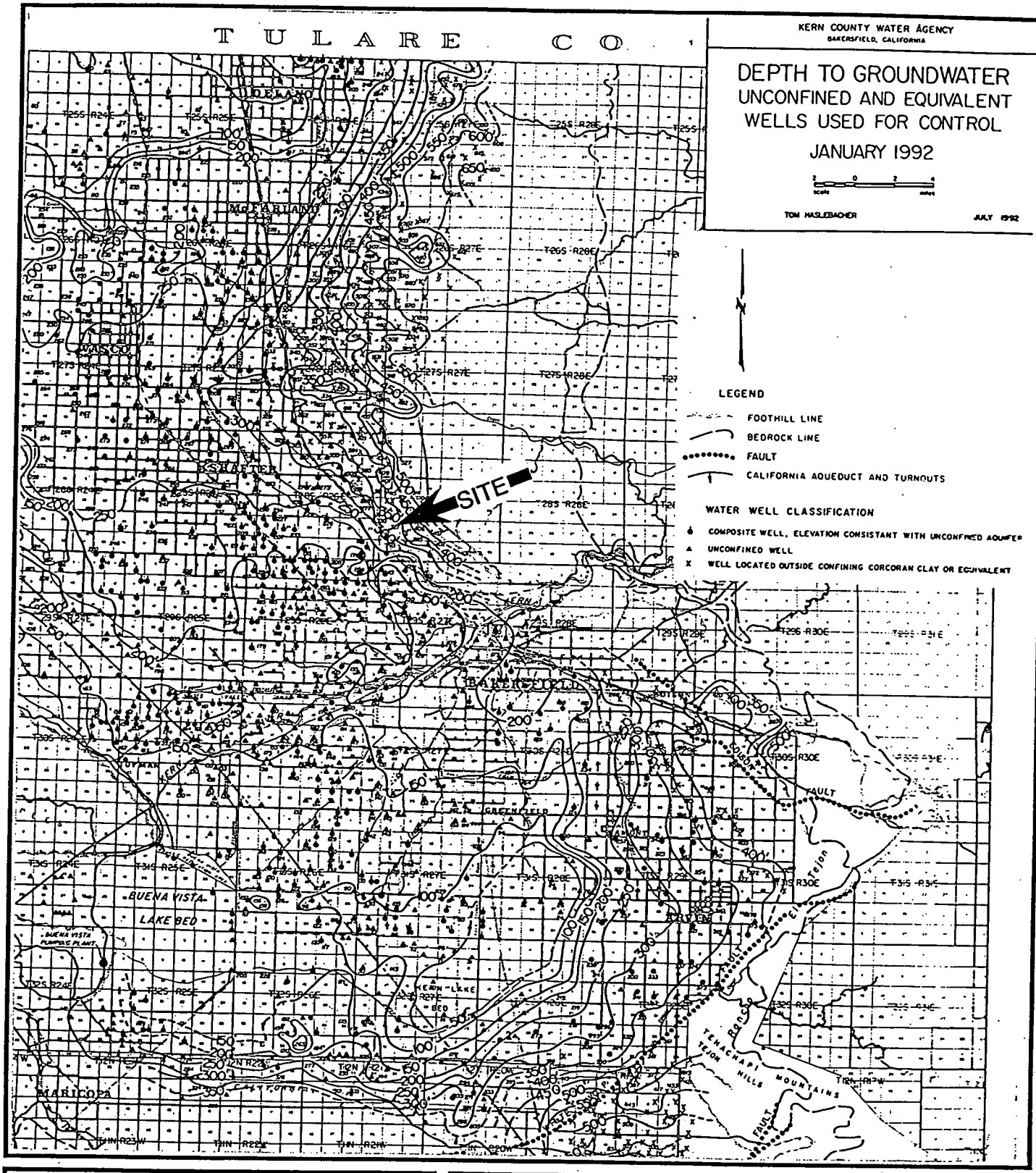
DATE: 03/24/92
PROJECT NUMBER: 5682-3

MALIBU VINEYARDS

SECTION 30, T.28S, R.27E., MDB&M
KERN COUNTY, CALIFORNIA

Groundwater Gradient Map
(February 1994)

PLATE
3



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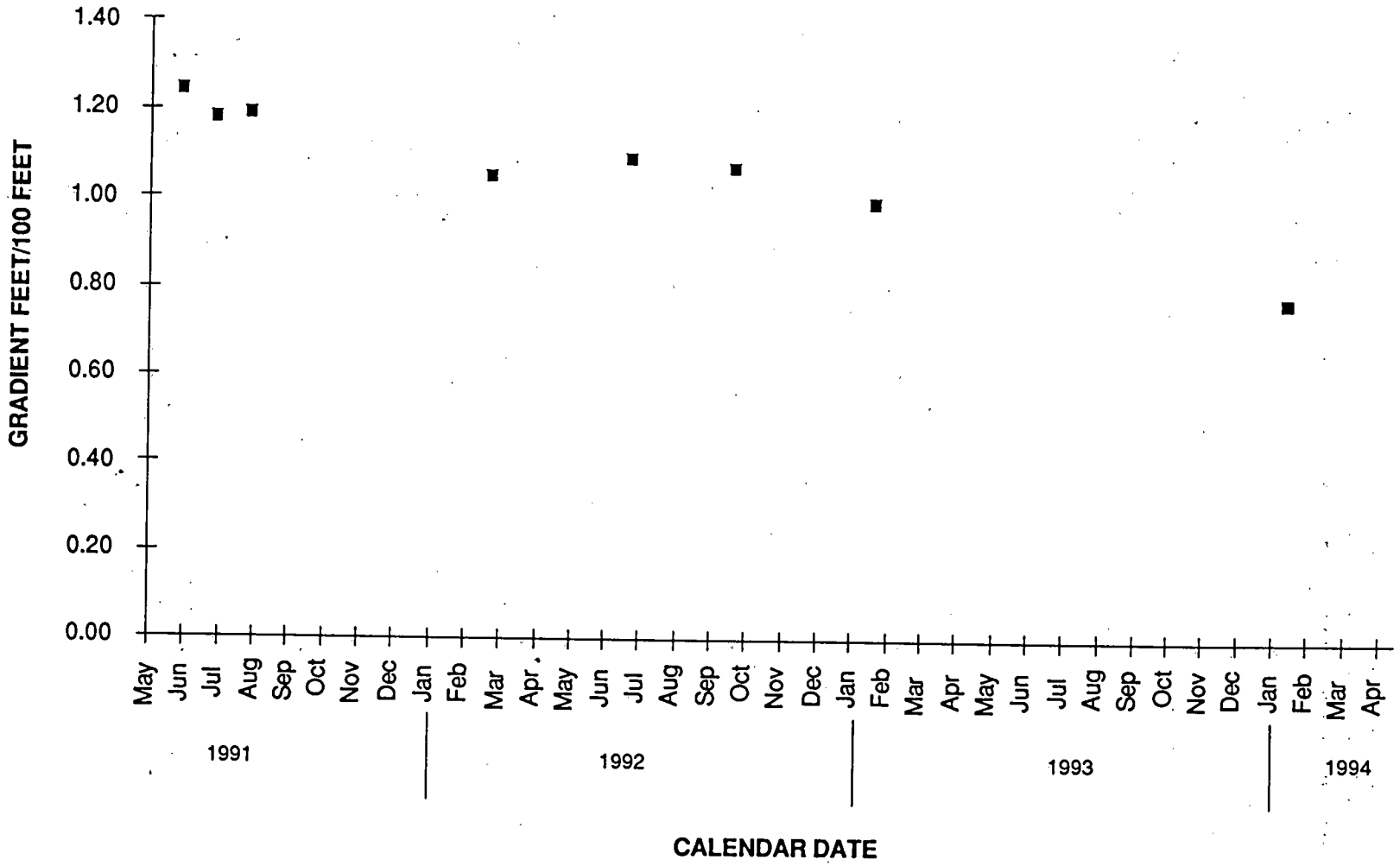
PROJECT NUMBER: OB5682.34

MALIBU VINEYARDS

SECTION 30, T.28S, R.27E., MDB&M
KERN COUNTY, CALIFORNIA

DEPTH TO GROUND WATER
(JANUARY 1992)

PLATE
4



PLATE

5

MALIBU VINEYARDS

Section 30, T.28S., R.27E.
Kern County, California

GROUNDWATER GRADIENT vs. TIME

RESNA
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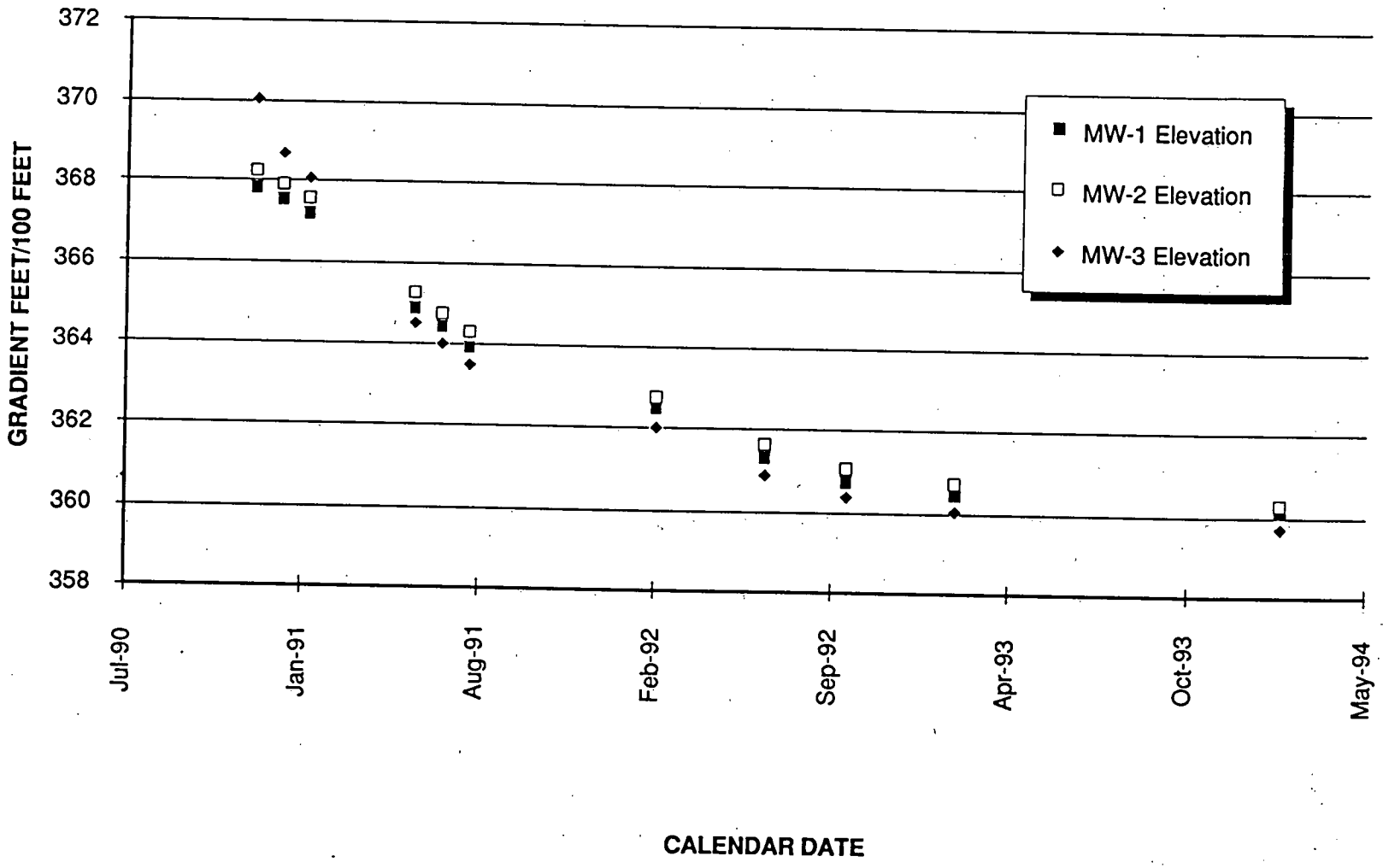
DATE: 3/28/94
PROJECT NUMBER: OB5682.34



PLATE

6

MALIBU VINEYARDS

Section 30, T.28S., R.27E.
Kern County, California

TIME VS. ELEVATION

RESNA
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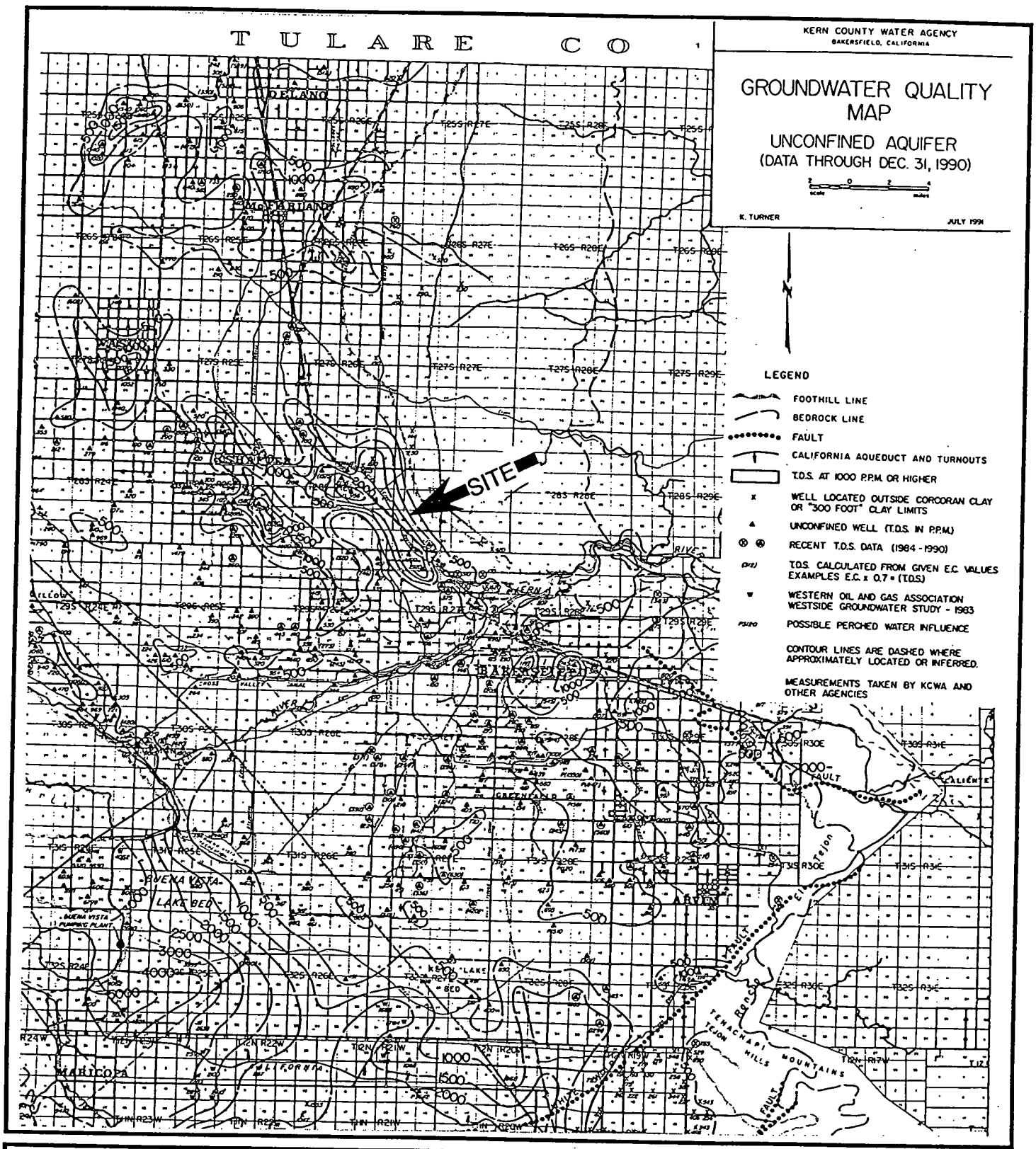
DATE: 3/28/94
PROJECT NUMBER: OB5682.34



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MALIBU VINEYARDS

SECTION 30, T.28S, R.27E., MDB&M

KERN COUNTY, CALIFORNIA

GROUND WATER QUALITY

(DATA THROUGH DEC. 1990)

PLATE

7

Calculations for Groundwater Discharge Velocity
(Best Fit Model)

Where:

V_d	= Discharge Velocity
K	= Hydraulic Conductivity
i	= Gradient
T	= Transmissivity
b	= Aquifer Thickness

And:

T	= 460.120 ft /day^2
b	= 25 ft
i	= .0077

Therefore:

$$K = \frac{T}{b}$$

$$K = \frac{460.120 \text{ ft /day}^2}{25 \text{ ft}}$$

2047 m/yr

$$K = 18.4 \text{ ft/day}$$

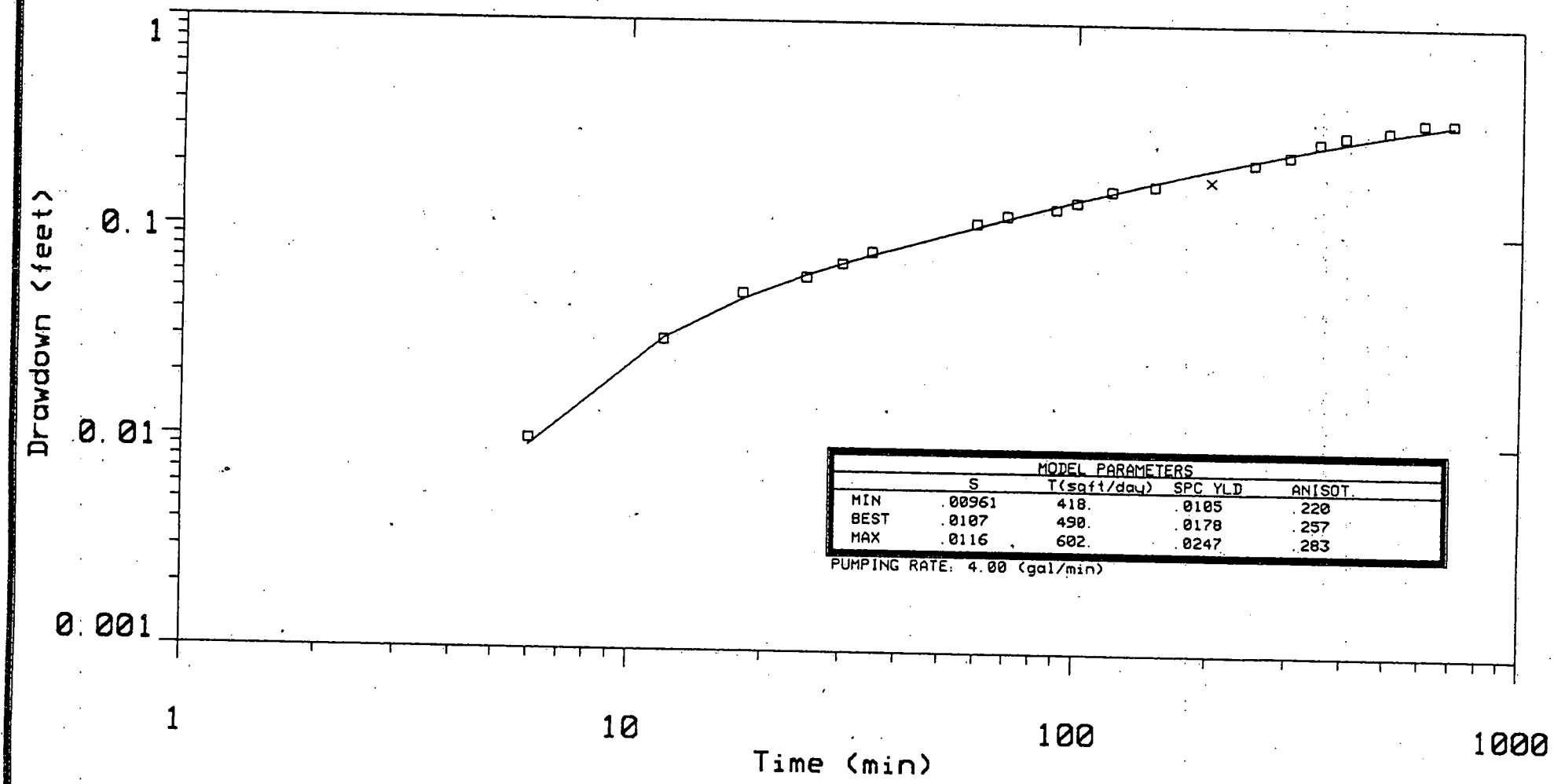
$$V_d = Ki$$

$$V_d = (18.4 \text{ ft/day}) (0.0077)$$

$$V_d = 0.14 \text{ ft/day}$$

$$V_d = (0.142 \text{ ft/day}) (365 \text{ days/yr}) =$$

$$\boxed{V_d = 51.7 \text{ ft/yr}}$$



for: MALIBU VINEYARDS

by: GROUND WATER RESOURCES

Aquifer: UNCONFINED

Thickness: 10.0 Depth: 129. feet

Screen: Base: 9.00 Top: 0.00 feet

Distance: 35.0 feet Pumping well: MW-1

Well Pumping Test Data

BAKERSFIELD, CALIF.

KERN

Date: 17 FEB 94

Well No.: MW-2

DATA SET: MW-2A

CLIENT: MALIBU VINEYARDS
LOCATION: BAKERSFIELD, CALIF.
COUNTY: KERN
PROJECT: Well Pumping Test Data
AQUIFER: UNCONFINED
WATER TABLE: 119.92 feet
PUMPING WELL No: MW-1

DATE: 17 FEB 94
WELL NO.: MW-1
FLOW RATE: 4.00 gal/min
WELL DEPTH: 129.00 feet
THICKNESS: 10.00 feet

RADIUS FROM PUMPED WELL: 35.00 feet
RADIUS OF WELL CASING: 2.000 in

The following depths are from top of Aquifer:

PUMPING WELL: SCREENED FROM 0.00 TO 9.00 feet
OBSERVATION WELL: SCREENED FROM 0.00 TO 9.00 feet

FITTING ERROR: 4.437 PERCENT

Neuman, 1975: Par. Pen. Unconfined Aquifer

MODEL PARAMETERS:

STORAGE COEF:	1.075E-02	TRANSM:	490.374 sqft/day
	FREE		FREE
ANISOTROPY [SQRT(Kz/Kr)]:			0.25735
			FREE
SPECIFIC YIELD:			1.788E-02
			FREE

PARAMETER BOUNDS FROM EQUIVALENCE ANALYSIS

	MINIMUM	BEST	MAXIMUM
STORAGE:	9.610E-03	1.075E-02	1.169E-02
TRANSM:	418.685	490.374	601.929
SPC. YIELD:	0.011	0.018	0.025
ANISOTR.:	0.220	0.257	0.283

EQUIVALENT MODELS:

STORAGE	TRANSMISS. (sqft/day)	SPC. YIELD	ANISOTR.	FIT (%)
1.169E-02	502.829	0.01804	0.279	10.032

* GROUND WATER RESOURCES *

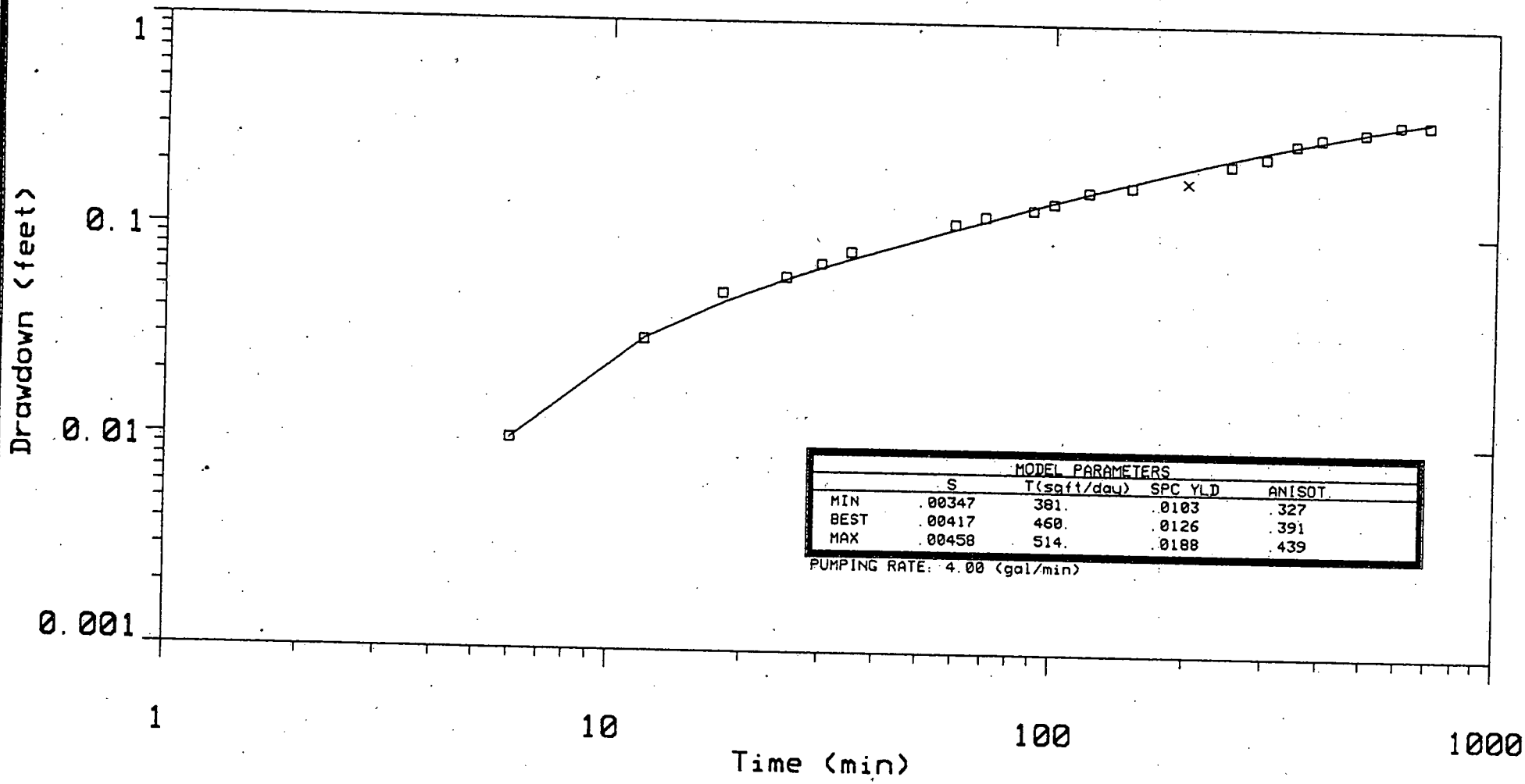
9.610E-03	474.198	0.01766	0.231	10.303
1.147E-02	574.338	0.01488	0.264	8.268
1.008E-02	418.685	0.02149	0.251	6.808
1.092E-02	432.516	0.02473	0.283	9.579
1.047E-02	601.929	0.01053	0.220	9.897
1.153E-02	494.320	0.01873	0.282	9.796
9.793E-03	485.149	0.01681	0.228	9.813

No.	TIME (min)	DRAWDOWN (feet) DATA	SYNTHETIC	DIFFERENCE (percent)
1	6.00	0.0100	0.00921	7.90
2	12.00	0.0300	0.0305	-1.69
3	18.00	0.0500	0.0471	5.70
4	25.00	0.0600	0.0616	-2.79
5	30.00	0.0700	0.0700	-0.133
6	35.00	0.0800	0.0774	3.23
7	60.00	0.110	0.106	2.99
8	70.00	0.120	0.116	2.83
9	90.00	0.130	0.134	-3.45
10	100.0	0.140	0.142	-1.89
11	120.0	0.160	0.157	1.43
12	150.0	0.170	0.177	-4.47
13	200.0	0.180	0.205	-14.12
14	250.0	0.220	0.228	-3.78
15	300.0	0.240	0.247	-3.27
16	350.0	0.280	0.264	5.45
17	400.0	0.300	0.279	6.79
18	500.0	0.320	0.305	4.67
19	600.0	0.350	0.326	6.82
20	700.0	0.350	0.344	1.63

PARAMETER RESOLUTION MATRIX:
"*" INDICATES FIXED PARAMETER

S	0.68			
T	-0.10	0.77		
B	-0.03	0.27	0.29	
A	-0.31	-0.04	-0.21	0.59

S T B A



for: MALIBU VINEYARDS

by: GROUND WATER RESOURCES

Aquifer: UNCONFINED

Thickness: 25.0 Depth: 129. feet

Screen: Base: 9.00 Top: 0.00 feet

Distance: 35.0 feet Pumping well: MW-1

Well Pumping Test Data

BAKERSFIELD, CALIF.

KERN

Date: 17 FEB 94

Well No.: MW-2

DATA SET: MW-2B

CLIENT: MALIBU VINEYARDS
LOCATION: BAKERSFIELD, CALIF.
COUNTY: KERN
PROJECT: Well Pumping Test Data
AQUIFER: UNCONFINED
WATER TABLE: 119.92 feet
PUMPING WELL No:

DATE: 17 FEB 94
WELL NO.: MW-1
FLOW RATE: 4.00 gal/min
WELL DEPTH: 129.00 feet
THICKNESS: 25.00 feet

RADIUS FROM PUMPED WELL: 35.00 feet
RADIUS OF WELL CASING: 2.000 in

The following depths are from top of Aquifer:

PUMPING WELL: SCREENED FROM 0.00 TO 9.00 feet
OBSERVATION WELL: SCREENED FROM 0.00 TO 9.00 feet

FITTING ERROR: 4.734 PERCENT

Neuman, 1975: Par. Pen. Unconfined Aquifer

MODEL PARAMETERS:

STORAGE COEF:	4.169E-03	
	FREE	
TRANSM:	460.120	sqft/day
	FREE	
ANISOTROPY [SQRT(Kz/Kr)]:	0.39094	
	FREE	
SPECIFIC YIELD:	1.265E-02	
	FREE	

PARAMETER BOUNDS FROM EQUIVALENCE ANALYSIS

	MINIMUM	BEST	MAXIMUM
STORAGE:	3.477E-03	4.169E-03	4.586E-03
TRANSM:	381.044	460.120	514.514
SPC. YIELD:	0.010	0.013	0.019
ANISOTR.:	0.327	0.391	0.439

EQUIVALENT MODELS:

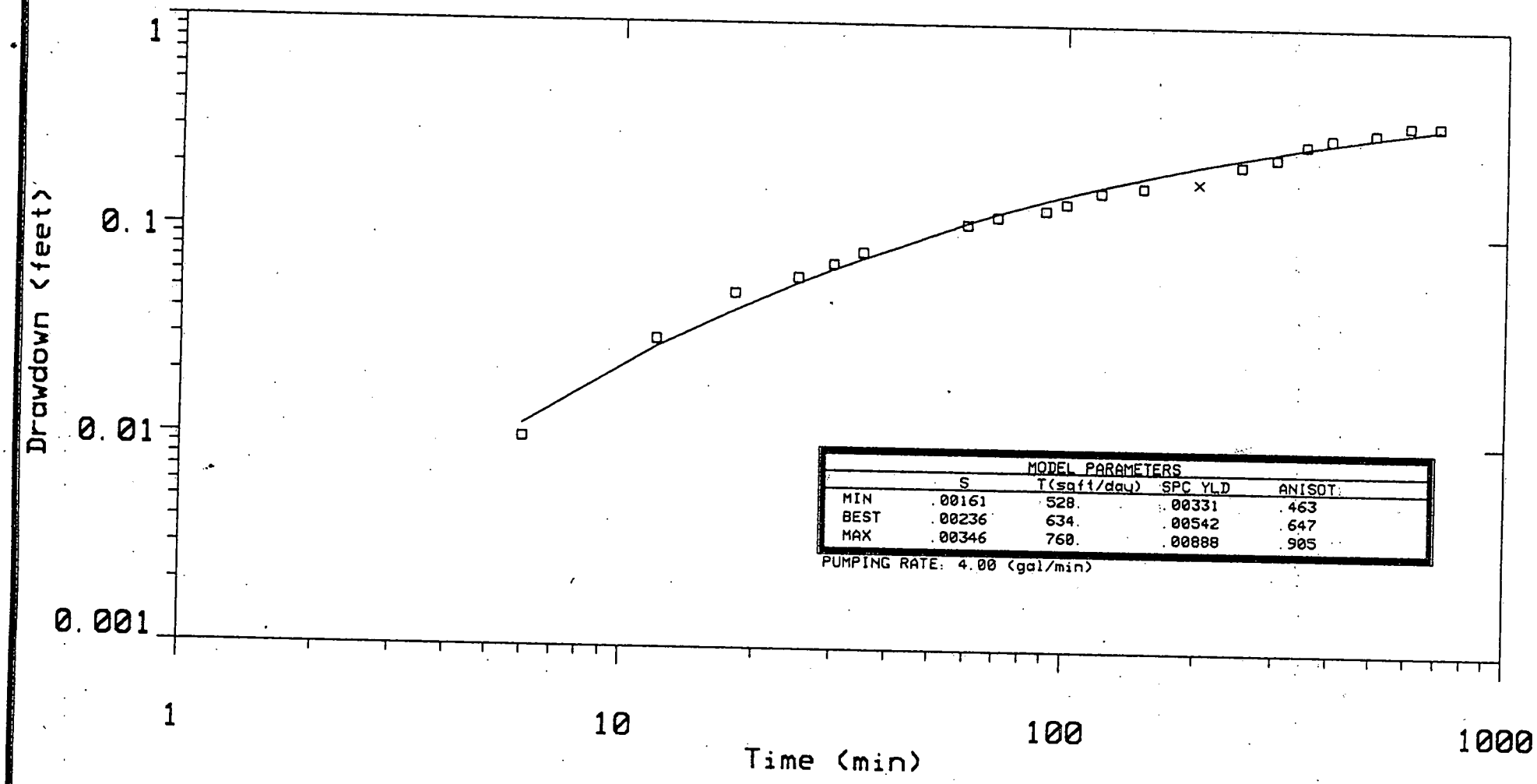
STORAGE	TRANSMISS. (sqft/day)	SPC. YIELD	ANISOTR.	FIT (%)
4.586E-03	473.433	0.01278	0.429	5.601

3.477E-03	435.808	0.01240	0.327	5.709
4.363E-03	514.514	0.01111	0.398	5.665
3.861E-03	381.044	0.01576	0.380	5.593
4.251E-03	394.546	0.01882	0.439	5.172
4.129E-03	496.887	0.01037	0.369	5.195
4.546E-03	464.724	0.01340	0.438	5.645
3.830E-03	455.650	0.01196	0.350	5.609

No.	TIME (min)	DRAWDOWN (feet) DATA	SYNTHETIC	DIFFERENCE (percent)
1	6.00	0.0100	0.00995	0.499
2	12.00	0.0300	0.0303	-1.29
3	18.00	0.0500	0.0453	9.38
4	25.00	0.0600	0.0586	2.27
5	30.00	0.0700	0.0666	4.77
6	35.00	0.0800	0.0738	7.69
7	60.00	0.110	0.103	5.56
8	70.00	0.120	0.114	4.78
9	90.00	0.130	0.133	-2.46
10	100.0	0.140	0.141	-1.36
11	120.0	0.160	0.158	1.20
12	150.0	0.170	0.179	-5.65
13	200.0	0.180	0.210	-16.66
14	250.0	0.220	0.235	-6.91
15	300.0	0.240	0.256	-6.97
16	350.0	0.280	0.275	1.65
17	400.0	0.300	0.291	2.73
18	500.0	0.320	0.319	0.0533
19	600.0	0.350	0.342	2.00
20	700.0	0.350	0.362	-3.67

PARAMETER RESOLUTION MATRIX:
"*" INDICATES FIXED PARAMETER

S	0.68			
T	-0.10	0.77		
B	-0.03	0.27	0.29	
A	-0.31	-0.04	-0.21	0.59
	S	T	B	A



MODEL PARAMETERS				
	S	T(sqft/day)	SPC YLD	ANISOT
MIN	.00161	528.	.00331	.463
BEST	.00236	634.	.00542	.647
MAX	.00346	760.	.00888	.905

PUMPING RATE: 4.00 (gal/min)

for: MALIBU VINEYARDS

by: GROUND WATER RESOURCES

Aquifer: UNCONFINED

Thickness: 50.0 Depth: 129. feet

Screen: Base: 9.00 Top: 0.00 feet

Distance: 35.0 feet Pumping well: MW-1

Well Pumping Test Data

BAKERSFIELD, CALIF.

KERN

Date: 17 FEB 94

Well No.: MW-2

DATA SET: MW-2C

CLIENT: MALIBU VINEYARDS
LOCATION: BAKERSFIELD, CALIF.
COUNTY: KERN
PROJECT: Well Pumping Test Data
AQUIFER: UNCONFINED
WATER TABLE: 119.92 feet
PUMPING WELL No:

DATE: 17 FEB 94
WELL NO.: MW-1
FLOW RATE: 4.00 gal/min
WELL DEPTH: 129.00 feet
THICKNESS: 50.00 feet

RADIUS FROM PUMPED WELL: 35.00 feet
RADIUS OF WELL CASING: 2.000 in

The following depths are from top of Aquifer:

PUMPING WELL: SCREENED FROM 0.00 TO 9.00 feet
OBSERVATION WELL: SCREENED FROM 0.00 TO 9.00 feet

FITTING ERROR: 9.013 PERCENT

Neuman, 1975: Par. Pen. Unconfined Aquifer

MODEL PARAMETERS:

STORAGE COEF:	2.365E-03	TRANSM:	633.783 sqft/day
	FREE		FREE
ANISOTROPY [SQRT(Kz/Kr)]:			0.64761
			FREE
SPECIFIC YIELD:	5.424E-03		
	FREE		

PARAMETER BOUNDS FROM EQUIVALENCE ANALYSIS

	MINIMUM	BEST	MAXIMUM
STORAGE:	1.688E-03	2.365E-03	3.746E-03
TRANSM:	578.562	633.783	760.540
SPC. YIELD:	0.003	0.005	0.009
ANISOTR.:	0.490	0.648	0.948

EQUIVALENT MODELS:

STORAGE	TRANSMISS. (sqft/day)	SPC. YIELD	ANISOTR.	FIT (%)
3.746E-03	629.591	0.00903	0.948	9.942

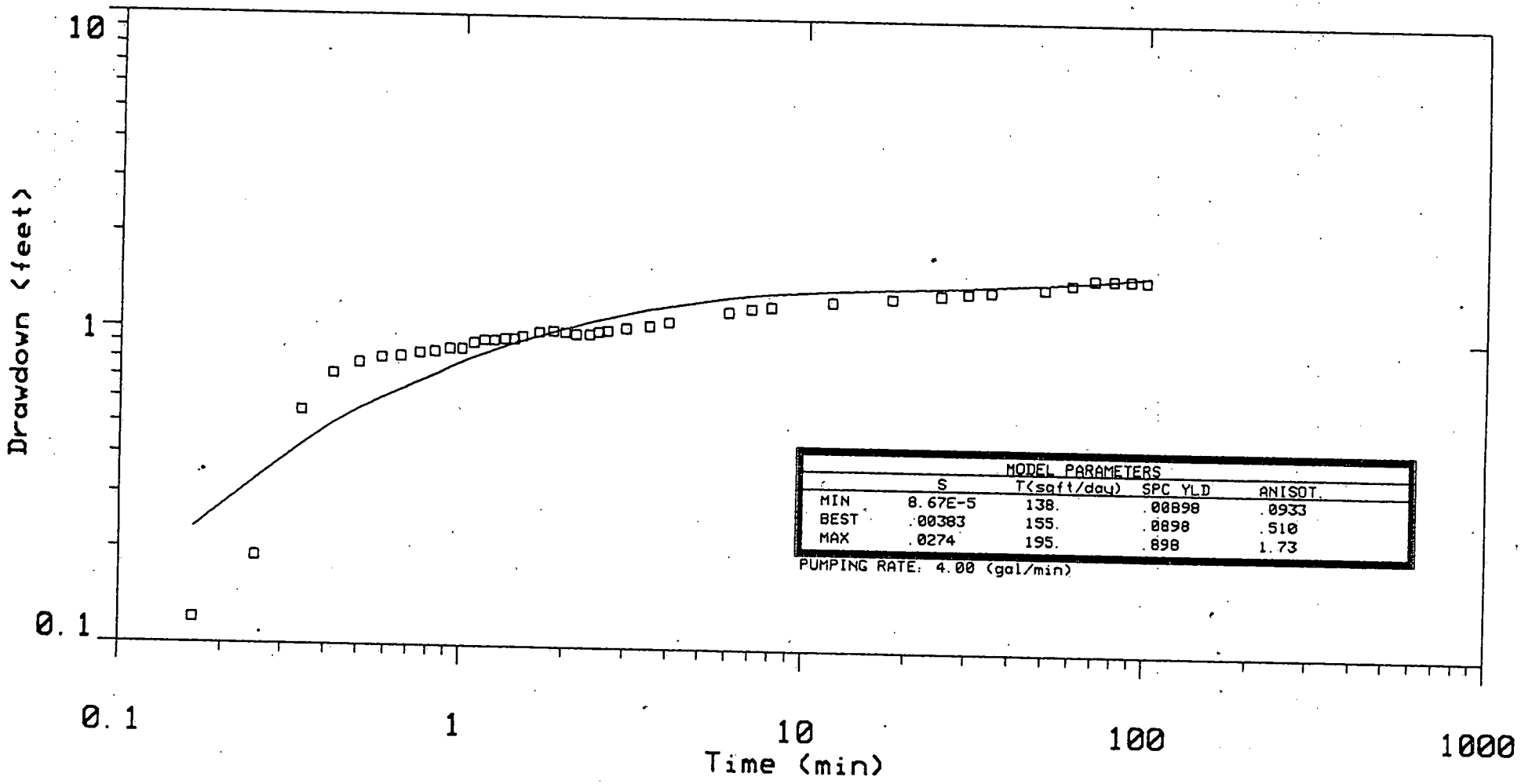
* GROUND WATER RESOURCES *

1.688E-03	636.873	0.00373	0.490	9.977
2.166E-03	760.540	0.00337	0.552	10.045
2.470E-03	578.562	0.00689	0.702	9.610
3.550E-03	615.752	0.00916	0.925	9.925
1.719E-03	648.306	0.00359	0.490	10.013
3.413E-03	626.406	0.00834	0.884	9.478
1.968E-03	637.505	0.00437	0.554	9.102

No.	TIME (min)	DRAWDOWN (feet) DATA	SYNTHETIC	DIFFERENCE (percent)
1	6.00	0.0100	0.0115	-15.37
2	12.00	0.0300	0.0275	8.15
3	18.00	0.0500	0.0414	17.05
4	25.00	0.0600	0.0561	6.43
5	30.00	0.0700	0.0657	6.06
6	35.00	0.0800	0.0747	6.59
7	60.00	0.110	0.111	-1.80
8	70.00	0.120	0.124	-3.47
9	90.00	0.130	0.145	-11.65
10	100.0	0.140	0.154	-10.22
11	120.0	0.160	0.170	-6.62
12	150.0	0.170	0.190	-12.34
13	200.0	0.180	0.217	-21.09
14	250.0	0.220	0.239	-8.67
15	300.0	0.240	0.256	-6.89
16	350.0	0.280	0.271	3.10
17	400.0	0.300	0.284	5.30
18	500.0	0.320	0.305	4.50
19	600.0	0.350	0.323	7.68
20	700.0	0.350	0.338	3.42

PARAMETER RESOLUTION MATRIX:
"*" INDICATES FIXED PARAMETER

S	0.68			
T	0.00	0.99		
B	-0.36	0.03	0.54	
A	-0.27	0.01	-0.31	0.77
	S	T	B	A



for: MALIBU VINEYARDS

by: GROUND WATER RESOURCES

Aquifer: UNCONFINED

Thickness: 10.0 Depth: 129. feet

Screen: Base: 9.00 Top: 0.00 feet

Casing Radius: 2.00 in

Well Pumping Test Data

BAKERSFIELD, CALIF.

KERN

Date: 17 FEB 94

Well No.: MW-1

DATA SET: MW-1A

CLIENT: MALIBU VINEYARDS
LOCATION: BAKERSFIELD, CALIF.
COUNTY: KERN
PROJECT: Well Pumping Test Data
AQUIFER: UNCONFINED
WATER TABLE: 119.92 feet

DATE: 17 FEB 94
WELL NO.: MW-1
FLOW RATE: 4.00 gal/min
WELL DEPTH: 129.00 feet
THICKNESS: 10.00 feet

RADIUS OF FLOWING WELL: 5.000 in
RADIUS OF WELL CASING: 2.000 in

The following depths are from top of Aquifer:
PUMPING WELL: SCREENED FROM 0.00 TO 9.00 feet

FITTING ERROR: 20.695 PERCENT

Neuman, 1975: Par. Pen. Unconfined Aquifer

MODEL PARAMETERS:

STORAGE COEF:	3.833E-03	TRANSM:	155.193 sqft/day
	FREE		FREE
ANISOTROPY [SQRT(Kz/Kr)]:			0.51006
			FREE
SPECIFIC YIELD:			8.981E-02
			FREE

PARAMETER BOUNDS FROM EQUIVALENCE ANALYSIS

	MINIMUM	BEST	MAXIMUM
STORAGE:	8.669E-05	3.833E-03	2.740E-02
TRANSM:	138.284	155.193	195.468
SPC. YIELD:	0.009	0.090	0.898
ANISOTR.:	0.093	0.510	1.730

EQUIVALENT MODELS:

STORAGE	TRANSMISS. (sqft/day)	SPC. YIELD	ANISOTR.	FIT (%)
2.548E-02	157.524	0.09589	1.193	24.981

* GROUND WATER RESOURCES *

8.669E-05	150.635	0.07877	0.093	19.694
3.901E-03	193.854	0.08222	0.574	25.407
3.799E-03	138.858	0.09386	0.481	22.197
4.085E-03	144.428	0.89810	0.511	20.856
3.596E-03	166.761	0.00898	0.509	24.112
2.740E-02	195.468	0.09026	1.730	25.024
1.433E-03	138.284	0.08959	0.277	24.702

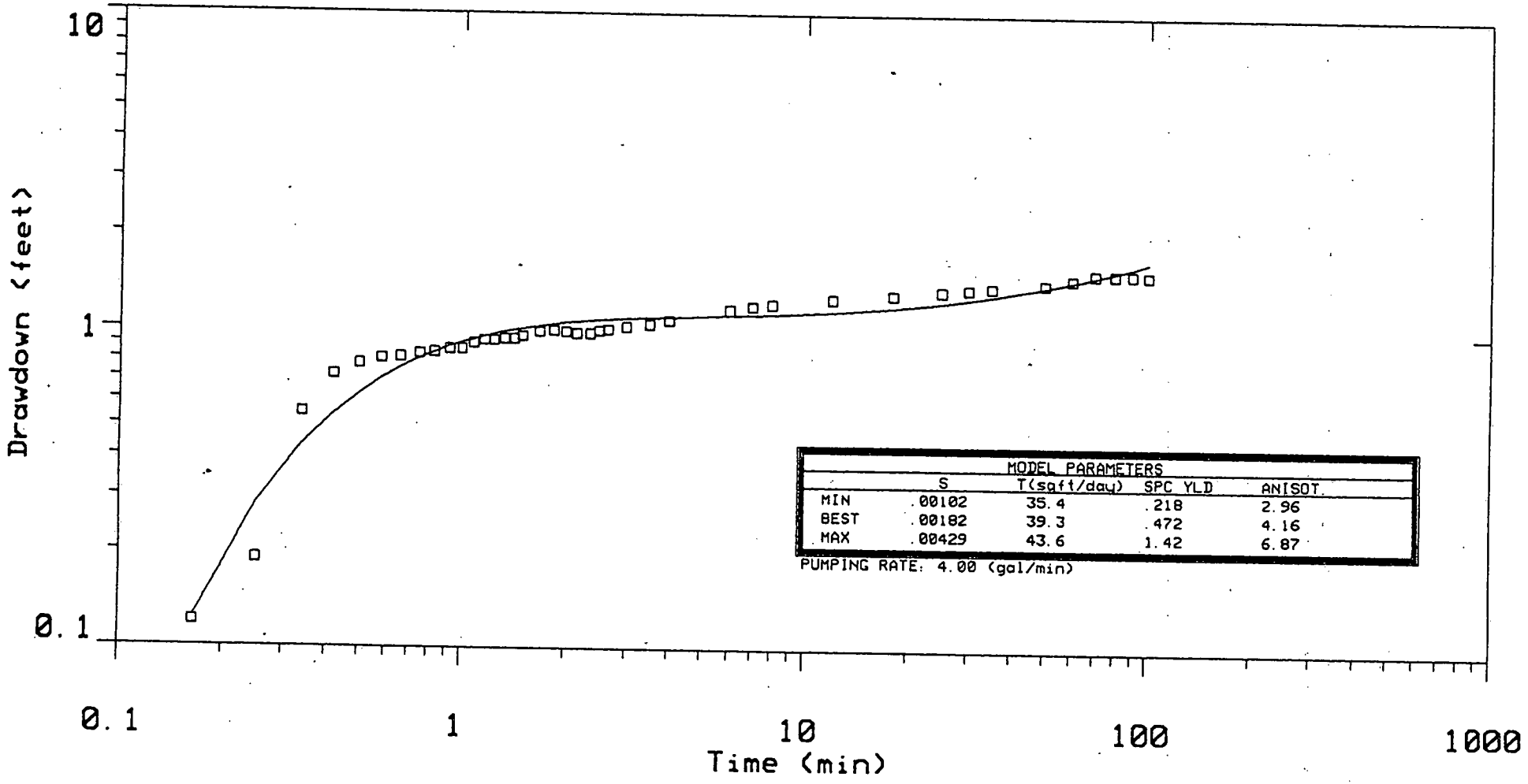
No.	TIME (min)	DRAWDOWN (feet) DATA	SYNTHETIC	DIFFERENCE (percent)
1	0.165	0.120	0.231	-92.99
2	0.250	0.190	0.331	-74.57
3	0.340	0.550	0.425	22.57
4	0.420	0.720	0.500	30.54
5	0.500	0.780	0.557	28.51
6	0.580	0.810	0.602	25.62
7	0.660	0.820	0.640	21.85
8	0.750	0.840	0.682	18.79
9	0.830	0.850	0.717	15.55
10	0.920	0.870	0.755	13.11
11	1.00	0.870	0.787	9.48
12	1.08	0.910	0.816	10.29
13	1.16	0.930	0.842	9.42
14	1.24	0.930	0.865	6.90
15	1.33	0.940	0.889	5.36
16	1.42	0.940	0.910	3.08
17	1.50	0.960	0.928	3.29
18	1.68	0.990	0.963	2.65
19	1.85	1.00	0.994	0.594
20	2.00	0.990	1.01	-2.90
21	2.15	0.980	1.04	-6.29
22	2.35	0.980	1.06	-9.14
23	2.50	1.00	1.08	-8.86
24	2.65	1.01	1.10	-9.52
25	3.00	1.03	1.14	-10.87
26	3.50	1.05	1.18	-12.62
27	4.00	1.08	1.21	-12.41
28	6.00	1.17	1.29	-10.66
29	7.00	1.20	1.31	-9.91
30	8.00	1.22	1.33	-9.61
31	12.00	1.27	1.37	-8.45

No.	TIME (min)	DRAWDOWN (feet) DATA	SYNTHETIC	DIFFERENCE (percent)
32	18.00	1.31	1.40	-7.19
33	25.00	1.35	1.42	-5.45
34	30.00	1.37	1.43	-4.76
35	35.00	1.39	1.44	-4.06
36	50.00	1.43	1.47	-3.39
37	60.00	1.48	1.49	-1.26
38	70.00	1.54	1.51	1.41
39	80.00	1.54	1.53	0.197
40	90.00	1.54	1.55	-0.978
41	100.0	1.53	1.57	-2.77

PARAMETER RESOLUTION MATRIX:
"*" INDICATES FIXED PARAMETER

S	0.22			
T	-0.01	0.92		
B	-0.03	0.03	0.02	
A	-0.35	-0.04	0.00	0.78

S T B A



MODEL PARAMETERS				
	S	T(sqft/day)	SPC YLD	ANISOT.
MIN	.00102	35.4	.218	2.96
BEST	.00182	39.3	.472	4.16
MAX	.00429	43.6	1.42	6.87

PUMPING RATE: 4.00 (gal/min)

for: MALIBU VINEYARDS

by: GROUND WATER RESOURCES

Aquifer: UNCONFINED

Thickness: 25.0 Depth: 129. feet

Screen: Base: 9.00 Top: 0.00 feet

Casing Radius: 2.00 in

Well Pumping Test Data

BAKERSFIELD, CALIF.

KERN

Date: 17 FEB 94

Well No.: MW-1

DATA SET: MW-1B

CLIENT: MALIBU VINEYARDS
LOCATION: BAKERSFIELD, CALIF.
COUNTY: KERN
PROJECT: Well Pumping Test Data
AQUIFER: UNCONFINED
WATER TABLE: 119.92 feet

DATE: 17 FEB 94
WELL NO.: MW-1
FLOW RATE: 4.00 gal/min
WELL DEPTH: 129.00 feet
THICKNESS: 25.00 feet

RADIUS OF FLOWING WELL: 5.000 in
RADIUS OF WELL CASING: 2.000 in

The following depths are from top of Aquifer:
PUMPING WELL: SCREENED FROM 0.00 TO 9.00 feet

FITTING ERROR: 11.456 PERCENT

Neuman, 1975: Par. Pen. Unconfined Aquifer

MODEL PARAMETERS:

STORAGE COEF:	1.828E-03	
	FREE	
TRANSM:		39.332 sqft/day
		FREE
ANISOTROPY [SQRT(Kz/Kr)]:		4.16652
		FREE
SPECIFIC YIELD:	4.722E-01	
		FREE

PARAMETER BOUNDS FROM EQUIVALENCE ANALYSIS

	MINIMUM	BEST	MAXIMUM
STORAGE:	1.027E-03	1.828E-03	4.292E-03
TRANSM:	35.430	39.332	43.632
SPC. YIELD:	0.218	0.472	1.423
ANISOTR.:	2.964	4.167	6.876

EQUIVALENT MODELS:

STORAGE	TRANSMISS. (sqft/day)	SPC. YIELD	ANISOTR.	FIT (%)
4.292E-03	38.990	1.29265	6.876	13.709

* GROUND WATER RESOURCES *

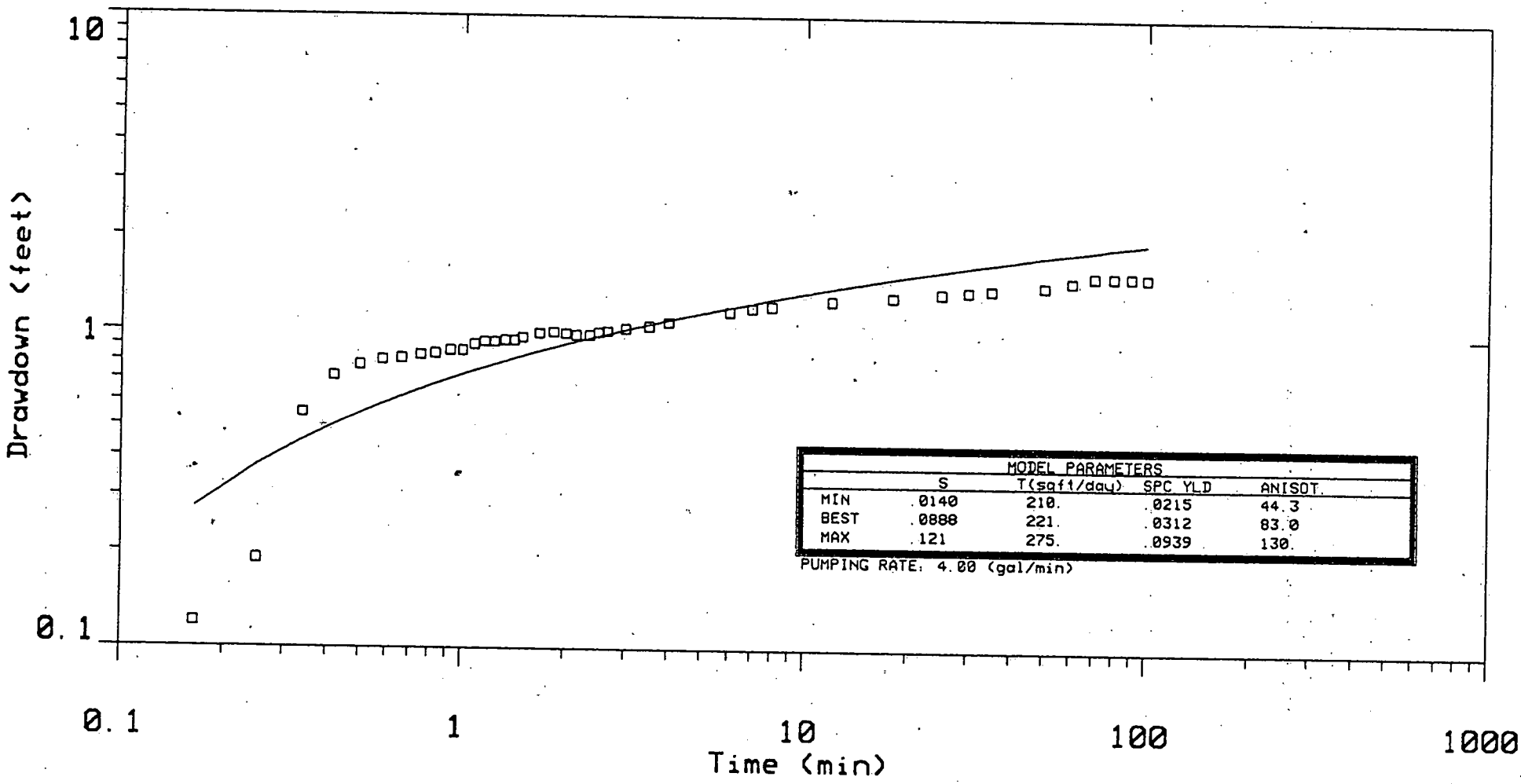
1.027E-03	39.565	0.23914	2.970	13.594
1.524E-03	43.632	0.26648	3.740	13.835
2.195E-03	35.430	0.83988	4.645	13.814
3.957E-03	38.512	1.42344	6.583	13.783
1.065E-03	39.915	0.21840	3.027	13.524
4.181E-03	38.997	1.26428	6.799	13.837
1.028E-03	39.567	0.23805	2.964	13.790

No.	TIME (min)	DRAWDOWN (feet) DATA	SYNTHETIC	DIFFERENCE (percent)
1	0.165	0.120	0.124	-3.51
2	0.250	0.190	0.282	-48.58
3	0.340	0.550	0.433	21.13
4	0.420	0.720	0.541	24.79
5	0.500	0.780	0.628	19.37
6	0.580	0.810	0.699	13.61
7	0.660	0.820	0.757	7.60
8	0.750	0.840	0.811	3.44
9	0.830	0.850	0.850	-5.610E-04
10	0.920	0.870	0.885	-1.83
11	1.00	0.870	0.912	-4.88
12	1.08	0.910	0.935	-2.77
13	1.16	0.930	0.955	-2.70
14	1.24	0.930	0.972	-4.56
15	1.33	0.940	0.989	-5.22
16	1.42	0.940	1.00	-6.73
17	1.50	0.960	1.01	-5.63
18	1.68	0.990	1.03	-4.44
19	1.85	1.00	1.04	-4.87
20	2.00	0.990	1.05	-6.98
21	2.15	0.980	1.06	-8.93
22	2.35	0.980	1.07	-9.82
23	2.50	1.00	1.08	-8.14
24	2.65	1.01	1.08	-7.50
25	3.00	1.03	1.09	-6.21
26	3.50	1.05	1.10	-4.98
27	4.00	1.08	1.10	-2.58
28	6.00	1.17	1.12	3.94
29	7.00	1.20	1.13	5.78
30	8.00	1.22	1.13	6.78
31	12.00	1.27	1.16	8.37

No.	TIME (min)	DRAWDOWN (feet) DATA	SYNTHETIC	DIFFERENCE (percent)
32	18.00	1.31	1.20	8.20
33	25.00	1.35	1.24	7.61
34	30.00	1.37	1.27	6.66
35	35.00	1.39	1.30	5.77
36	50.00	1.43	1.40	2.07
37	60.00	1.48	1.45	1.42
38	70.00	1.54	1.51	1.54
39	80.00	1.54	1.57	-2.08
40	90.00	1.54	1.62	-5.62
41	100.0	1.53	1.67	-9.78

PARAMETER RESOLUTION MATRIX:
"*" INDICATES FIXED PARAMETER

S	0.66			
T	0.00	1.00		
B	-0.40	0.01	0.43	
A	-0.20	0.00	-0.24	0.88
	S	T	B	A



MODEL PARAMETERS				
	S	T(sqft/day)	SPC YLD	ANISOT.
MIN	.0140	210.	.0215	44.3
BEST	.0888	221.	.0312	83.0
MAX	.121	275.	.0939	130.

PUMPING RATE: 4.00 (gal/min)

for: MALIBU VINEYARDS

by: GROUND WATER RESOURCES

Aquifer: UNCONFINED

Thickness: 50.0 Depth: 129. feet

Screen: Base: 9.00 Top: 0.00 feet

Casing Radius: 2.00 in

Well Pumping Test Data

BAKERSFIELD, CALIF.

KERN

Date: 17 FEB 94

Well No.: MW-1

DATA SET: MW-1C

CLIENT: MALIBU VINEYARDS
LOCATION: BAKERSFIELD, CALIF.
COUNTY: KERN
PROJECT: Well Pumping Test Data
AQUIFER: UNCONFINED
WATER TABLE: 119.92 feet

DATE: 17 FEB 94
WELL NO.: MW-1
FLOW RATE: 4.00 gal/min
WELL DEPTH: 129.00 feet
THICKNESS: 50.00 feet

RADIUS OF FLOWING WELL: 5.000 in
RADIUS OF WELL CASING: 2.000 in
The following depths are from top of Aquifer:
PUMPING WELL: SCREENED FROM 0.00 TO 9.00 feet

FITTING ERROR: 27.508 PERCENT

Neuman, 1975: Par. Pen. Unconfined Aquifer

MODEL PARAMETERS:

STORAGE COEF:	8.880E-02	TRANSM:	221.696 sqft/day
	FREE		FREE
ANISOTROPY [SQRT(Kz/Kr)]:			83.01820
			FREE
SPECIFIC YIELD:		3.120E-02	
			FREE

PARAMETER BOUNDS FROM EQUIVALENCE ANALYSIS

	MINIMUM	BEST	MAXIMUM
STORAGE:	1.399E-02	8.880E-02	1.217E-01
TRANSM:	210.000	221.696	275.366
SPC. YIELD:	0.022	0.031	0.094
ANISOTR.:	44.339	83.018	130.049

EQUIVALENT MODELS:

STORAGE	TRANSMISS. (sqft/day)	SPC. YIELD	ANISOTR.	FIT (%)
9.503E-02	221.117	0.03090	84.952	29.771

* GROUND WATER RESOURCES *

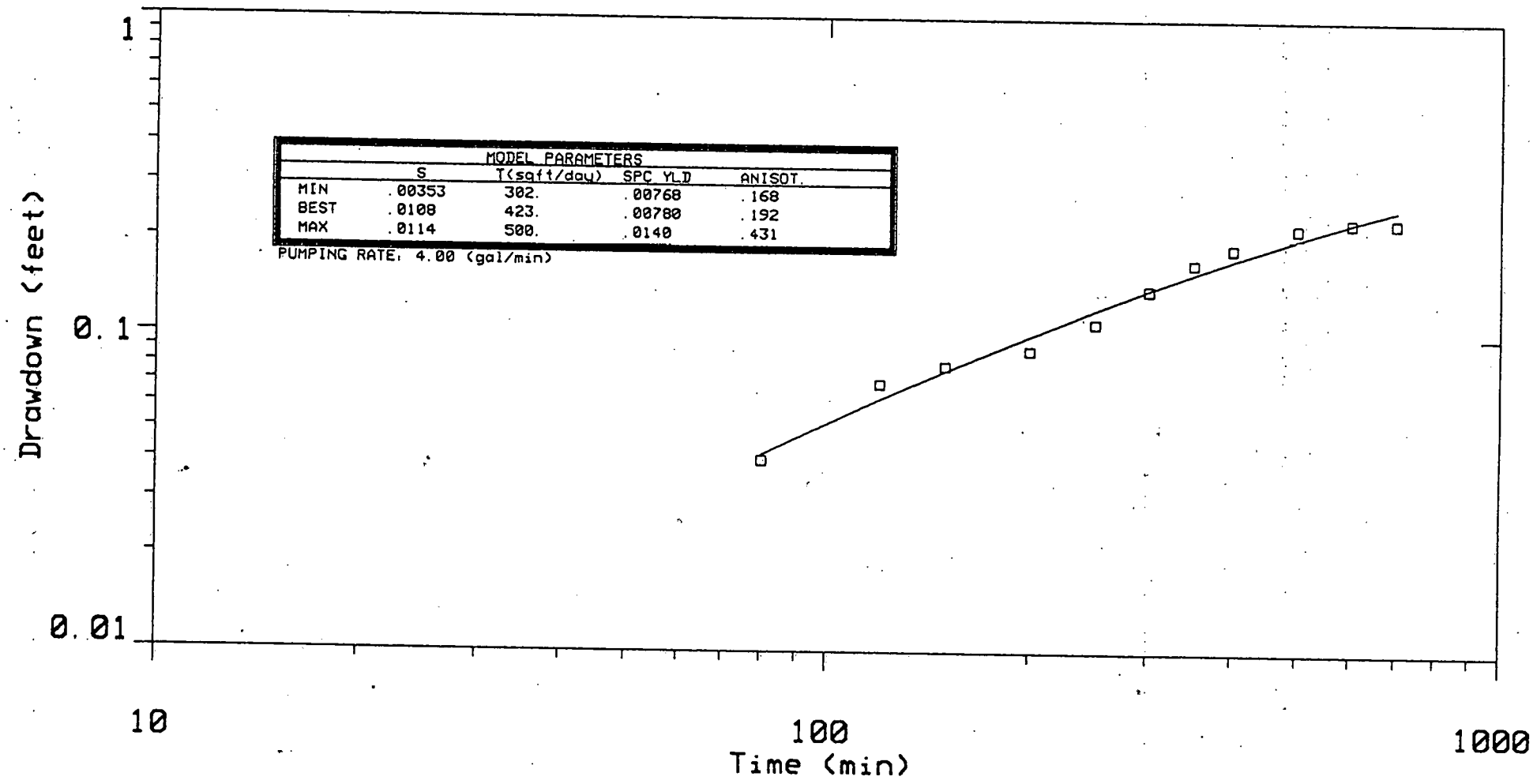
1.399E-02	238.057	0.04081	44.339	30.158
7.976E-02	275.366	0.02744	100.645	29.452
9.121E-02	210.000	0.03222	79.117	29.215
7.610E-02	211.088	0.09390	113.520	30.024
9.352E-02	225.376	0.02155	74.738	29.848
1.217E-01	236.414	0.04103	130.049	28.670
7.584E-02	214.684	0.02721	66.329	27.925

No.	TIME (min)	DRAWDOWN (feet) DATA	SYNTHETIC	DIFFERENCE (percent)
1	0.165	0.120	0.274	-129.0
2	0.250	0.190	0.372	-95.96
3	0.340	0.550	0.448	18.50
4	0.420	0.720	0.502	30.22
5	0.500	0.780	0.547	29.78
6	0.580	0.810	0.586	27.63
7	0.660	0.820	0.619	24.42
8	0.750	0.840	0.653	22.23
9	0.830	0.850	0.679	20.00
10	0.920	0.870	0.707	18.72
11	1.00	0.870	0.729	16.19
12	1.08	0.910	0.749	17.63
13	1.16	0.930	0.768	17.36
14	1.24	0.930	0.786	15.45
15	1.33	0.940	0.804	14.37
16	1.42	0.940	0.822	12.52
17	1.50	0.960	0.836	12.83
18	1.68	0.990	0.866	12.44
19	1.85	1.00	0.892	10.75
20	2.00	0.990	0.913	7.74
21	2.15	0.980	0.932	4.83
22	2.35	0.980	0.956	2.41
23	2.50	1.00	0.972	2.72
24	2.65	1.01	0.988	2.15
25	3.00	1.03	1.02	0.830
26	3.50	1.05	1.06	-1.20
27	4.00	1.08	1.09	-1.68
28	6.00	1.17	1.20	-3.13
29	7.00	1.20	1.24	-3.98
30	8.00	1.22	1.28	-5.22
31	12.00	1.27	1.39	-9.62

No.	TIME (min)	DRAWDOWN (feet) DATA	SYNTHETIC	DIFFERENCE (percent)
32	18.00	1.31	1.50	-14.55
33	25.00	1.35	1.58	-17.68
34	30.00	1.37	1.63	-19.53
35	35.00	1.39	1.67	-20.79
36	50.00	1.43	1.77	-24.09
37	60.00	1.48	1.82	-23.19
38	70.00	1.54	1.86	-21.07
39	80.00	1.54	1.90	-23.41
40	90.00	1.54	1.93	-25.46
41	100.0	1.53	1.96	-28.11

PARAMETER RESOLUTION MATRIX:
"*" INDICATES FIXED PARAMETER

S	0.14			
T	0.03	0.93		
B	0.12	0.04	0.11	
A	-0.29	-0.06	-0.25	0.59
	S	T	B	A



for: MALIBU VINEYARDS	Well Pumping Test Data
by: GROUND WATER RESOURCES	BAKERSFIELD, CALIF.
Aquifer: UNCONFINED	KERN
Thickness: 10.0 Depth: 129. feet	
Screen: Base: 9.00 Top: 0.00 feet	
Distance: 73.9 feet Pumping well: MW-1	Date: 17 FEB 94 / Well No.: MW-3

DATA SET: MW-3A

CLIENT: MALIBU VINEYARDS
LOCATION: BAKERSFIELD, CALIF.
COUNTY: KERN
PROJECT: Well Pumping Test Data
AQUIFER: UNCONFINED
WATER TABLE: 120.13 feet
PUMPING WELL No: MW-1

DATE: 17 FEB 94
WELL NO.: MW-3
FLOW RATE: 4.00 gal/min
WELL DEPTH: 129.00 feet
THICKNESS: 10.00 feet

RADIUS FROM PUMPED WELL: 73.90 feet
RADIUS OF WELL CASING: 2.000 in

The following depths are from top of Aquifer:

PUMPING WELL: SCREENED FROM 0.00 TO 9.00 feet
OBSERVATION WELL: SCREENED FROM 0.00 TO 9.00 feet

FITTING ERROR: 7.818 PERCENT

Neuman, 1975: Par. Pen. Unconfined Aquifer

MODEL PARAMETERS:

STORAGE COEF:	1.083E-02	
	FREE	
TRANSM:	423.594	sqft/day
	FREE	
ANISOTROPY [SQRT(Kz/Kr)]:	0.19210	
	FREE	
SPECIFIC YIELD:	7.801E-03	
	FREE	

PARAMETER BOUNDS FROM EQUIVALENCE ANALYSIS

	MINIMUM	BEST	MAXIMUM
STORAGE:	3.534E-03	1.083E-02	1.146E-02
TRANSM:	302.192	423.594	499.844
SPC. YIELD:	0.008	0.008	0.014
ANISOTR.:	0.169	0.192	0.431

EQUIVALENT MODELS:

STORAGE	TRANSMISS. (sqft/day)	SPC. YIELD	ANISOTR.	FIT (%)
1.086E-02	423.460	0.00779	0.192	10.170

* GROUND WATER RESOURCES *

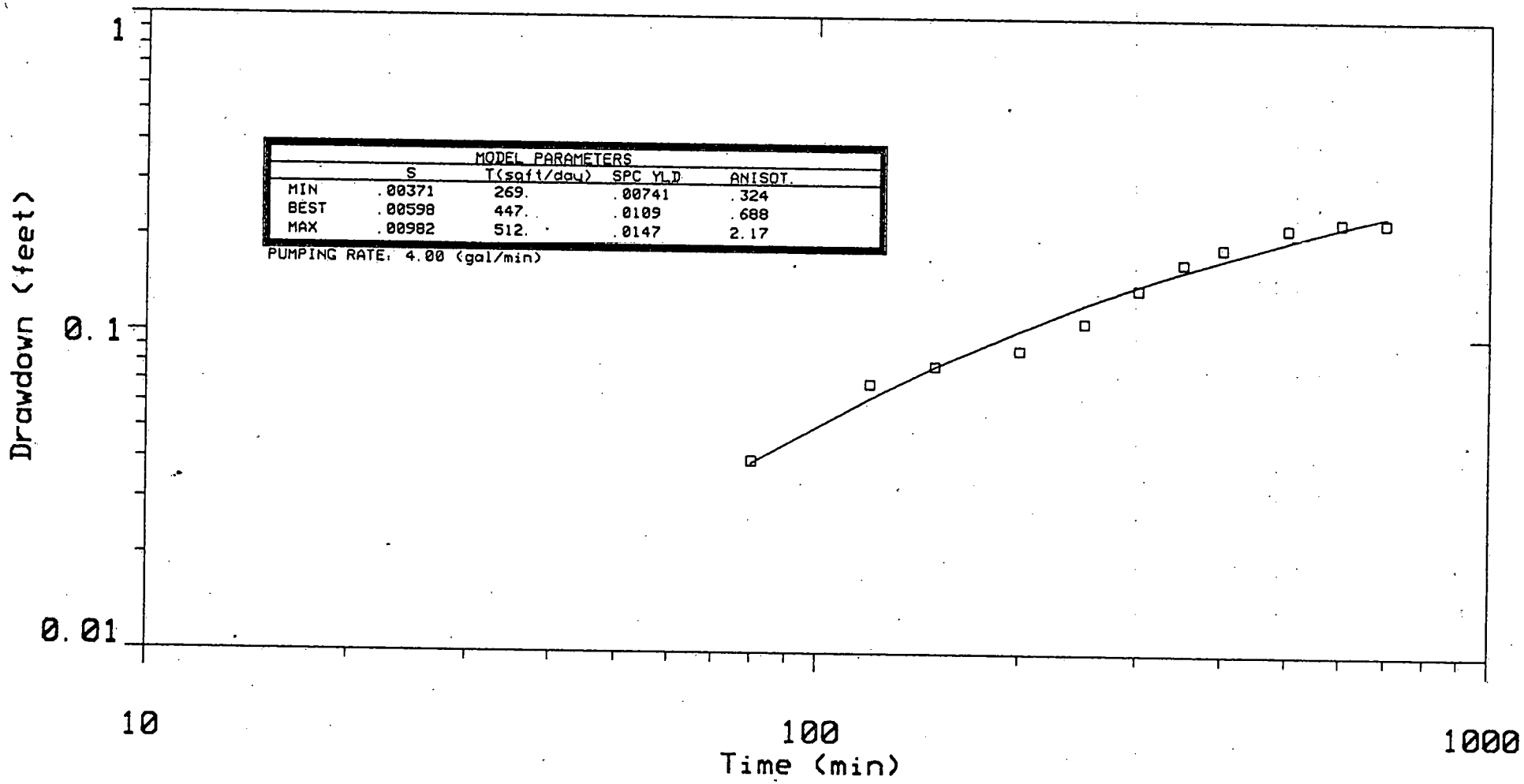
3.534E-03	499.844	0.01401	0.431	10.045
1.078E-02	435.687	0.00768	0.194	10.052
1.146E-02	302.192	0.00944	0.169	9.871
8.066E-03	319.804	0.01282	0.201	7.858
1.084E-02	423.732	0.00780	0,192	10.007
8.195E-03	483.503	0.00804	0.265	9.841
1.092E-02	422.018	0.00779	0.190	9.798

No.	TIME (min)	DRAWDOWN (feet) DATA	SYNTHETIC	DIFFERENCE (percent)
1	80.00	0.0400	0.0418	-4.67
2	120.0	0.0700	0.0629	10.12
3	150.0	0.0800	0.0775	3.11
4	200.0	0.0900	0.100	-11.71
5	250.0	0.110	0.121	-10.63
6	300.0	0.140	0.141	-0.764
7	350.0	0.170	0.158	6.54
8	400.0	0.190	0.175	7.73
9	500.0	0.220	0.204	6.96
10	600.0	0.230	0.230	-0.143
11	700.0	0.230	0.252	-9.96

PARAMETER RESOLUTION MATRIX:
"*" INDICATES FIXED PARAMETER

S	0.47			
T	0.08	0.53		
B	0.28	0.26	0.53	
A	0.38	-0.18	-0.04	0.56

S T B A



for: MALIBU VINEYARDS	Well Pumping Test Data
by: GROUND WATER RESOURCES	BAKERSFIELD, CALIF.
Aquifer: UNCONFINED	KERN
Thickness: 25.0 Depth: 129. feet	
Screen: Base: 9.00 Top: 0.00 feet	
Distance: 73.9 feet Pumping well: MW-1	Date: 17 FEB 94 / Well No.: MW-3

DATA SET: MW-3B

CLIENT: MALIBU VINEYARDS
LOCATION: BAKERSFIELD, CALIF.
COUNTY: KERN
PROJECT: Well Pumping Test Data
AQUIFER: UNCONFINED
WATER TABLE: 120.13 feet
PUMPING WELL No: MW-1

DATE: 17 FEB 94
WELL NO.: MW-3
FLOW RATE: 4.00 gal/min
WELL DEPTH: 129.00 feet
THICKNESS: 25.00 feet
RADIUS FROM PUMPED WELL: 73.90 feet

RADIUS OF WELL CASING: 2.000 in

The following depths are from top of Aquifer:

PUMPING WELL: SCREENED FROM 0.00 TO 9.00 feet
OBSERVATION WELL: SCREENED FROM 0.00 TO 9.00 feet

FITTING ERROR: 8.394 PERCENT

Neuman, 1975: Par. Pen. Unconfined Aquifer

MODEL PARAMETERS:

STORAGE COEF:	5.981E-03	
	FREE	
TRANSM:	446.906	sqft/day
	FREE	
ANISOTROPY [SQRT(Kz/Kr)]:	0.68826	
	FREE	
SPECIFIC YIELD:	1.091E-02	
	FREE	

PARAMETER BOUNDS FROM EQUIVALENCE ANALYSIS

	MINIMUM	BEST	MAXIMUM
STORAGE:	3.718E-03	5.981E-03	9.823E-03
TRANSM:	269.522	446.906	512.093
SPC. YIELD:	0.007	0.011	0.015
ANISOTR.:	0.324	0.688	2.176

EQUIVALENT MODELS:

STORAGE	TRANSMISS. (sqft/day)	SPC. YIELD	ANISOTR.	FIT (%)
9.230E-03	457.777	0.00828	0.649	10.217

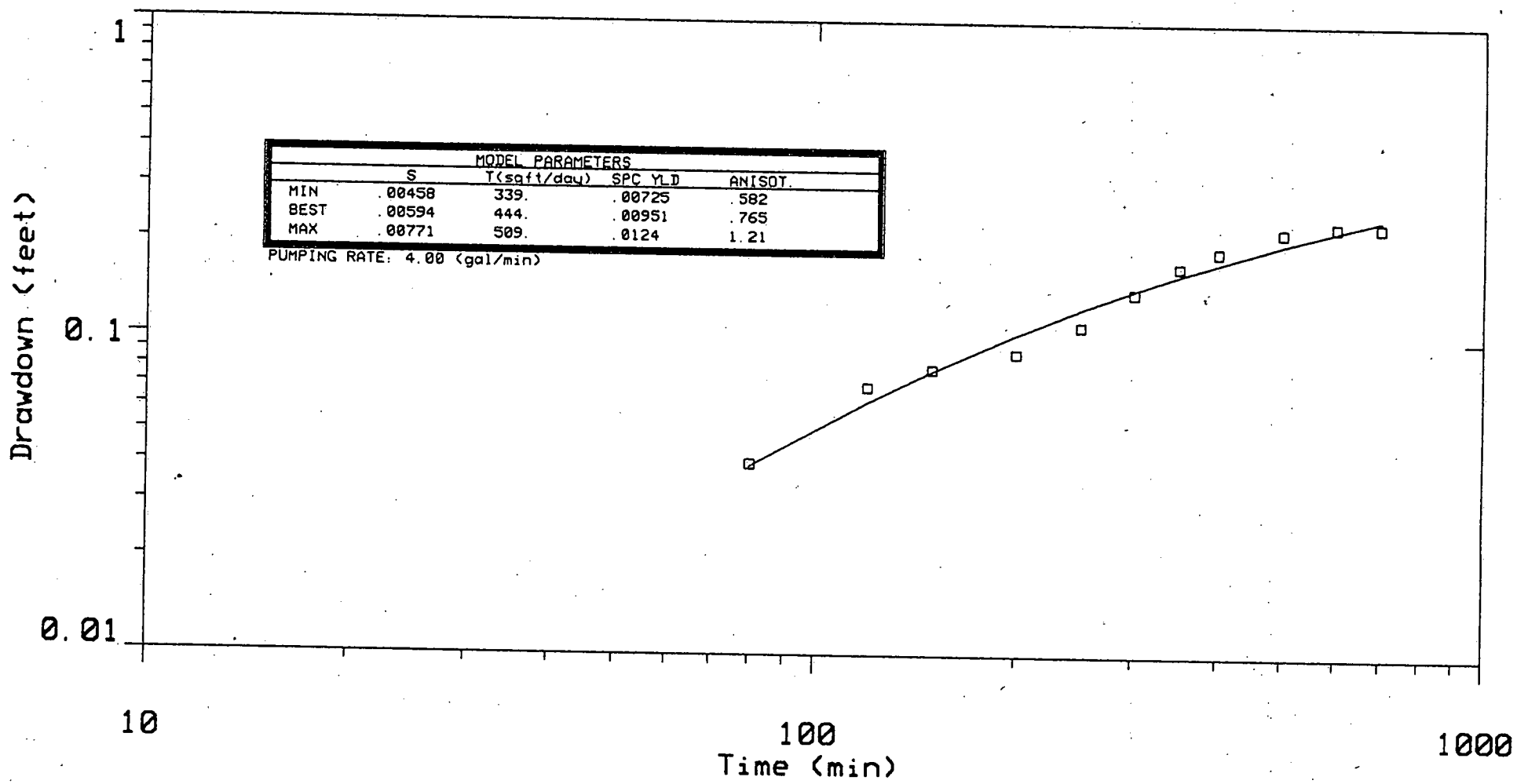
* GROUND WATER RESOURCES *

3.718E-03	435.285	0.01477	0.734	10.167
6.200E-03	507.133	0.01018	0.764	9.161
5.179E-03	269.522	0.01440	0.454	8.971
4.114E-03	419.676	0.01460	0.662	9.929
9.823E-03	485.744	0.00741	0.725	10.223
5.335E-03	512.093	0.01031	2.176	9.393
6.445E-03	408.826	0.01132	0.324	9.979

No.	TIME (min)	DRAWDOWN (feet) DATA	SYNTHETIC	DIFFERENCE (percent)
1	80.00	0.0400	0.0394	1.38
2	120.0	0.0700	0.0633	9.50
3	150.0	0.0800	0.0798	0.135
4	200.0	0.0900	0.104	-16.02
5	250.0	0.110	0.125	-14.27
6	300.0	0.140	0.144	-3.10
7	350.0	0.170	0.160	5.35
8	400.0	0.190	0.175	7.51
9	500.0	0.220	0.201	8.48
10	600.0	0.230	0.223	3.00
11	700.0	0.230	0.241	-5.15

PARAMETER RESOLUTION MATRIX:
"*" INDICATES FIXED PARAMETER

S	0.32			
T	-0.04	0.87		
B	0.43	0.07	0.66	
A	0.09	-0.11	0.05	0.09
	S	T	B	A



MODEL PARAMETERS				
	S	T(sqft/day)	SPC YLD	ANISOT.
MIN	.00458	339.	.00725	.582
BEST	.00594	444.	.00951	.765
MAX	.00771	509.	.0124	1.21

PUMPING RATE: 4.00 (gal/min)

for: MALIBU VINEYARDS

by: GROUND WATER RESOURCES

Aquifer: UNCONFINED

Thickness: 50.0 Depth: 129. feet

Screen: Base: 9.00 Top: 0.00 feet

Distance: 73.9 feet Pumping well: MW-1

Well Pumping Test Data

BAKERSFIELD, CALIF.

KERN

Date: 17 FEB 94 Well No.: MW-3

DATA SET: MW-3C

CLIENT: MALIBU VINEYARDS
LOCATION: BAKERSFIELD, CALIF.
COUNTY: KERN
PROJECT: Well Pumping Test Data
AQUIFER: UNCONFINED
WATER TABLE: 120.13 feet
PUMPING WELL No: MW-1

DATE: 17 FEB 94
WELL NO.: MW-3
FLOW RATE: 4.00 gal/min
WELL DEPTH: 129.00 feet
THICKNESS: 50.00 feet

RADIUS FROM PUMPED WELL: 73.90 feet
RADIUS OF WELL CASING: 2.000 in

The following depths are from top of Aquifer:

PUMPING WELL: SCREENED FROM 0.00 TO 9.00 feet
OBSERVATION WELL: SCREENED FROM 0.00 TO 9.00 feet

FITTING ERROR: 8.242 PERCENT

Neuman, 1975: Par. Pen. Unconfined Aquifer

MODEL PARAMETERS:

STORAGE COEF:	5.945E-03	TRANSM:	444.509 sqft/day
	FREE		FREE
ANISOTROPY [SQRT(Kz/Kr)]:			0.76522
			FREE
SPECIFIC YIELD:		9.511E-03	
			FREE

PARAMETER BOUNDS FROM EQUIVALENCE ANALYSIS

	MINIMUM	BEST	MAXIMUM
STORAGE:	4.585E-03	5.945E-03	7.707E-03
TRANSM:	339.250	444.509	508.817
SPC. YIELD:	0.007	0.010	0.012
ANISOTR.:	0.582	0.765	1.217

EQUIVALENT MODELS:

STORAGE	TRANSMISS. (sqft/day)	SPC. YIELD	ANISOTR.	FIT (%)
7.707E-03	469.832	0.00790	0.856	8.719

* GROUND WATER RESOURCES *

4.585E-03	420.551	0.01145	0.684	8.540
6.490E-03	508.817	0.00845	0.773	8.985
4.989E-03	339.250	0.01206	0.750	9.538
4.940E-03	412.437	0.01247	0.867	9.096
7.154E-03	479.075	0.00725	0.676	8.917
6.651E-03	447.280	0.01077	1.217	10.027
5.565E-03	442.887	0.00884	0.582	9.827

No.	TIME (min)	DRAWDOWN (feet) DATA	SYNTHETIC	DIFFERENCE (percent)
1	80.00	0.0400	0.0	100.0
2	120.0	0.0700	0.0	100.0
3	150.0	0.0800	0.0	100.0
4	200.0	0.0900	0.0	100.0
5	250.0	0.110	0.0	100.0
6	300.0	0.140	0.0	100.0
7	350.0	0.170	0.0	100.0
8	400.0	0.190	0.0	100.0
9	500.0	0.220	0.0	100.0
10	600.0	0.230	0.0	100.0
11	700.0	0.230	0.0	100.0

PARAMETER RESOLUTION MATRIX:
"*" INDICATES FIXED PARAMETER

S	0.51			
T	-0.10	0.84		
B	0.35	0.14	0.49	
A	-0.21	-0.01	-0.24	0.12
	S	T	B	A

BC LABORATORIES

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: BOB BECKER 805-835-7700

Date Reported: 03/07/94
Date Received: 02/22/94
Laboratory No.: 94-01893-1

Sample Description: #OB5682.33 MALIBU VINEYARDS: MW-1 (WS-1) 02-17-94 @ 4:00PM SAMPLED BY TIM REED

WATER ANALYSIS
(METALS)

Constituents	Results	Units	D.L.R.	Method
Copper	None Detected	µg/L	10.	EPA-6010
Iron	None Detected	µg/L	50.	EPA-6010
Manganese	None Detected	µg/L	10.	EPA-6010
Zinc	24.	µg/L	10.	EPA-6010

D.L.R. = Detection Limit for Reporting purposes.

Department Supervisor

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BC LABORATORIES

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: BOB BECKER 805-835-7700

Date Reported: 03/07/94
Date Received: 02/22/94
Laboratory No.: 94-01893-1

Sample Description: #OB5682.33 MALIBU VINEYARDS: MW-1 (WS-1) 02-17-94 @ 4:00PM SAMPLED BY TIM REED

WATER ANALYSIS
(GENERAL CHEMISTRY)

Constituents	Results	Units	D.L.R.	Method
Calcium	155.	mg/L	0.1	EPA-7140
Magnesium	10.9	mg/L	0.01	EPA-7450
Sodium	608.	mg/L	0.1	EPA-7770
Potassium	3.1	mg/L	0.1	EPA-7610
Total Cations	35.2	meq/L	0.01	Calculated
Hydroxide	None Detected	mg/L	0.8	EPA-310.1
Carbonate	None Detected	mg/L	2.6	EPA-310.1
Bicarbonate	203.	mg/L	2.6	EPA-310.1
Chloride	290.	mg/L	1.8	EPA-300.0
Sulfate	1020.	mg/L	5.	EPA-300.0
Nitrate/Nitrite as NO3	88.5	mg/L	0.4	EPA-353.2
Fluoride	0.20	mg/L	0.05	EPA-340.2
Total Anions	34.2	meq/L	0.01	Calculated
pH	7.9	pH Units	0.1	EPA-9040
Electrical Conductivity @ 25 C	3320.	umhos/cm	1.	EPA-9050
Total Dissolved Solids @ 180 C	2400.	mg/L	10.	EPA-160.1
MBAS	0.16	mg/L	0.04	EPA-425.1
Hardness as CaCO3	432.	mg/L	0.3	Calculated
Alkalinity as CaCO3	166.	mg/L	3.0	Calculated

D.L.R. = Detection Limit for Reporting purposes.

Department Supervisor

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BC LABORATORIES

Halogenated Volatile Organic Analysis

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: BOB BECKER 805-835-7700

Date of Report: 03/07/94
Lab #: 94-01893-1

Sample Description: #OB5682.33 MALIBU VINEYARDS: MW-1 (WS-1) 02-17-94 @ 4:00PM SAMPLED BY TIM REED

Test Method: EPA Method 601

Sample Matrix: Water

Date Sample Collected: 02/17/94

Date Sample Received @ Lab: 02/22/94

Date Analysis Completed: 02/24/94

Constituents	Analysis Results	Reporting Units	Minimum Reporting Level
Bromodichloromethane	None Detected	µg/L	0.5
Bromoform	None Detected	µg/L	0.5
Bromomethane	None Detected	µg/L	0.5
Carbon tetrachloride	None Detected	µg/L	0.5
Chlorobenzene	None Detected	µg/L	0.5
Chloroform	None Detected	µg/L	0.5
Chloromethane	None Detected	µg/L	0.5
Chloroethane	None Detected	µg/L	0.5
Dibromochloromethane	None Detected	µg/L	0.5
Dichlorodifluoromethane	None Detected	µg/L	0.5
1,1-Dichloroethane	None Detected	µg/L	0.5
1,2-Dichloroethane	0.54	µg/L	0.5
1,1-Dichloroethene	None Detected	µg/L	0.5
1,2-Dichlorobenzene	None Detected	µg/L	0.5
1,3-Dichlorobenzene	None Detected	µg/L	0.5
1,4-Dichlorobenzene	None Detected	µg/L	0.5
Total 1,2-Dichloroethene	None Detected	µg/L	0.5
1,2-Dichloropropane	None Detected	µg/L	0.5
cis-1,3-Dichloropropene	None Detected	µg/L	0.5
trans-1,3-Dichloropropene	None Detected	µg/L	0.5
Methylene Chloride	1.6	µg/L	0.5
1,1,2,2-Tetrachloroethane	None Detected	µg/L	0.5
Tetrachloroethene	None Detected	µg/L	0.5
1,1,1-Trichloroethane	None Detected	µg/L	0.5
1,1,2-Trichloroethane	None Detected	µg/L	0.5
Trichloroethene	None Detected	µg/L	0.5
Trichlorofluoromethane	None Detected	µg/L	0.5
Vinyl Chloride	None Detected	µg/L	0.5
Total Trihalomethanes	None Detected	µg/L	2

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BC LABORATORIES

Halogenated Volatile Organic Analysis

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: BOB BECKER 805-835-7700

Date of Report: 03/07/94
Lab #: 94-01893-1

Sample Description: #OB5682.33 MALIBU VINEYARDS: MW-1 (WS-1) 02-17-94 @ 4:00PM SAMPLED BY TIM REED

California D.O.H.S. Cert. #1186

Department Supervisor

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BC LABORATORIES

Purgeable Aromatics and Total Petroleum Hydrocarbons

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: BOB BECKER 805-835-7700

Date of Report: 03/05/94
Lab #: 94-01893-1

Sample Description: #OB5682.33 MALIBU VINEYARDS: MW-1 (WS-1) 02-17-94 @ 4:00PM SAMPLED BY TIM REED

TEST METHOD: TPH by D.O.H.S. / L.U.F.T. Manual Method - Modified EPA 8015
Individual constituents by EPA Method 5030/8020.

Sample Matrix: Water

Date Sample Collected: 02/17/94

Date Sample Received @ Lab: 02/22/94

Date Analysis Completed: 02/25/94

Constituents	Analysis Results	Reporting Units	Minimum Reporting Level
Benzene	None Detected	µg/L	0.5
Toluene	None Detected	µg/L	0.5
Ethyl Benzene	None Detected	µg/L	0.5
Total Xylenes	None Detected	µg/L	1.
Total Petroleum Hydrocarbons (gas)	None Detected	µg/L	50

California D.O.H.S. Cert. #1186

Stuart S. Sutter
Department Supervisor

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BC LABORATORIES

Purgeable Aromatics and Total Petroleum Hydrocarbons

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: BOB BECKER 805-835-7700

Date of Report: 03/05/94
Lab #: 94-01893-2

Sample Description: #OB5682.33 MALIBU VINEYARDS: WS-2, 02-18-94 @ 1:40PM SAMPLED BY TIM REED

TEST METHOD: TPH by D.O.H.S. / L.U.F.T. Manual Method - Modified EPA 8015
Individual constituents by EPA Method 5030/8020.

Sample Matrix: Water

Date Sample Collected: 02/18/94

Date Sample Received @ Lab: 02/22/94

Date Analysis Completed: 02/25/94

Constituents	Analysis Results	Reporting Units	Minimum Reporting Level
Benzene	None Detected	µg/L	0.5
Toluene	None Detected	µg/L	0.5
Ethyl Benzene	None Detected	µg/L	0.5
Total Xylenes	None Detected	µg/L	1.
Total Petroleum Hydrocarbons (gas)	None Detected	µg/L	50

California D.O.H.S. Cert. #1186

Stuart A. Ritter
Department Supervisor

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BC LABORATORIES

Purgeable Aromatics and Total Petroleum Hydrocarbons

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: BOB BECKER 805-835-7700

Date of Report: 03/05/94
Lab #: 94-01893-3

Sample Description: #OB5682.33 MALIBU VINEYARDS: WS-3, 02-18-94 @ 3:40PM SAMPLED BY TIM REED

TEST METHOD: TPH by D.O.H.S. / L.U.F.T. Manual Method - Modified EPA 8015
Individual constituents by EPA Method 5030/8020.

Sample Matrix: Water

Date Sample Collected:	Date Sample Received @ Lab:	Date Analysis Completed:
02/18/94	02/22/94	02/25/94

Constituents	Analysis Results	Reporting Units	Minimum Reporting Level
Benzene	None Detected	µg/L	0.5
Toluene	None Detected	µg/L	0.5
Ethyl Benzene	None Detected	µg/L	0.5
Total Xylenes	None Detected	µg/L	1.
Total Petroleum Hydrocarbons (gas)	None Detected	µg/L	50.

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Stuart S. Patterson
Department Supervisor

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BC LABORATORIES

Purgeable Aromatics and Total Petroleum Hydrocarbons

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: BOB BECKER 805-835-7700

Date of Report: 03/05/94
Lab #: 94-01893-4

Sample Description: #OB5682.33 MALIBU VINEYARDS: MW-2, 02-18-94 @ 4:40PM SAMPLED BY TIM REED

TEST METHOD: TPH by D.O.H.S. / L.U.F.T. Manual Method - Modified EPA 8015
Individual constituents by EPA Method 5030/8020.

Sample Matrix: Water

Date Sample Collected: 02/18/94

Date Sample Received @ Lab: 02/22/94

Date Analysis Completed: 02/25/94

Constituents	Analysis Results	Reporting Units	Minimum Reporting Level
Benzene	None Detected	µg/L	0.5
Toluene	None Detected	µg/L	0.5
Ethyl Benzene	None Detected	µg/L	0.5
Total Xylenes	None Detected	µg/L	1.
Total Petroleum Hydrocarbons (gas)	None Detected	µg/L	50

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Department Supervisor

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BC LABORATORIES

Purgeable Aromatics and Total Petroleum Hydrocarbons

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: BOB BECKER 805-835-7700

Date of Report: 03/05/94
Lab #: 94-01893-5

Sample Description: #OB5682.33 MALIBU VINEYARDS: MW-3, 02-18-94 @ 4:00PM SAMPLED BY TIM REED

TEST METHOD: TPH by D.O.H.S. / L.U.F.T. Manual Method - Modified EPA 8015
Individual constituents by EPA Method 5030/8020.

Sample Matrix: Water

Date Sample Collected: 02/18/94

Date Sample Received @ Lab: 02/22/94

Date Analysis Completed: 02/25/94

Constituents	Analysis Results	Reporting Units	Minimum Reporting Level
Benzene	None Detected	µg/L	0.5
Toluene	None Detected	µg/L	0.5
Ethyl Benzene	None Detected	µg/L	0.5
Total Xylenes	None Detected	µg/L	1.
Total Petroleum Hydrocarbons (gas)	None Detected	µg/L	50

California D.O.H.S. Cert. #1186

Stuart S. Buttram
Department Supervisor

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BC LABORATORIES

Purgeable Aromatics and Total Petroleum Hydrocarbons

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: BOB BECKER 805-835-7700

Date of Report: 03/05/94
Lab #: 94-01893-TB

Sample Description: #OB5682.33 MALIBU VINEYARDS: TB, 02-17-94

TEST METHOD: TPH by D.O.H.S. / L.U.F.T. Manual Method - Modified EPA 8015
Individual constituents by EPA Method 5030/8020.

Sample Matrix: Water

Date Sample Collected: 02/17/94

Date Sample Received @ Lab: 02/22/94

Date Analysis Completed: 02/25/94

Constituents	Analysis Results	Reporting Units	Minimum Reporting Level
Benzene	None Detected	µg/L	0.5
Toluene	None Detected	µg/L	0.5
Ethyl Benzene	None Detected	µg/L	0.5
Total Xylenes	None Detected	µg/L	1.

California D.O.H.S. Cert. #1186

Department Supervisor

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94-1843

RESNA

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

PROJECT NO.	PROJECT NAME/SITE	P.O. #:
OB5682.33	MALibu Vineyards	11670

SAMPLERS (SIGN) Tim Reed (PRINT) TIM REED

	SAMPLE IDENTIFICATION	DATE	TIME	COMP	GRAB	PRES. USED	ICED	NO. CONTAINERS	SAMPLE TYPE	BTEX (602/8020)	TPHg (8015)	TPHd (8015)	TOG 418.1/5520	601/8010	624/8240	625/8270	General Minerals	TDS	REMARKS
-1	MW-1 (WS-1)	2/17/94	4:00p		X		y	3	W	X	X			X			X			VOA'S (2) G+PE
-2	WS-2	2/18/94	1:40A		X		y	2	W	X	X							X		~~TDS Samples~~ 2 VOA
-3	WS-3	2/18/94	3:40A		X		y	2	W	X	X							X		
TB	TB	2/17/94					y	1	W	X										cancel TDS on -2 & -3
-4	MW-2	2/18/94	4:40p		X		y	2	W	X	X									
-5	MW-3	2/18/94	4:00p		X		y	2	W	X	X									

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	LABORATORY:	PLEASE SEND RESULTS TO:
Tim Reed	2-22-94	9:00	Rick Heed	BC Labs	RESNA Industries Inc. 1500 S. Union Ave. Bakersfield, CA 93307
RELINQUISHED BY: Rick Heed	DATE 2-22-94	TIME 2:45p	RECEIVED BY:		
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:	REQUESTED TURNAROUND TIME: Standard	
RELINQUISHED BY:	DATE	TIME	RECEIVED BY LABORATORY: Lina Byam	RECEIPT CONDITION: good, cold	PROJECT MANAGER: R. Becker

2:50

BC LABORATORIES

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: BOB BECKER 805-835-7700

Date Reported: 03/10/94 Page 1
Date Received: 02/24/94
Laboratory No.: 94-01995-1

Sample Description: #OB5682.33 MAL. VIN: VT-1 (WATER) 02-23-94 @ 3:15PM SAMPLED BY T. MOORE

TOTAL CONCENTRATIONS
(California Code of Regulations, Title 22, Section 66261)

Constituents	Sample Results	Units	Method P.Q.L.	Method	Regulatory Criteria STLC mg/L	Regulatory Criteria TTLC mg/kg
Antimony	None Detected	mg/L	0.100	SW-6010	15.	500.
Arsenic	None Detected	mg/L	0.002	SW-7060	5.0	500.
Barium	0.030	mg/L	0.010	SW-6010	100.	10000.
Beryllium	None Detected	mg/L	0.010	SW-6010	0.75	75.
Cadmium	None Detected	mg/L	0.005	SW-6010	1.0	100.
Chromium	None Detected	mg/L	0.010	SW-6010	560.	2500
Cobalt	None Detected	mg/L	0.010	SW-6010	80.	8000
Copper	None Detected	mg/L	0.010	SW-6010	25.	2500
Lead	None Detected	mg/L	10.050	SW-6010	5.0	1000
Mercury	None Detected	mg/L	0.2	SW-7471	0.2	20.
Molybdenum	None Detected	mg/L	0.050	SW-6010	350.	3500.
Nickel	None Detected	mg/L	0.050	SW-6010	20.	2000.
Selenium	None Detected	mg/L	0.005	SW-7740	1.0	100
Silver	None Detected	mg/L	0.010	SW-6010	5.0	500
Thallium	None Detected	mg/L	0.100	SW-6010	7.0	700
Vanadium	None Detected	mg/L	0.010	SW-6010	24.	2400
Zinc	3.7	mg/L	0.050	SW-6010	250.	5000.
Cyanides	None Detected	mg/L	0.02	SW-9012		
Sulfides	None Detected	mg/L	1.0	SW-9030		
Fluoride	0.19	mg/L	0.10	EPA-340.2	180.	18000
Hexavalent Chromium	None Detected	mg/L	0.01	SW-7196	5.0	500
pH (Straight)	7.80	pH Units	0.01	SW-9040	2 - 12.5	
Pensky-Martens Flash Point	> 150.	F	20.	SW-1010		
Corrosivity - Determined by pH to be	Non-Corrosive			SW-9040		
Other Tests:						
Total Dissolved Solids @ 180 C	2350.	mg/L	100.	EPA-160.1		

(See Last Page for Comments, Definitions, and References)

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BC LABORATORIES

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: BOB BECKER 805-835-7700

Date Reported: 03/10/94 Page 2
Date Received: 02/24/94
Laboratory No.: 94-01995-1

Sample Description: #OB5682.33 MAL. VIN: VT-1 (WATER) 02-23-94 @ 3:15PM SAMPLED BY T. MOORE

TOTAL CONCENTRATIONS
(California Code of Regulations, Title 22, Section 66261)

Comment: All above constituents are reported on an as received (wet) sample basis. Results reported represent totals (TTLC) as sample subjected to appropriate techniques to determine total levels.

P.Q.L. = Practical Quantitation Limit (refers to the least amount of analyte detectable based on sample size used and analytical technique employed).
STLC = Soluble Threshold Limit Concentration
TTLC = Total Threshold Limit Concentration

REFERENCES:
EPA = "Methods for Chemical Analysis of Water and Wastes", EPA-600, 14-79-020.
SW = "Test Methods for Evaluating Solid Wastes Physical/Chemical Methods" EPA-SW-846, September, 1986.

Department Supervisor

All results listed in this report are for the exclusive use of the submitting party. BC Laboratories, Inc. assumes no responsibility for report alteration, separation, detachment or third party interpretation.

4100 Atlas Ct. · Bakersfield, CA 93308 · (805) 327-4911 · FAX (805) 327-1918

BC LABORATORIES

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: BOB BECKER 805-835-7700

Date Reported: 03/09/94
Date Received: 02/24/94
Laboratory No.: 94-01995-1

TCLP TOXICITY

Sample Description: #OB5682.33 MAL. VIN: VT-1 (WATER) 02-23-94 @ 3:15PM SAMPLED BY T. MOORE

Constituents	Sample Results mg/liter	Method P.Q.L.	Analytical Method	Maximum Allowable Concentration
Arsenic	None Detected	0.1	SW-7060	5.0
Barium	None Detected	0.1	SW-6010	100.
Cadmium	None Detected	0.1	SW-6010	1.0
Chromium	None Detected	0.1	SW-6010	5.0
Lead	None Detected	0.5	SW-6010	5.0
Mercury	None Detected	0.02	SW-7471	0.20
Selenium	None Detected	0.1	SW-7740	1.0
Silver	None Detected	0.25	SW-6010	5.0

Comment: All extract contaminants reported in mg/liter on a filtrate basis. Sample analyzed in accordance with EPA's TCLP 18-hour extraction test.

P.Q.L. = Practical Quantitation Limit (refers to the least amount of analyte detectable based on sample size used and analytical technique employed).

N.D. = None Detected (Constituent, if present, would be less than the method P.Q.L.).

REFERENCES:

SW = "Test Methods for Evaluating Solid Wastes Physical/Chemical Methods", EPA-SW-846, September, 1986.

B C LABORATORIES, INC.

Department Supervisor

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BC LABORATORIES

Volatile Organic Analysis
(TCLP Extract)

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: BOB BECKER 805-835-7700

Date of Report: 03/07/94
Lab #: 94-01995-1

Sample Description: #OB5682.33 MAL. VIN: VT-1 (WATER) 02-23-94 @ 3:15PM SAMPLED BY T. MOORE

Test Method: EPA Method 8240

Sample Matrix: Water

Date Sample Collected: 02/23/94

Date Sample Received @ Lab: 02/24/94

Date Analysis Completed: 03/01/94

Constituents	Analysis Results	Reporting Units	Minimum Reporting Level
Benzene	None Detected	mg/L	0.01
Carbon Tetrachloride	None Detected	mg/L	0.01
Chlorobenzene	None Detected	mg/L	0.01
Chloroform	None Detected	mg/L	0.01
1,4-Dichlorobenzene	None Detected	mg/L	0.01
1,2-Dichloroethane	None Detected	mg/L	0.01
1,1-Dichloroethylene	None Detected	mg/L	0.01
Methyl Ethyl Ketone	None Detected	mg/L	0.05
Tetrachloroethylene	None Detected	mg/L	0.01
Trichloroethylene	None Detected	mg/L	0.01
Vinyl Chloride	None Detected	mg/L	0.01

California D.O.H.S. Cert. #1186

Department Supervisor

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BC LABORATORIES

Purgeable Aromatics

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: BOB BECKER 805-835-7700

Date of Report: 03/08/94
Lab #: 94-01995-1

Sample Description: #OB5682.33 MAL. VIN: VT-1 (WATER) 02-23-94 @ 3:15PM SAMPLED BY T. MOORE

TEST METHOD: EPA Method 5030/8020.

Sample Matrix: Water

Date Sample Collected: 02/23/94

Date Sample Received @ Lab: 02/24/94

Date Analysis Completed: 02/25/94

Constituents	Analysis Results	Reporting Units	Minimum Reporting Level
Benzene	None Detected	µg/L	0.5
Toluene	None Detected	µg/L	0.5
Ethyl Benzene	None Detected	µg/L	0.5
Total Xylenes	None Detected	µg/L	1

California D.O.H.S. Cert. #1186

Department Supervisor

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BC LABORATORIES

Total Petroleum Hydrocarbons

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: BOB BECKER 805-835-7700

Date of Report: 03/04/94
Lab #: 94-01995-1

Sample Description: #OB5682.33 MAL. VIN: VT-1 (WATER) 02-23-94 @ 3:15PM SAMPLED BY T. MOORE

Sample Matrix: Water

Constituents	Sample Results	Units	Method P.Q.L.	Method
Total Petroleum Hydrocarbons	None Detected	mg/L	1.	EPA-418.1

California D.O.H.S. Cert. #1186

Department Supervisor

All results listed in this report are for the exclusive use of the submitting party. BC Laboratories, Inc. assumes no responsibility for report alteration, separation, detachment or third party interpretation.

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BC LABORATORIES

RESNA
1500 S. UNION AVENUE
BAKERSFIELD, CA 93307
Attn.: BOB BECKER 805-835-7700

Date Reported: 03/07/94
Date Received: 02/24/94
Laboratory No: 94-01995-1

Sample Description: #OB5682.33 MAL. VIN: VT-1 (WATER) 02-23-94 @ 3:15PM SAMPLED BY T. MOORE

Enclosed are the results for the Fish Bioassay.

All results listed in this report are for the exclusive use of the submitting party. BC Laboratories, Inc. assumes no responsibility for report alteration, separation, detachment or third party interpretation.

4100 Atlas Ct. · Bakersfield, CA 93308 · (805) 327-4911 · FAX (805) 327-1918

LABORATORY REPORT

Aquatic Testing Laboratories

"dedicated to providing quality aquatic toxicity testing"

2810 Bunsen Ave., Unit A
Ventura, CA 93003
(805) 650-0546 FAX (805) 650-0756

CA DOHS ELAP Cert. No.: 1775

Date: March 7, 1994

Client: BC Laboratories
4100 Atlas Court
Bakersfield, CA 93308
Attn: Sheila Rawlins

Laboratory No.: A-94022801-001
Sample I.D.: 94-01995-1

Sample Control:

The samples were received by ATL in a chilled state, with the chain of custody record attached.

Date Sampled: 02/23/94
Date Received: 02/28/94

Sample Analysis:

The following analyses were performed on your sample:
CCR Title 22 - Fathead Minnow Hazardous Waste Screen Bioassay.

Attached are the test data generated from the analysis of your sample.

Result Summary:

ATL Lab No.	Sample ID.	Results
A-94022801-001	94-01995-1	LC50 > 750 mg/l

Quality Control: Reviewed and approved by:

Joseph A. LeMay, Laboratory Director

Thank you for your business!

This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of the Laboratory's name for advertising or publicity purpose without authorization is prohibited.

FATHEAD MINNOW HAZARDOUS WASTE SCREEN BIOASSAY

Lab No.: A-94022801-001

Client/ID: BCL 1995-1

TEST SUMMARY

Species: Pimephales promelas.
Fish length (mm): av: 32; min: 30; max: 34.
Fish weight (gm): av: .46; min: .39; max: .61.
Test Protocol: Calif. F&G/DOHS 1988.
Test type: Static.
Test chamber volume 10 l.
Mixing method: Mechanical shaking.
Acclimation/dilution water: Reconstituted soft water (hardness 40-48 mg/l $CaCO_3$).
Aeration: Single bubble through narrow-bore tube.

Source: Thomas Fish.
Date fish received: 2-22-94.
Regulations: CCR Title 22.
Endpoints: LC50 at 96 hrs.
Temperature: 20 +/- 2°C.
Number of replicates: 2.
Number of fish per chamber: 10.
QA/QC Batch No.: RT940225

TEST DATA

	INITIAL			24 Hr				48 Hr				72 Hr				96 Hr			
DATE/TIME	3-1-94 1100			3-2-94 1125				3-3-94 1000				3-4-94 0750				3-5-94 1030			
ANALYST:	JS			JS				JS				JS				cm			
	°C	DO	pH	°C	DO	pH	#D	°C	DO	pH	#D	°C	DO	pH	#D	°C	DO	pH	#D
CONT A	20.0	8.8	7.8	19.9	7.6	7.0	0	20.0	8.5	6.8	0	20.3	8.6	7.0	0	20.3	8.8	7.2	0
CONT B	19.8	8.8	7.8	19.8	7.4	7.0	0	20.0	8.4	6.7	0	20.2	8.4	6.9	0	20.2	8.8	7.2	0
400 A	20.0	8.8	7.8	20.1	7.8	7.1	0	20.1	8.6	6.9	0	20.2	8.0	6.9	0	20.2	8.2	7.1	0
400 B	19.9	8.8	7.8	19.9	7.5	7.2	0	20.0	8.8	7.0	0	20.1	8.4	7.0	0	20.1	8.6	7.1	0
750 A	19.8	8.8	7.8	19.7	7.5	7.2	0	19.9	8.8	6.9	0	20.0	8.4	7.0	0	20.0	8.6	7.2	0
750 B	19.7	8.8	7.8	19.6	7.7	7.2	0	19.8	8.7	7.0	0	19.9	8.4	7.0	0	20.0	8.4	7.2	0

Comments:

ADDITIONAL WATER CHEMISTRIES

	CONTROL	
	Alk.	Hard
0 hr	30	45
96hr	32	46

	HIGH CONC.	
	Alk.	Hard
0 hr	30	46
96hr	31	47

RESULTS

Total Number Dead	
CONTROL	0 /20
400 mg/l	0 /20
750 mg/l	0 /20

X	LC50 >750 mg/l (<40% dead in 750 mg/l conc.)
	400 <LC50< 750 (≥40% dead in 750 & ≤60% in 400) *** Definitive Test Required ***
	LC50 <400 mg/l (>60% dead in 400 mg/l conc.)

RESNA

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

PROJECT NO.	PROJECT NAME/SITE	P.O. #:
085682.33	Mal. Vin	11670

SAMPLERS (SIGN) / (PRINT) T. Moore

SAMPLE IDENTIFICATION	DATE	TIME	COMP	GRAB	PRES. USED	ICED	NO. CONTAINERS	SAMPLE TYPE	BTEX (602/8020)	TPHg (8015)	TPHd (8015)	TOG 418.1/5520	601/8010	624/8240	625/8270	Full Cam TCLP (As needed)	TDS		REMARKS
94-01995-1 VT-1	2/23/94	3:15		X	y	X	8	W	X			X				X	X	X	call for more info TCLP Metals & 8240 ~~8015~~ 418.1 in improper container - run any way per R. Becker 2-25-94

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
T. Moore	2/24/94	12:17	
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:	DATE	TIME	RECEIVED BY LABORATORY:
	2/24/94	12:20pm	Jean Mabbs

LABORATORY: BC Labs

REQUESTED TURNAROUND TIME: Standard

RECEIPT CONDITION: COLD

PLEASE SEND RESULTS TO:
RESNA
1500 S. Union Ave.
Bakersfield, CA
93307

PROJECT MANAGER: R. Becker

RESNA Industries Inc.

ENVIRONMENTAL HEALTH SERVICES DEPARTMENT

KERN COUNTY

Office Memorandum

To: Joe Date: June 16, 1994

From: Dolores

Re: Malibu Vineyards (Permit No. 390044)

RESNA recently submitted a report in behalf of Malibu Vineyards requesting for site closure. The report discussed their rationale including the results of an aquifer test they performed. The following summarizes their rationale and my comments:

1. Source of hydrocarbon contamination has been removed. They proposed to cap the area and abandon the wells.

   Com: True, tank has been removed. There is however residual hydrocarbon in subsurface soil that could recontaminate groundwater if contaminants move down or water level goes up. If this happens, I don't think contamination levels in groundwater will be severe because of dilution effects and "groundwater-contaminated soil contact" should occur gradually.

2. There would be no threat to public from airborne emissions because of a 7-ft clean fill material placed after the tank was removed. The site is also in a remote area.

   Com: Acceptable

3. Any recontamination of the groundwater will not pose a threat to drinking water supplies because there is a 200 feet separation between the perched water zone and the main unconfined aquifer. Their research indicated that there is no drinking water well within a mile from the site. With an estimated water velocity of 50 ft/year, it would take 105 years to move a mile.

   Com: Acceptable

4. Based on the TDS concentration of 2400 mg/l, the aquifer is not a suitable source of drinking water although it is capable of yielding 200 gallons/day.

Com: If the water is not treated, it is not suitable for domestic use and most likely does not have any beneficial designation. In the latter case, based on CVRWQCB Resolution 89-098, this aquifer is designated municipal and domestic supply because it has a TDS that is lower than 3000 mg/l, sustainable yield of 200 gal/day, and does not appear to have contamination that cannot be treated with current available technologies.

The last analysis (Feb. 94) showed no detectable TPH and BTEX. Water is at about ~~122~~ 119 feet below grade in February. Even with #4, if the chance of recontamination is "not much", then I'm inclined to agree with closure w/conditions. This will not be consistent with other cases and the RWQCB probably won't agree.

A really acceptable option would be to remediate the vadose zone by vapor extraction and test the water twice a year. I am sure they will fight this.

What do you think?

STEVE McCALLEY, R.E.H.S.
DIRECTOR

2700 "M" Street, Suite 300
Bakersfield, CA 93301
(805)861-3636
(805)861-3429 FAX

Kern
COUNTY

Environmental
Health
Services
Department

June 30, 1995

Central Valley Regional Water Quality Control Board
3614 E. Ashlan
Fresno, California 93726
ATTN: Alan Vong

SUBJECT: Underground Tank Site Investigation, Malibu Vineyards, Section 30, T28S, R27E (near Imperial & Saco Road), Kern County, CA

Dear Mr. Vong:

In July of last year, this Department requested the review of reports by the Regional Water Quality Control Board (Board) of the above investigation to determine if the site is suitable for closure. As discussed in our recent telephone conversation, Malibu Vineyards is awaiting a decision on the case. Because of the groundwater conditions at the site, this Department is withholding our decision pending review by the Board.

This Department has not required Malibu Vineyards to perform any additional work since. To our knowledge, the aquifer testing and groundwater sampling in February 1994 were the last field activities conducted at the site.

In the interest of moving this project forward, we would appreciate your written comments as soon as possible. Thank you for your assistance in this case and if you have any questions, please call us at (805) 861-3636.

Sincerely,

Steve McCalley, Director

Dolores Gough

By: Dolores Gough
Hazardous Materials Specialist II
Hazardous Materials Management Program

DG:cas

cc: Malibu Vineyards

\gough\malibu1.rwq

STATE OF CALIFORNIA - Environmental Protection Agency PETE WILSON, *Governor*

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION
3614 East Ashlan Ave.
Fresno, CA 93726
PHONE: (209) 445-5116
FAX: (209) 445-5910

RECEIVED
SEP 25 1995

21 September 1995

Ms. Dolores Gough
Kern County Environmental Health Services Department
2700 "M" Street, Suite 300
Bakersfield, CA 93301

SITE CLOSURE, MALIBU VINEYARD, BAKERSFIELD, KERN COUNTY

We reviewed the Malibu Vineyard file and your 19 July 1994 letter in regards to site closure of the subject site. The following is a summary of the site history, followed by our comments.

In August 1990, Duane R. Smith and Associates (DSA) conducted a site characteration study of the site. DSA indicates that a 1,000-gallon gasoline underground storage tank was removed in December 1989. Soil sampling beneath the tank revealed total petroleum hydrocarbons as gasoline (TPH-gas) and benzene in soils as high as 9,700 and 170 mg/kg, respectively. Toluene, ethylbenzene, and xylenes were also detected at high concentrations. Three borings were drilled in June 1990. One boring was drilled at the center of the former tank area, and ground water was encountered at a depth of 100 feet. The ground water encountered was said to be perched water created by a nearby irrigation reservoir. Soil samples from the borings revealed TPH-gas of 4,400 mg/kg at a depth of 30 feet and 1,200 mg/kg at a depth of 85 feet. In addition, benzene was detected at concentrations of 24 and 2.3 mg/kg at depths of 85 and 95 feet, respectively. Based on Kern County Water Agency (KCWA) 1991 Annual Water Supply Report, unconfined ground water in the region is about 300 feet below grade. DSA recommends additional investigation of the contaminants in soil and its impact on groundwater.

In 1993, Malibu retained Groundwater Resources (RESNA) to conduct an insvestigation as required by Kern County Environmental Health Services Department (KCESHD). RESNA submitted *Remedial Investigation/Feasiblity Study,* dated 10 August 1993. The report indicates that three monitoring wells were drilled in December 1990. MW-1, which is at the approximate center of the former tank area, was advanced to 129 feet below ground surface (bgs). Water was first encountered at a depth of 122 feet; however, it rose and stabilized at 112 feet bgs. Water encountered was said to be perched ground water created by the nearby reservoir. Water samples from the well contained THP-gas and benzene as high as 15,000 μg/l and 840 μg/l, respectively. The report hypothesizes that the contaminant plume had not extended to ground water. The perched ground water was contaminated because the drilling of the assessment boring penetrated an aquitard and allowed the water level to rise in the boring and contact the base of the contaminant plume. The report indicates that a soil sample collected at a depth of 115 feet was initially clean and that the vertical extent of the contaminant plume reached to about 110 to 115 bgs. Water samples from the other two monitoring wells, MW-2 and MW-3, revealed low levels of TPH-gas and benzene in ground water in June 1991 and March 1992; however, THP-gas and benzene have not been detected since then. The report recommends no further action be taken.

In a letter dated 27 September 1993, the Kern County Environmental Health Services Department (KCEHSD) stated that it could not concur with RESNA's recommendation until specific aquifer characteristics could be established. In response to KCEHSD's concerns, RESNA submitted *Aquifer Test and Site Closure Report*, dated 29 April 1994. The report indicates that ground water has a gradient of approximately 0.77 feet per 100 feet trending north at a velocity of 51.7 feet per year. An aquifer pump test was conducted on 18 February 1994. Over 3,000 gallons of water was extracted from MW-1. Three grab samples were taken during the extraction, and they were nondetect for TPH-gas and benzene. A grab sample of the extracted water was found to contain 2,400 mg/l of total dissolved solids, 88.5 mg/l of nitrate as NO_3, and 1,020 mg/l of sulfate. The report indicates that the water is of poor quality and there are no domestic wells within a one-mile radius. The report concludes that the extraction of over 3,000 gallons of ground water may have remediated all of the remaining hydrocarbons in the ground water and that the probability of exposure due to migration pathways to the regional unconfined aquifer and domestic drinking water wells is low. It recommends no further action at the site.

Upon review of the information provided by you on the subject site, we do not believe closure is appropriate at this time. Ground water has been impacted with TPH-gas concentrations as high as 15,000 µg/l and benzene concentrations as high as 840 µg/l. In addition, we do not believe that the removal of over 3000 gallons of ground water has removed all the contaminants in ground water. Further, there are substantial concentrations of TPH-gas and benzene left in the soil. The extent of the contamination in soil and ground water has not been defined.

Further definition of the lateral extent of the contaminants in soil and ground water is warranted. Based on our review of the site closure report and the ground water flow direction calculated therein, there are no monitoring wells downgradient of the source area and monitoring well MW-1. We recommend at least one additional downgradient monitoring well to define the extent of ground water contamination. Based on the concentration of contaminants in soil reported to date, we expect the responsible party to, at a minimum, remediate the area(s) of heaviest soil contamination.

Thank you for providing us the opportunity to comment on the proposed site closure. Should you have any questions regarding this matter, please contact Alan M. Vong of this office at (209) 445-5553.

JOHN M. NOONAN
Senior Engineer
RCE No. C035206

AV:av/rac

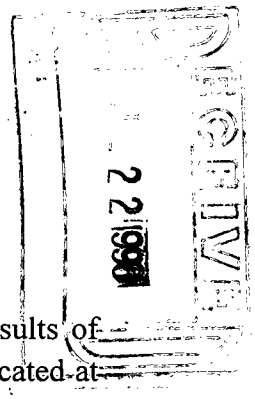
cc: Kyle Burdick, Malibu Vineyards, Delano
Robert J. Becker, RESNA, Bakersfield

SMITH
ENVIRONMENTAL TECHNOLOGIES CORPORATION

390044

July 8, 1996

Ms. Dolores Gough
Kern County Environmental
Health Services Department
2700 "M" Street, Suite 300
Bakersfield, CA 93301



Subject: Second Quarter 1996 Groundwater Monitoring Report
Malibu Vineyards
Section 30, T28S, R27E, Kern County, California
(Permit No. 390044)

Ms. Gough:

Smith Environmental Technologies Corporation (Smith Environmental) presents the results of the subsurface investigation performed for Lucich Farms at the Malibu Vineyards site located at Section 30, Township 28S, Range 27E, in Kern County California (Plate 1). The investigation was performed to determine the groundwater quality at the site in support of a site closure request.

SITE DESCRIPTION AND BACKGROUND

The project site is located at the Malibu Vineyards equipment facility located at the northeast corner of Section 30, T.28S, R. 27E., two miles north of 7th Standard Road and 1.5 miles west of Highway 65, north of Bakersfield (Plate 1). The site is located in agricultural land predominately orchards and vineyards. The site contains several equipment barns and a residence. Three ground water monitoring wells are located near the former location of a 1000 gallon underground gasoline tank. Adjacent to the wells is a large irrigation pond with a plastic lined earthen dike. A 1000 gallon above ground gasoline tank is located approximately 50 feet south of the former underground tank location (Plate 2).

On December 5, 1989 a 1,000 gallon underground gasoline storage tank was removed from the above referenced site. The analytical report for the samples collected during the removal indicated that significant levels of hydrocarbons were present in the soil below the tank location.

SMITH

A Phase I Site Characterization was performed by Duane R. Smith and Associated in August 1990. The results from that report indicated that soil contamination was present below the tank location to a depth of at least 100 feet with a lateral extent of approximately 45 feet in diameter. Unconfined ground water in the region was reported in the Kern County Water Agency 1990 Annual Report to be greater than 300 feet below grade. Perched ground water, associated with percolation below the unlined water reservoir east of the tank location, was encountered at a depth of 110 feet by RESNA/Groundwater Resources, Inc. This discovery was made during site characterization work and the installation of three monitoring wells, performed November 28 through December 4, 1990. At the request of the Kern County Environmental Health Services Department (KCEHSD), regular monitoring events have been reported since December, 1990. During that time the water elevation in MW-1 had decreased almost eight feet and continued to drop. As of February 1993, hydrocarbons were detected in MW-1 but MW-2 and MW-3 remained clean. A decision regarding remediation of the vadose plume was deferred by KCEHSD until the perched water levels dropped below the slotted intervals of the MWs, however, since it may take up to ten years for the water to drop that far, and Malibu Vineyards has requested that KCEHSD give Site Closure before that time, KCEHSD requested that a Remediation Feasibility Study of the vadose plume be made. On August 10, 1993, RESNA (now Smith Environmental) submitted a Remedial Investigation/Feasibility Study. The report, recommended no further action be taken. A letter from the KCEHSD, September 27, 1993 stated that the county could not concur with the report's recommendation until specific aquifer characteristics could be established. On February 17-18, 1994, a pump test was performed and water samples were collected to help determine aquifer characteristics and water quality. In April 1994, an Aquifer Test and Site Closure Report was prepared. The report proposed that the presence of hydrocarbons in the perched aquifer would not pose a significant threat to adjacent wells in the area. No further action was recommended for the groundwater. In a letter dated September 21, 1995, the California Regional Water Quality Control Board (CRWQCB) recommended that an additional groundwater monitoring well be located north of MW-1, which was the calculated downgradient direction in the April 1994 report. In addition, further definition of the contamination was requested along with the remediation of the areas demonstrating the heaviest soil contamination. The KCDEHS agreed with the CRWQCB recommendations in a letter dated October 6, 1995 and requested a workplan within 90 days from the date of the letter. A workplan was prepared by Smith Environmetal Technologies Corporation (Smith Environmental) and submitted to the KCDEHS and CRWQCB for approval. The workplan was approved, however, in light of recent changes in the classification of sites requiring active remediation, Smith Environmental proposed performing a computer based risk assessment to determine if a risk exists from the remaining hydrocarbons in the soil.

SMITH

Groundwater monitoring was performed to determine whether any additional assessment is required at this site.

GROUNDWATER SAMPLES

Groundwater monitoring wells MW-1, MW-2 and MW-3 were sampled on June 12, 1996. The wells were sampled following the removal of approximately three well volumes. Samples were collected using a new disposable bailer in each well. Purge water collected from the monitoring wells was stored in DOT approved 55-gallon drums and left at the site pending analysis. Enclosed are the well purge data recorded during the groundwater sampling event.

Groundwater samples were submitted to BC Laboratories in Bakersfield, California, a California Department of Health Services certified laboratory. The samples were analyzed for TPHg using modified EPA method 8015 and BTEX using EPA method 5030/8020.

ANALYTICAL RESULTS

Analytical results from the groundwater samples indicate that TPHg and BTEX concentrations were reported in MW-1 while TPHg was detected in MW-3. No hydrocarbon concentrations were detected in MW-2. Table 1 presents the analytical results. As shown on Table 1, the BTEX and TPHg concentrations for MW-1 show a steady decrease in concentration over time. MW-2 continues to maintain concentrations below detection. MW-3 was reported to contain 250 ppb TPHg which indicates an increase from previous reports. Copies of the laboratory certified analytical reports and the chain-of-custody documentation are enclosed.

GROUNDWATER GRADIENT

During the June 12 groundwater monitoring event, all wells were sounded for depth to water. A calculation of the perched groundwater gradient and direction was determined (Plate 3). As shown on Plate 3, the groundwater gradient was calculated at 0.042 in a westerly direction. This indicates that the gradient has shifted approximately 90 degrees compared to the last measurement recorded in February 1994.

SMITH

TABLE 1
GROUND WATER ANALYSIS RESULTS

	Date	Benzene	Toluene	Ethyl-benzene	Xylenes	TPHg
MW-1						
	12/17/90	140	650	11	1090	3600
	1/22/91	840	3300	72	3000	15000
	6/17/91	370	1100	24	1910	6700
	8/16/91	89	18	<0.3	470	3600
	3/6/92	37	170	6.7	230	7500
	7/17/92	0.4	2.0	<0.03	2	<50
	10/26/92	10	42	1.4	76	480
	2/12/93	19	160	7.1	120	810
	2/18/94	<0.5	<0.5	<0.5	<1.0	<50
	6/12/96	0.94	4.0	<0.3	8.6	58
MW-2						
	12/17/90	<0.5	<0.5	<0.5	<0.5	<50
	1/22/91	<0.3	<0.3	<0.3	<0.5	<50
	6/17/91	0.94	<0.5	<0.5	<0.5	64
	8/16/91	<0.3	<0.3	<0.3	<0.5	<50
	3/6/92	1.1	3.6	<0.5	3.0	86
	7/17/92	<0.3	<0.3	<0.3	<0.5	<50
	10/26/92	<0.5	<0.5	<0.5	<1.5	<50
	2/12/93	<0.5	<0.5	<0.5	2.0	<50
	2/18/94	<0.5	<0.5	<0.5	<1.0	<50
	6/12/96	<0.3	<0.3	<0.3	<0.6	<50
MW-3						
	12/17/90	<0.5	<0.5	<0.5	<0.5	<50
	1/22/91	<0.3	<0.3	<0.3	<0.5	<50
	6/17/91	0.95	0.28	<0.5	<0.5	58
	8/16/91	<0.3	<0.3	<0.3	<0.5	<50
	3/6/92	1.5	1.7	<0.5	1.8	<50
	7/17/92	<0.3	<0.3	<0.3	<0.5	<50
	10/26/92	<0.5	<0.5	<0.5	<1.5	<50
	2/12/93	<0.5	<0.5	<0.5	2.9	<50
	2/18/94	<0.5	<0.5	<0.5	<1.0	<50
	6/12/96	<0.3	<0.3	<0.3	<0.6	250

NOTES:
Concentrations are expressed in µg/l (ppb)

SMITH

CONCLUSIONS AND RECOMMENDATIONS

As indicated on Table 1, hydrocarbon concentrations in MW-3 have increased since the last monitoring event. However, concentrations in MW-1, located at the former tank location, have continued to decline (Chart 1). This indicates that the groundwater plume has migrated and is now in the vicinity of MW-3. The decline in concentrations for MW-1 may indicate that the soil plume is not contributing to the groundwater plume. Since no BTEX constituents were detected in MW-3 and are decreasing in MW-1, it can be assumed that natural occurring microbial action is accelerating the decline of groundwater hydrocarbons in this area.

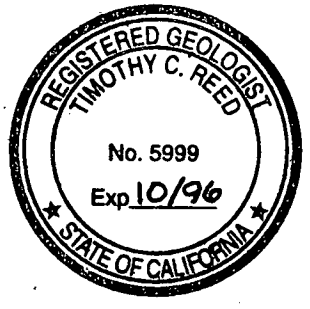
The groundwater gradient measured in February 1994 was calculated with a gradient of 0.0077 in a northerly direction. The most recent measurement of the perched aquifer indicates that the direction of flow has shifted approximately 90 degrees to the west with a new gradient of 0.043.

In light of the results of this groundwater monitoring event Smith Environmental suggest that this site be reconsidered for closure. This recommendation is based on the conclusions and recommendations provided in the April 14, 1994 Aquifer Test and Site Closure Report, prepared by RESNA along with the data collected to date showing declining groundwater concentrations below the soil plume.

If you have any questions or require additional information please contact our office at (805) 835-7700.

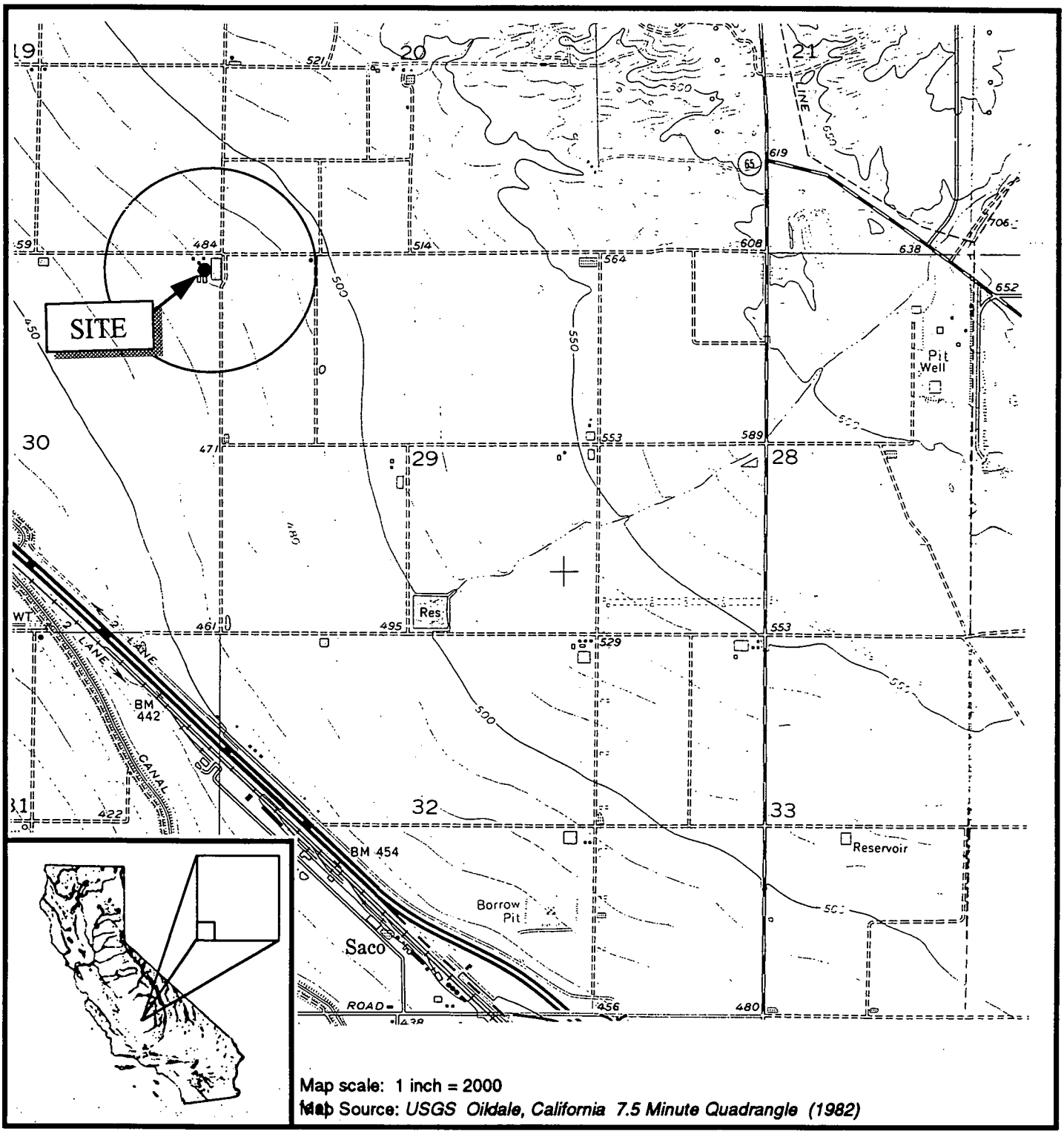
Sincerely,
Smith Environmental Technologies Corporation

Timothy C. Reed, R.G. 5999
Technical Services Manager



Enclosures:
- Plate 1 Location Map
- Plate 2 Plot Plan
- Plate 3 Groundwater Gradient Map
- Chart 1 MW-1 Groundwater Concentrations
- Well Purge Data
- Laboratory Analytical Reports

cc: Mr. Dennis Bell, Lucich Farms



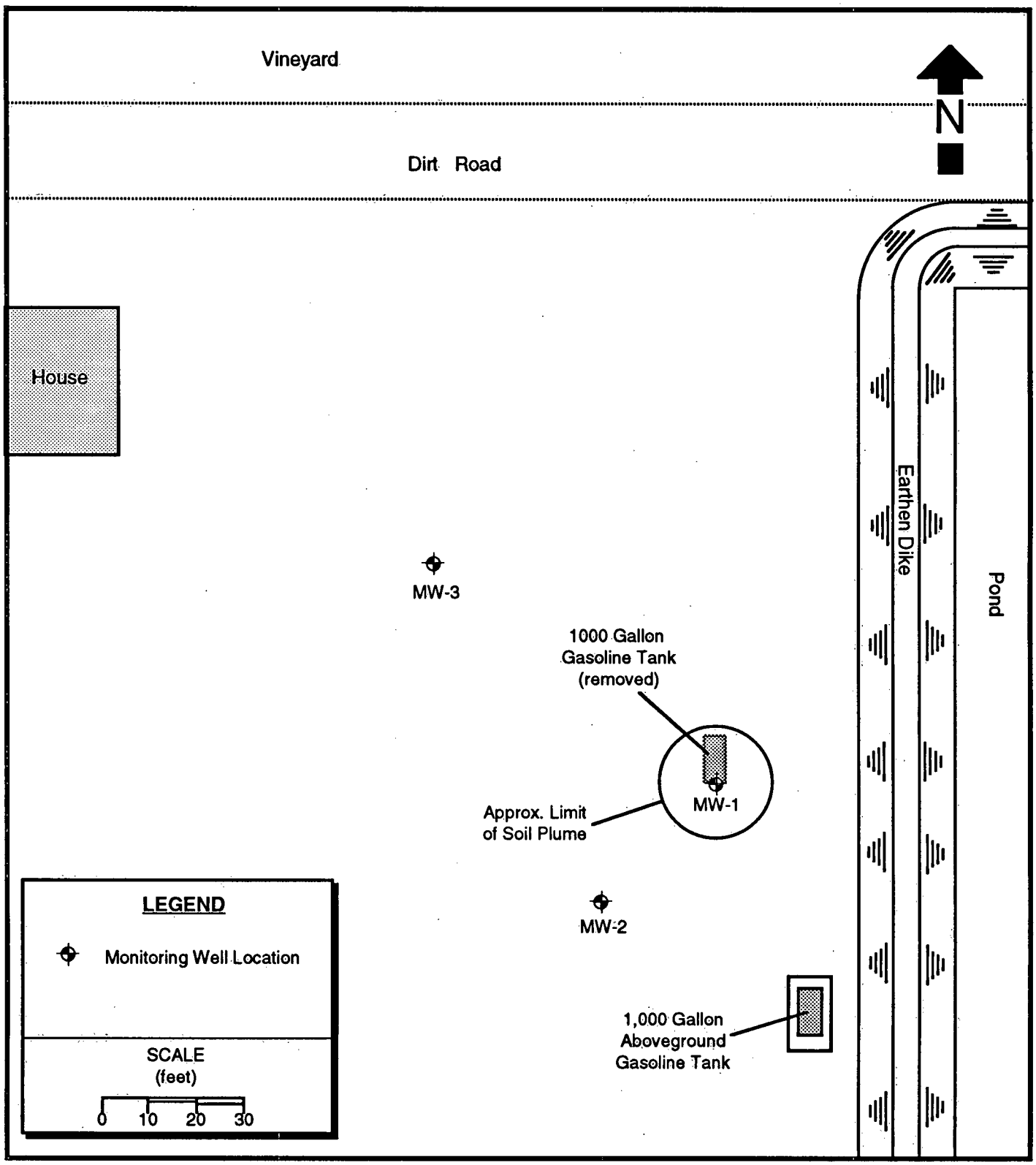
SMITH
ENVIRONMENTAL TECHNOLOGIES CORPORATION

PROJECT NUMBER: 8656

MALIBU VINEYARDS
SECTION 30, T. 28S, R. 27E
KERN COUNTY, CALIFORNIA

LOCATION MAP

PLATE
1



SMITH
ENVIRONMENTAL TECHNOLOGIES CORPORATION

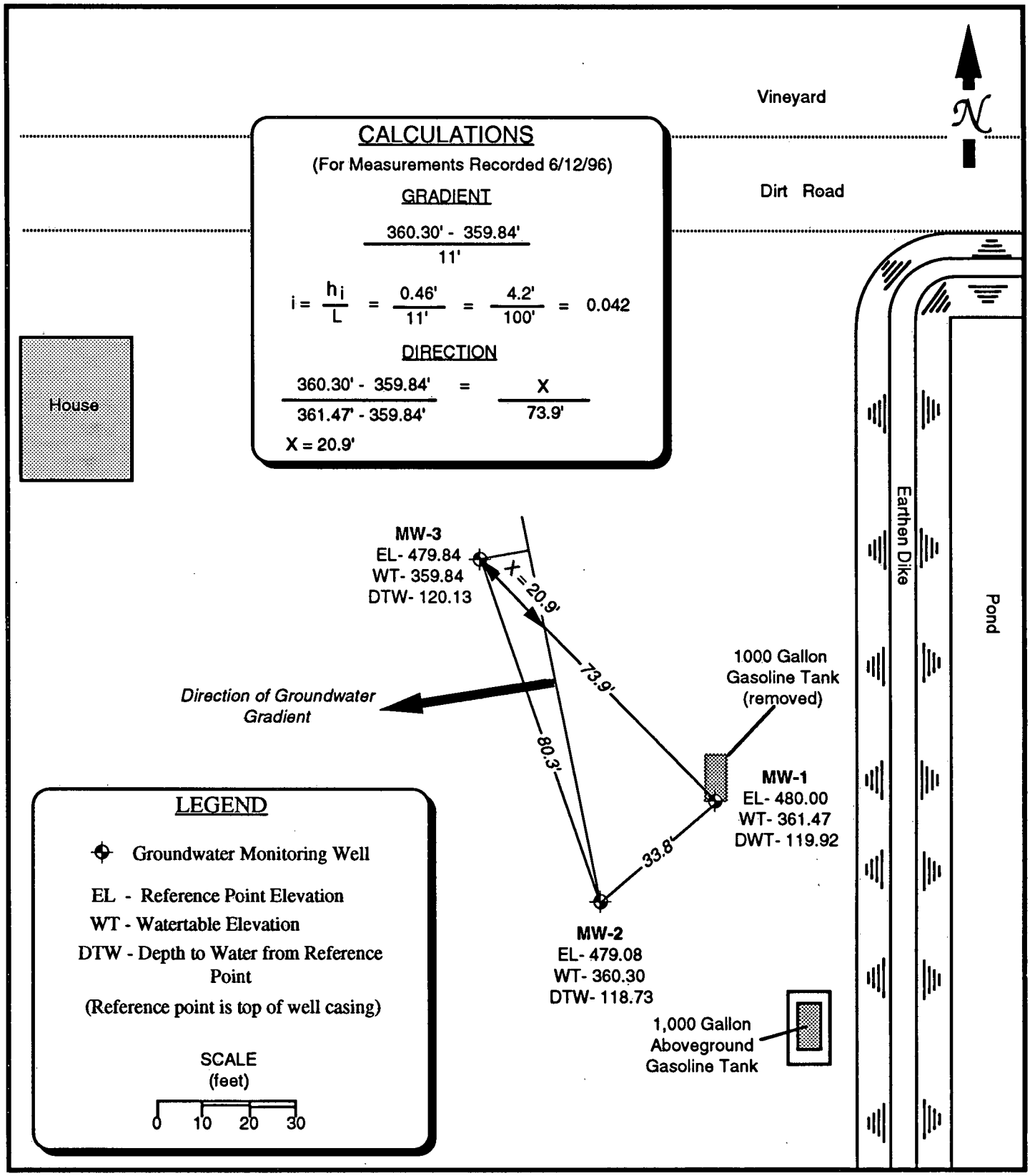
PROJECT NUMBER: 8656

MALIBU VINEYARDS

SECTION 30, T.28S, R.27E., MDB&M
KERN COUNTY, CALIFORNIA

PLOT PLAN

PLATE
2



SMITH
ENVIRONMENTAL TECHNOLOGIES CORPORATION

DATE: 06/12/96
PROJECT NUMBER: 86.56

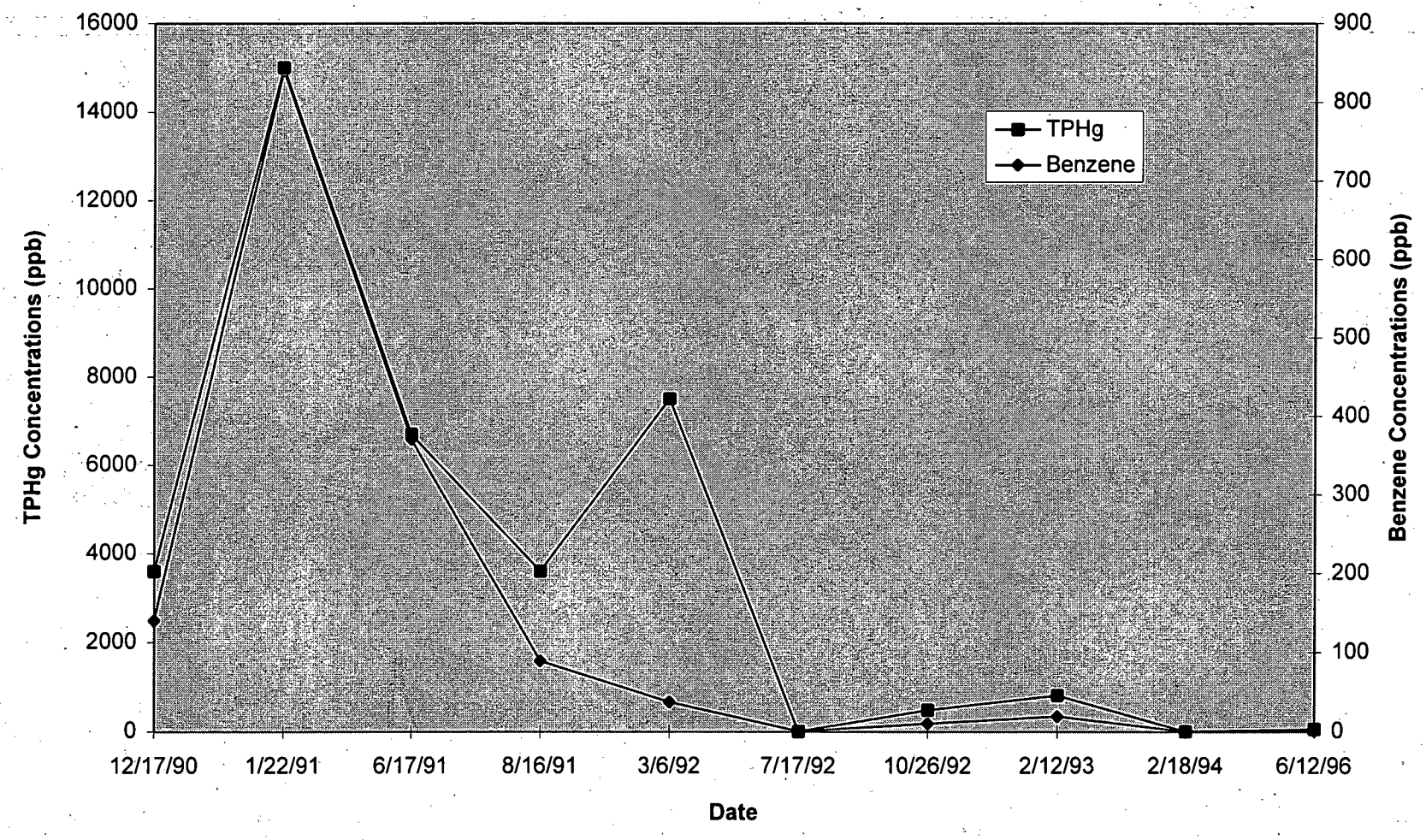
MALIBU VINEYARDS

SECTION 30, T.28S, R.27E., MDB&M
KERN COUNTY, CALIFORNIA

Groundwater Gradient Map
(June 1996)

PLATE
3

CHART 1
MW-1 Groundwater Concentrations



BC LABORATORIES

Purgeable Aromatics and Total Petroleum Hydrocarbons

SMITH ENVIRONMENTAL TECH.
6313 SCHIRRA COURT
BAKERSFIELD, CA 93313
Attn: TIM REED 805-835-7700

Date Reported: 06/25/96
Date Received: 06/12/96
Laboratory No.: 96-06766-1

Sample Description: 8656 MALIBU VINEYARDS: MW-1 SAMPLED BY BILL ZOBEL

Sample Matrix: Water

Date Collected: 06/12/96 @ 02:00PM
Date Extracted-8020: 06/21/96
Date Analyzed-8020: 06/21/96
Date Extracted-8015M(g): 06/21/96
Date Analyzed-8015M(g): 06/21/96

Constituents	Analysis Results	Reporting Units	Practical Quantitation Limit
Benzene	0.94	µg/L	0.3
Toluene	4.0	µg/L	0.3
Ethyl Benzene	None Detected	µg/L	0.3
Total Xylenes	8.6	µg/L	0.6
Total Petroleum Hydrocarbons (gas)	58.	µg/L	50.
Surrogate % Recovery	100.	%	70-130

TEST METHOD: TPH by D.O.H.S. / L.U.F.T. Manual Method - Modified EPA 8015
Individual constituents by EPA Method 5030/8020.

California D.O.H.S. Cert. #1186

Stuart G. Buttram
Department Supervisor

All results listed in this report are for the exclusive use of the submitting party. BC Laboratories, Inc. assumes no responsibility for report alteration, separation, detachment or third party interpretation.

BC LABORATORIES

Purgeable Aromatics and Total Petroleum Hydrocarbons

SMITH ENVIRONMENTAL TECH.
6313 SCHIRRA COURT
BAKERSFIELD, CA 93313
Attn: TIM REED 805-835-7700

Date Reported: 06/25/96
Date Received: 06/12/96
Laboratory No.: 96-06766-2

Sample Description: 8656 MALIBU VINEYARDS: MW-2 SAMPLED BY BILL ZOBEL

Sample Matrix: Water

Date Collected: 06/12/96 @ 01:00PM
Date Extracted-8020: 06/21/96
Date Analyzed-8020: 06/21/96
Date Extracted-8015M(g): 06/21/96
Date Analyzed-8015M(g): 06/21/96

Constituents	Analysis Results	Reporting Units	Practical Quantitation Limit
Benzene	None Detected	µg/L	0.3
Toluene	None Detected	µg/L	0.3
Ethyl Benzene	None Detected	µg/L	0.3
Total Xylenes	None Detected	µg/L	0.6
Total Petroleum Hydrocarbons (gas)	None Detected	µg/L	50.
Surrogate % Recovery	104.	%	70-130

TEST METHOD: TPH by D.O.H.S. / L.U.F.T. Manual Method - Modified EPA 8015
Individual constituents by EPA Method 5030/8020.

California D.O.H.S. Cert. #1186

Stuart G. Buttram
Department Supervisor

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Purgeable Aromatics and Total Petroleum Hydrocarbons

SMITH ENVIRONMENTAL TECH.
6313 SCHIRRA COURT
BAKERSFIELD, CA 93313
Attn: TIM REED 805-835-7700

Date Reported: 06/25/96
Date Received: 06/12/96
Laboratory No.: 96-06766-3

Sample Description: 8656 MALIBU VINEYARDS: MW-3 SAMPLED BY BILL ZOBEL

Sample Matrix: Water

Date Collected: 06/12/96 @ 12:00PM
Date Extracted-8020: 06/21/96
Date Analyzed-8020: 06/21/96
Date Extracted-8015M(g): 06/21/96
Date Analyzed-8015M(g): 06/21/96

Constituents	Analysis Results	Reporting Units	Practical Quantitation Limit
Benzene	None Detected	µg/L	0.3
Toluene	None Detected	µg/L	0.3
Ethyl Benzene	None Detected	µg/L	0.3
Total Xylenes	None Detected	µg/L	0.6
Total Petroleum Hydrocarbons (gas)	250.	µg/L	50.
Surrogate % Recovery	103.	%	70-130

TEST METHOD: TPH by D.O.H.S. / L.U.F.T. Manual Method - Modified EPA 8015
Individual constituents by EPA Method 5030/8020.

Note: Sample chromatogram not typical of gasoline.
One large peak in the Total Petroleum Hydrocarbons - gas range is contributing must of the concentration.

California D.O.H.S. Cert. #1186

Stuart G. Buttram
Department Supervisor

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BC LABORATORIES

Purgeable Aromatics and Total Petroleum Hydrocarbons

SMITH ENVIRONMENTAL TECH.
6313 SCHIRRA COURT
BAKERSFIELD, CA 93313
Attn: TIM REED 805-835-7700

Date Reported: 06/25/96
Date Received: 06/12/96
Laboratory No.: 96-06766-TB

Sample Description: 8656 MALIBU VINEYARDS: TRAVEL BLANK

Sample Matrix: Water

Date Collected:
Date Extracted-8020: 06/21/96
Date Analyzed-8020: 06/21/96
Date Extracted-8015M(g): 06/21/96
Date Analyzed-8015M(g): 06/21/96

Constituents	Analysis Results	Reporting Units	Practical Quantitation Limit
Benzene	None Detected	µg/L	0.3
Toluene	None Detected	µg/L	0.3
Ethyl Benzene	None Detected	µg/L	0.3
Total Xylenes	None Detected	µg/L	0.6
Total Petroleum Hydrocarbons (gas)	None Detected	µg/L	50.
Surrogate % Recovery	87.	%	70-130

TEST METHOD: TPH by D.O.H.S. / L.U.F.T. Manual Method - Modified EPA 8015
Individual constituents by EPA Method 5030/8020.

California D.O.H.S. Cert. #1186

Stuart G. Buttram
Department Supervisor

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4100 Atlas Ct. · Bakersfield, CA 93308 · (805) 327-4911 · FAX (805) 327-1918

SMITH

96-6766

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

PROJECT NO.	PROJECT NAME/SITE	P.O. #
8656	MALIBU VINEYARDS	40623

SAMPLERS (SIGN) Bill Zobel / (PRINT) BILL ZOBEL

	SAMPLE IDENTIFICATION	DATE	TIME	COMP	GRAB	PRES. USED	ICED	NO. CONTAINERS	SAMPLE TYPE	BTEX (602/8020)	TPHg (8015)	TPHd (8015)	TOG 418.1/5520	601/8010	624/8240	625/8270	REMARKS
-1	MW-1	6/12/96	2:00		X	HCL	X	2	GW	X	X						
-2	MW-2		1:00					2									
-3	MW-3		12:00					2									
-TB	TRAVEL BLANK		9:00					1	W								

RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
Bill Zobel	6/12/96	3:49pm	
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:	DATE	TIME	RECEIVED BY:
RELINQUISHED BY:	DATE	TIME	RECEIVED BY LABORATORY:
	6/12/96	3:49 pm	Jennifer Mallon

LABORATORY:
B.C LABS
4100 ATLAS CT
BAKERSFIELD, CA 93308
327-4911

REQUESTED TURNAROUND TIME:
NORMAL

RECEIPT CONDITION:

PLEASE SEND RESULTS TO:
SMITH ENVIRONMENTAL
6313 SCHIRRA CT
BAKERSFIELD, CA. 93313
835-7700

PROJECT MANAGER:
TIM REED

Well	Well Depth	Well Diam.	Depth to Water	Hight of Water in Casing	Vol. (gal)	Vol. Purged	pH			Temperature			Conductivity			Turbidity		
mw 1	129.00	4"	118.53	10.47		21	7.91	7.82	7.73	81.0	78.2	77.6	3.30	3.40	3.32			
mw-2	129.00	4"	118.78	10.22		20	7.64	7.58	7.51	80.3	80.9	78.6	2.79	2.75	2.75			
mw-3	129.00	4"	120.00	9	18	18	8.15	7.84	7.80	78.2	76.0	78.9	3.21	3.14	3.07			

WELL SAMPLING DATA

Project Number: 8656

Project Name: MALIBU VINEYARD

Date: 6/12/96

SMITH
ENVIRONMENTAL TECHNOLOGIES CORPORATION

Finally!
Good Work
Dolores

October 23, 1996

Lucich Farms
P.O. Box 1266
Delano, CA 93216

Attention: Dennis Bell

SUBJECT: Underground Tank Site Investigation, Malibu Vineyards, Section 30, T28S, R27E, Kern County, California (Permit No. 390044)

Dear Mr. Bell:

The June 1996 groundwater monitoring report submitted by Smith Environmental Technologies has been reviewed. A copy of the sampling results along with our recommendation for closure has also been forwarded to the Regional Water Quality Control Board. Based on their review, they have concurred with site closure. However, before issuance of the closure letter, all monitoring wells installed as part of this investigation should be properly abandoned.

Please have the well abandonment activities initiated within 30 days from the date of this letter. Prior to beginning well abandonment activities, a permit from this office must be obtained. If you have any questions regarding this matter, I can be reached at (805) 862-8728.

Sincerely,

Steve McCalley, Director

By: Dolores Gough
Hazardous Materials Specialist II
Hazardous Materials Management Program

cc: Smith Environmental Technologies
Regional Water Quality Control Board

ENVIRONMENTAL HEALTH SERVICES DEPARTMENT

STEVE McCALLEY, R.E.H.S., Director
2700 "M" STREET, SUITE 300
BAKERSFIELD, CA 93301
Phone: (805) 862-8700
FAX: (805) 862-8701

RESOURCE MANAGEMENT AGENCY

DAVID PRICE III, RMA DIRECTOR
Engineering & Survey Services Department
Environmental Health Services Department
Planning Department
Roads Department

November 27, 1996

REMEDIAL ACTION COMPLETION CERTIFICATION

Lucich Farms
P.O. Box 1266
Delano, CA 93216

SUBJECT: UNDERGROUND STORAGE TANK (UST) CASE
Location: Section 30, T28S, R27E
Known As: Malibu Vineyards
Site No.: 390044

Gentlemen:

This letter confirms the completion of site investigation and remedial action for the underground storage tank(s) formerly located at the above-described location. Enclosed is the Case Closure Summary for the referenced site for your records.

Based on the available information, including the current land use, and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the underground tank release is required.

This notice is issued pursuant to a regulation contained in Title 23, California Code of Regulations, Division 3, Chapter 16, Section 2721 (e). (If a change in land use is proposed, the owner must promptly notify this agency.)

Please telephone Dolores Gough at (805) 862-8728, if you have any questions regarding this matter.

Sincerely,

Steve McCalley, Director
Environmental Health Services Department

Enclosure
cc: CV RWQCB
State Board, Underground Tank Program

CASE CLOSURE SUMMARY
Leaking Underground Fuel Storage Tank Program

I. Agency Information

Date: September 26, 1996

Agency Name: KERN COUNTY ENV. HEALTH SERVICES DEPT.	**Address:** 2700 "M" STREET, SUITE 300
City/State/Zip: BAKERSFIELD, CA 93301	**Phone:** (805) 862-8728
Responsible Staff Person: DOLORES GOUGH	**Title:** HAZ. MATERIALS SPECIALIST

II. Case Information

Site Facility Name: MALIBU VINEYARDS		
Site Facility Address: SEC 30, T28S, R27E (7TH STANDARD/HWY 65), KERN COUNTY		
RB LUSTIS Case No:	**Local Case No:**	**LOP Case No:** 390044
URF Filing Date:	**SWEEPS No:**	
Responsible Party	**Addresses**	**Phone Numbers**
LUCICH FARMS C/O MR. DENNIS BELL	PO BOX 1266 Delano, CA 93216	(805) 725-4550

Tank No.	Size in Gal.	Contents	Closed in-Place/Removed	Date
1	1000	GASOLINE	REMOVED	10/05/89

III. Release and Site Characterization Information

Cause and type of release: GASOLINE		
Site characterization complete? ☒ Yes ☐ No	**Date approved by oversight agency:** DECEMBER 1990	
Monitoring Wells Installed? ☒ Yes ☐ No	**Number:** 3	**Proper screened interval?** ☒ Yes ☐ No
Highest GW depth below ground surface: 112 FT	**Lowest depth:** 122 FT	**Flow direction:** N-W
Most Sensitive Current Use: NONE		
Are drinking water wells affected? ☐ Yes ☒ No	**Aquifer name:**	
Is surface water affected? ☐ Yes ☒ No	**Nearest/affected SW name:**	
Off-site beneficial use impacts (addresses/locations): NONE		
Report(s) on file? ☒ Yes ☐ No	**Where is report(s) filed?** KC Env. Health File	

Treatment and Disposal of Affected Material

Material	Amount (Include Units)	Action (Treatment or Disposal w/Destination)	Date
Tank	1	TRANSPORTED TO AMERICAN METAL RECYCLING	12/11/89
Piping			
Free Product			
Soil			
Groundwater			
Barrels			

III. Release and Site Characterization Information (continued)

Maximum Documented Contaminant Concentrations - - Before and After Cleanup

Contaminant	Soil (ppm)		Water (ppm)		Contaminant	Soil (ppm)		Water (ppm)	
	Before	After	Before	After		Before	After	Before	After
TPH (Gas)	4700	--	15	0.25	Xylene	1720	--	3	0.009
TPH (Diesel)	--	--	--	--	Ethylbenzene	310	--	0.07	ND
Benzene	100	--	0.84	0.0009	Oil & Grease	--	--	--	--
Toluene	890	--	3.3	0.004	Heavy metals	--	--	--	--
Other					Other				

Comments (Depth of Remediation, etc.): There was no active soil and groundwater remediation conducted.

IV. Closure

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? ☒ Yes ☐ No

Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? ☒ Yes ☐ No

Does corrective action protect public health for current land use? ☒ Yes ☐ No

Site management requirements: None

Should corrective action be reviewed if land use changes? ☒ Yes ☐ No

Monitoring Wells Decommissioned: ☐ Yes ☐ No	**Number Decommissioned:** WILL BE DESTROYED	**Number Retained:**

List enforcement actions taken: None

List enforcement actions rescinded: None

V. Local Agency Representative Data

Name: DOLORES GOUGH	**Title:** HAZARDOUS MATERIALS SPECIALIST
Signature: Dolores Gough	**Date:** 9/26/96

VI. RWQCB Notification

Date Submitted to RB:		RB Response:
RWQCB Staff Name: Yi Pan	Title:	Date:

VII. Additional Comments, Data, etc.

A 1,000-gal underground gasoline storage tank was removed at the site in December 1989. Soil sampling during tank removal and subsequent site assessment activities showed petroleum hydrocarbon contamination to a depth of over 100 feet exists at the former tank location. Groundwater which was at approximately 112 feet bgs at that time was also impacted.

Groundwater, using three wells was monitored beginning in late 1990. The results indicate a decreasing trend in the contamination levels from MW-1 (well beneath tank location). The levels from the two other wells have been below detection levels since 1992, except for MW-3 which had 250 ug/l in the June 1996 sampling.

In an effort to obtain further information on the impacted aquifer, a pump test with additional groundwater sampling was conducted in February 1994. Following the pump test, the case was evaluated by the owners consultants and site closure was requested. Closure was denied by the RWQCB and our Department.

Last June, the wells were resampled. Based on the analytical results and results of a previous general risk assessment, closure was again requested in behalf of the property owners. This Department has re-evaluated the case and concurs with closure for the following reasons:

1. Closure has been repeatedly requested by the owners.

2. The site is located in a remote area predominantly occupied with vineyards and orchards. The former tank location is not used for storage of any chemicals that potentially could leak into the impacted soil. An aboveground storage tank is present at the site but is located about 50 feet from the impacted area.

3. Groundwater from the impacted aquifer is not currently being used. A domestic well is located a mile from the site, however it was estimated that it will take about 105 years for the contaminants to migrate to the well. This estimation did not account the degradation of the contaminants.

4. The top seven feet of the site had been backfilled with clean soil thus reducing/eliminating any risk to receptors from any surface emissions.

5. There is a potential for the groundwater to be recontaminated from the soil if the water table were to rise. Since 1990, the water table has not risen but continue to decline. Since the source of the leak has been removed, the remaining contamination is expected to degrade over time and should not pose a significant risk to the public or to drinking water sources.

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT

EMERGENCY ☐ YES ☑ NO

HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED? ☐ YES ☑ NO

REPORT DATE: 12/03/96

CASE #: 390044

FOR LOCAL AGENCY USE ONLY
I HEREBY CERTIFY THAT I HAVE DISTRIBUTED THIS INFORMATION ACCORDING TO THE DISTRIBUTION SHOWN ON THE INSTRUCTION SHEET ON THE BACK PAGE OF THIS FORM.
SIGNED: Lydia V. Von Sydow DATE: 12/03/96

REPORTED BY
NAME OF INDIVIDUAL FILING REPORT: Lydia V. Von Sydow
PHONE: (805) 862-8700
SIGNATURE: Lydia V. Von Sydow
REPRESENTING: ☑ LOCAL AGENCY ☐ OWNER/OPERATOR ☐ REGIONAL BOARD ☐ OTHER
COMPANY OR AGENCY NAME: Kern Co. Env. Health Dept.
ADDRESS: 2700 "M" St. Ste. 300, Bakersfield, CA 93301 (STREET, CITY, STATE, ZIP)

RESPONSIBLE PARTY
NAME: Lucich Farms ☐ UNKNOWN
CONTACT PERSON:
PHONE: ( )
ADDRESS: P.O. Box 1266, Delano CA 93216 (STREET, CITY, STATE, ZIP)

SITE LOCATION
FACILITY NAME (IF APPLICABLE): Malibu Vineyards
OPERATOR:
PHONE: ( )
ADDRESS: Imperial and Saco Rds., Bakersfield, ~~CA~~ Kern Co. 93308 (STREET, CITY, COUNTY, ZIP)
CROSS STREET:

IMPLEMENTING AGENCIES
LOCAL AGENCY / AGENCY NAME: Kern Co. Env. Health
CONTACT PERSON: Dolores Gough
PHONE: (805) 862-8700
REGIONAL BOARD: Central Valley
PHONE: ( )

SUBSTANCES INVOLVED
(1) NAME: Gasoline — QUANTITY LOST (GALLONS): ☑ UNKNOWN
(2) ☐ UNKNOWN

DISCOVERY/ABATEMENT
DATE DISCOVERED: 12/04/89
HOW DISCOVERED: ☐ INVENTORY CONTROL ☐ SUBSURFACE MONITORING ☐ NUISANCE CONDITIONS ☐ TANK TEST ☑ TANK REMOVAL ☐ OTHER
DATE DISCHARGE BEGAN: ☑ UNKNOWN
HAS DISCHARGE BEEN STOPPED? ☑ YES ☐ NO IF YES, DATE: 12/04/89
METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY): ☐ REMOVE CONTENTS ☑ CLOSE TANK & REMOVE ☐ REPAIR PIPING ☐ REPAIR TANK ☐ CLOSE TANK & FILL IN PLACE ☐ CHANGE PROCEDURE ☐ REPLACE TANK ☐ OTHER

SOURCE/CAUSE
SOURCE OF DISCHARGE: ☐ TANK LEAK ☐ UNKNOWN ☐ PIPING LEAK ☐ OTHER
CAUSE(S): ☐ OVERFILL ☐ RUPTURE/FAILURE ☐ SPILL ☐ CORROSION ☑ UNKNOWN ☐ OTHER

CASE TYPE
CHECK ONE ONLY: ☐ UNDETERMINED ☐ SOIL ONLY ☑ GROUNDWATER ☐ DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)

CURRENT STATUS
CHECK ONE ONLY: ☐ NO ACTION TAKEN ☐ LEAK BEING CONFIRMED ☐ REMEDIATION PLAN ☐ PRELIMINARY SITE ASSESSMENT WORKPLAN SUBMITTED ☐ PRELIMINARY SITE ASSESSMENT UNDERWAY ☑ CASE CLOSED (CLEANUP COMPLETED OR UNNECESSARY) ☐ POLLUTION CHARACTERIZATION ☐ POST CLEANUP MONITORING IN PROGRESS ☐ CLEANUP UNDERWAY

REMEDIAL ACTION
CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS): ☐ CAP SITE (CD) ☐ CONTAINMENT BARRIER (CB) ☐ VACUUM EXTRACT (VE) ☐ EXCAVATE & DISPOSE (ED) ☐ EXCAVATE & TREAT (ET) ☑ NO ACTION REQUIRED (NA) ☐ OTHER (OT) ☐ REMOVE FREE PRODUCT (FP) ☐ PUMP & TREAT GROUNDWATER (GT) ☐ TREATMENT AT HOOKUP (HU) ☐ ENHANCED BIO DEGRADATION (IT) ☐ REPLACE SUPPLY (RS) ☐ VENT SOIL (VS)

COMMENTS
Case closed 11/27/96.

HSC 05 (8/90)

INSTRUCTIONS

EMERGENCY
Indicate whether emergency response personnel and equipment were involved at any time. If so, a Hazardous Material-Incident Report should be filed with the State Office of Emergency Services (OES) at 2800 Meadowview Road, Sacramento, CA 95832. Copies of the OES report form may be obtained at your local underground storage tank permitting agency. Indicate whether the OES report has been filed as of the date of this report.

LOCAL AGENCY ONLY
To avoid duplicate notification pursuant to Health and Safety code Section 25180.5, a government employee should sign and date the form in this block. A signature here does not mean that the leak has been determined to pose a significant threat to human health or safety, only that notification procedures have been followed if required.

REPORTED BY
Enter your name, telephone number, and address. Indicate which party you represent and provide company or agency name.

RESPONSIBLE PARTY
Enter name, telephone number, contact person, and address of the party responsible for the leak. The responsible party would normally be the tank owner.

SITE LOCATION
Enter information regarding the tank facility. At a minimum, you must provide the facility name and full address.

IMPLEMENTING AGENCIES
Enter names of the local agency and Regional Water Quality Control Board involved.

SUBSTANCES INVOLVED
Enter the name and quantity lost of the hazardous substance involved. Room is provided for information on two substances if appropriate. If more than two substances leaked, list the two of most concern for cleanup.

DISCOVERY/ABATEMENT
Provide information regarding the discovery and abatement of the leak.

SOURCE/CAUSE
Indicate source(s) of leak. Check box(es) indicating cause of leak.

CASE TYPE
Indicate the case type category for this leak. Check one box only. Case type is based on the most sensitive resource affected. For example, if both soil and ground water have been affected, case type will be "Ground Water". Indicate "Drinking Water" only if one or more municipal or domestic water wells have actually been affected. A "Ground Water" designation does not imply that the affected water cannot be, or is not, used for drinking water, but only that water wells have not yet been affected. It is understood that case type may change upon further investigation.

CURRENT STATUS
Indicate the category which best describes the current status of the case. Check one box only. The response should be relative to the case type. For example, if case type is "Ground Water", then "Current Status" should refer to the status of the ground water investigation or cleanup, as opposed to that of soil. Descriptions of options follow:

No Action Taken - No action has been taken by responsible party beyond initial report of leak.
Leak Being Confirmed - Leak suspected at site, but has not been confirmed.
Preliminary Site Assessment Workplan Submitted - workplan/proposal requested of/submitted by responsible party to determine whether ground water has been, or will be, impacted as a result of the release.
Preliminary Site Assessment Underway - implementation of workplan.
Pollution Characterization - responsible party is in the process of fully defining the extent of contamination in soil and ground water and assessing impacts on surface and/or ground water.
Remediation Plan - remediation plan submitted evaluating long term remediation options. Proposal and implementation schedule for appropriate remediation options also submitted.
Cleanup Underway - implementation of remediation plan.
Post Cleanup Monitoring in Progress - periodic ground water or other monitoring at site, as necessary, to verify and/or evaluate effectiveness of remedial activities.
Case Closed - regional board and local agency in concurrence that no further work is necessary at the site.

IMPORTANT: THE INFORMATION PROVIDED ON THIS FORM IS INTENDED FOR GENERAL STATISTICAL PURPOSES ONLY AND IS NOT TO BE CONSTRUED AS REPRESENTING THE OFFICIAL POSITION OF ANY GOVERNMENTAL AGENCY

REMEDIAL ACTION
Indicate which action have been used to cleanup or remediate the leak. Descriptions of options follow:

Cap Site - install horizontal impermeable layer to reduce rainfall infiltration.
Containment Barrier - install vertical dike to block horizontal movement of contaminant.
Excavate and Dispose - remove contaminated soil and dispose in approved site.
Excavate and Treat - remove contaminated soil and treat (includes spreading or land farming).
Remove Free Product - remove floating product from water table.
Pump and Treat Groundwater - generally employed to remove dissolved contaminants.
Enhanced Biodegradation - use of any available technology to promote bacterial decomposition of contaminants.
Replace Supply - provide alternative water supply to affected parties.
Treatment at Hookup - install water treatment devices at each dwelling or other place of use.
Vacuum Extract - use pumps or blowers to draw air through soil.
Vent Soil - bore holes in soil to allow volatilization of contaminants.
No Action Required - incident is minor, requiring no remedial action.

COMMENTS - Use this space to elaborate on any aspects of the incident.

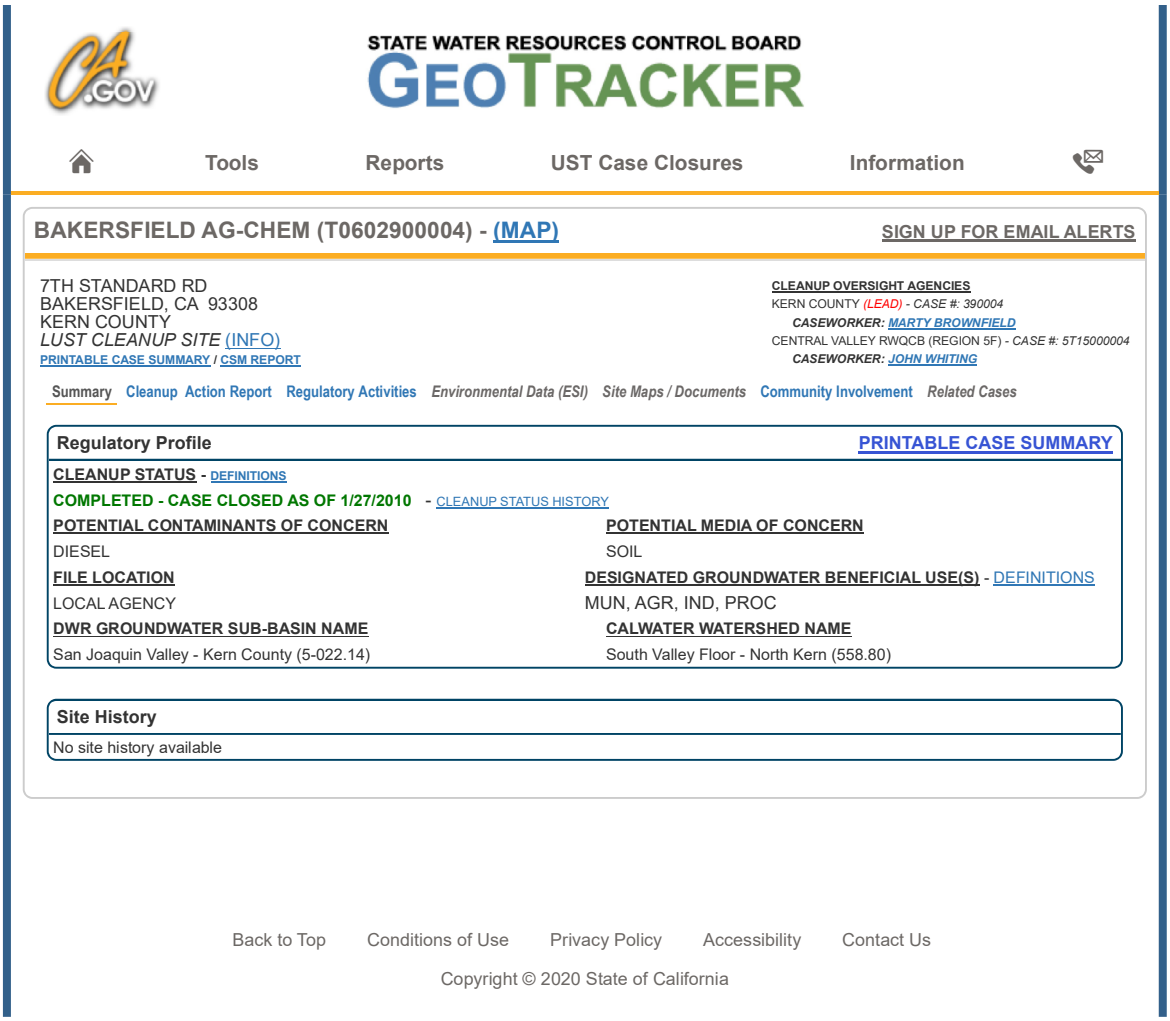
SIGNATURE - Sign the form in the space provided.

DISTRIBUTION
If the form is completed by the tank owner or his agent, retain the last copy and forward the remaining copies intact to your local tank permitting agency for distribution.
1. Original - Local Tank Permitting Agency
2. State Water Resources Control Board, Division of Clean Water Programs, Underground Storage Tank Program, P.O. Box 944212, Sacramento, CA 94244-2120
3. Regional Water Quality Control Board
4. Local Health Officer and County Board of Supervisors or their designee to receive Proposition 65 notifications.
5. Owner/responsible party.

APPENDIX L

Bakersfield Ag-Chem Co.

Exhibit L-1



STATE WATER RESOURCES CONTROL BOARD
GEOTRACKER

Tools Reports UST Case Closures Information

BAKERSFIELD AG-CHEM (T0602900004) - (MAP)

SIGN UP FOR EMAIL ALERTS

7TH STANDARD RD
BAKERSFIELD, CA 93308
KERN COUNTY
LUST CLEANUP SITE (INFO)
PRINTABLE CASE SUMMARY / CSM REPORT

CLEANUP OVERSIGHT AGENCIES
KERN COUNTY *(LEAD) - CASE #: 390004*
CASEWORKER: MARTY BROWNFIELD
CENTRAL VALLEY RWQCB (REGION 5F) - *CASE #: 5T15000004*
CASEWORKER: JOHN WHITING

Summary Cleanup Action Report Regulatory Activities *Environmental Data (ESI)* *Site Maps / Documents* Community Involvement *Related Cases*

Regulatory Profile — PRINTABLE CASE SUMMARY

CLEANUP STATUS - DEFINITIONS
COMPLETED - CASE CLOSED AS OF 1/27/2010 - CLEANUP STATUS HISTORY

POTENTIAL CONTAMINANTS OF CONCERN	POTENTIAL MEDIA OF CONCERN
DIESEL	SOIL
FILE LOCATION	**DESIGNATED GROUNDWATER BENEFICIAL USE(S)** - DEFINITIONS
LOCAL AGENCY	MUN, AGR, IND, PROC
DWR GROUNDWATER SUB-BASIN NAME	**CALWATER WATERSHED NAME**
San Joaquin Valley - Kern County (5-022.14)	South Valley Floor - North Kern (558.80)

Site History

No site history available

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STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER

CASE SUMMARY

REPORT DATE
5/28/1987

HAZARDOUS MATERIAL INCIDENT REPORT FILED WITH OES?

I. REPORTED BY -
UNKNOWN

CREATED BY
UNKNOWN

III. SITE LOCATION

FACILITY NAME
BAKERSFIELD AG-CHEM

FACILITY ID

FACILITY ADDRESS
7TH STANDARD RD
BAKERSFIELD, CA 93308
KERN COUNTY

ORIENTATION OF SITE TO STREET

CROSS STREET
HWY 99

V. SUBSTANCES RELEASED / CONTAMINANT(S) OF CONCERN

DIESEL

VI. DISCOVERY/ABATEMENT

DATE DISCHARGE BEGAN

DATE DISCOVERED	HOW DISCOVERED	DESCRIPTION
5/26/1987	Inventory Control	

DATE STOPPED	STOP METHOD	DESCRIPTION
5/26/1987		

VII. SOURCE/CAUSE

SOURCE OF DISCHARGE
Piping

CAUSE OF DISCHARGE

DISCHARGE DESCRIPTION

VIII. CASE TYPE

CASE TYPE
Soil

IX. REMEDIAL ACTION

NO REMEDIAL ACTIONS ENTERED

X. GENERAL COMMENTS

XI. CERTIFICATION

I HEREBY CERTIFY THAT THE INFORMATION REPORTED HEREIN IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

XII. REGULATORY USE ONLY

LOCAL AGENCY CASE NUMBER	REGIONAL BOARD CASE NUMBER
390004	5T15000004

LOCAL AGENCY

CONTACT NAME	INITIALS	ORGANIZATION_NAME	EMAIL ADDRESS
MARTY BROWNFIELD	MAR	KERN COUNTY	

ADDRESS
2700 "M" STREET SUITE 300
BAKERSFIELD,

CONTACT DESCRIPTION

REGIONAL BOARD

CONTACT NAME	INITIALS	ORGANIZATION_NAME	EMAIL ADDRESS
JOHN WHITING	JDW	CENTRAL VALLEY RWQCB (REGION 5F)	john.whiting@waterboards.ca.gov

ADDRESS
1685 E STREET
FRESNO, CA 93706-2020

CONTACT DESCRIPTION

PHONE TYPE	PHONE NUMBER	EXTENSION
OFFICE	(559)-445-5504	

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CSM REPORT FOR PUBLIC NOTICING

PROJECT INFORMATION (DATA PULLED FROM GEOTRACKER) - MAP THIS SITE

SITE NAME / ADDRESS	STATUS	STATUS DATE	RELEASE REPORT DATE	AGE OF CASE	CLEANUP OVERSIGHT AGENCIES
BAKERSFIELD AG-CHEM (Global ID: T0602900004) 7TH STANDARD RD BAKERSFIELD, CA 93308	Completed - Case Closed	1/27/2010	5/28/1987	33	KERN COUNTY *(LEAD)* - *CASE #: 390004* ***CASEWORKER:*** *MARTY BROWNFIELD* - ***SUPERVISOR:*** *NONE SPECIFIED* CENTRAL VALLEY RWQCB (REGION 5F) - *CASE #: 5T15000004* ***CASEWORKER:*** *JOHN WHITING* - ***SUPERVISOR:*** *SHELTON GRAY*

SITE HISTORY

<NO SITE HISTORY ENTERED>

RESPONSIBLE PARTIES

NAME	ORGANIZATION	CONTACT TYPE	ADDRESS	CITY	EMAIL
BAKERSFIELD AGCHEM	BAKERSFIELD AGCHEM6041	PRIMARY RESPONSIBLE PARTY	ROUTE 11 BOX 858, BAKERSFIELD, CA 93008	r5 UNKNOWN	

CLEANUP ACTION INFO

NO CLEANUP ACTIONS HAVE BEEN REPORTED

RISK INFORMATION

VIEW CASE REVIEWS

CONTAMINANTS OF CONCERN	CURRENT LAND USE	BENEFICIAL USE	DISCHARGE SOURCE	DATE REPORTED	STOP METHOD	NEARBY / IMPACTED WELLS
Diesel			Piping	5/28/1987		0

FREE PRODUCT	OTHER CONSTITUENTS	NAME OF WATER SYSTEM	LAST REGULATORY ACTIVITY	LAST ESI UPLOAD	LAST EDF UPLOAD	EXPECTED CLOSURE DATE	MOST RECENT CLOSURE REQUEST
			1/1/1965				

CDPH WELLS WITHIN 1500 FEET OF THIS SITE

NONE

CALCULATED FIELDS (BASED ON LATITUDE / LONGITUDE)

APN	GW BASIN NAME	WATERSHED NAME
No APN Found	San Joaquin Valley - Kern County (5-022.14)	South Valley Floor - North Kern (558.80)

COUNTY	PUBLIC WATER SYSTEM(S)
Kern	

MOST RECENT CONCENTRATIONS OF PETROLEUM CONSTITUENTS IN GROUNDWATER

VIEW ESI SUBMITTALS

NO GROUNDWATER DATA HAS BEEN SUBMITTED TO GEOTRACKER ESI FOR THIS SITE

MOST RECENT CONCENTRATIONS OF PETROLEUM CONSTITUENTS IN SOIL

VIEW ESI SUBMITTALS

NO SOIL DATA HAS BEEN SUBMITTED TO GEOTRACKER ESI FOR THIS SITE

MOST RECENT GEO_WELL DATA

VIEW ESI SUBMITTALS

NO GEO_WELL DATA HAS BEEN SUBMITTED TO GEOTRACKER ESI FOR THIS SITE

STATE WATER RESOURCES CONTROL BOARD
GEOTRACKER

Tools Reports UST Case Closures Information

BAKERSFIELD AG-CHEM (T0602900004) - (MAP)

SIGN UP FOR EMAIL ALERTS

7TH STANDARD RD
BAKERSFIELD, CA 93308
KERN COUNTY
LUST CLEANUP SITE (INFO)
PRINTABLE CASE SUMMARY / CSM REPORT

CLEANUP OVERSIGHT AGENCIES
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CASEWORKER: JOHN WHITING

Summary Cleanup Action Report Regulatory Activities *Environmental Data (ESI)* *Site Maps / Documents* Community Involvement *Related Cases*

Regulatory Activities

Action Type Filter: Show All Activities Go

* Indicates a revised due date

ACTION TYPE	ACTION	ACTION DATE	RECEIVED / ISSUE DATE	TITLE / DESCRIPTION / COMMENTS
Leak Action	Leak Reported	5/28/1987		
Leak Action	Leak Discovery	5/26/1987		
Leak Action	Leak Stopped	5/26/1987		

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Cleanup Status History

DATE	STATUS
1/27/2010	Completed - Case Closed
10/6/1987	Open - Site Assessment
5/26/1987	Open - Case Begin Date

BAKERSFIELD AG-CHEM
TITLE: SITE SCREENING
DOC TYPE: SITE SCREENING
VERSION Final DTSC Letter
FILENAME Bakersfield AG-Chem_Site Screening_070387.pdf
SIZE 2888 KB

Exhibit L-2

ATTACHMENT 1
SITE TRACKING SHEET

Site Name: BAKERSFIELD AG CHEM

Site Location: GOLDEN STATE HIGHWAY & SEVENTH AND STANDARD RD.
BAKERSFIELD CA KERN CO

Site ID Number: 15-28-0064

Site Screening ✓ PA _____ SI _____

Action Summary: COMPANY CUSTOM FORMULATES COMPOUNDS FOR AGRICULTURAL USE. DHS ISSUED A NOV 13 FEB. 1986 NOTED VIOLATIONS INCLUDE: ILLEGAL STORAGE AND DISPOSAL OF WASTES AND POOR OR NO CONTAINMENT OF WASTE ON SITE. DHS SAMPLE ANALYSES SHOW ELEVATED LEVELS OF PESTICIDES IN SURFACE AND SUBSURFACE SOILS: 245 T ACID 12 ppm; TOXAPHENE 700 ppm; DINOSEB 1,318 ppm PCNB 25 ppm AND 2,4,5 T ESTER 89 ppm AQUIFER DEPTH IS APPROX. 215 FEET USED FOR INDUSTRIAL, AGRICULTURAL AND MUNICIPAL PURPOSES. ADDITIONAL SAMPLING REQ'D TO DETERMINE THREAT TO AQUIFER

Recommendation:
PA RECOMMENDED.

Rationale/Supporting Documentation: CONTAMINATION CONFIRMED BY SAMPLE ANALYSIS. POSSIBILITY OF WIDESPREAD CONTAMINATION DUE TO POOR WASTE MGMT PRACTICES

Supervisor: [signature] Preparer: S. [signature]

Hours Spent: 3 Date: 7-3-86

ASP 001
10/86

https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/8244724869/Bakersfield%20AG-Chem_Site%20Screening_070387.pdf

REH

ASPIS-01

TOXIC SUBSTANCES CONTROL DIVISION

FACILITY INVENTORY INFORMATION

Form Usage:
- O Add New Facility
- O Delete Facility
- ● Change Facility Data

1. FACILITY FILE NO. 1 5 2 8 0 0 6 4 (co. sic. no.)
2. REGION ● NC O SC O NCC
3. DATE PREPARED 0 7 0 3 8 7 (mo dy yr)

4. FACILITY NAME
BAKERSFIELD AG CHEM

5. FACILITY LOCATION (STREET, ROAD, OR LOCATION DESCRIPTION)
GOLDEN STATE HWY & SEVENTH AND STANDARD RD.

6. CITY
BAKERSFIELD

7. STATE
CA

8. ZIP

9. OPERATOR/CONTACT NAME

10. TELEPHONE NUMBER (area c. number)

11. OPERATOR/CONTACT ADDRESS

12. CITY

13. STATE

14. ZIP

15. CURRENT LAND OWNER NAME

16. TELEPHONE NUMBER (area co. number)

17. CURRENT LAND OWNER ADDRESS

18. CITY

19. STATE

20. ZIP

21. FUND SOURCE:
O(RCRA) 3012 RCRA
●(SEP) SEP(SITE EVALUATION Program)
O(CERCLA2) CERCLA (II)
O(CERCLA) 104 CERCLA
O(SSP) SSP(SITE SURVEY PROGRAM)
O(NONE) NO FUND SOURCE

22. ACTION STATUS: DATE 0 7 0 6 8 7

REH

O(SUPFD) SUPERFUND SITES
O(REF) SITES REFERRED
O(UNR) UNRESOLVED SITES
O(SSRH) SITE SCREENING REQUIRED (high)
O(SSRM) SITE SCREENING REQUIRED (med)
O(SSRL) SITE SCREENING REQUIRED (low)
●(PAH) PA REQUIRED (high)
●(PAM) PA REQUIRED (med)
O(PAL) PA REQUIRED (low)
CAM
O(SIPH) INSPECTION REQUIRED (high)
O(SIPM) INSPECTION REQUIRED (med)
O(SIRL) INSPECTION REQUIRED (low)
O(RSM) REFERRED TO SITE MITIGATION
O(RENF) REFERRED TO ENF
O(PDS) PENDING STATUS
O(NFA) NO FURTHER ACTION

TOXIC SUBSTANCES CONTROL DIVISION

ASPIS - 02-1

FACILITY BACKGROUND INFORMATION

Form Usage:
● Add New Data
○ Delete Data
Change Data

1. FACILITY FILE NO. 15 28 0064 (co. sic. no.)

2. COUNTY KERN

3. DATE PREPARED 07 03 87 (mo dy yr)

4. FACILITY NAME: BAKERSFIELD AG. CHEM

FACILITY CHARACTERIZATION

OPERATOR FACILITY OF RECORD

1. OPERATIONAL STATUS: ●(102001) ACTIVE O(102002) INACTIVE

2. OPERATOR: O(104001) FEDERAL O(104002) STATE O(104003) COUNTY O(104004) CITY O(104005) DISTRICT O(104006) PRIVATE O(104007) UNKNOWN

3. TOTAL AREA ACRES: (113001)

4. COMMENCEMENT DATE: (year) (115001)

5. CLOSURE DATE (year): (116001)

CURRENT SITE STATUS

1. TS & D PERMIT STATUS: O(101001) PERMITTED O(101002) UNPERMITTED O(101003) NOT REQUIRED O(101004) PENDING

2. CURRENT OWNERSHIP: O(103001) FEDERAL O(103002) STATE O(103003) COUNTY O(103004) CITY O(103005) DISTRICT O(103006) PRIVATE O(103007) UNKNOWN

3. SURROUNDING LAND USE: (check all that apply) O(106001) URBAN/BUILT-UP O(106002) AGRICULTURE O(106003) RANGE LAND O(106004) FOREST LAND O(106005) WATER O(106006) WETLAND O(106007) BARREN

4. URBAN LAND USE: (check all that apply) O(107001) RESIDENTIAL O(107002) COMMERCIAL O(107003) INDUSTRIAL O(107005) COMPLEX O(107006) MIX URBAN O(107007) OTHER URBAN

5. ENVIRONMENTAL SETTING: (check all that apply) O(109003) CRITICAL HABITAT/RANGE O(109004) SEISMIC ACTIVITY O(109005) SOILS INSTABILITY O(109006) WETLANDS O(109007) US SURFACE WATERS O(109008) RECHARGED ZONE O(109009) SOLE SOURCE AQUIFER

6. RWQCB REGION: (check all that apply) O(111001) NORTH COAST O(111002) SAN FRANCISCO BAY O(111003) CENTRAL COAST O(111004) LOS ANGELES ●(111005) CENTRAL VALLEY O(111006) LAHONTAN O(111007) COLORADO RIVER O(111008) SANTA ANA O(111009) SAN DIEGO

7. TS & D PERMIT AREA ACRES (114001)

ANY OPERATORS (check all that apply)

1. OPERATIONAL METHODS: O(105001) LANDFILL O(105002) SURFACE IMP. O(105003) LANDSPREADING O(105004) TRANSFER (LG) O(105005) TRANSFER (SM) O(105006) RECYCLING O(105007) INCINERATION O(105008) INJECTION O(105009) MINESHAFT O(105010) OCEAN DISPOSAL O(105011) DISCH. TO SEWER O(105012) STORAGE, DRUMS O(105013) STORAGE, TANK-ABOVE O(105014) STORAGE, TANK-BELOW O(105015) STORAGE, WASTE PILE O(105016) STORAGE, SURFACE IMP O(105017) STORAGE, OTHER O(105018) USED OIL O(105019) TANK TREATMENT O(105020) NEUTRALIZATION O(105021) FILTRATION O(105022) STABILIZATION POND O(105023) TREATMENT OTHER O(105024) HAZARD WASTE HAULER O(105030) OTHER

2. FACILITY TYPE: O(110001) TREATMENT O(110002) STORAGE O(110003) DISPOSAL ●(110004) GENERATOR O(110005) OTHER

3. DISPOSAL: ●(108001) ON-SITE O(108002) OFF-SITE

TOXIC SUBSTANCES CONTROL DIVISION

FACILITY BACKGROUND INFORMATION

ASPIS - 02-2

Form Usage:
● Add New Data
○ Delete Data

1. FACILITY FILE NO. 15 28 010614 (co. sic. no.)

2. COUNTY: KERN

3. DATE PREPARED: 07 03 87 (mo cy yr)

4. FACILITY NAME:

BAKERSFIELD AG. CHEM

WASTE RELATED INFORMATION

ANY OPERATORS (check all that apply)

RESTRICTED WASTES

○(205711) LIQUIDS WITH CYANIDES	○(205721) LIQUIDS WITH ARSENIC	○(205722) LIQUIDS WITH CADMIUM
○(205723) LIQUIDS WITH CHROMIUM (VI)	○(205724) LIQUIDS WITH LEAD	○(205725) LIQUIDS WITH MERCURY
○(205726) LIQUIDS WITH NICKEL	○(205727) LIQUIDS WITH SELENIUM	○(205728) LIQUIDS WITH THALLIUM
○(205731) LIQUIDS WITH POLYCHLORINATED BIPHENYLS	○(205741) LIQUIDS WITH HALOGENATED ORGANIC COMPOUNDS	○(205751) SOLIDS OR SLUDGES WITH HALOGENATED ORGANIC COMPOUNDS
○(205791) LIQUIDS pH ≤ 2	○(205801) WASTE POTENTIALLY CONTAINING DIOXINS	

NONRESTRICTED WASTES

INORGANICS:	○(205111) ACID SOLUTION 2 < pH < 7 WITH METALS (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc)	○(205112) ACID SOLUTION W/OUT METALS
○(205113) UNSPECIFIED ACID SOLUTION		○(205121) ALKALINE SOLUTION (pH ≥ 12.5) WITH METALS
○(205122) ALKALINE SOLUTION W/OUT METALS		○(205123) UNSPECIFIED ALKALINE SOLUTION
○(205131) AQUEOUS SOLUTION (2 < pH < 12.5) CONTAINING REACTIVE ANIONS (azide, bromate, chlorate, cyanide, fluoride, hypochlorite, nitrite, perchlorate, sulfide anions)		○(205132) AQUEOUS SOLUTION W/METALS
		○(205133) AQUEOUS SOLUTION WITH TOTAL ORGANIC RESIDUES 10% OR MORE
	○(205134) AQUEOUS SOLUTION WITH TOTAL ORGANIC RESIDUES LESS THAN 10%	○(205135) UNSPECIFIED AQUEOUS SOLUTION
○(205151) ASBESTOS-CONTAINING WASTE	○(205161) FCC WASTE	○(205141) OFF-SPECIFICATION, AGED, OR SURPLUS INORGANICS
○(205162) OTHER SPENT CATALYST	○(205171) METAL SLUDGE	○(205172) METAL DUST & MACHINING WASTE
○(205181) OTHER INORGANIC SOLID WASTE		
ORGANICS:	○(205211) HALOGENATED SOLVENTS (chloroform, methyl chloride, perchloroethylene, etc.)	○(205212) OXYGENATED SOLVENTS (acetone, butanol, ethyl acetate, etc.)
○(205213) HYDROCARBON SOLVENTS (benzene, hexane, Stoddard, etc.)		○(205214) UNSPECIFIED SOLVENT MIXTURE
○(205221) WASTE OIL AND MIXED OIL	○(205222) OIL/WATER SEPARATION SLUDGE	○(205223) UNSPECIFIED OIL-CONTAINING WASTE
○(205231) PESTICIDE RINSE WATER	●(205232) PESTICIDES & OTHER WASTE ASSOCIATED W/PESTICIDE PRODUCTION	
○(205241) TANK BOTTOM WASTE		○(205251) STILL BOTTOMS WITH HALOGENATE ORGANICS
○(205252) OTHER STILL BOTTOM WASTE	○(205261) POLYCHLORINATED BIPHENYLS AND MATERIAL CONTAINING PCBs	
○(205272) POLYMERIC RESIN WASTE		○(205271) ORGANIC MONOMER WASTE (includ unreacted resins)
○(205281) ADHESIVES	○(205291) LATEX WASTE	
○(205311) PHARMACEUTICAL WASTE	○(205321) SEWAGE SLUDGE	○(205322) BIOLOGICAL WASTE OTHER THAN SEWAGE SLUDGE
○(205331) OFF-SPECIFICATION, AGED, OR SURPLUS ORGANICS	○(205341) ORGANIC LIQUIDS (nonsolvents) WITH HALOGENS	○(205342) ORGANIC LIQUIDS W/METALS
○(205343) UNSPECIFIED ORGANIC LIQUID MIXTURE	○(205351) ORGANIC SOLIDS W/HALOGENS	○(205352) OTHER ORGANIC SOLIDS
SLUDGES:	○(205411) ALUM AND GYPSUM SLUDGE	○(205421) LIME SLUDGE
○(205431) PHOSPHATE SLUDGE	○(205441) SULFUR SLUDGE	○(205451) DEGREASING SLUDGE
○(205461) PAINT SLUDGE	○(205471) PAPER SLUDGE/PULP	○(205481) TETRAETHYL LEAD SLUDGE
○(205491) UNSPECIFIED SLUDGE WASTE		
MISCELLANEOUS:	○(205511) EMPTY PESTICIDE CONTAINERS 30 GALLONS OR MORE	○(205512) OTHER EMPTY CONTAINERS 30 GALLONS OR MORE
○(205513) EMPTY CONTAINERS < 30 GALLONS		
○(205521) DRILL MUD	○(205531) CHEMICAL TOILET WASTE	○(205541) PHOTOCHEMICALS/PHOTOPROCESSI WASTE
○(205551) LABORATORY WASTE CHEMICALS	○(205561) DETERGENT AND SOAP	
○(205571) FLY ASH, BOTTOM ASH, AND RETORT ASH	○(205581) GAS SCRUBBER WASTE	○(205591) BAGHOUSE WASTE
	○(205611) CONTAMINATED OIL	○(205612) HOUSEHOLD WASTES

TOXIC SUBSTANCES CONTROL DIVISION

FACILITY BACKGROUND INFORMATION

ASPIS - 02 -

Form Usage:
● Add New Data
○ Delete Data
Change Data

1. FACILITY FILE NO. | 15 | co. | 18 | sic. | 010614 | no.

2. COUNTY: KERN

3. DATE PREPARED: 07 mo | 03 dy | 87 yr

4. FACILITY NAME: BAKERSFIELD AG. CHEM

RELATED INFORMATION

CURRENT SITE STATUS

5. ACCESS: ○(306001) CONTROLLED ○(306002) UNCONTROLLED

6. PERMIT: (check all that apply)
○(502001) SOLID WASTE FACILITY PERMIT ○(502002) RWQCB WASTE DISCH REQUIREMENT ○(502103) NPDES 402
○(502007) LAND USE PERMIT ○(502011) HSD WASTE OPERATIONAL PERMIT ○(502013) OTHER

ANY OPERATORS

7. HAZARDOUS WASTE CHARACTERISTICS: (check all that apply)
○(203001) LIQUID ○(203002) SOLID ○(203003) SLUDGE
○(203004) GAS ○(203005) UNKNOWN

8. HAZARDOUS WASTE CATEGORIES: (check all that apply)
○(204001) CORROSIVE ○(204002) IGNITABLE ○(204103) RADIOACTI
○(204004) VOLATILE ○(204005) TOXIC ○(204106) REACTIVE
○(204009) CARCINOGEN ○(204006) SENSITIZER/IRRITANT

9. TONS/OPERATING DAY - AVERAGE WEIGHT SOLIDS RECEIVED (206001) |_____|

10. GALLONS/OPERATING DAY - AVERAGE VOLUME LIQUIDS RECEIVED (207001) |_____|

TOXIC SUBSTANCES CONTROL DIVISION

FACILITY BACKGROUND INFORMATION

ASPIS - C2-4

Form Usage:
● Add New Data
O Delete Data
Change Data

1. FACILITY FILE NO. | 15 | co. | 28 | sic. | 010614 | no.

2. COUNTY | KERN

3. DATE PREPARED | 07 | mo | 03 | dy | 87 | yr

4. FACILITY NAME:

PHYSICAL CHARACTERISTICS

5. SURFACE SOILS: (check all that apply)
O(401001) GRAVEL
O(401002) SAND
O(401003) SILT
O(401004) CLAY

6. SUBSOILS: (check all that apply)
O(402001) GRAVEL
O(402002) SAND
O(402003) SILT
O(402004) CLAY
O(402005) ROCK

7. SOIL PERMEABILITY:
●(403001) HIGH ($P \geq 10$cm/sec)
O(403002) MODERATE ($10 \geq P > 10^{-3}$cm/sec)
O(403003) LOW ($10^{-3} \geq P > 10^{-6}$cm/sec)
O(403004) IMPERMEABLE ($P \leq 10^{-6}$cm/sec)

8. HYDROLOGY:
DEPTH TO GROUNDWATER (405001) | 2,175 | ft.

DIRECTION OF GROUND WATER FLOW
O(405002) NORTH
O(405003) SOUTH
O(405004) EAST
O(405005) WEST

DISTANCE TO NEAREST DRINKING WATER SUPPLY (405006) | | ft.

DIRECTION TO NEAREST DRINKING WATER SUPPLY
O(405007) NORTH
O(405008) SOUTH
O(405009) EAST
O(405010) WEST

9. CLIMATOLOGY:
MEAN ANNUAL PRECIPITATION (406001) | | in.

MEAN ANNUAL EVAPORATION POTENTIAL (406002) | | in.

MEAN JANUARY TEMPERATURE (406003) | | °F

MEAN JULY TEMPERATURE (406004) | | °F

ANNUAL MEAN WIND SPEED (1.00 mph = 0.865 knots) (406005) | | knots

PREVAILING WIND DIRECTION
O(406006) NORTH
O(406007) SOUTH
O(406008) EAST
O(406009) WEST

TOXIC SUBSTANCES CONTROL DIVISION
ABANDONED SITE PROGRAM INFORMATION SYSTEM
OVERSIGHT ACTIONS REPORTING FORM

ASPIS - 03

FORM USAGE:
● ADD COMMENT ● ADD ACTION

1. FACILITY FILE NUMBER: 15 (co.) 28 (sic.) 0064 (no.)

2. COUNTY: KERN

4. FACILITY FILE NAME: BAKERSFIELD AG. CHEM.

5. DATE PREPARED: 07 (mo) 03 (dy) 87 (yr)

6. ACT. DATE mo. dy. yr.	7. ACT. CODE	8. COMMENT NUMBER	9. COMMENTS
07 03 87	2401	01	SITE SCREENING COMPLETED
07 03 87	2502	01	CONTAMINATION CONFIRMED BY SAMPLE
07 03 87	2502	02	ANALYSIS

DHS 8015 (3/82) 15 (3/82)

State of California
Department of Health Services

March, 1987

TOXIC TRIAGE
SUMMARY SHEET

Site Name: BAKERSFIELD AG CITEM

Site Location: GOLDEN STATE HIGHWAY & SEVENTH AND STANDARD RD.

(street address BAKERSFIELD, CA KERN CO.

or map coordinates) _____

DATE	PREPARER	COMMENTS
7-3-87	S. Flint	

SCORE SHEET

		DATE		
		7-3-87		
		SCORE		
SITE ACCESS & CONTAMINANTS				
1. Known information	1.	5		
2. Quantity	2.	4		
3. Public access	3.	4		
		13		
EXPOSURE PATHWAYS				
4. Groundwater, soil	4.	4		
5. Surface water	5.	3		
6. Flood plain status	6.	1		
7. Drinking water sources	7.	5		
8. Annual precipitation	8.	2		
9. Air emissions	9.	3		
10. Food chain	10.	2		
		20		
HAZARD POTENTIAL				
11. Toxicity rating	11.	~~8~~ 10		
12. Fire/explosion risk	12.	2		
		~~10~~ 12		
POPULATION AND ENVIRONMENT AT RISK		1/16		
13. Population exposure	13.	8		
14. Sensitive populations	14.	2		
15. Adverse health effects	15.	4		
16. Sensitive environment/ecosystem	16.	2		
	TOTAL	~~59~~ 61		

REH

State of California
Department of Health Services

March, 1987

TOXIC TRIAGE

SAF

	SITE DESCRIPTORS						DATE		
	0	1	2	3	4	5	7-3		
SITE ACCESS & CONTAMINATION							SCORE		
1. Known information (documentation) of presence of hazardous substances on-site or evidence of release to the environment.[1]			Uncorroborated allegations, complaints.	Indicators of waste on-site (e.g., stained soil, stressed vegetation, referrals, waste facilities).	Historical records suggest on-site contamination (e.g., records of buried drums).	Documented presence of waste on-site (lab confirmation or exposed drums)	5		
2. Estimated quantity of hazardous substances on-site (historically disposed or currently existing).[2]		Less than or equal to 55 gallons (1 drum) of liquids and/or less than or equal to 500 lbs. of solid.		Greater than 55 gallons, less than or equal to 110 gallons of liquid; and/or greater than 500 lbs., less than or equal to 1,000 lbs. of solid.	No data.	Greater than 110 gallons of liquid; and/or greater than 1,000 lbs. solids.	4		
3. Public access to the site.	High security fence, locked gate, and guarded.	High security fence, locked gate, no guard.		Low security fence, unlocked gate, no guard.	No data.	Partially fenced, or direct access with or without fence.	4		
EXPOSURE PATHWAYS			215 ft. 2x2						
4. Depth to groundwater.[3] Note: Double score for site unless underlain by impermeable soil. Do not double the "no data" score. It should remain at 8.[4]	Greater than 1,000 feet.	Greater than 400 feet, less than or equal to 1,000 feet.	Greater than 150 feet, less than or equal to 400 feet.	Greater than 75 feet, less than or equal to 150 feet.	Greater than 20 feet, less than or equal to 75 feet.	Less than 20 feet.	4		
	NO DATA = 8								
5. Distance to surface water (including intermittent streams).	Greater than 2 miles.	Greater than 1 mile, less than or equal to 2 miles.	Greater than 2,000 feet, less than or equal to 1 mile; or No data.	Greater than 1,000 feet, less than or equal to 2,000 feet. 1/4 - 1/3 mile X	Greater than 100 feet, less than or equal to 1,000 feet.	100 feet or less.	3		
6. Flood plain status.[5]	Not located in a known flood plain.	No data. 1	500-year flood.	100-year flood.	Located in known flood plain (frequently flooded areas).		1		
							21		

TOXIC TRIAGE (Continued)

SAF

	SITE DESCRIPTORS						DATE		
	0	1	2	3	4	5	7-3		
EXPOSURE PATHWAYS (Continued)							SCORE		
7. Distance to nearest domestic drinking water supply (groundwater or surface water). Note: If the site is documented as contaminating a drinking water supply, then the score should be the maximum and doubled.	Greater than 1 mile.	Greater than 1,000 feet, less than or equal to 1 mile.	Greater than 500 feet, less than or equal to 1,000 feet.	Greater than 200 feet, less than or equal to 500 feet; or No data.	Greater than 100 feet, less than or equal to 200 feet.	100 feet or less.	5		
8. Mean annual precipitation in area of suspected site, see Attachment 1.[6]	5 or less inches per year.	Greater than 5 inches, less than or equal to 10 inches per year.	Greater than 10 inches, less than or equal to 15 inches per year.	Greater than 15 inches, less than or equal to 20 inches per year.	Greater than 20 inches per year.		2		
9. Airborne emissions/contamination (real or potential).	Sampling data shows no detectable emissions; or no potential for emissions due to waste type and containment.			Potential for emissions due to waste type and containment; or No data.		Complaints of irritative symptoms; odor, odor complaints; confirmed sampling data.	3		
10. Distance to food processing/packaging or agricultural production.	Greater than 1 mile, less than or equal to 2 miles.	Greater than 2,500 feet, less than or equal to 1 mile.	Greater than 1,000 feet, less than or equal to 2,500 feet; or No data.	Greater than 500 feet, less than or equal to 1,000 feet.	500 feet or less.		2		
HAZARD POTENTIAL									
11. Toxicity of the known or suspected substances on the site (refer to *Dangerous Properties of Industrial Materials* [Irving Sax, 6th ed.] for toxicity scores. Also, refer to Attachment 2[teratogens and carcinogens]).[7] Note: Double scores of 4 or 5.			Toxicants with Sax toxicity score of 1 or less.	Toxicants with Sax toxicity score of 2; or No data.	4+2 Known or suspected presence of any 1 of the following: carcinogens, teratogens, or acute toxicants (Sax toxicity score of 3). Diluted 2.4.5T	Known or suspected presence of (2) or 3 of the following: carcinogens, teratogens, or acute toxicants (Sax toxicity score of 3).	10 ~~8~~		
12. Fire or explosion hazard of substances on-site (use flammability ratings from 1–4 within *Fire Protection Guide on Hazardous Materials* 8th ed., National Fire Protection Association) or estimate fire explosion hazard.[8]	Nonflammable.	Flammability rating of 1, or low (estimated) hazard.	Flammability rating of 2, or No data.	Flammability rating of 3, or medium (estimated) hazard.	Flammability rating of 4, or high (estimated) hazard.		2		

~~22~~ 24

TOXIC TRIAGE (Continued)

SAF

	SITE DESCRIPTORS						DATE		
	0	1	2	3	4	5	7-3		
POPULATION AT RISK							SCORE		
13 Estimated number of people residing and/or working near site. Note: For population = 0 assign a score of zero. For population = 1–99, assign scores as given. For population greater than 100, double the score. (Do not double the "no data" score. It should remain at 8.)	Greater than 2 miles.	Greater than 1 mile, less than or equal to 2 miles.	Greater than ½ mile, less than or equal to 1 mile.	Greater than ¼ mile, less than or equal to ½ mile.	Greater than 500 feet, less than or equal to ¼ mile.	500 feet or less.	8		
	NO DATA = 8 Note: If more than one score is possible use the highest score.								
14. Presence of schools, hospitals, nursing homes, day care centers, or other "sensitive" populations.[9]		Two miles or greater.	Greater than 1 mile, less than or equal to 2 miles, or No data.		Greater than ½ mile, less than or equal to 1 mile.	Closer than ½ mile.	2		
15. Presence of adverse health effects. Note: Double all scores in this category.	Studies show no reported adverse health effects.		No data. 2×2	Alleged.		Documented/ verified adverse health effects allegedly due to site.	4		
16. Sensitive environment/ecosystem.	No sensitive ecosystem or endangered species within 1 mile.		No data.	Sensitive ecosystem (e.g., national or state park, wild or scenic river, or marshland) or endangered species within 1 mile.	Documented potential or known existing impact to sensitive ecosystem or endangered species.		2		

1 Stressed vegetation refers to localized areas of dead or wilted vegetation. Generally, adjacent areas of healthy vegetation will help to differentiate between vegetation stressed because of chemical contamination and vegetation stressed because of climatic conditions.

Stained soil refers to localized areas of soil discoloration.

16

2 Fifty-five (55) gallons equal one (1) drum.

3 "Depth to groundwater" refers to the minimum depth at which the water table is found.

4 "Impermeable soils" refers to soils with clays or strongly cemented impermeable subsurface layers. (Impermeable is defined as a permeability rate less than 10^{-6} cm/sec.)

5 Flood plain information is available from the Department of Water Resources, 827 7th Street, Sacramento, California 95814.

6 "Mean annual precipitation" means the total amount of yearly rainfall.

7 The Sax "toxicity scores" are explained on pages 1 and 2 of *Dangerous Properties of Industrial Materials* (Irving Sax, 6th edition). The scores are given in the compound listings.

Carcinogens: Compounds which cause cancer in humans or animals, as determined by the International Agency for Research on Cancer. (See Attachment 2.)

Teratogens: This list of compounds was taken from a compilation of teratogenicity studies by J. L. Schardein (1985). Each compound was reported to cause a teratogenic effect in at least one animal species. (No attempt was made to verify the adequacy of the test protocols or the accuracy of the reported results.) (See Attachment 2.)

8 The "flammability rating" is explained on pages 704–711 of the *Fire Protection Guide on Hazardous Materials*, 8th edition, National Fire Protection Association. Actual ratings are presented on pages 325M-9 to 325M-93.

9 This category represents populations which may exhibit increased susceptibility to the effects of toxic substances due to age, ill health, etc.

Exhibit L-3

BAKERSFIELD AG-CHEM

TITLE:	PRELIMINARY ASSESSMENT REPORT	
DOC TYPE:	PRELIMINARY ASSESSMENT REPORT	
VERSION	FILENAME	SIZE
Final DTSC Letter	Bakersfield AG-Chem_Preliminary Assessment Report_092287.pdf	1343 KB

Preliminary Assessment

Bakersfield Ag-Chem, Inc.
7th Standard Rd. and Highway 99
Bakersfield, Kern County
ASPIS # 15 28 0064
EPA ID # CAD27868884

By: Barry Padilla
Department of Health Services
Toxic Substances Control Division
Northern California Section

September 1987

https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=15280064&doc_id=5012234

https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/5024082779/Bakersfield%20AG-Chem_Preliminary%20Assessment%20Report_092287.pdf

MC 9/15/87

EXECUTIVE SUMMARY*

The Bakersfield Ag-Chem, Inc. site is currently being investigated by state and local officials for alleged illegal disposal of hazardous wastes. Soil contamination on the site has been confirmed. Hazardous wastes found on-site include Toxaphene, DDT, Dinoseb, and Methyl Parathion. Concerns are also focused on numerous ponds that have been utilized either on or immediately adjacent to the site. Little information is known about many of the ponds. The soil contamination suggests a possible threat to the groundwater in the area.

The Department of Health Services has certified the closure of a waste disposal pond on-site. A site assessment report has been submitted the the Department of Health Services and the Regional Water Quality Control Board as requested by these Agencies. Formal review of the report is pending.

Suggested recommendation for further action under CERCLA is to perform a site inspection of the site. The focus of the inspection should be on groundwater gradient and quality.

Suggested recommendation for further action at the state level is to rank the site for inclusion onto the Bond Expenditure Plan. This is to be completed after the site inspection is done.

*Information contained in this report represents material gathered from public information sources. This report may not include information considered confidential.

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A. General surrounding
    1. Location of site
    2. Distance to population
        a. Population within 1 mile of site
        b. Presense of sensitive populations
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I SITE HISTORY

A. Description of operations and processess

Bakersfield Ag-Chem, Inc. (BAC) is an agricultural chemical formulation and distribution operation, located at the intersection of 7th Standard Road and Highway 99 (see Map 1, Appendix A). Raw materials are made into fertilizers, pesticides, herbicides, defoliants, fungicides, and other chemicals using a mixing process. The product is sold to farmers and ranchers throughout Tulare and Kern counties.

Operations at the site have included three separate formulation processes. A fertilizer formulation plant, located at the north end of the facility, has operated since 1965. The pesticide formulation plant is located outside of the west side of warehouse #2. It is reported to have operated from 1967 to 1986. Dinoseb formulation took place on the same cement pad as pesticide formulation outside of warehouse #2. This reportedly occurred from 1967 to 1982. After 1982 Dinoseb formulation was moved to a location between the dust mill and pond #2. Dinoseb formulation was discontinued in 1986. See Map 2-4 in Appendix A. Map 2 shows the north end of the facility, Maps 3 and 4 continue south through the facility. (1,2)

A dust mill and soda ash plant are utilized at the facility. BAC also operates a mechanics shop and a paint and welding facility at the site. A wash rack is located with the paint and welding facility. (1,2)

B. Owners, operators, and years of operation

BAC is a California corporation, incorporated December 24, 1964. Frank J. Waterman is president and majority stockholder of the corporation. Other officers are B. Craig Waterman, Secretary-Treasurer, and Steven J. Steiber, Secretary. BAC started operations in 1965 and continues through the present.

The above named persons are also officers in Valley Zinc Corporation, 245 Industrial St., Bakersfield, CA. Valley Zinc Corp. is a California corporation chartered in 1973. In addition BAC holds fifty percent ownership of Bocmer, an almond grove.

C. Types and quantities of wastes produced

Throughout the course of operations the following waste streams are known to have been produced. They include, but are not

limited to, formulation rinse water, pesticide and fertilizer equipment rinse water, empty pesticide containers, truck washdown water, and yard drainage. (1,4)

The quantities of wastes produced are not known.

D. Waste disposal practices

Two ponds on site have historically been used for disposal of rinse water (refer to Maps 2-4, Appendix A). Pond #2 received rinse water from the formulation and dust mill operation from 1969 to 1984. The pond was closed in 1984, after which the rinse water was stored in above ground tanks. In 1986 pesticide formulation and the dust mill operations were discontinued. (1,2,4)

Before 1984 runoff from the pesticide formulation area was collected and stored in above ground tanks. The runoff is now collected and used in the fertilizer formulation process. (1)

Rinse water from the wash rack has historically been discharged into pond #3. Equipment and truck washdown still occurs at the wash rack. Two ponds at the northwest corner of the site were constructed in the late seventies to collect runoff water. One of the ponds, no longer in existence, was located just beyond property boundaries. (1,2,4)

An underground tank located south of the mechanic shop receives rinse water from the steam cleaning area. It is not known how long the tank has been in use. (1)

Unknown liquid and solid waste stored in drums has been stored in an area south of warehouse #3. This practice still continues. (1)

In the past empty drums and bags have been disposed of in four ways. These practices continue to date. Drums are used on-site for storage of unknown liquid and solid waste, sent for recycling, or disposed of in state approved landfills or county landfills. Bags are sent to county landfills. (1)

Four septic tanks are located on the site. The first is located in the tank farm at the north end of the site and leaches westwardly. The second is approximately 40' north of the front office. Its leach line leads to a dry well 20' north of the tank. The third septic tank is located west of warehouse #1. The leach line leads southwest from the warehouse into the yard. The final septic tank is located west of the field service shop. (1)

BAC is a Class 1 Generator registered with the U.S. Environmental Protection Agency (EPA). Their EPA Identification Number is CAD027868884.

E. Handling and storage practices of non-waste hazardous materials

Chemicals stored on-site are housed in the three warehouses and in areas immediately outside the warehouses. A tank farm is located at the north end of the site. A two million gallon storage tank is located at the south end of the site. Both are utilized by the facility. (1,2)

F. Description of problem

Dating back to 1952 eleven (11) impoundments (pond) are known to have existed within and adjacent to BAC property boundaries. Many of the ponds are filled and little or no information exist regarding there use or construction. Two ponds on the site still exist as do two others outside of the southern property line.

On site, pond #2 was backfilled and covered with a cement slab. The closure of the pond was not certified by the Department of Health Services (DHS), the Central Valley Regional Water Quality Control Board (CVRWQCB), or Kern County Environmental Health. Pond #3, lined with fiberglass (1), is designed with a leak detection system (1). However, regular monitoring procedures have not been implemented (5). Concerns as to the quality of closure of the pond beneath the two million gallon tank exist. Miscellaneous debris were disposed of in the pond before it was backfilled.

Miscellaneous spills in the formulation areas and around the rail car unloading areas suggest the threat of soil contamination throughout the site. An underground pipe leading from the formulation area to a storage area south of the dust mill leaked an unknown amount of Dinoseb during operations (1). A network of underground pipes are buried beneath the site (1).

Rain runoff water is of concern at the site. Runoff carrying chemicals spilled on the surface soil threaten areas off-site. Two ponds were constructed to catch such runoff. Agricultural land to the west may be a receptor for runoff.

Ground water in the area may be threatened by disposal practices at the site. A well located adjacent to the western boundary provides water for the facility and a residential unit approximately 1,000' southwest of the well.

G. Inspection and enforcement history

The inspection history of the site dates back to April, 1981. An inspection of the site on 1 April, 1981 by DHS resulted in the eventual cleanup of pond #2. This effort would take until March, 1984 before closure was certified (6). DHS and CVRWQCB oversaw cleanup completion. Concerns of the agencies involved included contamination of soils on and off the site and potential for ground water contamination. Further investigation resulted in BAC being instructed to file for a permit to operate a hazardous waste surface impoundment (7).

DHS, Kern County Environmental Health, and Kern County District Attorneys office began investigations into illegal disposal of hazardous waste by BAC in April, 1985. The investigation has resulted in three inspections of the site by enforcement and other staff of the agencies. On two occasions samples were taken to confirm contamination on-site. Company records were confiscated during one of the investigations.

The investigation into alleged illegal waste disposal practices is still continuing. A Notice of Violation was issued to BAC following an inspection on 31 October, 1985. The schedule of violations notes failure to obtain a permit when disposing of hazardous waste at a facility. DHS and CVRWQCB requested a complete site characterization from BAC describing processes, waste streams, and methods of disposal among other things.

1. DHS involvement

Inspection date: 1 April, 1981 (8)
Inspected by DHS staff only. A tour of the facility was performed and samples were collected. Samples were collected from ponds #1 and #3 and from surface soils.

Dinoseb and DDT were detected in samples taken along the western edge of the facility adjacent to Frontage Rd. Maximum levels detected were 372 parts per million (ppm) of Dinoseb and 34.82 ppm of DDT.

A liquid sample collected from pond #2 revealed Dinoseb, Malathion, and Lindane present at low concentrations.

Inspection date: 23 July, 1985 (8)
Inspection by DHS staff only. A cursory inspection was made of the site following the opening of a formal investigation. Only minor violations were observed.

Inspection date: 31 October, 1985 (8)
Inspection by DHS, Kern County Environmental Health, and Kern County District Attorneys Office. A facility inspection was performed and core samples were taken at four

locations. Two additional surface samples were also collected. During the inspection facility records were impounded. The inspection was performed under an inspection warrant.

Core samples were collected from three borings located on-site and a background boring to the northwest of the site. The three borings on-site were drilled to a depth of 10 feet. The background boring was drilled to 15 feet.

DDE, DDT, and DDD were detected in composite samples taken from borings #1 and #2 (see Maps 5-6, Appendix A). Analysis of composite samples taken from borings #1 and #2 also revealed 2,4,5-T ester at 21 ppm at each location. Dinoseb was found in concentrations of 26.0 and 29.8 ppm at 2 1/2 - 5 foot and 5 - 7 1/2 foot depths respectively at boring #2.

Analysis of a composite sample taken from boring #3 showed a level of 2,4,5-T ester at 22 ppm. A surface sample collected east of the dust mill revealed elevated levels of Dinoseb, 2,4,5-T acid, 2,4,5-T ester, toxaphene, and pentachloronitrobenzene (PCNB). Extreme concentrations found of the chemicals were Dinoseb - 1,318. ppm, toxaphene - 700 ppm, and 2,4,5-T - 89 ppm.

Inspection date: 7 April, 1987 (8)
Inspection by DHS, CVRWQCB, Kern County Environmental Health, and Kern County District Attorneys Office. Further sampling was performed. Video of site walkthrough was taken by inspectors.

Analysis of samples collected during the 7 April 1987 inspection reveal the presence of priority pollutant pesticides at elevated levels. Analysis of a sludge sample collected from a small sump near the former pesticide formulation area detected Endosulfan I and II at 320 ppm and 56 ppm. Malathion and Methyl Parathion were found at 92,000 ppm and 90,000 ppm concentrations at this location.

A composite sample taken at the fenceline east of the dust mill revealed a high level of toxaphene present in the soil. The concentration detected was 200 ppm. Liquid and sludge was collected from a settling pond next to pond #3. Malathion was detected in the liquid sample at 29 percent concentration. Malathion was detected in the sludge at a concentration of 100 ppm.

II. CURRENT SITE STATUS

BAC operations are ongoing at the site. The pesticide formulation process has been dismantled. All other processes are still

operative. BAC submitted to DHS and CVRWQCB a site assessment report as required. The report, "Site Assessment Work Plan for Bakersfield Ag Company," was prepared by Toxic Waste Consultants, Inc. The report has been submitted for review.

Enforcement procedures are continuing into matters of alleged illegal disposal of hazardous waste on-site. The investigation is being handled by the Enforcement Unit of DHS, Fresno Office, Kern County Environmental Health, and District Attorney's Office. Southern Pacific Transport Company (SPTC), site property owner, have made inquiries into the ongoing investigation. According to the lease agreement entered into between BAC and STPC no registered chemicals are allowed to be used on the site (9). SPTC has contacted BAC regarding this issue.

The Site Mitigation Unit of DHS, Sacramento Office, is involved in the proceedings for remedial oversight.

III. LOCATION AND SETTING

A. General Surroundings

The site is located in the southern end of the great San Joaquin Valley in Kern County. This end of the valley is surrounded by mountain ranges on its east, west, and southern boundaries. The southern Sierra Nevada mountains are to the east. The west side is bordered by the low Temblor mountain range and the Tehachapis line the southern border. Agricultural and petroleum production are the predominant features of the county. (10,11)

1. Location of site

The site is located north of 7th Standard Road at the intersection of Highway 99 in Bakersfield, Kern County (T28S, R27E, SEC 32 Mt. Diablo Base and Meridian) (12). BAC operates on 6.4 acres of a 9.9 acre parcel owned by SPTC (APN 092 250 08)
(see Map 7, Appendix A).

2. Distance to population

Population is scarce and widely scattered in the area surrounding the site. The area of greatest concentration is approximately three miles southeast in Oildale. The northwest portion of Oildale including Kern County Airport fall within the four mile radius of the site.

a. Population within 1 mile of site

There are approximately seven residential units within

a one mile radius of the site (1). The nearest residence is around 1,000' to the southwest on Frontage Road. Census data results taken from the 1980 census determine that the average occupancy per residential unit is 2.8 people (13). Using available information, approximately twenty people reside within one mile of the site.

b. Presence of sensitive populations

No sensitive populations were identified in the immediate surroundings of the site.

Norris School is located around one and three quarter miles southwest of the site. Two other schools are located approximately four miles to the southeast. (12)

3. Surrounding land use

The area surrounding the site is dedicated to agricultural and medium industrial use. Zoning in the area is primarily designated for medium industrial (M-2) and limited agricultural (A-1). (14)

B. Soils

The regional geological formation are older alluvium, primarily of slightly consolidated and directed fan deposits, but may locally include young terrace deposits. The site lies outside of the corcoran clay area(15). Local geology exhibits alternating layers of sand, silt, clay, and gravel (16).

1. Permeability

Regionally, the approximate range of hydraulic conductivity is from 10^{-5} to 10^{-7} cm/sec to 10^{-3} to 10^{-5} cm/sec. (17)

C. Ground water

Bakersfield is underlain by the Kern County Basin (Basin), which consists of unconfined and confined aquifers. The flow of the deep aquifer is to the northwest. the Basin is recharged by runoff from the Sierra Nevada mountains in the east, the Kern River, and by artificial recharge. During years of heavy precipitation unlined irrigation canals are utilized to maximize seepage.

1. Depth to aquifer

The depth to ground water in the area is reported to be around 215' (4). Ground water levels in the surrounding areas ranges from 189' to 340' (16).

Perched ground water is found in the central and southern portions of Bakersfield. The perched water found in the southern portion of Kern County is connected to a perched water aquifer extending up to the northern boundary of the county. Levels in the Bakersfield area range 6' to 20'. (18)

2. Water use and water quality

Water drawn from the Basin is used for municipal, agricultural, and industrial purposes. Most of the water used to service the area is drawn from the Basin. Bakersfield City Water District and California Water Service are the primary water purveyors in the area. Together, they maintain over 126 municipal wells. Both purveyors provide water to outlying area water districts. (18,19)

Water quality is considered good to excellent. Complaints of high sulfur and nitrates levels are experienced. An oily taste in ground water is sometimes encountered. (19)

3. Distance to wells

Immediately adjacent to the western boundary of the site is a water well. The Well, estimated to be approximately 1,000' in depth, serves the BAC facility and a residence south of the site. Three municipal wells are located within one mile of the site (20,21).

D. Surface water

The Kern River is the primary surface water influence in the Bakersfield area. Extending from the Kern River is a network of canals cutting across the southern central valley. The canals provide irrigation water to area farmers and recharge to the Basin during wet years. Local water districts operate an extensive recharge system throughout the area. (18)

1. Distance to downgradient surface water

Beardsley Canal is located approximately 1/3 to 1/4 mile southwest of the site. The canal runs north to south. (12)

The slope is to southwest at 1.5 percent.

2. Use

Beardsley Canal is used to transport water for irrigation purposes from the Kern River to outlining agricultural areas.

E. Climatic data (10)

There exist three distinct climate variations in Kern County. These zones of variations are classified as valley, mountain, and desert areas. The site is located within the valley zone. The overall climate is warm and semi-arid.

1. General climatic conditions

Winters in the region are mild and semi-arid with fairly high humidity. Fog is dense during December and January. Dense fog can last continuously for two to three weeks. The region has a single wet season, ninety percent of all precipitation falls between October and April.

Cloudless, hot, and dry conditions are characteristic of valley summers. The region experiences northeast sea breezes about twice weekly.

The region experiences a southwest wind (Chinook) off the Tehachapi Pass in the winter. The wind is warm and dry and reaches speeds of 30 to 40 miles an hour with occasional gusts to 60 miles an hour.

2. Average precipitation and seasonal distribution

The average annual precipitation is 5.72 inches. Measurements are recorded by the National Oceanic and Atmospheric Administration (NOAA) at Kern County Terminal. Greatest precipitation in a 24-hour period is 3.02 inches recorded February, 1978

Ninety percent of precipitation occurs between October and April.

Average annual pan evaporation in the area is 56.54 inches. Heaviest evaporation occurs between May and September. Least evaporation occurs in December and January.

Net precipitation is - 0.74 inches during the months December through February. The three month period reflects the greatest net precipitation throughout the entire year.

3. Temperatures

Temperatures in the valley are generally considered mild.

a. Summer high

Average high temperatures for the months June through September are 92.8, 99.7, 97.7, and 91.0 (°F) respectively. Recorded extremes for each of the above months are 114, 115, 112, and 112 (°F).

b. Winter low

Average low temperatures for the months November through February are 42.8, 37.7, 37.4, 41.2 (°F) respectively. Recorded extremes for each of the above months are 28, 21, 20, and 26 (°F).

4. Average wind speed and direction

The average annual wind speed is 6.4 mph. Average speeds are greatest during April through August.

The prevailing wind direction is northwest.

IV. CONTAMINATION (22)

Parathion? Malathion? Endosulfan?

Analysis of samples taken from the site revealed elevated levels of hazardous wastes are present. Toxaphene, DDT, 2 SEC-Butyl 4-6 - dinitrophenol (Dinoseb), and 2,4,5-T ethyl hexyl ester (2,4,5-T) were the chemicals found to have the greatest toxicity among of the wastes detected. Each of the chemicals rates a maximum score of 3 for toxicity in the EPA Hazard Ranking Manual.

A. Toxicity

1.) Toxaphene:

Toxaphene is a highly toxic chemical when taken by mouth, absorbed through the skin, or inhaled. Toxaphene is a known carcinogen in animals and an experimental carcinogen in humans. The estimated lethal dose for man is 2 - 7 grams. Toxaphene "causes Central Nervous System (CNS) stimulation with tremors, convulsions, death."

* oral rat Lethal Dose LD_{50} : 40 mg/kg0

* Threshold Limit Value (TLV) Air : 0.5 mg/m3

* oral human Lethal Dose Low LD_{lo} : 44 mg/kg

* Toxicity Rating : 3

2.) Dichlorodiphenyltrichloroethane (DDT)

DDT is a highly toxic chemical when taken by mouth, inhaled, or absorbed through the skin when in solution. DDT acts on the CNS and is an experimental carcinogen in humans. DDT is a common air contaminant.

* unk man : LD_{lo} : 221 mg/kg

* TLV Air : 1 mg/m3

* oral human TD_{lo} : 6 mg/kg

* Toxicity Rating : 3

3.) 2-sec-butyl-4,6-dinitrophenol (Dinoseb)

Dinoseb is highly toxic chemical when taken by mouth of absorbed through the skin. Dinoseb is an experimental teratogen in humans.

* oral rat LD_{50} : 25 mg/kg

* skin rat LD_{50} : 80 mg/kg

* Toxicity Rating : 3

4.) 2,4,5-T ethyl hexyl ester (2,4,5-T)

2,4,5-T is a moderately toxic chemical when taken by mouth. 2,4,5-T is an experimental carcinogen.

* oral rat LD_{50} : 820 mg/kg

* unk man LD_{50} : 150 mg/kg

* Toxicity Rating : 3

5.) Methyl Parathion

Methyl Parathion is considered highly toxic when taken by

mouth, inhaled, or absorbed through the skin. Methyl Parathion is an experimental cacinogen in humans. It is a known cholinesterase inhibitor.

* oral human LD_{10} : 24 ug/kg

* oral rat LD_{50} : 2 mg/kg

* Toxicity Rating : 3-2

B. Persistence

Toxaphene, DDT, Dinoseb, and 2,4,5-T are considered highly persistent chemicals. Each of the above listed chemicals rates a maximum score of 3 for persistence in the EPA Hazard Ranking Manual. (17)

V. ROUTES OF EXPOSURE

The primary route of exposure of concern is through the ground water. Contamination of the ground water could result in increased dermal and oral exposure to the population and the environment. Inhalation of dust particles in the air with chemical contamination is possible.

VI. CONCLUSIONS AND RECOMMENDATIONS

BAC waste disposal and operational practices over the past 22 years have resulted is soil contamination at the site. Soil samples collected during investigations of the site show high levels of toxaphene, DDT, Dinoseb, 2,4,5-T, and methyl parathion are present. Ground water beneath the site is threatened by the soil contamination. The regional geological configuration allows rapid permeation to occur.

Continuing investigations by state and local agencies may potentially reveal further problems associated with the site. DHS, Kern County Environmental Health, and the Kern County District Attorney's Office are currently pursuing enforcement actions against BAC in their ongoing investigation.

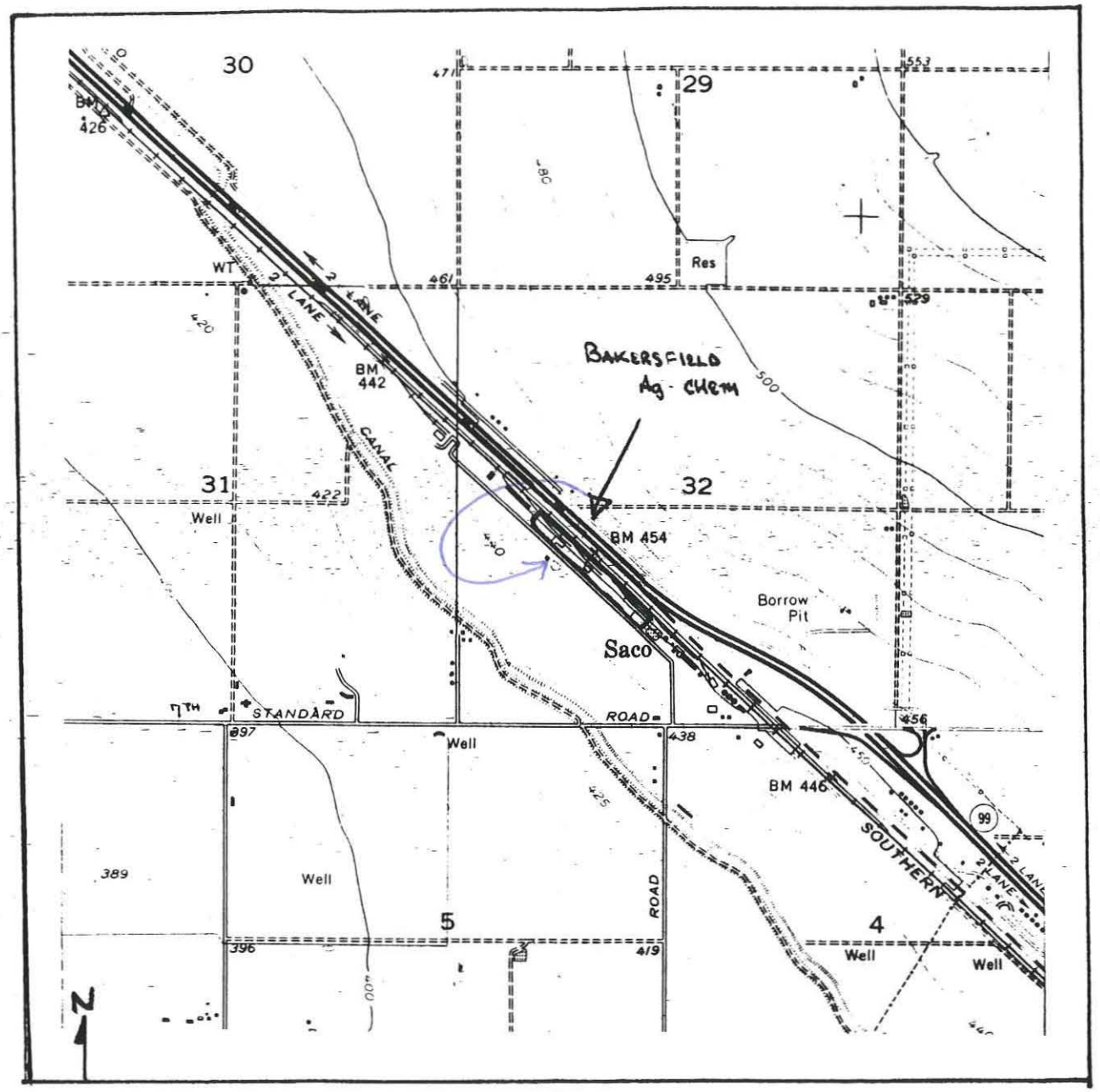
EPA Recommendation

A Site Inspection (SI) is recommended. The SI should be given a medium priority. The SI is to focus on groundwater gradient and quality. Results from the SI will determine whether the site should be hazard ranked.

State Recommendation

It is recommended that the site be hazard ranked for inclusion onto the Bond Expenditure Plan. The hazard ranking should be completed after the results of an SI are reviewed.

Appendix A

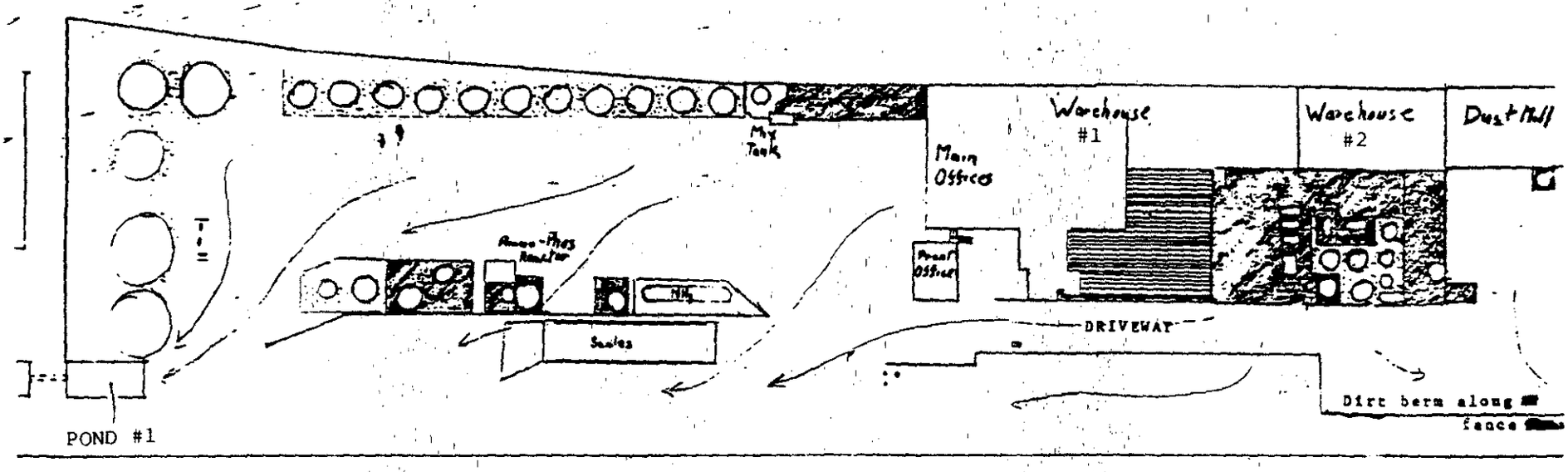


OILDALE QUADRANGLE
CALIFORNIA—KERN CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

SCALE 1:24 000

1 0 1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 .5 0 1 KILOMETER

MAP 1



BAKERSFIELD AG CHEM Bakersfield, CA

LEGEND

Max. length 2,087'

Max. width 147'

Not drawn to scale

50'

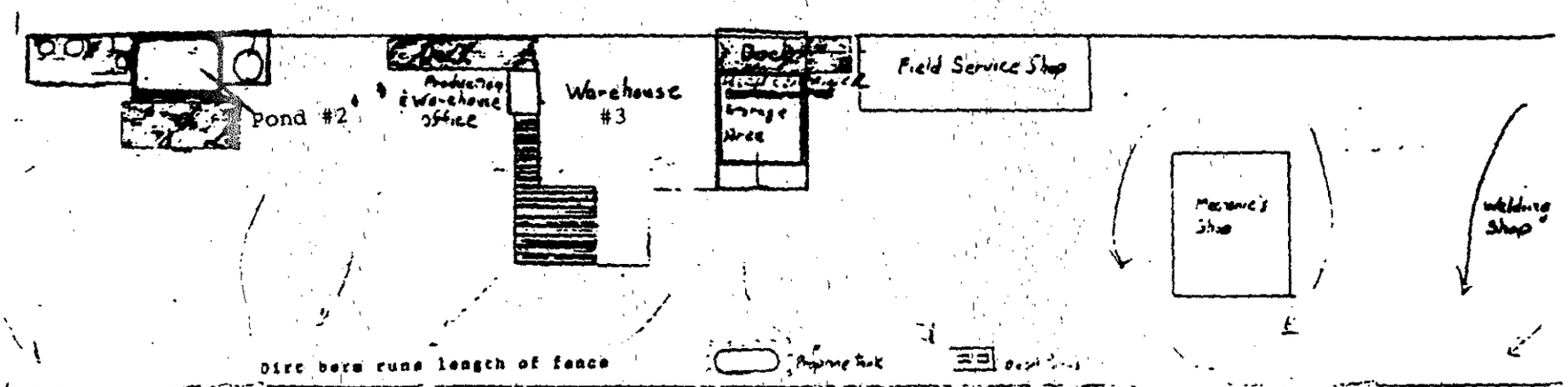
1'

Concrete

Sheet Metal Overhangs

Gravel Base

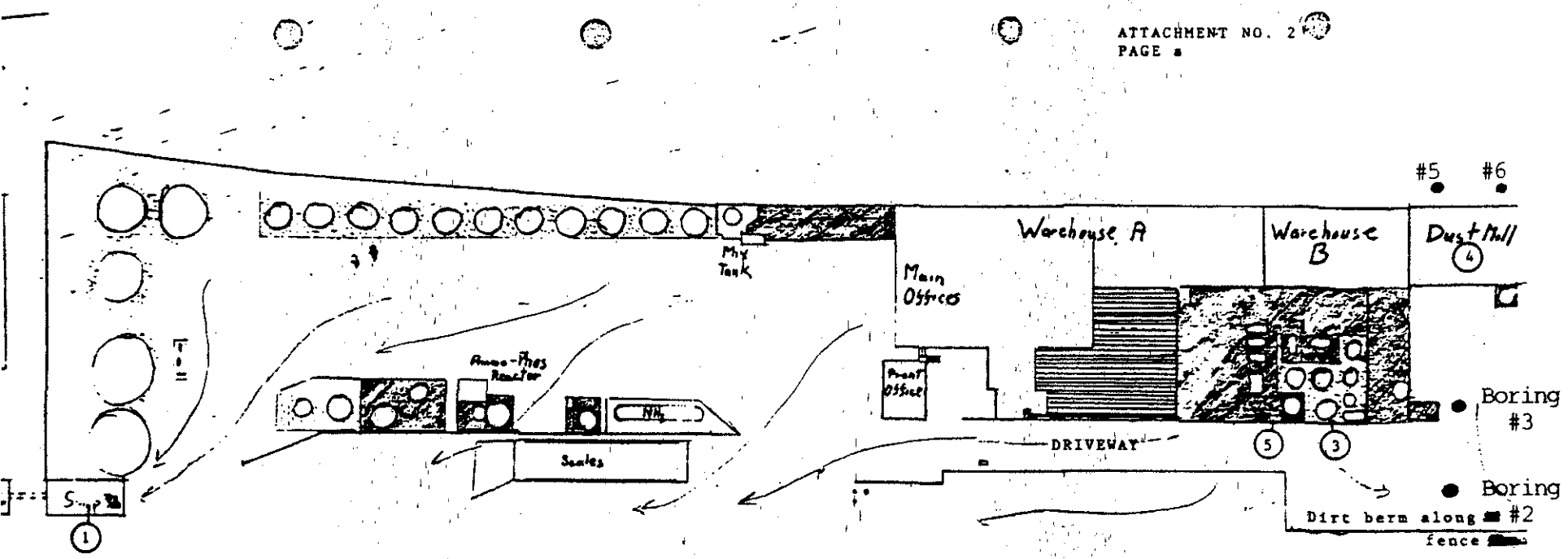
MAP # 2


Pond #2
Warehouse
#3
Field Service Shop
Dirt berm runs length of fence

MAP # 3

MAP # 4

Appendix B



Boring #1

FRONTAGE ROAD

EAST
NORTH

MAP # 5

BAKERSFIELD AG CHEM Bakersfield, CA

LEGEND

Max. length 2,067'

Max. width 147'

Not drawn to Scale

50'

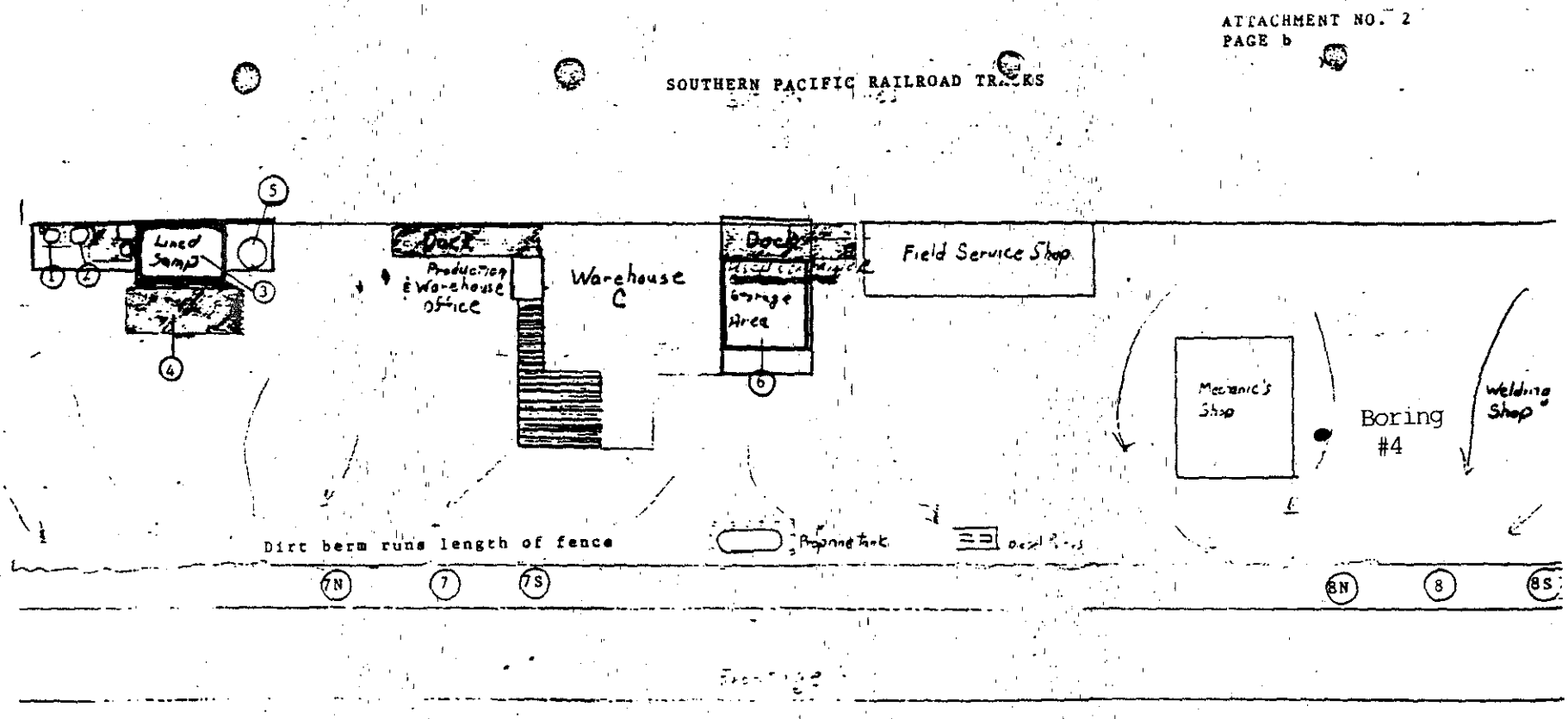
1'

Concrete

Sheet Metal Overhangs

Gravel Base

* Sample locations (approx - map not to scale)


SOUTHERN PACIFIC RAILROAD TRACKS
Lined Sump
Dock
Production & Warehouse Office
Warehouse C
Dock
Garage Area
Field Service Shop
Mechanic's Shop
Boring #4
Welding Shop
Dirt berm runs length of fence
Propane tank
Diesel Tanks
7N
7
7S
8N
8
8S
1
2
3
4
5
6

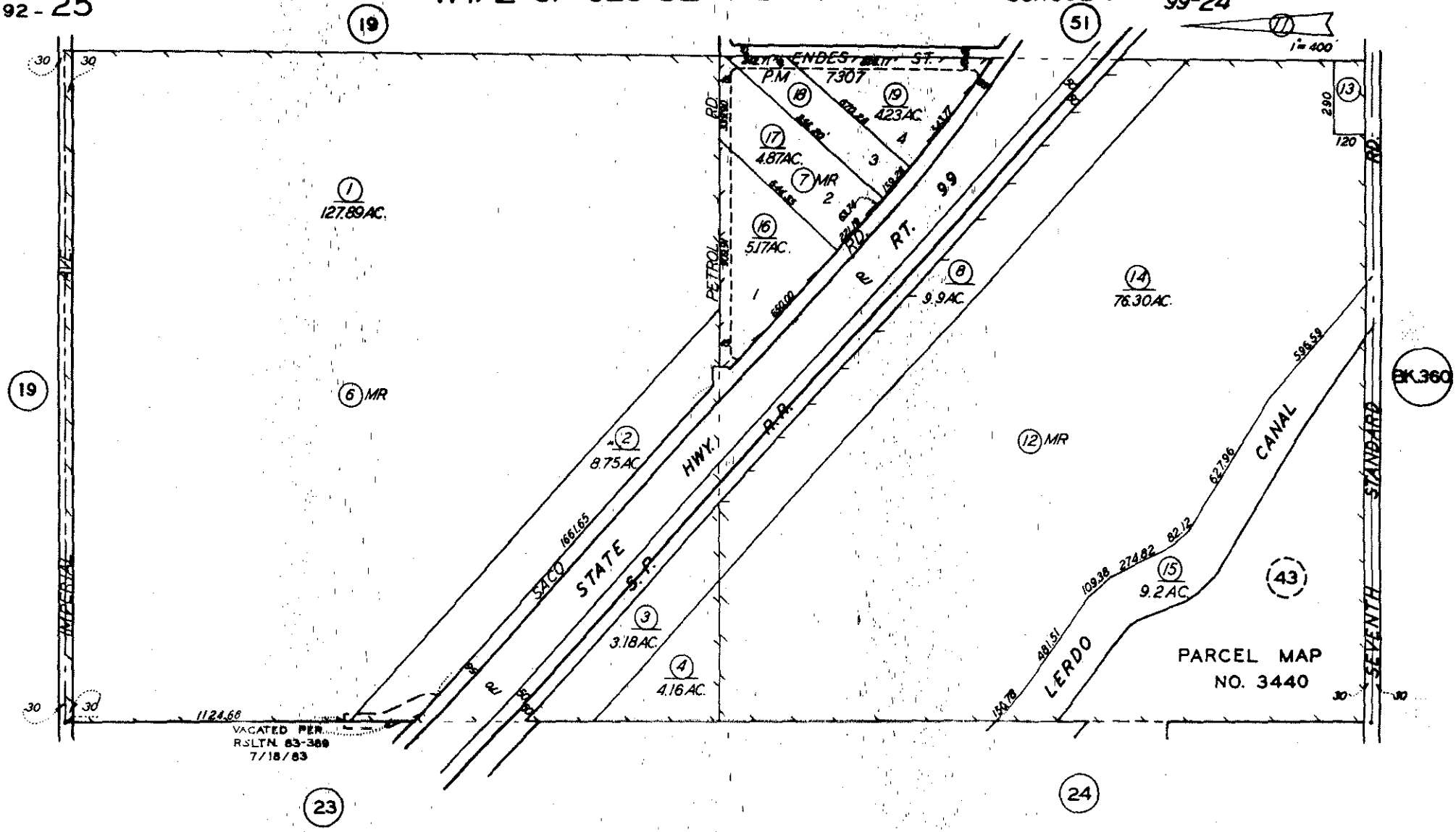
MAP # 6

92-25

W1/2 OF SEC. 32 T. 28 S. R. 27 E.

SCHOOL DIST. 99-27, 57-36, 99-24

92-25



Note: This map is for assessment purposes only. It is not to be construed as portraying legal ownership or divisions of land for purposes of zoning or subdivision law.

ASSESSORS MAP NO. 92-25
COUNTY OF KERN

MAP # 7

Appendix C

Exhibit L-4

BAKERSFIELD AG-CHEM

TITLE: SITE INSPECTION REPORT
DOC TYPE: *SITE INSPECTION (SI) REPORT

VERSION	FILENAME	SIZE
Final DTSC Letter	Bakersfield AG-Chem_Site Inspection Report_030689.pdf	686 KB

PURPOSE : CERCLA Site Inspection

SITE : Bakersfield Ag Chemical Company
7th Standard Road & Hwy 99
Bakersfield, California

SITE EPA I.D. NUMBER: CAD27868884

DATE OF INSPECTION : June 28, 1988

REPORT PREPARED BY : Barry Padilla

REPORT DATE : September 1989

****

https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=15280064&doc_id=5012233

https://www.envirostor.dtsc.ca.gov/public/deliverable_documents/5443525016/Bakersfield%20AG-Chem_Site%20Inspection%20Report_030689.pdf

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1.0 INTRODUCTION

Bakersfield Ag Chemical Company (BAC) site was referred for a Site Inspection (SI) after a California Department of Health Services (DHS) Preliminary Assessment produced documentation of spillage of pesticides. The SI was recommended to further evaluate the threat posed to surface and groundwater by the site.

The inspection was conducted in three parts by the Toxic Substances Control Program of DHS. The first part was a record review conducted in early 1988. This was followed by a site visit June 28, 1988 by Barry Padilla and Richard E. Hill of DHS. Soil and groundwater were sampled during the week of August 15, 1988.

The property is owned by Southern Pacific Transportation Company, One Market Plaza, San Francisco, California 94105. The land is leased to BAC.

This report will summarize investigative efforts and make a recommendation for further action.

2.0 SITE CHARACTERIZATION

2.1 Site History and Description

BAC is located at the intersection of 7th Standard Road and Highway 99, approximately 4 miles north of Bakersfield, California, T28, R27E, Section 32 (see Figure 1: Site Location Map). The site is located on 6.4 acres of a 9.9 acre parcel (APN 092 250 08) owned by the Southern Pacific Transportation Company (Figure 2: Acessor Map) [1].

BAC, currently known as Bakersfield Ag Company, is a California Corporation, incorporated December 24, 1964, and has operated at the site since 1965 [2]. Frank J. Waterman is majority stockholder of the Corporation and Steven J. Steiber is President. Prior to 1965, the site was occupied by three potato packaging plants, Cobley West Packaging, John's Packaging, and Leby Zenter Packing.

In 1965, BAC operations took over the area previously occupied by Cobley West Packaging at the north end of the site. Currently the BAC offices and warehouse 1 are located here. Operations were expanded between 1972 and 1975 to include the area once occupied by John's Packaging where warehouse 3 is

presently located. BAC expanded to the current operational size in 1977 after the Leby Zenter Packing shed was destroyed by fire. This area is now used for field equipment storage and the UN 32 tank (see Appendix A).

A description of the site, from north to south, is as follows (see Figure 3 a-f, Site Facility Map): A fertilizer tank farm and runoff pond (Pond 3) (Figure 3a) now closed, main office/warehouse 1, warehouse 2, and decommissioned pesticide area, old Dinoseb formulation area, dust mill (Figure 3b), decommissioned Dinoseb formulation area, rinsewater pond (Pond 1) closed, warehouse 3, hazardous waste storage area, soda ash plant (Figure 3c), field service shop, mechanic shop (Figure 3d), paint and welding area and truck washwater pond (Pond 2) (Figure 3e), and a 2 million gallon UN 32 tank (Figure 3f). The site is enclosed by a chain link fence and barbed wire.

2.2 Process Description

The following process description information was obtained from the Site Assessment Workplan (see Appendix A) and during the site visit. BAC is an agricultural chemical formulation and distribution operation. Current operations are limited to fertilizer formulation and sales. Previous operations included the formulation of pesticides, herbicides, defoliants, and fungicides.

Fertilizer formulation has taken place at the north end of the facility since 1965. Dichloropropane-dichloropropene is reported to have been processed in the fertilizer formulation area for an undetermined amount of time. Dinoseb is reported to have been off-loaded from rail cars into storage tanks and formulated in this area for one year. Pesticide formulation took place west of warehouse 2 from 1967 to 1986. Dinoseb was formulated in this area from 1967 to 1982. From 1982 until 1986, when the use of Dinoseb was banned by the U. S. Environmental Protection Agency, Dinoseb was formulated at a location between the dust mill and the rinsewater pond. A dust mill was brought into service in 1973. In August 1984, a soda ash plant was put into service.

Other operations put into service include a wash rack, paint shop and welding shop between 1972 and 1975, a field service shop in 1977, and a mechanics shop in 1979.

2.3 Waste Management Practices

Except as noted, the following information was obtained from the Site Assessment Workplan (see Appendix A). Throughout the course of operations, several waste streams are known to have been produced. They include formulation rinsewater, pesticide and fertilizer equipment rinsewater, empty pesticide containers, truck washdown water, yard drainage, and incidental spillage.

In 1967, an unlined pond (Pond 1) was constructed to receive wastewater from the pesticide formulation and dust mill operations. This pond was located south of the dust mill operation (Figure 3c). The pond was lined in 1978 with plastic and fiberglass. In 1984, the pond was closed [3]. The pond was backfilled and capped with cement. Following the closure of the pond, rinsewater was disposed of in a 5,000 gallon above ground storage tank. The tank was located on the area of the former rinsewater pond. Use of the tank was discontinued in 1986 after pesticide and dust mill operations were stopped. At an unknown time, the tank was moved to the hazardous waste storage area. The tank is currently estimated to be half-full of rinsewater.

Between 1972 and 1975, a wash rack and Pond 2 were constructed. The pond was lined in October 1981. The lining consists of plastic and fiberglass, and a leak detection system. The truck washwater pond is undergoing closure. Work has been submitted to the Central Valley Regional Water Quality Control Board (CVRWQCB) for review.

Two sumps were located in the pesticide/Dinoseb formulation area. This area is elevated above the ground surface. The sumps were used to receive wastewater from the formulation process and to catch runoff from storm drainage. The sumps were cleaned and backfilled with concrete in April 1988 (see Appendix B).

Two unlined ponds were constructed in 1979 to receive formulation rinsewater and site runoff water from the fertilizer formulation area. Pond 3 was located at the northwest corner of the site. This pond was closed in 1987. Closure documents have been submitted to the CVRWQCB (see Appendix B and C). The other pond was located adjacent to the north end of the site boundary. This pond was closed in 1980.

An area adjacent to the south end of warehouse 3 has historically been used as a hazardous waste storage area. From approximately 1972 to 1975, when the area was acquired, to 1981 the ground surface was unprotected. In 1981, the area was paved and covered. The hazardous waste storage area has no containment.

There is a 1,000 gallon underground gasoline tank located west of the office/warehouse 1. Two 10,000 gallon underground diesel tanks were located west of the field service shop along the west boundary of the site. The tanks were removed in 1988.

At least five septic tanks are located on the site. The first is located in the tank farm at the north end of the site and leaches westwardly. The second is approximately 40 feet north of the front office. Its leach line leads to a dry well 20 feet north of the tank. The third septic tank is located west of warehouse 1. The leach line leads southwest from the warehouse into the yard. The fourth septic tank is located west of the field service shop. Another septic tank is located south of warehouse 3 beneath the hazardous waste storage area.

Two underground tanks are located to the southeast and southwest corners of the mechanics shop. The tank located at the southeast of the shop is used to store steam condensate from the steam cleaning operations. The second tank, located at the southwest corner of the shop, is used to collect waste oils. The tanks are reported to be field tanks made of steel.

2.4 Permits

The CVRWQCB issued Wastewater Discharge Requirements (WDR) to BAC in 1981. These requirements regulated a pesticide rinsewater pond and two yard drainage ponds. These ponds have been undergoing closure by BAC. No new WDRs have been issued pending review of the remediation work [4].

The Interim Status Document issued by DHS has not been rescinded [5].

The Department of Food and Agriculture has issued BAC 14 licenses for products registered as economic poisons [6].

Kern County Air Pollution Control District has issued two permits for BAC. One is for a polyphosphate liquid plant and another for the rail car load out [7].

2.5 Remedial Actions

The washwater ponds used in the potato packaging operations were backfilled by BAC as operations expanded. Approximately seven or eight washwater ponds were backfilled (see Figure 4). No information about backfilling procedures is known. The ponds at the southern end of the site were reported backfilled using debris from a burned packaging shed, including wooden pallets, and a truck body. Dirt from the embankments was used to backfill the ponds (see Appendix A).

Between 1980 and the end of 1981, remedial activities occurred at three locations. The fertilizer rinsewater/yard drainage pond outside of the north boundary of the site was backfilled. No information is available regarding the backfilling of the pond. During the same period, soil excavation occurred at the truck washwater Pond 2 and the waste storage area. Soils beneath the pond were found to be contaminated with Dinoseb and other pesticides and subsequently removed and disposed of at Big Blue Hills Disposal Site. Approximately 533 tons of soil are reported to have been excavated from the pond area. Excavation took place down to 10 feet beneath the pond bottom. A layer of soil, 1 foot in depth, was removed from the waste storage area. The total volume of soil removed from this area is not known. No cleanup certification was issued for either location (see Appendix A).

In 1984, the pesticide rinsewater pond (Pond 1) was closed and certified clean by the DHS [3]. Closure data was not available in DHS files, only the certification letter was found. The closure was conducted by DeWalt Engineering, Inc.

Closure of the two collection sumps in the Dinoseb/pesticide formulation area and the fertilizer rinsewater/yard drainage pond at the north end of the site occurred in April 1988. The closures were conducted under the guidance of John M. Minney, Consulting Engineer. The collection sumps were swept clean, acid washed with muriatic acid, and scrubbed with a solution of Trisodium phosphate (TSP) and water. Swab samples were taken and analyzed by National Toxicology Laboratories, Inc. The samples were analyzed for DBCP, Malathion, Methylparathion, Endosulfan I & II, and Endosulfan Sulfate. Endosulfan was detected in the swab samples and further cleaning was conducted. Confirmation samples were collected and analyzed. The collection sumps were filled with concrete after being determined clean. The cleaning materials were drummed and handled as hazardous waste. Confirming samples were not collected by any government agency prior to filling the sump (see Appendix B).

The fertilizer rinsewater/yard drainage pond required the excavation of approximately 29 yards of soil. Soil samples collected from beneath the bottom of the sump revealed the presence of DDT and DDE above the non-detected level. The excavated soil was hauled to the Kettleman Hills Facility by Chemical Waste Management. Cleanup and closure activities of the pond were completed under the supervision of the CVRWQCB. Confirming agency samples were not collected (see Appendix B and C).

BAC and their engineering consultant are in the process of removing soils contaminated with Dinoseb and/or Toxaphene along the east side of warehouse 3.

3.0 ENVIRONMENTAL SETTING

3.1 Surrounding Area

The site is located in the southern end of the great San Joaquin Valley in Kern County. The end of the Valley is surrounded by mountain ranges on its east, west, and southern boundaries. The southern Sierra Nevada mountains are to the east. The west side is bordered by the low Temblor mountain range and the Tehachapis line the southern border.

The Kern River is located approximately 5 miles south-southeast of the site. The Kern River is a primary source for domestic, industrial, and agricultural water. The Beardsley/Lerdo Canal is approximately 1/4 mile southwest of the site (see Figure 1). The Canal is used for the transportation of irrigation water to surrounding fields. A network of canals extending from the Kern River cut across the area. The canals are used to transport irrigation water and for groundwater recharge in wet years. They do not receive storm water runoff [8].

The site is located approximately 3 miles northwest of Oildale and 4 miles northwest of Bakersfield. The site is located within a rural area utilized for agricultural, industrial, and residential purposes. Immediately adjacent and to the north is Continental Grain Company. At the south end of the site is Bidart Brothers. The principle industrial locations are along the east and west sides of Highway 99. Agricultural fields and orchards extend east, west, and north from the site. The closest residence is approximately 2,000 feet south of the site. There are approximately 14 residential units within 1 mile of the site.

The City of Oildale, has a projected 1988 population of 24,681. The 1988 projected population of the City of Bakersfield is 285,174. The estimated current population within a 3 mile radius of the site is 10,120 [9].

The federal and State critical habitats/endangered species identified within 1 mile of the site include the San Joaquin Kit Fox, Tipton Kangaroo Rat, and Blunt-Nosed Leopard Lizard. The San Joaquin Antelope Squirrel is a listed critical habitat/endangered species with the State of California [10].

No listed wetlands and/or nature reserves are located within a 3 mile radius of the site (see Figure 7).

The one year, 24-hour rainfall in Bakersfield is 1.25 inches [11].

No plants were visible within the site boundary.

3.2 Geology

Subsurface geology at the site is classified as Pleisocene non-marine sedimentary deposits. Subsurface soils consist of older alluvium, consisting mainly of slightly consolidated and dissected fan deposits. Localized areas may include Quaternary terrace deposits. Soil bores drilled on-site to a depth of 26 feet revealed alternating layers of sand, silt, clay, and gravel. Specific soil types identified include silty sands, silty clayey sands, silty sandy clay, silty clay, gypsum, and gravels (see Appendix C).

Based upon subsurface soil logging completed at the site, the permeability would be considered moderate.

The slope is decreasing to the southwest at 1.5 percent (see Figure 1).

3.3 Hydrology

3.3.1 Surface Water

The Kern River (River) is the primary surface water influence in the Bakersfield area (see Figure 7). The River is located approximately 5 miles southwest of the site. Water drawn from the River is used for agricultural, industrial, and domestic purposes. Irrigation water is diverted to and from the River via canals. The unlined canals also function as a groundwater recharge during heavy precipitation.

Runoff is typically non-existent for most of the year and usually occurs during infrequent winter storms [12]. There are no streams or water channels in the area. Surface runoff drains from east to west across the site and along the frontage road to the west.

The closest surface water body is a raised irrigation pond located approximately 35 feet west of the site. The Beardsley/Lerdo Canal is located about 2,000 feet west of the site. The canal is used to transport irrigation water (see Figure 1).

No samples of surface runoff or surface water bodies have been collected.

3.3.2 Groundwater

The Alluvium-Kern River formation is the principal aquifer in the region where the site is located. The depth to groundwater in the area is reported to be approximately 215 feet. Groundwater levels in the surrounding area range from 189 feet to 340 feet (Figure 5). The depth of the unconfined aquifer is unknown. The Corcoran Clay layer is suspected of fanning out in the Bakersfield area (see Figure 6). The Corcoran Clay layer does not appear to extend under the site. Groundwater in the area is used for irrigation, industrial, and domestic purposes. Groundwater quality is considered good. Complaints of high sulfur and nitrate levels are recorded. An oily taste in groundwater is sometimes reported [13]. Total dissolved solid measurements of as high as 3,000 parts per million (ppm) have been reported (Figure 6). Groundwater flow beneath the site is to the north, but may be influenced by pumping in the general area (see Figure 5).

Three municipal wells are located within 1-2 miles of the site [13,14]. The wells provide irrigation, industrial, and domestic water for residences in Oildale and the surrounding area north of Oildale. These are stand-by wells not currently in use [13,14]. The total population served by the water districts operating the wells total over 24,681 people. The well identified adjacent to the site provides domestic water to Bidart Brothers and serves 80 people seasonally at the packing shed and an additional 20 people year round [15].

4.0 SUMMARY OF INVESTIGATIVE EFFORTS

4.1 Previous Activities By Other Agencies/ Responsible Party

This site first came to the attention of DHS in February 1981, when the CVRWQCB requested comments on Tentative WDR's for BAC. An inspection was conducted and soil samples were collected along with samples from several ponds April 1, 1981. Analysis revealed the presence of pesticides (see Table 1). WDR's were issued April 24, 1981 [16].

In July 1983, BAC applied for a hazardous waste facility permit at the direction of DHS because of the pesticides in the waste water ponds [16].

October 31, 1985, a joint inspection/sampling visit was conducted by DHS, Kern County Environmental Health, and Kern County Deputy Attorney under an inspection warrant. A second joint inspection/sampling visit was conducted April 7, 1987, [16]. Sample results are summarized in Table 1.

As outlined in Section 2.5, BAC has continued to take remedial actions at the site and have been corresponding with the CVRWQCB regarding closure of Ponds 2 and 3. Also addressed are the old spill areas along the railroad siding, near the zinc tank, and the Dinoseb formulation area (see Appendix C). Confirming samples by government agencies have not been collected to verify cleanup/closure.

4.2 DHS Investigation

4.2.1 Site Inspection

BAC was visited on June 28, 1988, by Barry Padilla and Richard E. Hill of DHS. Steven Steiber, President of BAC, accompanied DHS staff through an inspection of the site. After the site inspection, Frank "Buzz" Waterman, former president and majority stockholder of BAC, joined Steven Steiber in the interview. Photographs of the site were taken and are included in Appendix E.

The site inspection began at the north end of the site and proceeded to the south end. Areas of operation were identified by Mr. Steiber at each processing location and chemical and waste storage areas were inspected.

TABLE 1
SUMMARY OF ANALYTICAL RESULTS

DATE	LOCATION	MATRIX	CONTAMINANTS	LEVEL	NOTE
4/1/81	Pond #2	Liquid	Dinoseb Lindane Malathion	Low	
	West Boundary	Dinoseb	Dinoseb	372 ppm	
		DDT	DDT	35 ppm	
10/31/85	SW of Dinoseb Formulation Area	Soil	DDT, DDE, DDD	Detected	Composite Samples
Joint State & County Inspection			2,4,5-T Ester	21 ppm	
			Dinoseb	20.6 ppm	
	East of Dust Mill	Soil	Toxaphene	700 ppm	
			2,4,5-T Ester	89 ppm	
			2,4,5-T Acid	12 ppm	
			2,4-DB Ester	Detected	
			Dinoseb	1,318 ppm	
			PCNB	25 ppm	
4/7/87	East of Dust Mill	Soil	Dinoseb	900 ppm	
Joint State & County Inspection			Toxaphene	200 ppm	
	Pesticide Formulation Area	Sump Sludge	Endosulfan I	320 ppm	
			Endosulfan II	56 ppm	
			Malathion	92 ppm	
			Parathion	90 ppm	
			pH 3.67		
	Tank #5	Soil	Zinc	157,000 ppm	
			Cadmium	123 ppm	
	Truck Wash Pond (Pond #2)	Sludge	Malation	100 ppm	
8/17/88	Pond #2	Soil	Aldicarb	.39 ppm	
DHS	Pond #2	Soil	Malathion	47 ppm	
			Dinoseb	13 ppm	
			2,4-D	3.0 ppm	
			2,4,5-T	.19 ppm	
			2,4-DB	1.2 ppm	
8/19/88	West of Hazardous Waste Storage Area	Soil	2,4,5-T	.18 ppm	

Three locations on the site were identified as having been altered since the completion of the Preliminary Assessment Report. The runoff pond, located at the north end of the site, had been closed under the guidance of the CVRWQCB (see Appendix B). The two sumps located in the pesticide/Dinoseb formulation area were backfilled with concrete. Closure activities were completed without Agency oversight. Mr. Steiber provided a copy of the closure reports completed by BAC (see Appendix C). An area east of warehouse 3 was being excavated. Mr. Steiber reported that Dinoseb had been detected in soil samples collected from the area. Excavation had not been completed on the date of the inspection.

The sampling locations were tentatively identified during the walk-through inspection. The waste storage area and the former pesticide pond were chosen as the locations to be sampled. The areas were inspected for accessibility. The background sample location area was identified at this time. The well on-site would be sampled as part of the investigation. An off-site well would be chosen during sampling.

4.3 Sampling Procedures

The sampling effort completed at BAC was intended to determine whether contaminants have leached or have the potential for leaching into the groundwater. Both soil and groundwater samples were collected. The sampling plan, which is included in Appendix D, contains a more complete discussion of sampling locations and rationale. The samples were analyzed for pesticides and herbicides. Sampling activities, documentation, and analytical results are all presented in the discussion that follows.

4.3.1 Sample Collection

The soil and groundwater sampling effort was completed during the week of August 15, 1988. Members of the sampling team from DHS were Barry Padilla, Scott Flint, Richard Hill, and Reid Buell. DHS contracted with Metcalf & Eddy, Inc. to provide geologic interpretation and drilling services at the site. James Taylor, consulting geologist representing Metcalf & Eddy, Inc. Spectrum Exploration, Inc., provided drilling services as a subcontractor to Metcalf & Eddy, Inc. Garry Buss and Mario Guevara represented Spectrum Exploration, Inc. Representatives from BAC included Rick Hornung, plant manager, John Minney, consultant, and Thomas W. Ladd.

Soil samples were collected from two location points at the site. Background soil samples were collected from a location point off-site. Water samples were collected from a well located on the site and from a domestic well upgradient of the site (see Figure 4: Sample Location Map). All personnel located within 30 feet of the drilling operations wore Level C protection, except during the collection of the background soil samples. Level D protection was worn during the collection of groundwater samples.

Samples 8BP001 through 8BP006 were collected on August 17,1988, from beneath the truck rinsewater pond (see Table 1 for sample depth locations). The samples were collected using a continuous core hollow stem auger rig, with a 5 foot internal core barrel at a 30 degree angle beneath the truck rinsewater pond. Drilling contact with the ground surface began at 7 feet from the northeast corner of the pond outside of the property fence line. Sample 8BP001 was collected from the internal core barrel from a depth of 3-3 1/2 feet and placed in a glass pint jar. A split sample was collected and provided to representatives of BAC. The remainder of the samples were collected in 6 inch brass tubes and split samples provided to representatives of BAC.

Samples 8BP011 through 8BP014 were collected on August 19, 1988, from beneath the hazardous waste storage area (see Table 1 for sample depth locations). A duplicate sample was taken at sample location 8BP012. The samples were collected in the same manner as described above. The sample core was drilled at a 30 degree angle beneath the hazardous waste storage area. Drilling point of contact was 5 feet east of the hazardous materials storage area boundary. Samples were collected in 6 inch brass tubes and split samples provided to representatives of BAC.

Samples 8BP015 through 8BP019 (background) were collected on August 18, 1988, northwest of the facility in an adjacent field. The samples were collected using a continuous core auger rig drilling vertical to the desired depths. Samples were collected in 6 inch brass tubes and split samples provided to representatives of BAC.

Sample 8BP007 was collected on August 18, 1988, from a well located on the site. The well is used to provide water for industrial purposes. The well was purged for approximately 15 minutes before the sample was collected. The sample was poured into four clear pint jars wrapped with aluminum foil. Labels were secured to the outside of the aluminum foil for identification at the lab. Samples 8BP009 (field blank) and 8BP010 (trip blank) were poured into sample jars immediately after the well sample at the site was taken.

Sample 8BP008 was collected on August 18, 1988, from a domestic well located upgradient from the site. Samples were collected from the line between the well tank. The well was purged for 10 minutes prior to collecting the sample. The tank was returned to its presampling condition. The samples were collected in glass pint jars wrapped with aluminum foil.

4.3.2 Sampling Documentation

All samples were collected, packaged, and shipped according to the procedures outlined in the Sampling Plan, with the exception of sample 8BP001. Sample 8BP001 was collected from the internal core barrel and placed in a glass pint jar. Duplicate samples were taken from the previously discussed locations. All samples were stored in coolers with ice prior to and during shipping. The samples were delivered, via courier service, to the laboratory before the expiration of the hold-times.

4.3.3 Modifications

Soil and water samples were not analyzed for volatile organics and semi-volatile organics as described in the Sampling Plan. DHS Hazardous Materials Laboratory (HML) was not able to meet the required holding times for the analysis to be performed.

The sampling effort took place during the week of August 15, 1988, rather than the week of August 8, 1988. BAC and their attorney reneged on a verbal agreement to provide the personnel, services, material, and equipment necessary to implement the terms of the Sampling Plan. DHS secured the services of Metcalf & Eddy, Inc., to implement the Sampling Plan.

The location beneath Pond 3, location P, in the Sampling Plan, was substituted for sampling location Pond 2, location H, in the Sampling Plan, as the sampling location. Clarification of records in the DHS file determined that the proposed sampling location, Pond 2, had previously been certified as clean closure by DHS.

The sampling location for the collection of background samples was determined to be northwest of the site boundary (see Figure 7: Sample Location Map).

A total of five samples were collected at the background sample location to correspond to sample depths on-site rather than two, as described in the Sampling Plan.

4.3.4 Quality Assurance

Soil samples, with the exception of sample #8BP001, were collected in brass sleeves provided by Spectrum Exploration, Inc. Prior to collecting soil samples, all brass tubes and plastic end caps were decontaminated in accordance with the Sampling Plan. Sample 8BP001 was collected in a glass container provided by I-Chem. Water samples were collected in glass containers provided by I-Chem. All sample numbers were noted in the field log and on Analytical Request forms. All persons coming in contact with samples wore rubber gloves and changed gloves between sample locations.

One soil duplicate and one field blank were collected from the location of sampling discussed previously in this report. In addition, one trip blank was poured into the sampling container at HML prior to conducting sampling at the site. These samples were labelled and packaged in a manner identical to all other samples.

4.4 Analytical Results

A complete pesticide and herbicide analytical scan was conducted on each sample collected from the site. Herbicides, organophosphorus pesticides, and dinitro-compounds were detected above detection limits in soil samples. No contaminants were detected in the water samples. Quality assurance reviews of the laboratory data is in Appendix E.

The results of the analysis from this sampling and others since 1981 are summarized in Table 1.

5.0 HRS FACTORS

5.1 Observed Release

There is no analytical evidence of a release of contaminants from the site to groundwater, surface water, or air. Groundwater samples collected on-site and upgradient were analyzed for organophosphorous pesticides, organophorus pesticides, carbamates, dinitro-compounds, phenoxy herbicides, and chlorinated pesticides. No contaminants were found.

The potential for an observed release to surface water is minimal due to the low precipitation, distance to the nearest surface water, and low probability of site drainage contaminating elevated canals.

The potential release of contaminants to the air is very low as most of the wastes are liquid. There is a potential for the blowing of dust in the zinc spill area.

5.2 Waste Type and Quantity

Historically, wastes have been stored on-site in unlined ponds, lined ponds, drums on bare ground and concrete, tanks and spilled on the ground. The actual quantity of material spilled or disposed of on-site is unknown. The estimated once-through volumes of waste management units and leaking tanks are as follows:

Small Sump/Dinoseb Mfg. area	100 gal.
Zinc Sulfate Tank	21,140 gal.
Pond 1	100,980 gal.
Pond 2	20,480 gal.
Pond 3	16,700 gal.
Total	159,400 gal.

Dinoseb is known to have overflowed from its tank in the formulation area once or twice but the quantity was not documented. Also, Dinoseb and Toxaphene were delivered by railcar and known to have spilled in the area adjacent to the tracks.

Analysis of soils and sludges from the site confirm the spillage and/or disposal of numerous pesticides from the following families: acid and ester phenoxy herbicides, organophosphorous compounds, and organochlorine compounds. Toxaphene, DDT, 2 SEC-Butyl 4-6-dinitrphenol (Dinoseb), 2,4,5-T ethyl hexyl ester (2,4,5,-T), and zinc were the chemicals found to have the greatest toxicity with Sax ratings of 3 [17]. Due to the chlorinated nature of these chemicals, they are considered very persistent.

5.3 Groundwater

Water in the unconfined aquifer beneath the site is found at approximately 215 feet (see Figure 5). The unsaturated zone is moderately permeable. Within a 3 mile radius of BAC, 27 wells serve a potential population of 24,681 for both domestic and industrial uses [13,14]. The nearest well is 2,000 feet from the site and serves 80 people seasonally at the Bidart Brothers operation [15].

Net precipitation is -11.72 inches during the months of November-April, the period of greatest precipitation [18].

In general, water quality in the area is good. Occasional complaints of high sulfur, nitrates or an oily taste have been experienced. Total dissolved solids is 1,000 ppm (Figure 6).

5.4 Surface Water

The average annual rainfall in the area is 5.72 inches [9]. The one year 24-hour rainfall is approximately 1.25 inches [11].

The nearest surface water used for irrigation or domestic uses is the Kern River approximately 5 miles to the southeast. The elevated nature of the irrigation pond, 35 feet, away and the Beardsley/Lerdo canal, 2,000 feet away, combined with the limited rainfall, provide little possibility of surface water contamination near the site. Slope is approximately 1.5%. On-site drainage flows across the site to the west.

5.5 Air

There has been no documented release to air from BAC.

5.6 Fire Explosion/Direct Contact

There have been no documented incidents of direct contact with the waste, fire, or explosion. Access to the site is limited by a chain link fence (see Figure 3). Pond 2 is enclosed by a fence (photo, Appendix F).

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Bakersfield Ag Chemical Company is located north of the intersection of 7th Standard Road and Highway 99, northwest of Bakersfield, in Kern County. Over the last 24 years, BAC has formulated and handled a variety of agricultural chemicals. Past rinsewater disposal and material spillage has resulted in contamination of surface and subsurface soils.

There have been no documented releases to groundwater, surface water, or air. All surface waters in the area are elevated and do not appear to be threatened by surface runoff from the site. No off-site surface water samples have been collected. Depth to groundwater is greater than 200 feet, resulting in a low route characteristic for groundwater contamination.

Remedial work has been conducted by BAC without DHS oversite and no samples confirming remediation have been collected by governmental agency.

6.2 Recommendations

6.2.1 EPA

Recommendation at the Federal level is for no further action under CERCLA as information indicates the site is not likely to score for inclusion on the NPL for the following reasons:

- Low potential for observed release to air or surface water;
- No documented observed release to air, surface, or groundwater;
- Low target population for surface water usage; and
- Low route characteristics for surface water and groundwater.

6.2.2 State

Recommendation at the State level is that this site be ranked for inclusion on the State Bond Expenditure Plan for the following reasons:

- Large quantity of water generated and processed;
- Toxicity and persistence of wastes found;
- History of releases to soil;
- Lack of confirming samples for remedial activities; and
- Anticipated expansion of development and population centers in the area.

7.0 REFERENCES

Figures
Tables
References

REFERENCES

1. Contact Report, Kern County Assessors Office, Claudia Johnasen, DHS, 8/25/89.

2. Articles of Incorporation, Bakersfield Ag-Chem.

3. Letter, DHS to BAC, Mohinder S. Sandhu, 3/26/84.

4. Contact Report between Claudia Johansen, DHS, and Dave Billett, CVRWQCB, 8/17/89.

5. RCRA Data Base Print-out.

6. Contact Report between Claudia Johansen, DHS, and Susanne Talams, DFA, 8/29/89.

7. Contact Report between Claudia Johansen, DHS, and Steve Beyn, Kern County APCD, 8/29/89.

8. Contact Report between Claudia Johansen, DHS, and Charles Williams, North of Kern Water Storage District, 8/21/89.

9. Census, Kern County Planning & Development Services, 5/29/87.

10. Contact Report between Barry Padilla, DHS, and Ron Rempel, Department of Fish and Game, 10/28/88.

11. Rainfall Frequency Atlas of the United States, Department of Commerce, October 1986.

12. Local Climatological Data, Bakersfield, California, National Oceanic and Atmospheric Administration, 1986.

13. Contact Report between Claudia Johansen, DHS, and Doug Nunnley, Oildale Mutual Water Company, 8/21/89.

14. Contact Report between Claudia Johansen, DHS, and Ralph Gifford, North of the River Water District, 8/21/89.

15. Contact Report between Claudia Johansen, DHS, and Leonard Bidart, Bidart Brothers, 8/21/89.

16. Contact Report between Claudia Johansen, DHS, and Kit Davis, DHS, 8/15/89.

17. Dangerous Properties of Industrial Materials, 7th Edition, Irving I. Nostrand Reinhold Company, 1989.

18. Net Precipitation Calculations.

Exhibit L-5

DEPARTMENT OF TOXIC SUBSTANCES CONTROL
ENVIROSTOR

Tools Reports Community Involvement How to Use EnviroStor ESI DTSC Web

BAKERSFIELD AG-CHEM (15280064)

SIGN UP FOR EMAIL ALERTS

GOLDEN STATE HWY & SEVENTH STANDARD RD
BAKERSFIELD, CA 93312
KERN COUNTY
SITE TYPE: EVALUATION

SUPERVISOR:
OFFICE: CLEANUP SACRAMENTO

Summary | Activities | Site/Facility Docs | Map | Related Sites | CalEnviroScreen

Site Information

CLEANUP STATUS
INACTIVE - NEEDS EVALUATION AS OF 5/9/2005

SITE TYPE: EVALUATION
NATIONAL PRIORITIES LIST: NO
ACRES: NONE SPECIFIED
APN: NONE SPECIFIED
CLEANUP OVERSIGHT AGENCIES:
NONE SPECIFIED

ENVIROSTOR ID: 15280064
SITE CODE: 100172
SPECIAL PROGRAM: * CERC2
FUNDING: RESPONSIBLE PARTY
ASSEMBLY DISTRICT: 32
SENATE DISTRICT: 16

Regulatory Profile

PAST USE(S) THAT CAUSED CONTAMINATION
NONE SPECIFIED

POTENTIAL CONTAMINANTS OF CONCERN
PESTICIDES - WASTES FROM PRODUCTION

POTENTIAL MEDIA AFFECTED
NONE SPECIFIED

Site History

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BAKERSFIELD AG-CHEM (15280064)

SIGN UP FOR EMAIL ALERTS

GOLDEN STATE HWY & SEVENTH STANDARD RD
BAKERSFIELD, CA 93312
KERN COUNTY
SITE TYPE: EVALUATION

SUPERVISOR:
OFFICE: CLEANUP SACRAMENTO

Summary | Activities | Site/Facility Docs | Map | Related Sites | CalEnviroScreen

Completed Activities

TITLE	DOCUMENT TYPE	DATE COMPLETED	COMMENTS
Site Inspection Report	*Site Inspection (SI) Report	3/6/1989	SELF MONITORING FINAL CLOSURE REPORT SUBMITTED TO CENTRAL VALLEY RWQCB SUBMIT TO EPA SI SENT TO EPA WITH RECOMMENDATION OF NO FURTHER FEDERAL ACTION. SITE INSP DONE SI RECOMMENDS RANKING FOR STATE BOND EXPENDITURE PLAN HAZARD RANKING REQUIRED
Preliminary Assessment Report	Preliminary Assessment Report	9/22/1987	PRELIM ASSESS DONE SI MEDIUM
Site Screening	Site Screening	7/3/1987	SITE SCREENING DONE CONTAMINATION CONFIRMED BY SAMPLING
Discovery	* Discovery	8/8/1982	FACILITY IDENTIFIED VIA PHONEBOOK

BAKERSFIELD AG-CHEM (15280064)

SIGN UP FOR EMAIL ALERTS

GOLDEN STATE HWY & SEVENTH STANDARD RD
BAKERSFIELD, CA 93312
KERN COUNTY
SITE TYPE: EVALUATION

SUPERVISOR:
OFFICE: CLEANUP SACRAMENTO

Summary | Activities | Site/Facility Docs | Map | Related Sites | CalEnviroScreen

DOCUMENT DATE RANGE: TO Filter

Completed Activities

HIDE DOCUMENTS > 1 YEAR OLD

TITLE/DESCRIPTION	DOCUMENT TYPE	DATE COMPLETED
Site Inspection Report	*Site Inspection (SI) Report	3/6/1989
Preliminary Assessment Report	Preliminary Assessment Report	9/22/1987
Site Screening	Site Screening	7/3/1987

Community Involvement Documents

HIDE DOCUMENTS > 1 YEAR OLD

NO COMMUNITY INVOLVEMENT DOCUMENTS HAVE BEEN UPLOADED TO THIS PROJECT

APPENDIX M

Bakersfield Oilfield Operation Inc.

Hazardous Waste Generator Profiles

Baker Hughes / Baker Petrolite Corporation
19433 Colombo Street Bakersfield, CA 93308
Facility Layout & Drainage Plan (Not to Scale) Storm Water Diagram/Flow

North

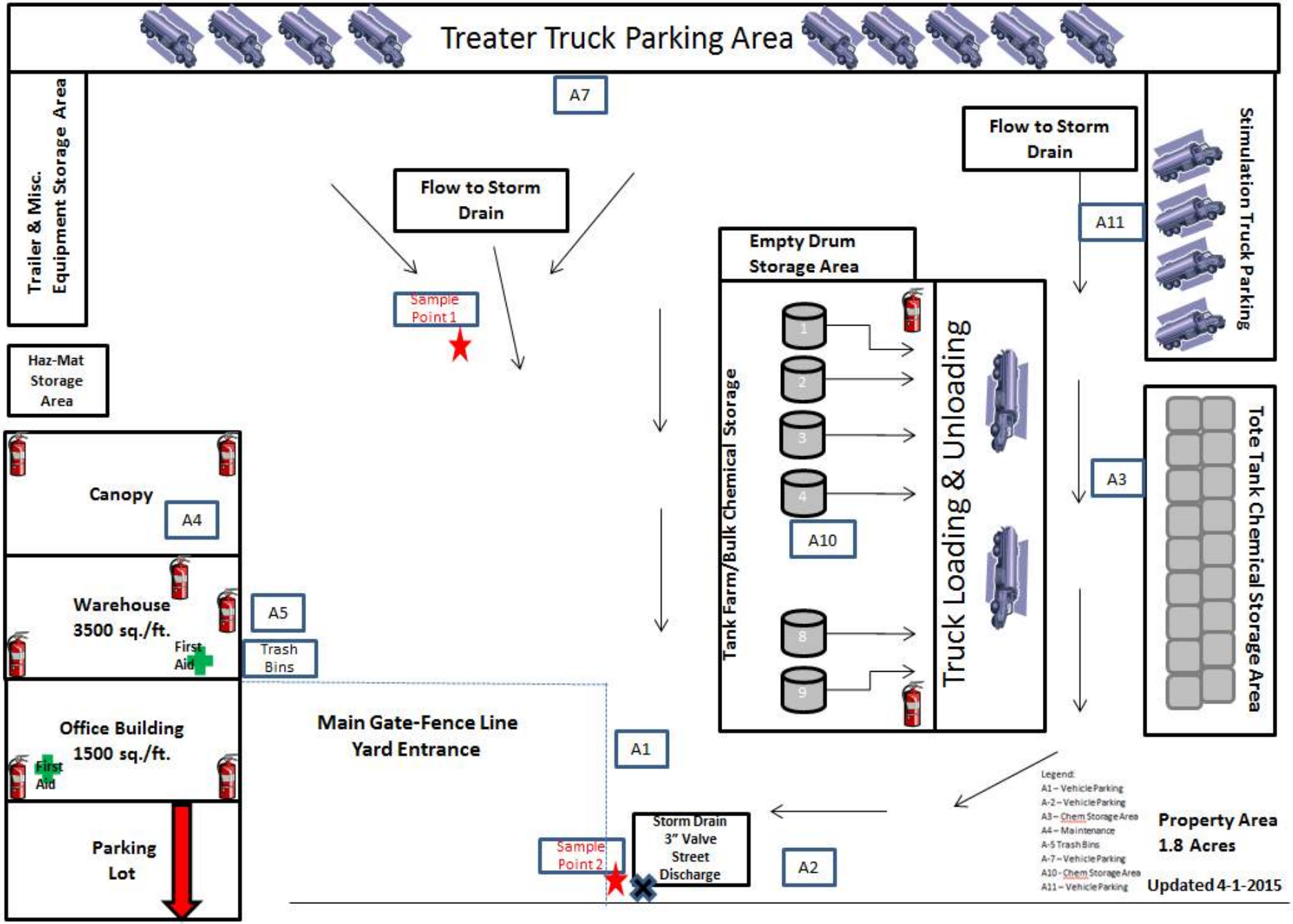

Exhibit M

Exhibit M-1

Jared Blumenfeld
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Environmental Protection

Department of Toxic Substances Control
Meredith Williams, Ph.D., Director
1001 "I" Street
P.O. Box 806
Sacramento, California 95812-0806

Gavin Newsom
Governor

EPA ID PROFILE

Map

ID Number:	CAL000129983		**Status:**	INACTIVE
Name:	WESTERN UNICHEM	U121	**Inactive Date:**	6/30/2005 3:01:00 PM
County:	KERN		**Record Entered:**	12/16/1994 12:00:00 AM
NAICS:	N/A		**Last Updated:**	9/27/2005 3:01:00 PM

	Name	Address	City	State	Zip Code	Phone
Location	WESTERN UNICHEM	19433 COLOMBO	BAKERSFIELD	CA	933080000	
Mailing		P O BOX 1499	HOBBS	NM	992400000	
Owner	THE WESTERN CO OF NO AMERICA	515 POST OAK	HOUSTON	TX	770270000	7136292600
Operator/Contact	--	19433 COLOMBO	BAKERSFIELD	CA	933080000	8053910794

Based Only Upon ID Number: **CAL000129983**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
Yes	N/A	N/A

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

Top line represents Manifest Count and Bottom line represents Total Tonnage

Year	Generator	Trans. 1	Trans. 2	TSDF	ALT. TSDF

1995	1 6.58000	0 0.00000	0 0.00000	0 0.00000	0 0.00000
1996	1 0.18700	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2003	2 1.36620	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2004	1 0.68805	0 0.00000	0 0.00000	0 0.00000	0 0.00000

Non California Manifest Total Tonnage

No Records Found

Waste Code Matrix					
California	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

Waste Code Matrix as a spreadsheet

The Department of Toxics Substances Control (DTSC) takes every precaution to ensure the accuracy of data in the Hazardous Waste Tracking System (HWTS). However, because of the large number of manifests handled, inaccuracies in the submitted data, limitations of the manifest system and the technical limitations of the database, DTSC cannot guarantee that the data accurately reflect what was actually transported or produced.

Report Generation Date: 08/05/2020

California Waste Code by Year Matrix

ID Number: **CAL000129983**
Entity Type: **Generator**

1995 2020 Select Years

Calif. Code	Description	1995	1996	2003	2004
141	OFF-SPEC, AGED, OR SURPLUS INORGANICS	0.00000	0.00000	0.45870	0.68805
331	OFF-SPEC, AGED, OR SURPLUS ORGANICS	0.00000	0.00000	0.90750	0.00000
343	UNSPECIFIED ORGANIC LIQUID MIXTURE	0.00000	0.18700	0.00000	0.00000
352	OTHER ORGANIC SOLIDS	6.58000	0.00000	0.00000	0.00000
	Grand Totals	**6.58000**	**0.18700**	**1.36620**	**0.68805**

The Department of Toxics Substances Control (DTSC) takes every precaution to ensure the accuracy of data in the Hazardous Waste Tracking System (HWTS). However, because of the large number of manifests handled, inaccuracies in the submitted data, limitations of the manifest system and the technical limitations of the database, DTSC cannot guarantee that the data accurately reflect what was actually transported or produced.

Report Generation Date: 08/05/2020

Exhibit M-2

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P.O. Box 806
Sacramento, California 95812-0806

Gavin Newsom
Governor

EPA ID PROFILE

Map

ID Number:	CAL000130960	**Status:**	INACTIVE
Name:	BJ CHEMICAL SERVICES CO U116	**Inactive Date:**	6/30/2011 12:00:00 AM
County:	KERN	**Record Entered:**	6/17/1995 12:00:00 AM
NAICS:	42269	**Last Updated:**	1/27/2016 11:13:08 AM

	Name	Address	City	State	Zip Code	Phone
Location	BJ CHEMICAL SERVICES CO	19433 COLOMBO ST	BAKERSFIELD	CA	933089517	
Mailing		11211 FM 2920 RD	TOMBALL	TX	773758927	
Owner	BJ SERVICES COMPANY USA	11211 FM 2920 RD	TOMBALL	TX	773758927	2813518131
Operator/Contact	J MORRISSETTE, HSE SPECIALIST	11211 FM 2920 RD	TOMBALL	TX	773758927	2813572573

Based Only Upon ID Number: **CAL000130960**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
Yes	Yes	N/A

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

Top line represents Manifest Count and Bottom line represents Total Tonnage

Year	Generator	Trans. 1	Trans. 2	TSDF	ALT. TSDF

1999	10 48.11790	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2000	2 3.20450	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2001	10 6.97300	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2003	3 2.93750	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2005	3 45.51120	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2006	3 3.57850	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2007	3 0.61485	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2008	2 2.22030	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2009	4 1.29140	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2010	12 3.72780	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2011	3 2.92300	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2012	1 0.80000	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2014	1 1.38600	0 0.00000	0 0.00000	0 0.00000	0 0.00000

Non California Manifest Total Tonnage

YEAR	GENERATOR	TRANS. 1	TRANS. 2	TSDF
1999	2.29340	0.00000	0.00000	0.00000

Waste Code Matrix					
California	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

Waste Code Matrix as a spreadsheet

The Department of Toxics Substances Control (DTSC) takes every precaution to ensure the accuracy of data in the Hazardous Waste Tracking System (HWTS). However, because of the large number of manifests handled, inaccuracies in the submitted data, limitations of the manifest system and the technical limitations of the database, DTSC cannot guarantee that the data accurately reflect what was actually transported or produced.

Report Generation Date: 08/05/2020

California Waste Code by Year Matrix

ID Number: CAL000130960
Entity Type: Generator

1999 2008 Select Years

Calif. Code	Description	1999	2000	2001	2003	2005	2006	2007	2008
	Blank/Unknown	0.00000	0.00000	0.00000	0.00000	0.00000	0.40000	0.00000	0.00000
122	ALKALINE SOLUTION (PH>=12.5) W/O METALS	0.00000	0.00000	0.22930	0.00000	0.00000	0.00000	0.00000	0.00000
131	AQ SOL 2 < PH < 12.5 CONTG REACTIVE ANIONS	0.00000	0.00000	0.13760	0.00000	0.00000	0.00000	0.00000	0.00000
132	AQ SOL WITH METALS (SMALLER THAN RESTRICTED LEVELS AND SEE 121)	3.44020	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
135	UNSPECIFIED AQUEOUS SOLUTION (2 < PH < 12.5)	0.00000	0.00000	0.27000	0.00000	0.00000	0.00000	0.00000	0.00000
141	OFF-SPEC, AGED, OR SURPLUS INORGANICS	0.54210	0.00000	0.00000	0.00000	0.00000	0.20850	0.22935	1.62630
181	OTHER INORGANIC SOLID WASTE	0.00000	0.00000	0.82510	0.96000	0.00000	0.00000	0.00000	0.00000

214	UNSPECIFIED SOLVENT MIXTURE	27.73800	0.00000	0.19800	0.00000	0.00000	0.00000	0.00000	0.59400
331	OFF-SPEC, AGED, OR SURPLUS ORGANICS	9.05850	3.20450	4.29350	1.97750	0.00000	0.00000	0.18150	0.00000
343	UNSPECIFIED ORGANIC LIQUID MIXTURE	0.00000	0.00000	0.18700	0.00000	0.00000	0.17000	0.20400	0.00000
611	CONTAMINATED SOILS FROM SITE CLEAN-UP	0.00000	0.00000	0.00000	0.00000	45.51120	2.80000	0.00000	0.00000
791	LIQUIDS W PH<=2	7.33910	0.00000	0.83250	0.00000	0.00000	0.00000	0.00000	0.00000
	Grand Totals	**48.11790**	**3.20450**	**6.97300**	**2.93750**	**45.51120**	**3.57850**	**0.61485**	**2.22030**

The Department of Toxics Substances Control (DTSC) takes every precaution to ensure the accuracy of data in the Hazardous Waste Tracking System (HWTS). However, because of the large number of manifests handled, inaccuracies in the submitted data, limitations of the manifest system and the technical limitations of the database, DTSC cannot guarantee that the data accurately reflect what was actually transported or produced.

Report Generation Date: 08/05/2020

California Waste Code by Year Matrix

ID Number: CAL000130960
Entity Type: Generator

2009 2018 Select Years

Calif. Code	Description	2009	2010	2011	2012	2014
122	ALKALINE SOLUTION (PH>=12.5) W/O METALS	0.00000	0.22935	0.00000	0.00000	0.00000
135	UNSPECIFIED AQUEOUS SOLUTION (2 < PH < 12.5)	0.00000	0.00000	1.93200	0.00000	1.38600
141	OFF-SPEC, AGED, OR SURPLUS INORGANICS	0.22935	1.25100	0.00000	0.00000	0.00000
181	OTHER INORGANIC SOLID WASTE	0.00000	0.25435	0.00000	0.00000	0.00000
213	HYDROCARBON SOLVENTS	0.00000	0.22935	0.00000	0.00000	0.00000
221	WASTE OIL AND MIXED OIL	0.00000	0.00000	0.83600	0.00000	0.00000

343	UNSPECIFIED ORGANIC LIQUID MIXTURE	0.37400	0.18700	0.00000	0.00000	0.00000
352	OTHER ORGANIC SOLIDS	0.45870	1.57675	0.07500	0.00000	0.00000
611	CONTAMINATED SOILS FROM SITE CLEAN-UP	0.22935	0.00000	0.08000	0.80000	0.00000
	Grand Totals	**1.29140**	**3.72780**	**2.92300**	**0.80000**	**1.38600**

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Report Generation Date: 08/05/2020

Exhibit M-3

Department of Toxic Substances Control
Meredith Williams, Ph.D., Director
1001 "I" Street
P.O. Box 806
Sacramento, California 95812-0806

Jared Blumenfeld
Secretary for
Environmental Protection

Gavin Newsom
Governor

EPA ID PROFILE

Map

ID Number:	CAL000040113	**Status:**	INACTIVE
Name:	PALL WELL TECHNOLOGY U127	**Inactive Date:**	6/30/2004 12:00:00 AM
County:	KERN	**Record Entered:**	9/17/1990 12:00:00 AM
NAICS:	N/A	**Last Updated:**	1/27/2016 11:13:08 AM

	Name	Address	City	State	Zip Code	Phone
Location	PALL WELL TECHNOLOGY	19433 COLOMBO ST	BAKERSFIELD	CA	933080000	
Mailing		19433 COLOMBO ST	BAKERSFIELD	CA	933080000	
Owner	PALL CORPORATION	--	--	99	--	0000000000
Operator/Contact	INACTIVE BUSINESS MOVED	INACT PER NONDEL 00VQ - CR	--	99	--	--

Based Only Upon ID Number: **CAL000040113**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
Yes	N/A	N/A

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

Top line represents Manifest Count and Bottom line represents Total Tonnage

Year	Generator	Trans. 1	Trans. 2	TSDF	ALT. TSDF

2004	1 0.42000	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2005	2 0.28560	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2006	4 2.44660	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2007	2 0.75200	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2014	1 0.19000	0 0.00000	0 0.00000	0 0.00000	0 0.00000

Non California Manifest Total Tonnage

No Records Found

Waste Code Matrix					
California	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

Waste Code Matrix as a spreadsheet

The Department of Toxics Substances Control (DTSC) takes every precaution to ensure the accuracy of data in the Hazardous Waste Tracking System (HWTS). However, because of the large number of manifests handled, inaccuracies in the submitted data, limitations of the manifest system and the technical limitations of the database, DTSC cannot guarantee that the data accurately reflect what was actually transported or produced.

Report Generation Date: 08/05/2020

California Waste Code by Year Matrix

ID Number: CAL000040113
Entity Type: Generator

2004 2020 Select Years

Calif. Code	Description	2004	2005	2006	2007	2014
135	UNSPECIFIED AQUEOUS SOLUTION (2 < PH < 12.5)	0.42000	0.28560	1.14660	0.25200	0.00000
221	WASTE OIL AND MIXED OIL	0.00000	0.00000	0.00000	0.00000	0.19000
352	OTHER ORGANIC SOLIDS	0.00000	0.00000	1.30000	0.50000	0.00000
	Grand Totals	**0.42000**	**0.28560**	**2.44660**	**0.75200**	**0.19000**

The Department of Toxics Substances Control (DTSC) takes every precaution to ensure the accuracy of data in the Hazardous Waste Tracking System (HWTS). However, because of the large number of manifests handled, inaccuracies in the submitted data, limitations of the manifest system and the technical limitations of the database, DTSC cannot guarantee that the data accurately reflect what was actually transported or produced.

Report Generation Date: 08/05/2020

Exhibit M-4

Department of Toxic Substances Control
Meredith Williams, Ph.D., Director
1001 "I" Street
P.O. Box 806
Sacramento, California 95812-0806

Jared Blumenfeld
Secretary for
Environmental Protection

Gavin Newsom
Governor

HAZNET:

Name:	U120	BAKER HUGHES OILFIELD OPERATIONS INC
Address:		19433 COLOMBO ST
Address 2:		Not reported
City,State,Zip:		BAKERSFIELD, CA 93308
Year:		2012
Gepaid:		CAL000379080

EPA ID PROFILE

Map

ID Number: CAL000379080
Name: BAKERSFIELD UPSTREAM CHEMICALS U116
County: KERN
NAICS: 213112

Status: ACTIVE
Inactive Date:
Record Entered: 10/18/2012 10:59:22 AM
Last Updated: 7/22/2020 8:41:38 AM

	Name	Address	City	State	Zip Code	Phone
Location	BAKERSFIELD UPSTREAM CHEMICALS	19433 COLOMBO ST	BAKERSFIELD	CA	93308	
Mailing		17021 ALDINE WESTFIELD	HOUSTON	TX	770730000	
Owner	BAKER PETROLITE, LLC	17021 ALDINE WESTFIELD	HOUSTON	TX	770730000	6613363359
Operator/Contact	BECKY	3901 FANUCCHI WAY	SHAFTER	CA	932630000	6613034419

Based Only Upon ID Number: **CAL000379080**

Calif. Manifests?	Non Calif. Manifests?	Transporter Registration?
Yes	N/A	N/A

California and Non California Manifest Tonnage Total and Waste Code by Year Matrix by Entity Type (if available) are on the next page

Calif. Manifest Counts and Total Tonnage

Top line represents Manifest Count and Bottom line represents Total Tonnage

Year	Generator	Trans. 1	Trans. 2	TSDF	ALT. TSDF

2012	2 0.16600	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2014	1 1.26000	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2015	18 19.83560	0 0.00000	0 0.00000	0 0.00000	0 0.00000
2016	7 2.37460	0 0.00000	0 0.00000	0 0.00000	0 0.00000

Non California Manifest Total Tonnage

No Records Found

Waste Code Matrix					
California	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF
RCRA	Generator	Trans. 1	Trans. 2	TSDF	Alt. TSDF

Waste Code Matrix as a spreadsheet

The Department of Toxics Substances Control (DTSC) takes every precaution to ensure the accuracy of data in the Hazardous Waste Tracking System (HWTS). However, because of the large number of manifests handled, inaccuracies in the submitted data, limitations of the manifest system and the technical limitations of the database, DTSC cannot guarantee that the data accurately reflect what was actually transported or produced.

Report Generation Date: 08/05/2020

California Waste Code by Year Matrix

ID Number: CAL000379080
Entity Type: Generator

2012 2020 Select Years

Calif. Code	Description	2012	2014	2015	2016
122	ALKALINE SOLUTION (PH>=12.5) W/O METALS	0.00000	0.00000	0.00750	0.00000
134	AQ SOL (2 < PH < 12.5) W ORG RESIDUES < 10%	0.12600	0.00000	0.00000	0.00000
135	UNSPECIFIED AQUEOUS SOLUTION (2 < PH < 12.5)	0.00000	1.26000	0.00000	0.00000
141	OFF-SPEC, AGED, OR SURPLUS INORGANICS	0.00000	0.00000	8.49450	0.54210
221	WASTE OIL AND MIXED OIL	0.00000	0.00000	0.41420	0.49400
331	OFF-SPEC, AGED, OR SURPLUS ORGANICS	0.00000	0.00000	4.85550	1.13850
343	UNSPECIFIED ORGANIC LIQUID MIXTURE	0.00000	0.00000	1.10300	0.00000
352	OTHER ORGANIC SOLIDS	0.04000	0.00000	2.27500	0.20000

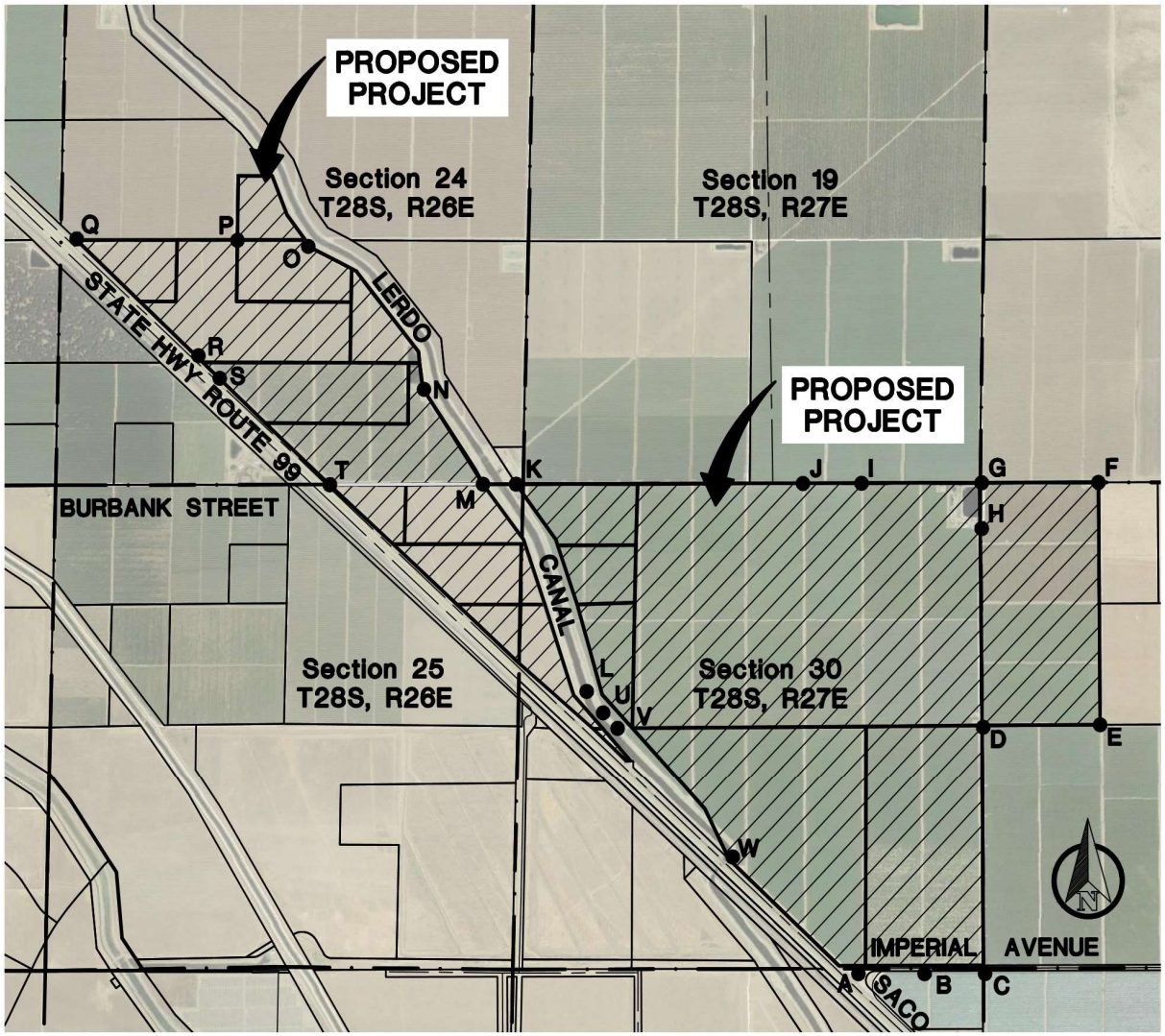
551	LABORATORY WASTE CHEMICALS	0.00000	0.00000	0.04750	0.00000
611	CONTAMINATED SOILS FROM SITE CLEAN-UP	0.00000	0.00000	1.50000	0.00000
791	LIQUIDS W PH<=2	0.00000	0.00000	1.13840	0.00000
	Grand Totals	**0.16600**	**1.26000**	**19.83560**	**2.37460**

The Department of Toxics Substances Control (DTSC) takes every precaution to ensure the accuracy of data in the Hazardous Waste Tracking System (HWTS). However, because of the large number of manifests handled, inaccuracies in the submitted data, limitations of the manifest system and the technical limitations of the database, DTSC cannot guarantee that the data accurately reflect what was actually transported or produced.

Report Generation Date: 08/05/2020

APPENDIX N

Site Photographs



PROPOSED PROJECT

Portions of Sections 24 & 25, Township 28 South, Range26 East &
Portions of Sections 29 & 30, Township 28 South, Range 27 East
County of Kern, State of California

Proposed Project Photo Index

Figure N-1

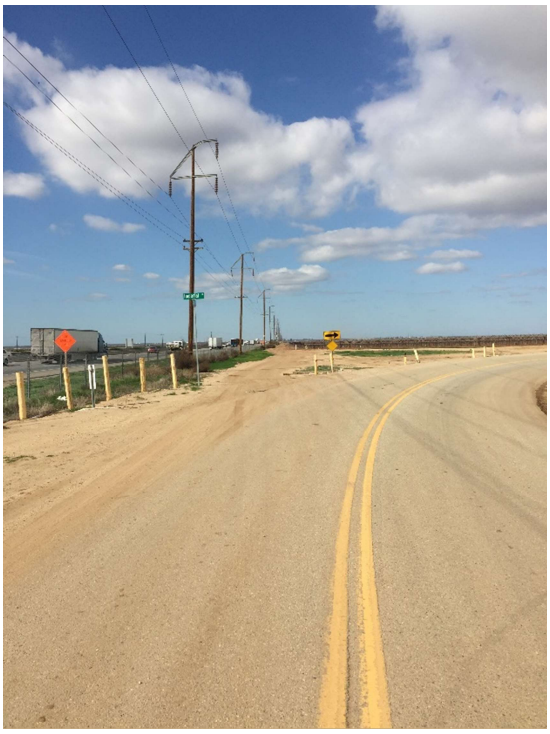


IMAGE 1
LOOKING NORTH AT SACO RD. & IMPERIAL AVE



IMAGE 2
LOOKING SOUTH DOWN SACO RD.



IMAGE 3
LOOKING EAST DOWN IMPERIAL AVE.

Photo Index Point 'A'

Figure N-2



IMAGE 4 - LOOKING NORTH FROM IMPERIAL AVE.



IMAGE 5 - LOOKING WEST ALONG IMPERIAL AVE.



IMAGE 6 - LOOKING EAST ALONG IMPERIAL AVE.

Photo Index Point 'B'

Figure N-3



IMAGE 7 -LOOKING NORTH FROM IMPERIAL AVE.



IMAGE 8 - LOOKING WEST ALONG IMPERIAL AVE.



IMAGE 9 - LOOKING EAST ALONG IMPERIAL AVE.

Photo Index Point 'C'

Figure N-4



IMAGE 10 -LOOKING NORTH



IMAGE 11 - LOOKING SOUTH

Photo Index Point 'D'

Figure N-5



IMAGE 12 -LOOKING EAST



IMAGE 13 - LOOKING WEST

Photo Index Point 'D'

Figure N-5



IMAGE 14 -LOOKING NW, CONCRETE LOADING DOCK



IMAGE 15 – NW OF IMAGE 14, IRRIGATON PUMP

Photo Index Point 'D'

Figure N-5



IMAGE 16 -LOOKING NORTH



IMAGE 17 - LOOKING SOUTH

Photo Index Point 'E'

Figure N-6



IMAGE 18 -LOOKING EAST



IMAGE 19 - LOOKING WEST

Photo Index Point 'E'

Figure N-6



IMAGE 20 -LOOKING SOUTH



IMAGE 21 – LOOKING EAST



IMAGE 22 - LOOKING WEST

Photo Index Point 'F'

Figure N-7



IMAGE 23 -LOOKING SOUTHWEST, WATER STORAGE TANK & IRRIGATION PUMP



IMAGE 24 - LOOKING SOUTH, WEST OF IMAGE 23, IRRIGATION PUMP

Photo Index Point 'F'

Figure N-7



IMAGE 25 - LOOKING NORTH



IMAGE 26 – LOOKING SOUTH

Photo Index Point 'G'

Figure N-8



IMAGE 27 – LOOKING EAST



IMAGE 28 – LOOKING WEST

Photo Index Point 'G'

Figure N-8



IMAGE 29 – LOOKING SOUTHEAST, IRRIGATION POND

Photo Index Point 'G'

Figure N-8



IMAGE 30 - LOOKING NORTH



IMAGE 31 – LOOKING SOUTH

Photo Index Point 'H'

Figure N-9



IMAGE 32 – LOOKING WEST



IMAGE 33 – LOOKING WEST, WATER STORAGE & SILO

Photo Index Point 'H'

Figure N-9



IMAGE 34 – LOOKING NORTHWEST, IRRIGATION FILTER SYSTEM



IMAGE 35 – LOOKING WEST-SOUTHWEST, METAL SHOP

Photo Index Point 'H'

Figure N-9



IMAGE 36 – LOOKING WEST, WEST OF IMAGE 35
HAZARDOUS CHEMICAL STORAGE UNIT



IMAGE 37 – LOOKING NORTHWEST, NORTH OF IMAGE 36
WOOD & METAL AG REPAIR SHOP

Photo Index Point 'H'

Figure N-9



IMAGE 38 – LOOKING NORTH, NORTH OF IMAGE 37
WOOD RESTROOM BUILDING



IMAGE 39 – LOOKING NORTH
AG STORAGE YARD

Photo Index Point 'H'

Figure N-9



IMAGE 40 – LOOKING EAST, ACROSS FROM IMAGE 38
UNLEADED FUEL STORAGE TANK



IMAGE 41 – LOOKING EAST, STANDING SOUTH OF IMAGE 41
PROPANE STORAGE TANK

Photo Index Point 'H'

Figure N-9



IMAGE 42 – LOOKING WEST, NORTH OF IMAGE 38
WOOD SHADE PARKING STRUCTURE



IMAGE 43 – LOOKING EAST, WEST OF IMAGE 43
SEWER SEPTIC MANHOLES & ABANDONED WELL PAD

Photo Index Point 'H'

Figure N-9



IMAGE 44 - LOOKING SOUTH, IRRIGATION RISER

Photo Index Point 'I'

Figure N-10



IMAGE 45 - LOOKING SOUTH, IRRIGATION PUMP & STANDPIPE

Photo Index Point 'J'

Figure N-11

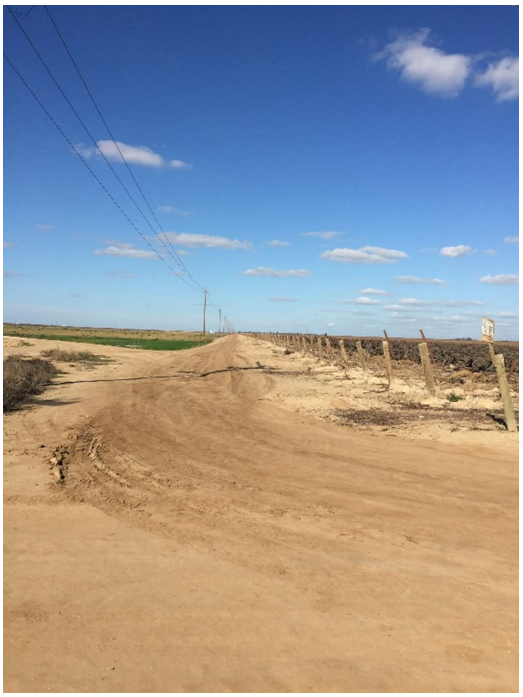


IMAGE 46 - LOOKING NORTH



IMAGE 47 – LOOKING SOUTH

Photo Index Point 'K'

Figure N-12



IMAGE 48 – LOOKING EAST



IMAGE 49 – LOOKING WEST

Photo Index Point 'K'

Figure N-12



IMAGE 50 – LOOKING SOUTHWEST, IRRIGATION PUMP & ELECTRICAL PANEL



IMAGE 51 – LOOKING NORTHWEST, CAWELO PUMP STATION 'B'

Photo Index Point 'K'

Figure N-12



IMAGE 52 – LOOKING NORTH



IMAGE 53 – LOOKING SOUTH

Photo Index Point 'L'

Figure N-13



IMAGE 54 – LOOKING EAST



IMAGE 55 – LOOKING WEST

Photo Index Point 'L'

Figure N-13

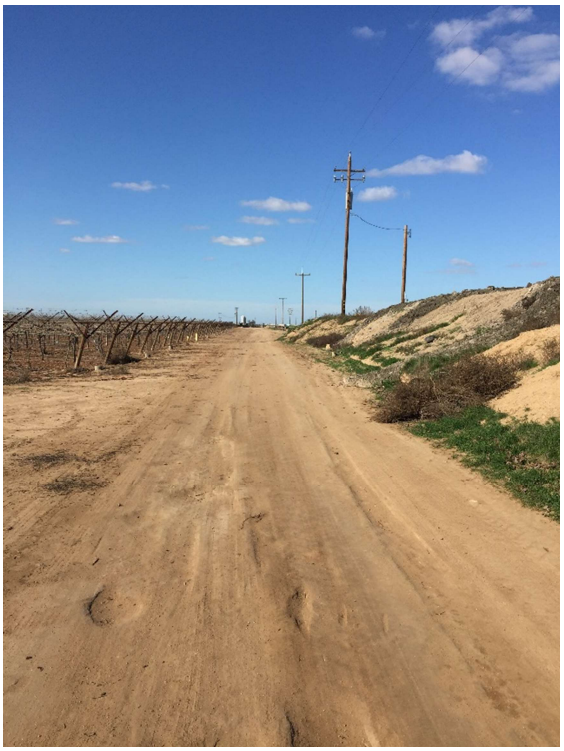


IMAGE 56 – LOOKING NORTH



IMAGE 57 – LOOKING SOUTH

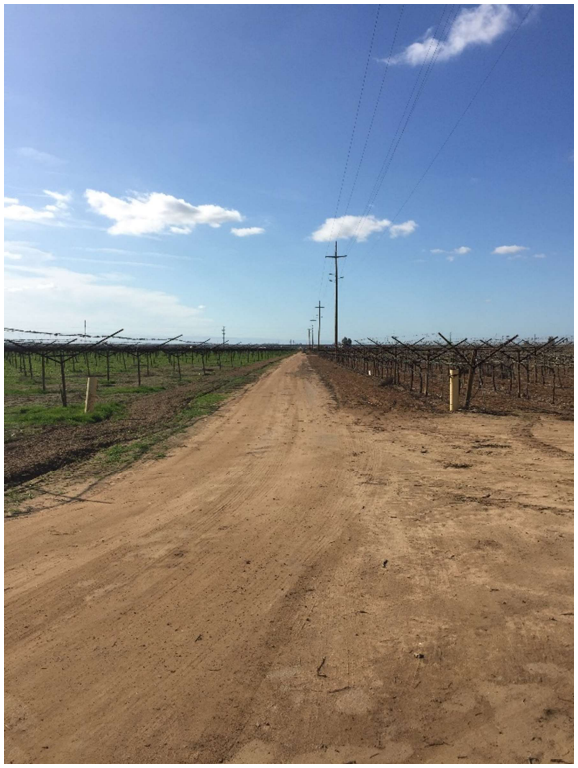


IMAGE 58 – LOOKING WEST

Photo Index Point 'M'

Figure N-14



IMAGE 59 – LOOKING NORTH



IMAGE 60 – LOOKING SOUTH

Photo Index Point 'N'

Figure N-15



**IMAGE 61 – LOOKING WEST, IRRIGATION PUMP,
COVERED CONCRETE LOADING DOCK & ELECTRICAL PANEL**



**IMAGE 62 – LOOKING NORTHWEST, NORTH OF IMAGE 61,
IRRIGATION FILTRATION SYSTEM**

Photo Index Point 'N'

Figure N-15



**IMAGE 63 – LOOKING NORTHWEST, NORTH OF IMAGE 62,
IRRIGATION STORAGE POND**

Photo Index Point 'N'

Figure N-15



IMAGE 64 – LOOKING EAST, ELECTRICAL TRANSFORMER



IMAGE 65 – LOOKING EAST, NORTH OF IMAGE 64

Photo Index Point 'O'

Figure N-16



IMAGE 66 – LOOKING NORTH



IMAGE 67 – LOOKING SOUTH

Photo Index Point 'P'

Figure N-17



IMAGE 68 – LOOKING EAST



IMAGE 69 – LOOKING WEST, IRRIGATION STANDPIPE

Photo Index Point 'P'

Figure N-17



IMAGE 70 – LOOKING NORTHWEST ALONG HWY 99



IMAGE 71 – LOOKING SOUTHEAST ALONG HWY 99

Photo Index Point 'Q'

Figure N-18



IMAGE 72 – LOOKING EAST

Photo Index Point 'Q'

Figure N-18



IMAGE 73 – LOOKING SOUTHEAST, DRAINAGE POND

Photo Index Point 'R'

Figure N-19



IMAGE 74 – LOOKING NORTHWEST, DRAINAGE POND



IMAGE 75 – LOOKING EAST

Photo Index Point 'S'

Figure N-20



IMAGE 76 – LOOKING SOUTHEAST, DRAINAGE POND

Photo Index Point 'T'

Figure N-21



IMAGE 77 – LOOKING EAST, NON-POTABLE WATER CONTROL VALVE

Photo Index Point 'U'

Figure N-22



IMAGE 78 – LOOKING WEST, ZANINOVICH IRRIGATION PUMP & PIPELINE

Photo Index Point 'V'

Figure N-23



IMAGE 79 – LOOKING WEST, LERDO CANAL CULVERT UNDER HWY 99 BRIDGE (CURRENTLY UNDERGOING REPAIRS)

Photo Index Point 'W'

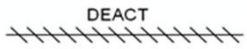
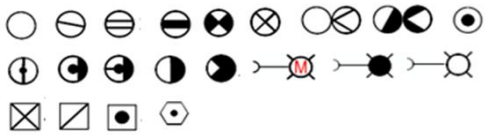
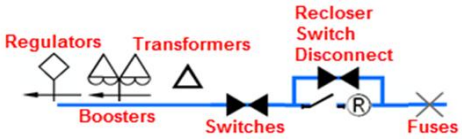
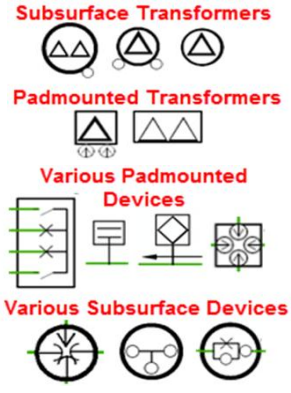
Figure N-24

APPENDIX O

Pacific Gas & Electric Company

Electrical Transmission & Distribution Maps

BASIC LEGEND FOR PG&E DISTRIBUTION MAPS

SYMBOL	DEFINITION	
Note: Line Segments - GREEN = UNDERGROUND / BLUE = OVERHEAD (* exceptions noted below)		
	Primary Voltage Overhead Conductor	
	Secondary Voltage Overhead Conductor	
	Primary Voltage Underground Conductor	APPROXIMATE LOCATIONS VERIFY BY HAND TOOLS PACIFIC GAS AND ELECTRIC CO. PLEASE CALL U.S.A. AT LEAST 48 HOURS PRIOR TO EXCAVATING IN THIS AREA Dial 811
	Secondary Voltage Underground Conductor	
	* Deactivated Underground Conductor (Not Energized)	
	* Empty Underground Conduit	
	Structures that Support Overhead Facilities (e.g. Poles, Towers, etc.)	
	Although they share the same symbol - Customer Service Locations are differntiated from Transmission Towers by symbol size	
Note: Symbols attached to Overhead Conductor Line Segments are Overhead devices		
	Examples of some more common Overhead equipment	
Note: Symbols attached to Underground Conductor Line Segments are either Padmounted or Subsurface facilities		
	Examples of some more common Underground/Padmounted Enclosures	
	Examples of some more common Subsurface/Padmounted Equipment (Note: Padmounted Equipment is typically enclosed in a rectangle. Subsurface Equipment is typically enclosed in a circle.)	

BASIC LEGEND FOR PG&E TRANSMISSION MAPS

SYMBOL	DEFINITION
	Overhead Transmission Lines (Various Voltages)
	Foreign Transmission Lines (Various Voltages)
	Structures that Support Overhead Facilities (e.g. Poles, Towers, etc.)
	Underground Transmission Lines Various Voltages
	Underground Structures (e.g. Manholes)

Pacific Gas & Electric Company

OVERVIEW

Date: 6/16/2020

1 inch = 600 feet

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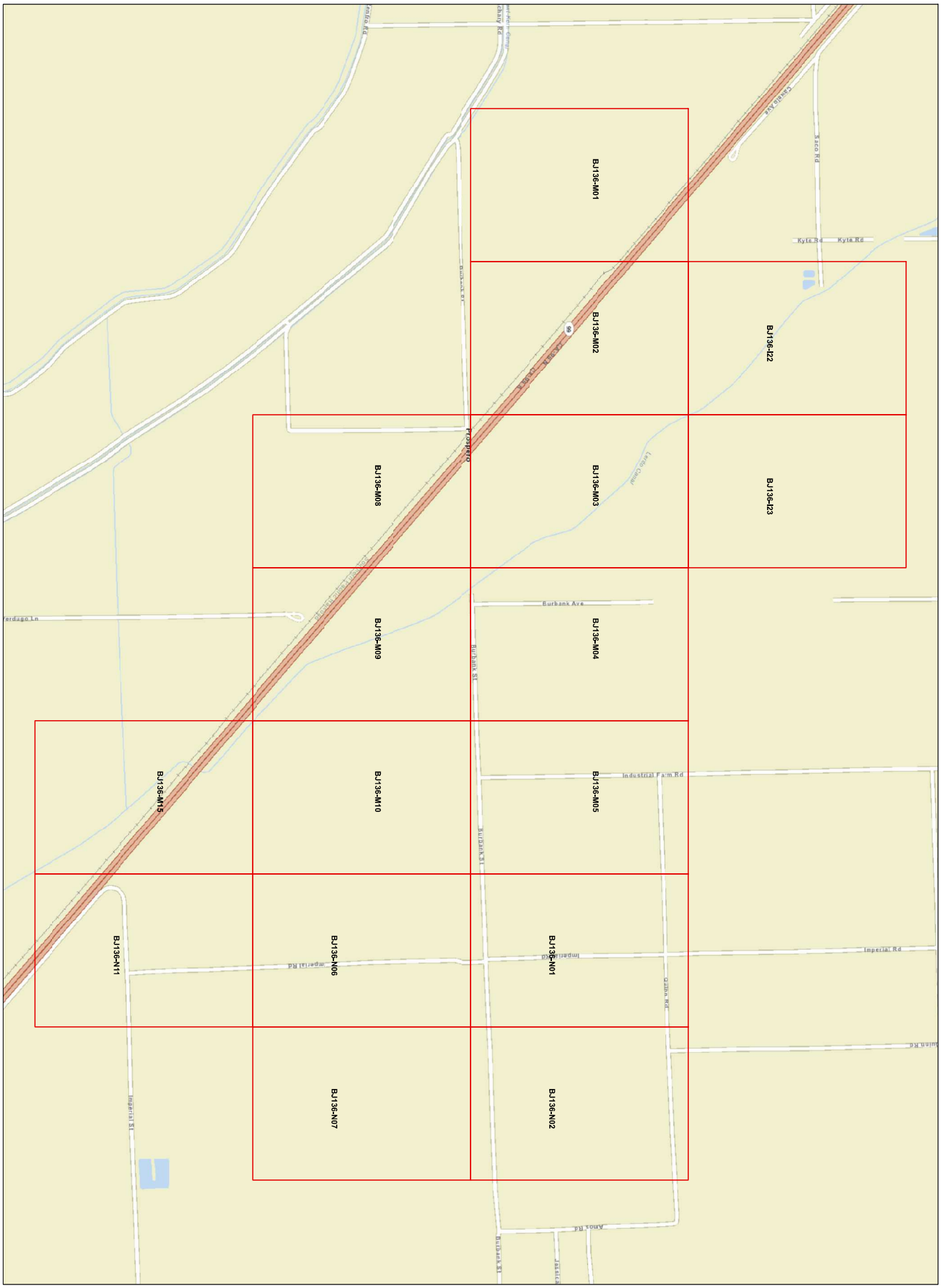
APPROXIMATE LOCATIONS
VERIFY BY HAND TOOLS
PACIFIC GAS AND ELECTRIC CO.

PLEASE CALL U.S.A. AT
LEAST 48 HOURS PRIOR TO
EXCAVATING IN THIS AREA
Dial 811

Printed on: 06/16/2020
Reference PG&E's GIS for the most current information.



Pacific Gas & Electric Company
BJ136-I22

ELECTRIC DISTRIBUTION

Printed on: 06/16/2020
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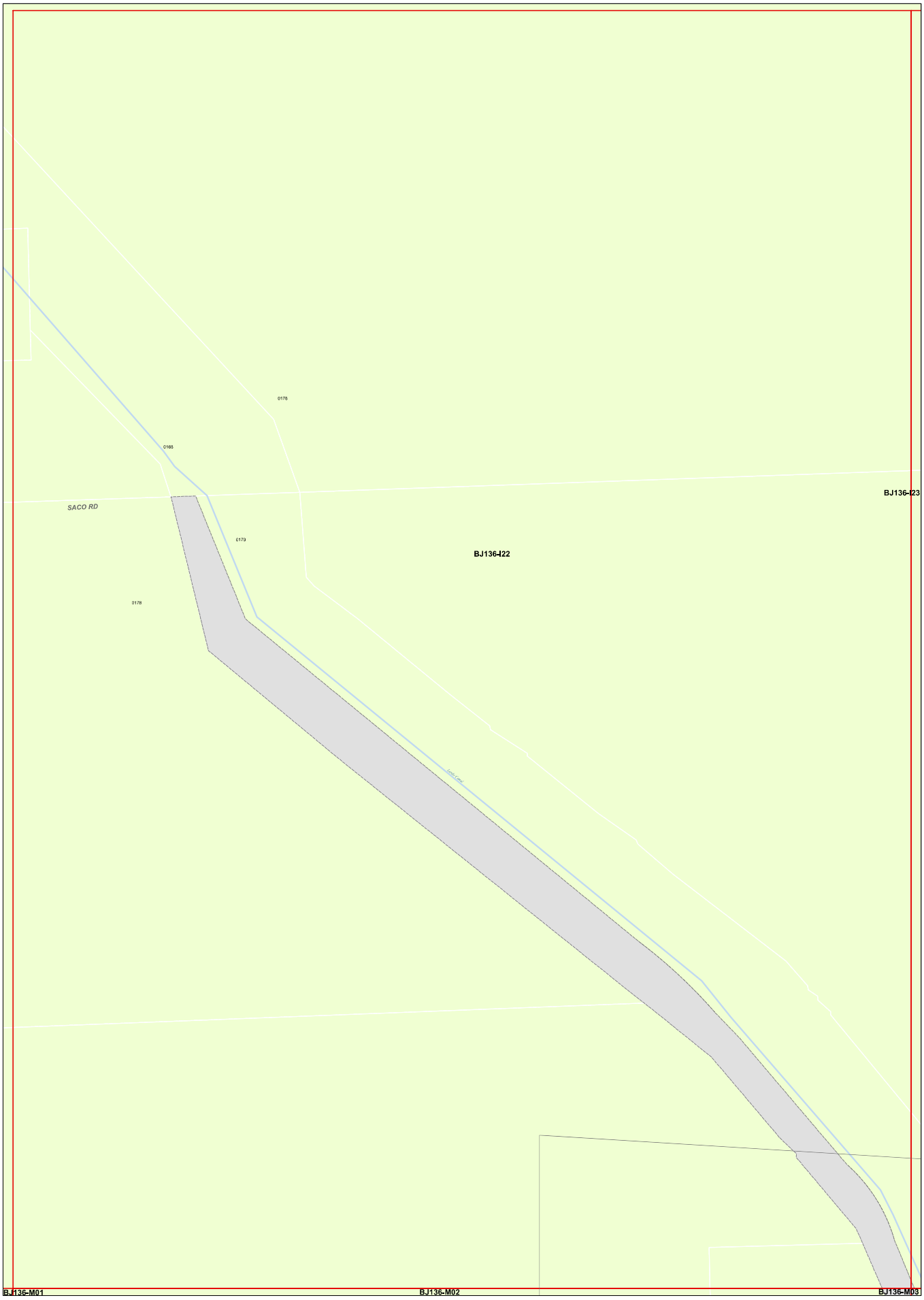

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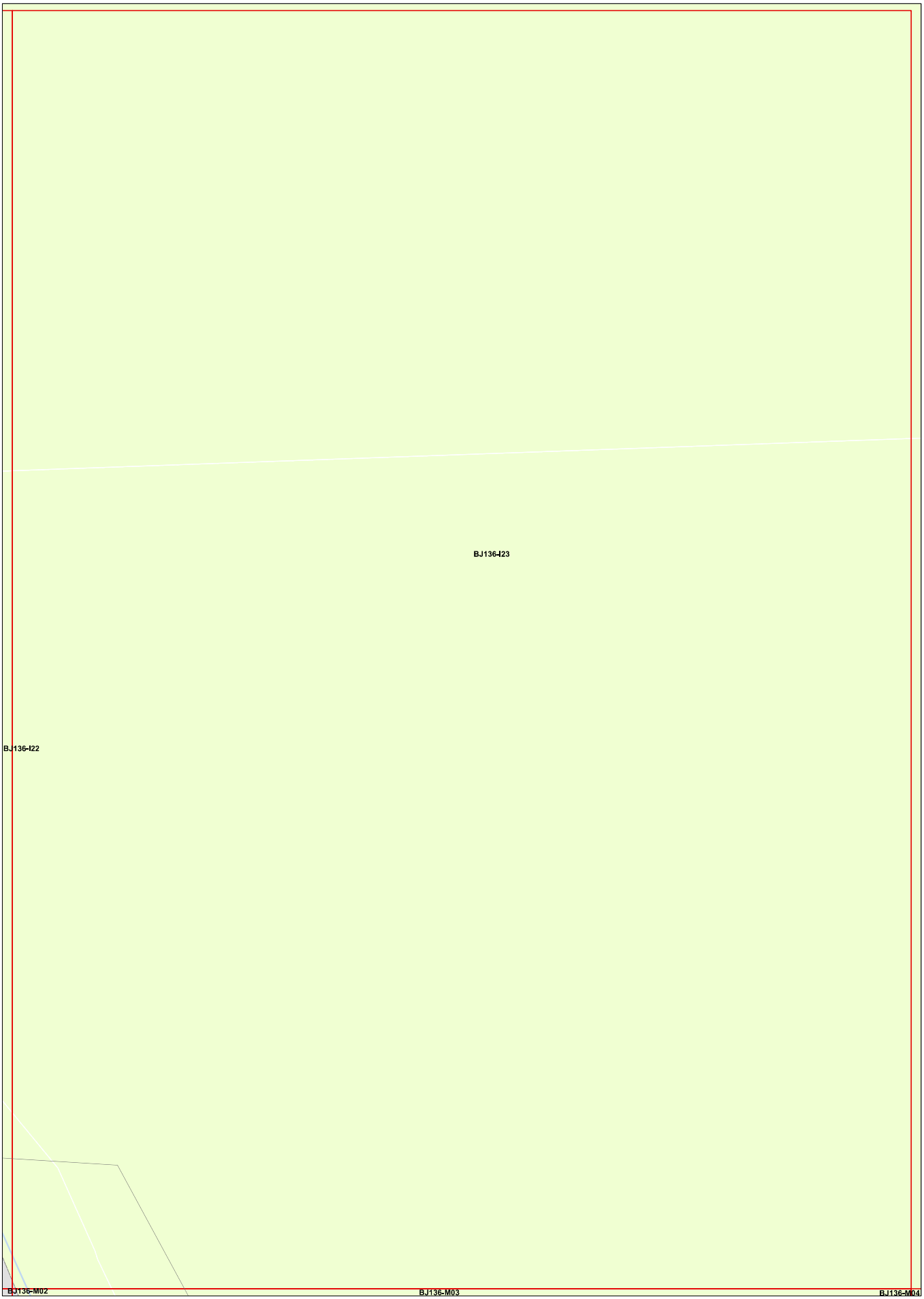

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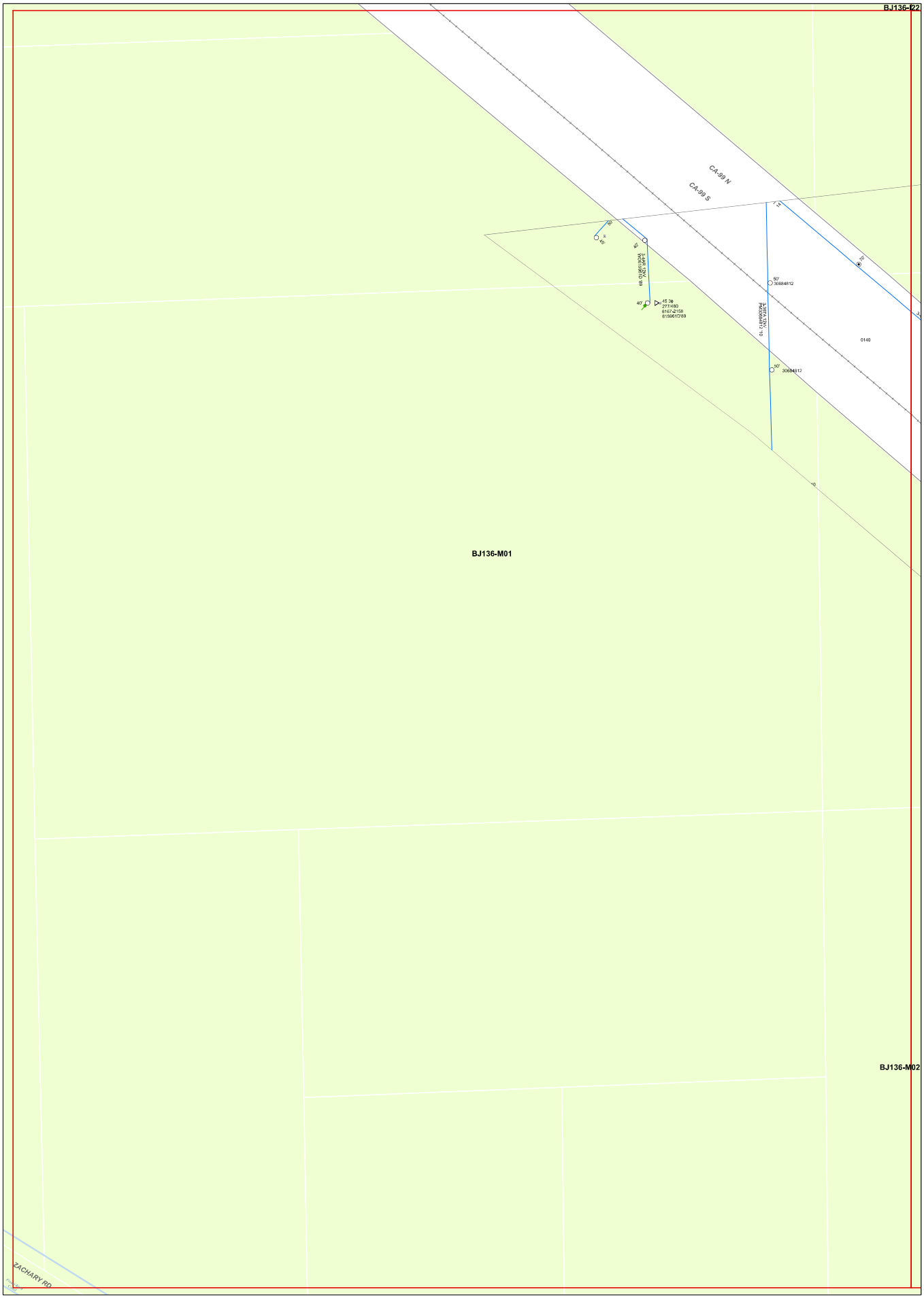

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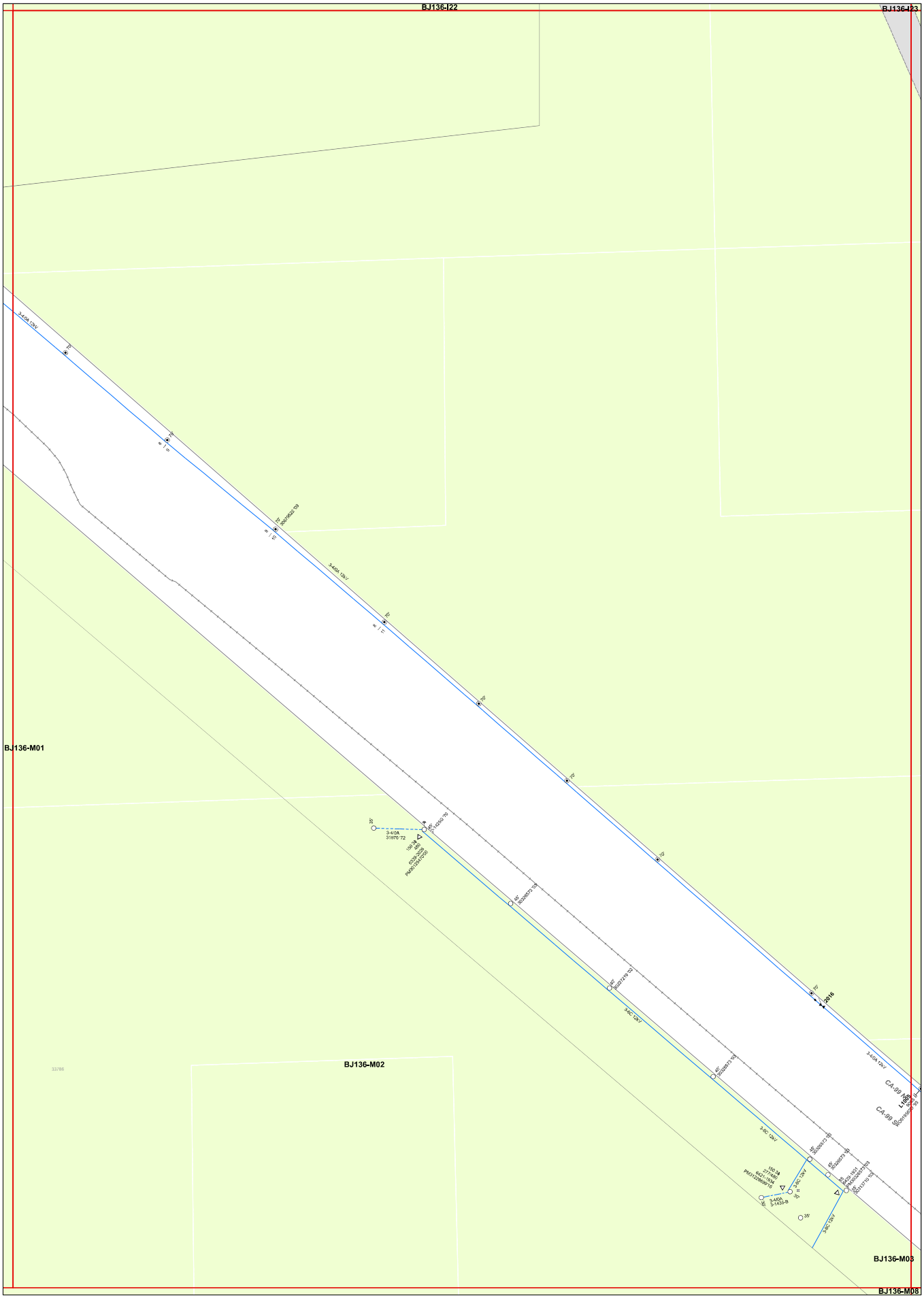

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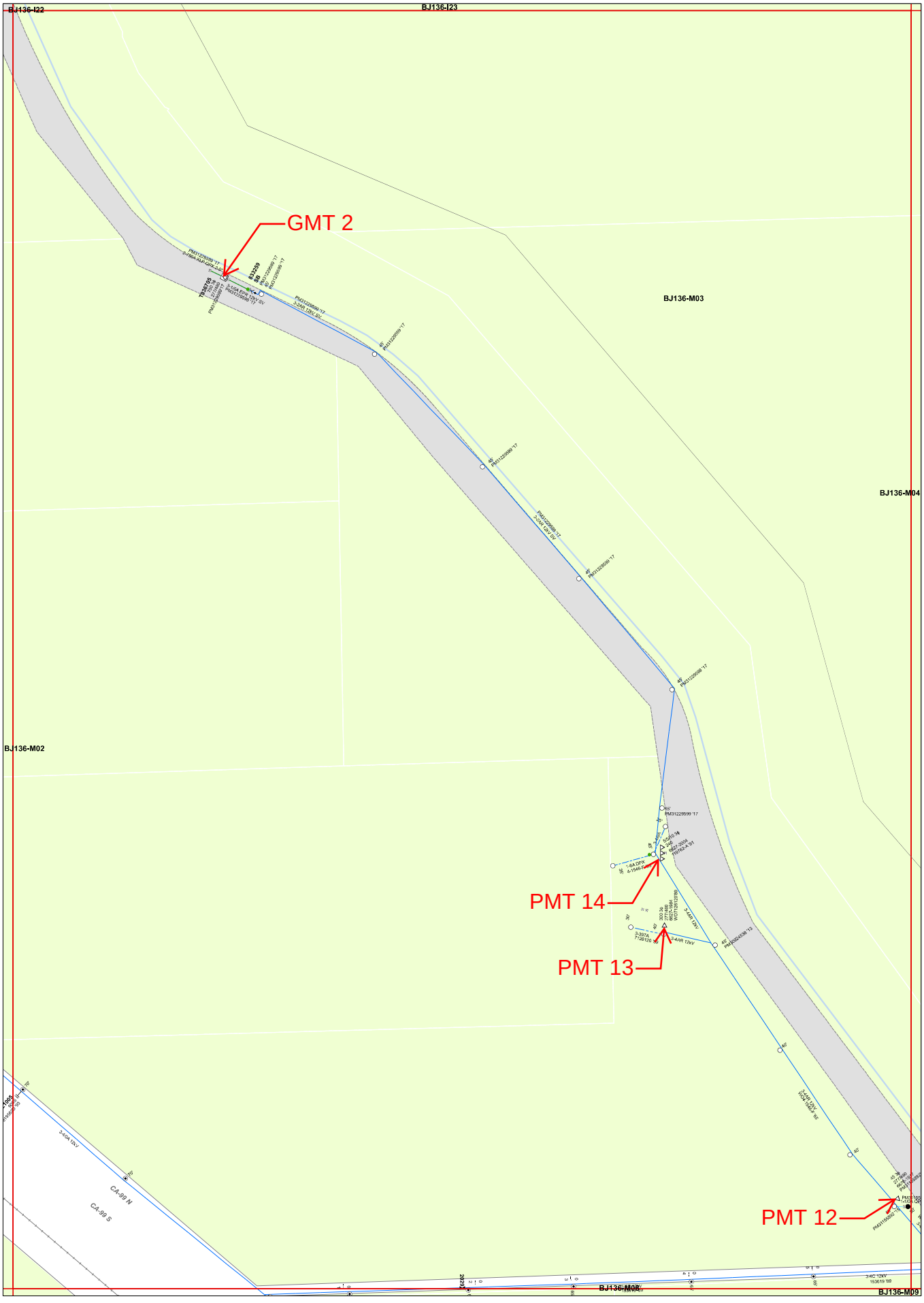

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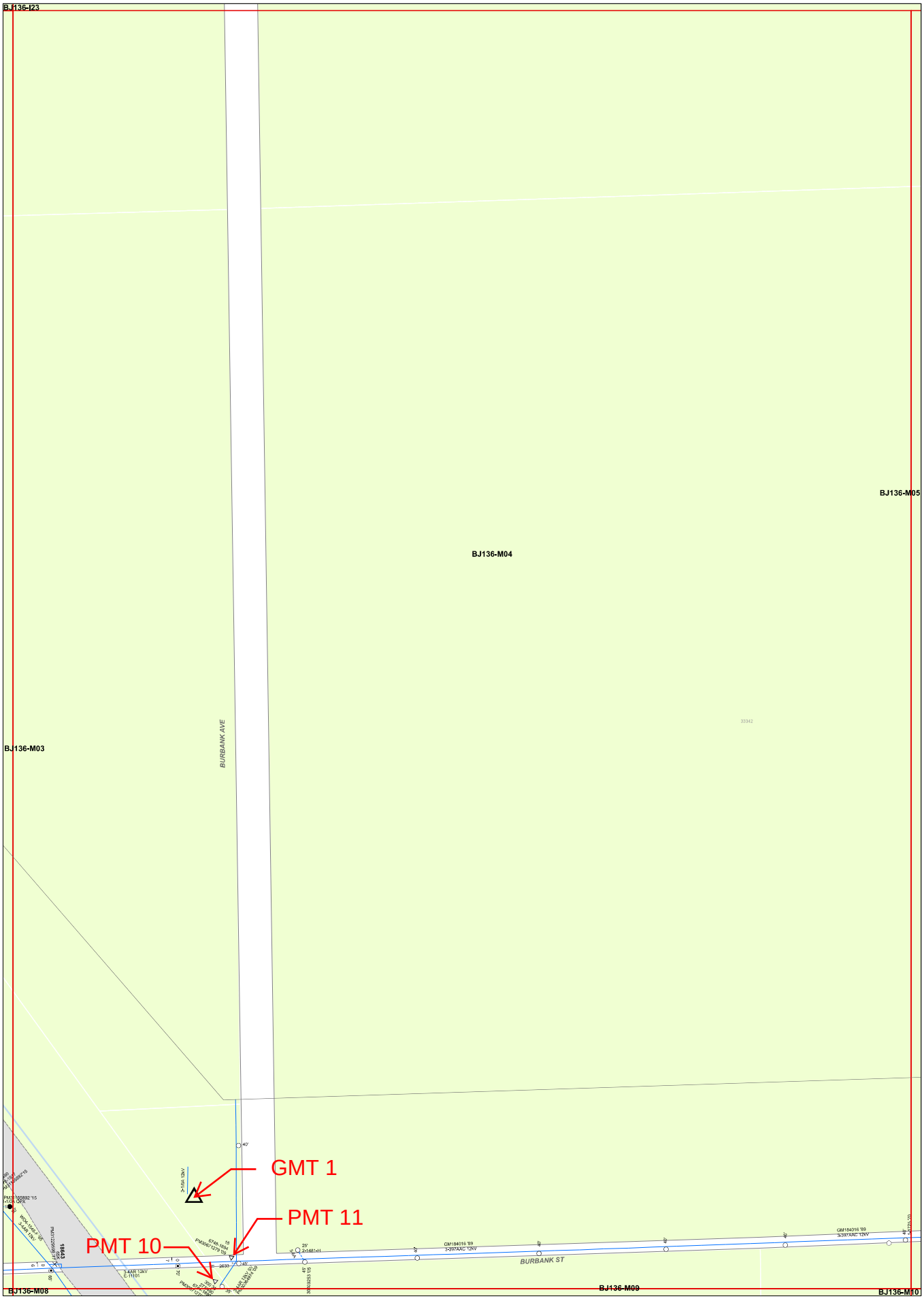

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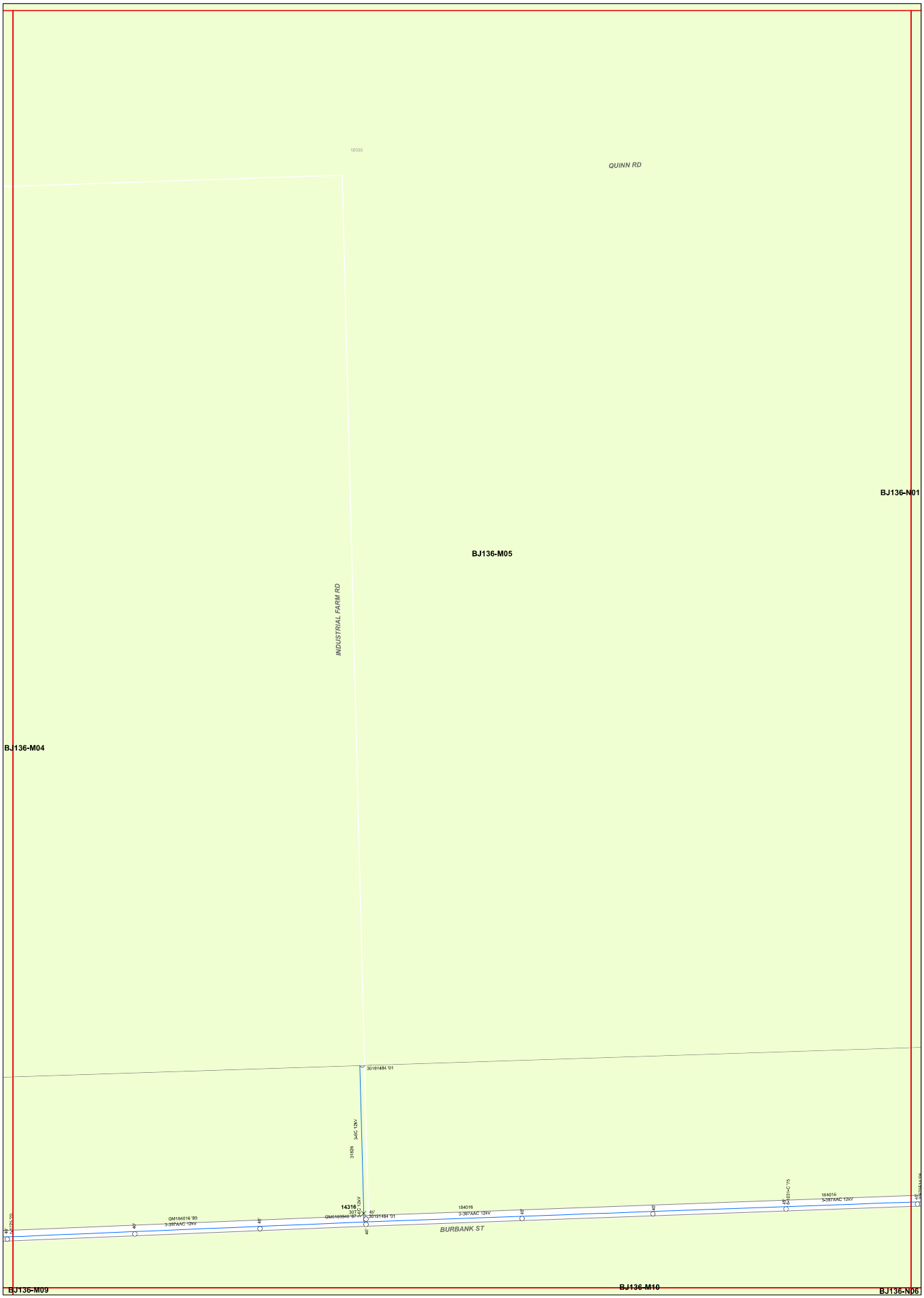

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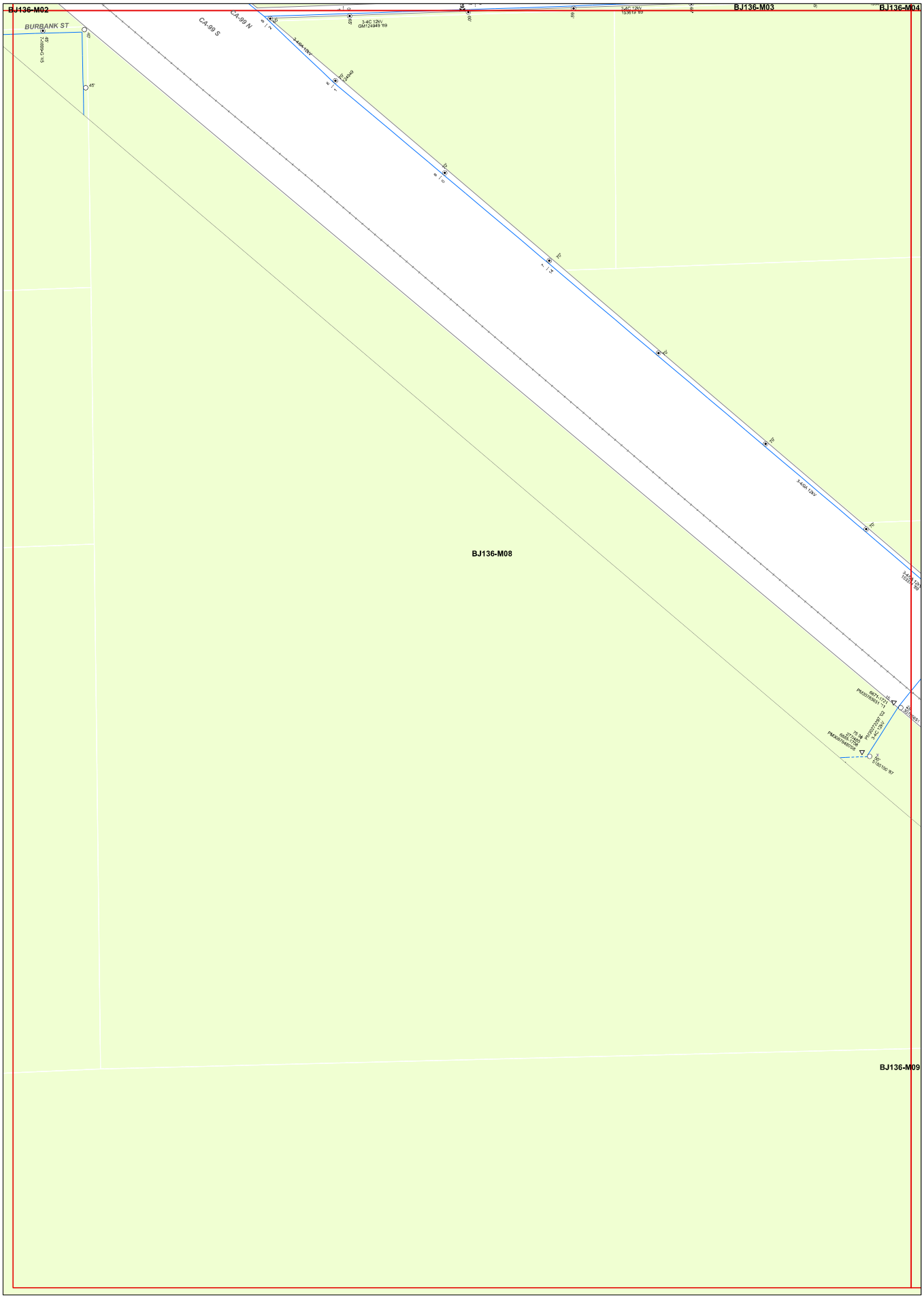
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BJ136-M03
BJ136-M04
BJ136-M08
BJ136-M09
BURBANK ST
CA-99 N
CA-99 S
3-4/0A 12kV
3-4C 12kV GM124949 '89
3-4C 12kV 125912 '89
3-4/0A 12kV 125912 '89
3-4/0A 12kV 125912 '89
3-4/0A 12kV
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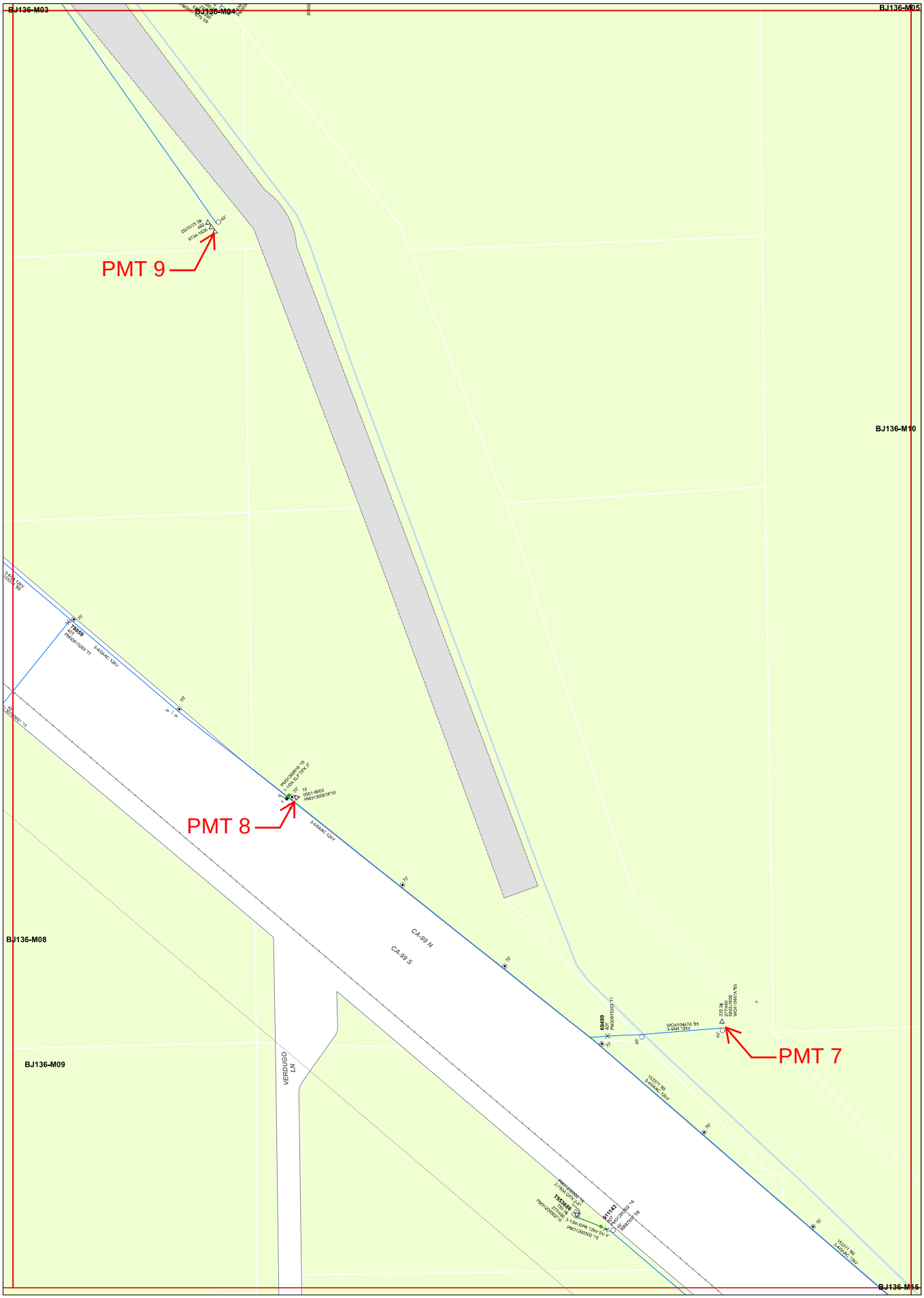

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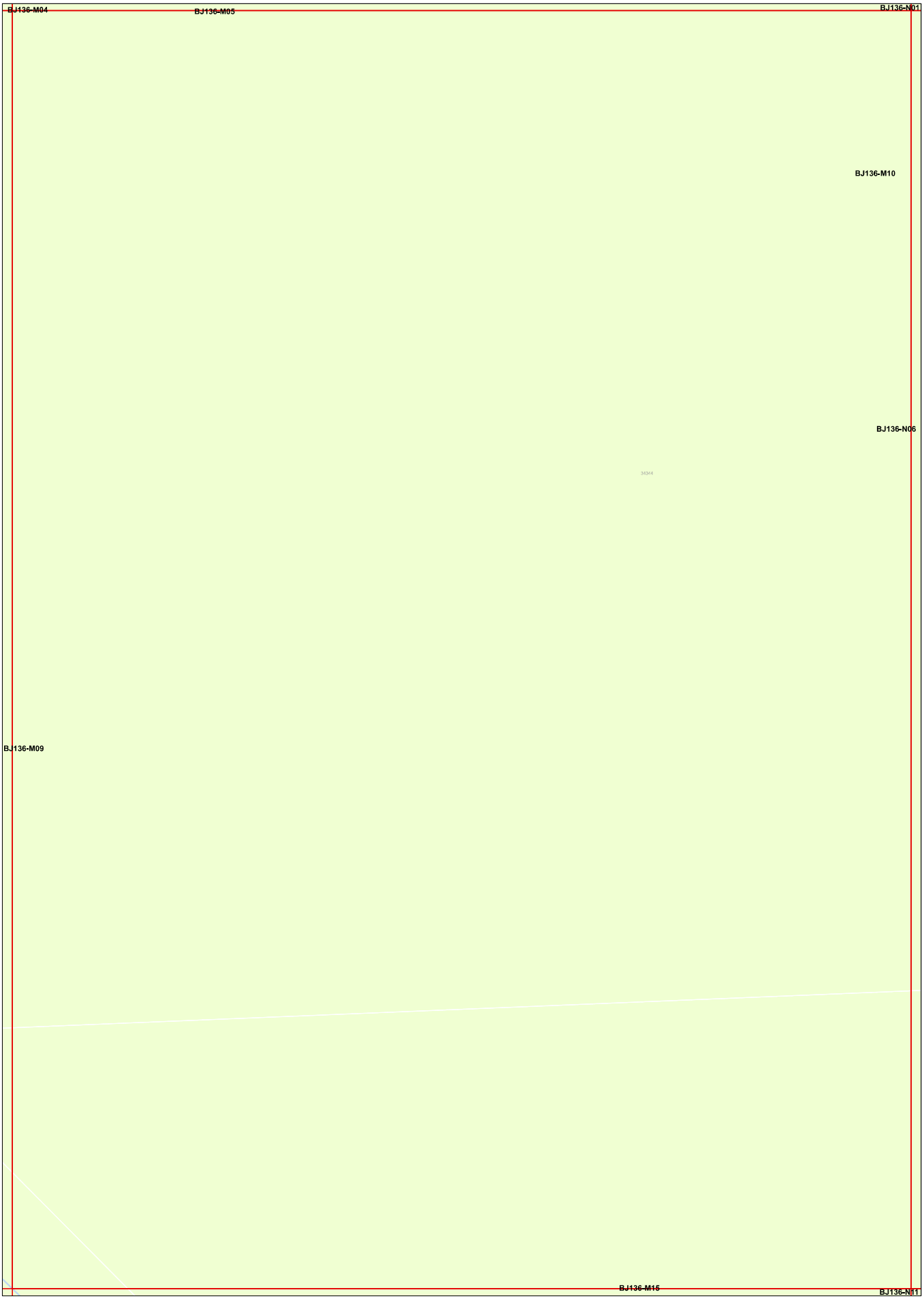

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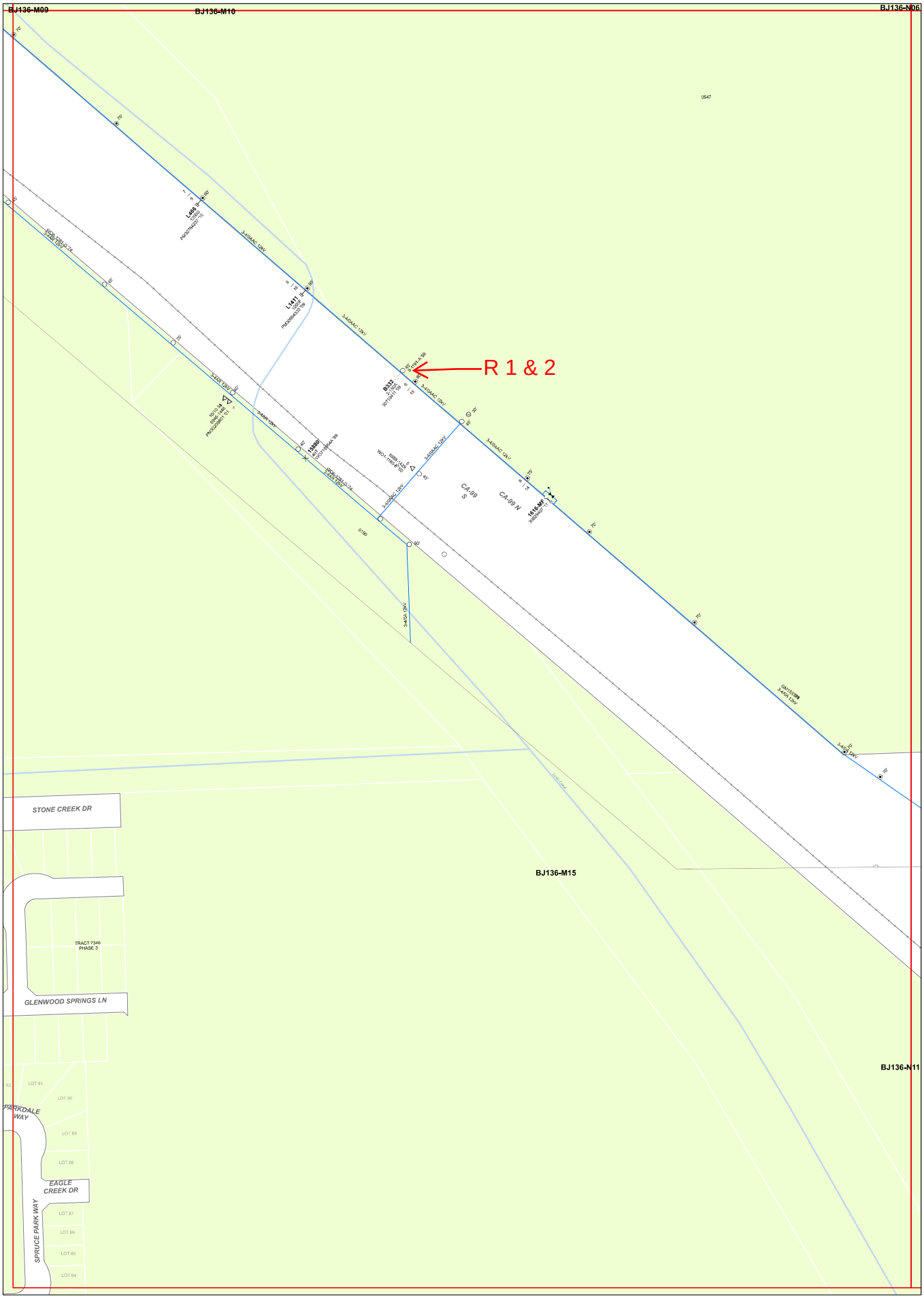

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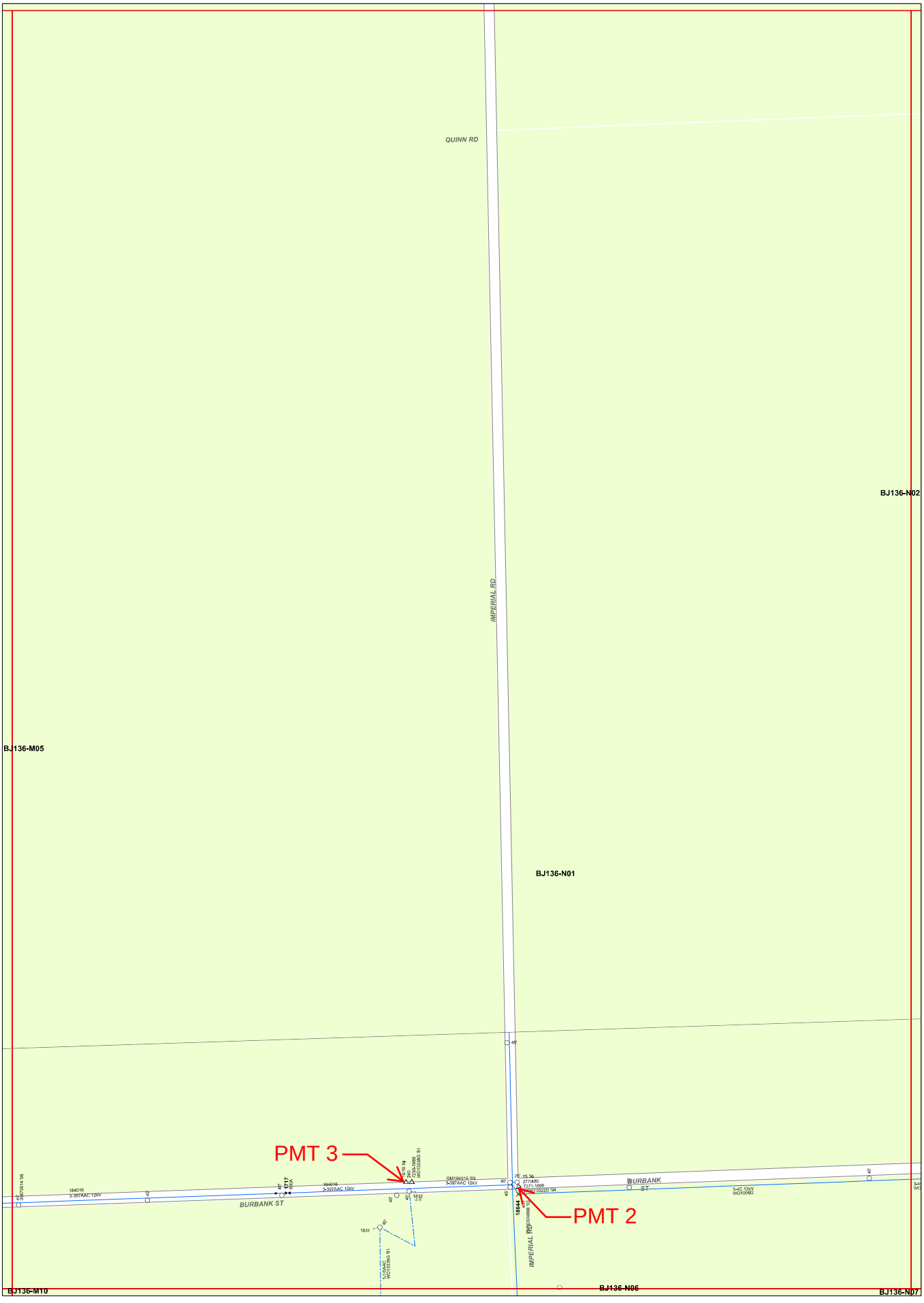

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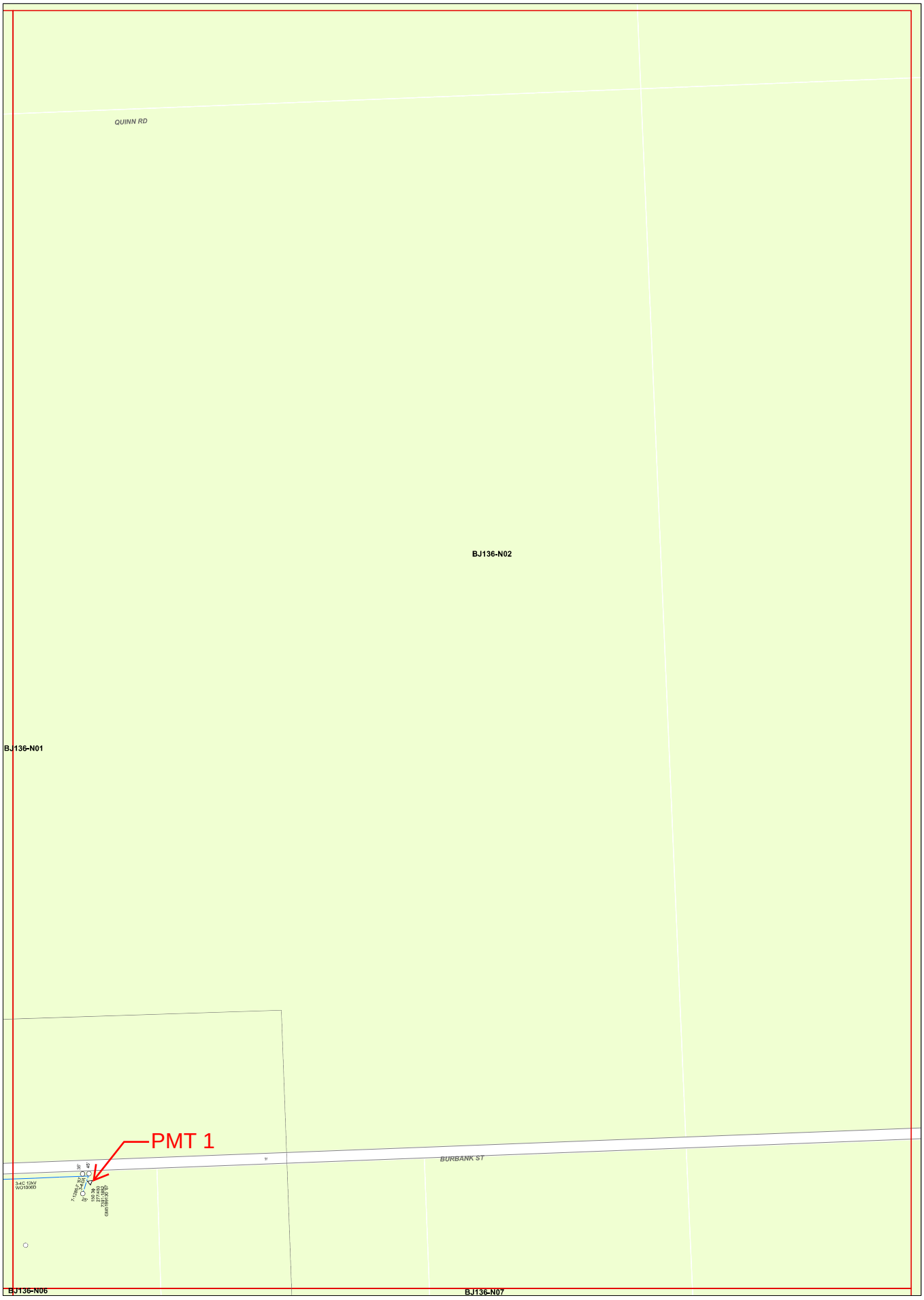

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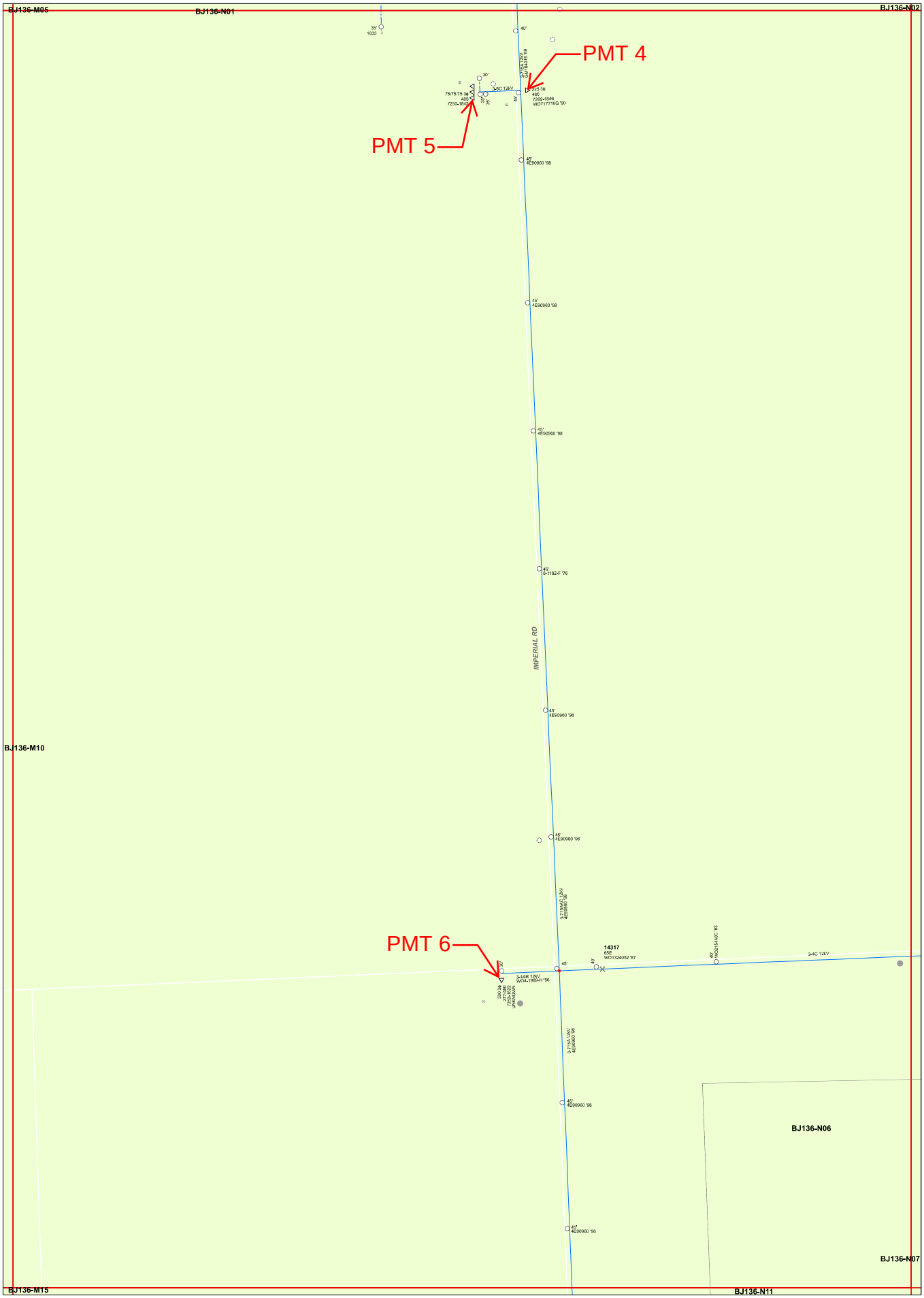

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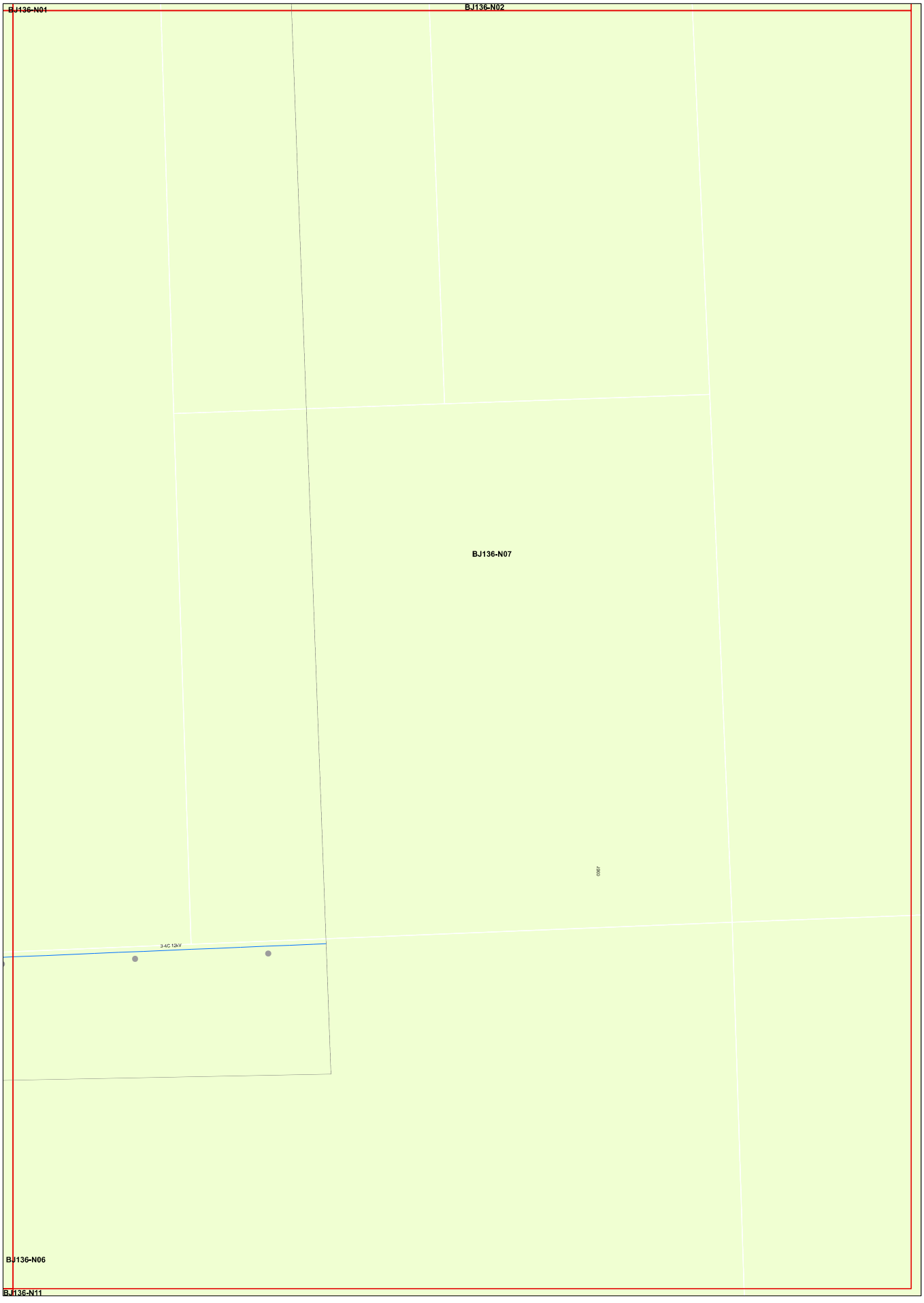

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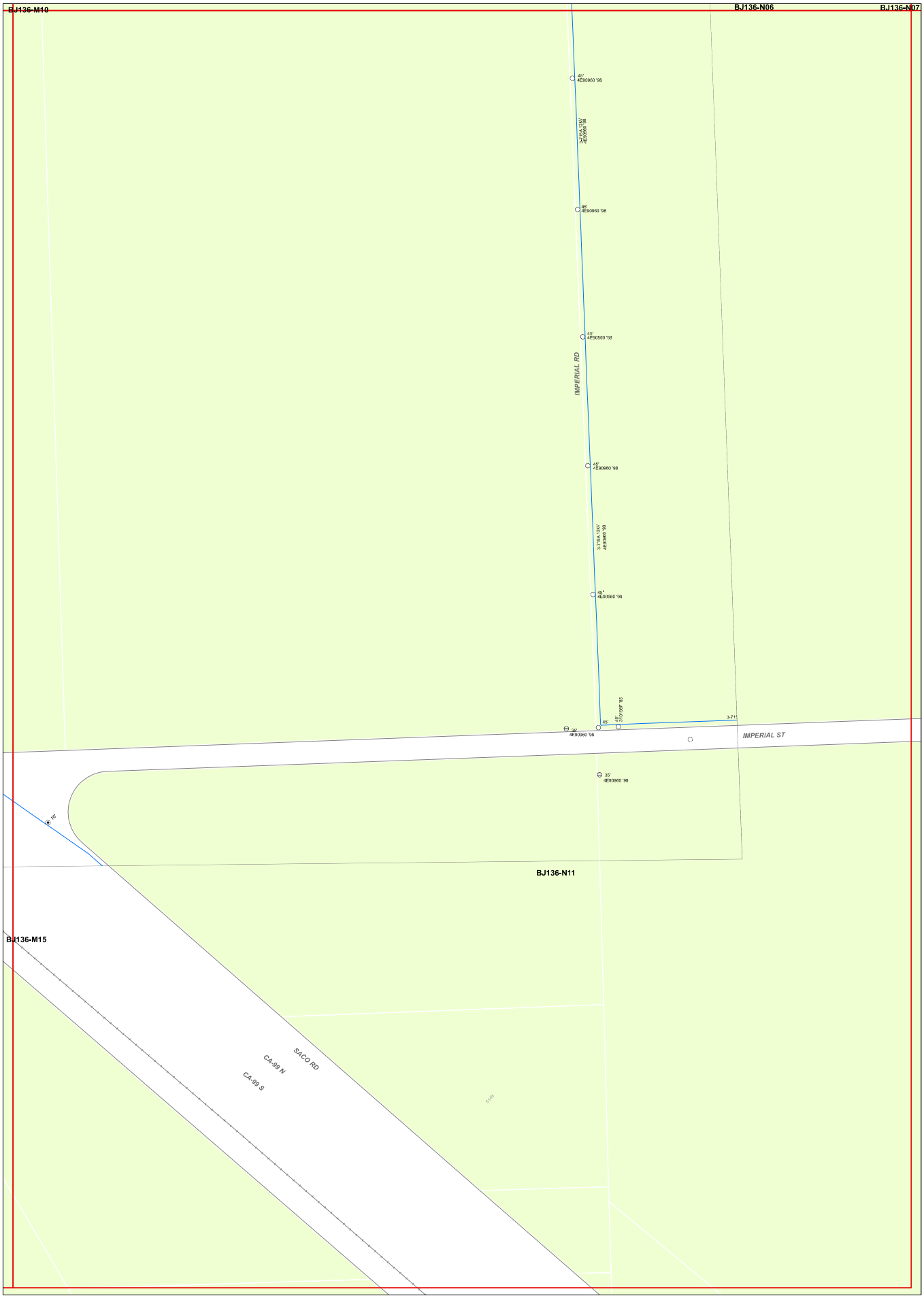

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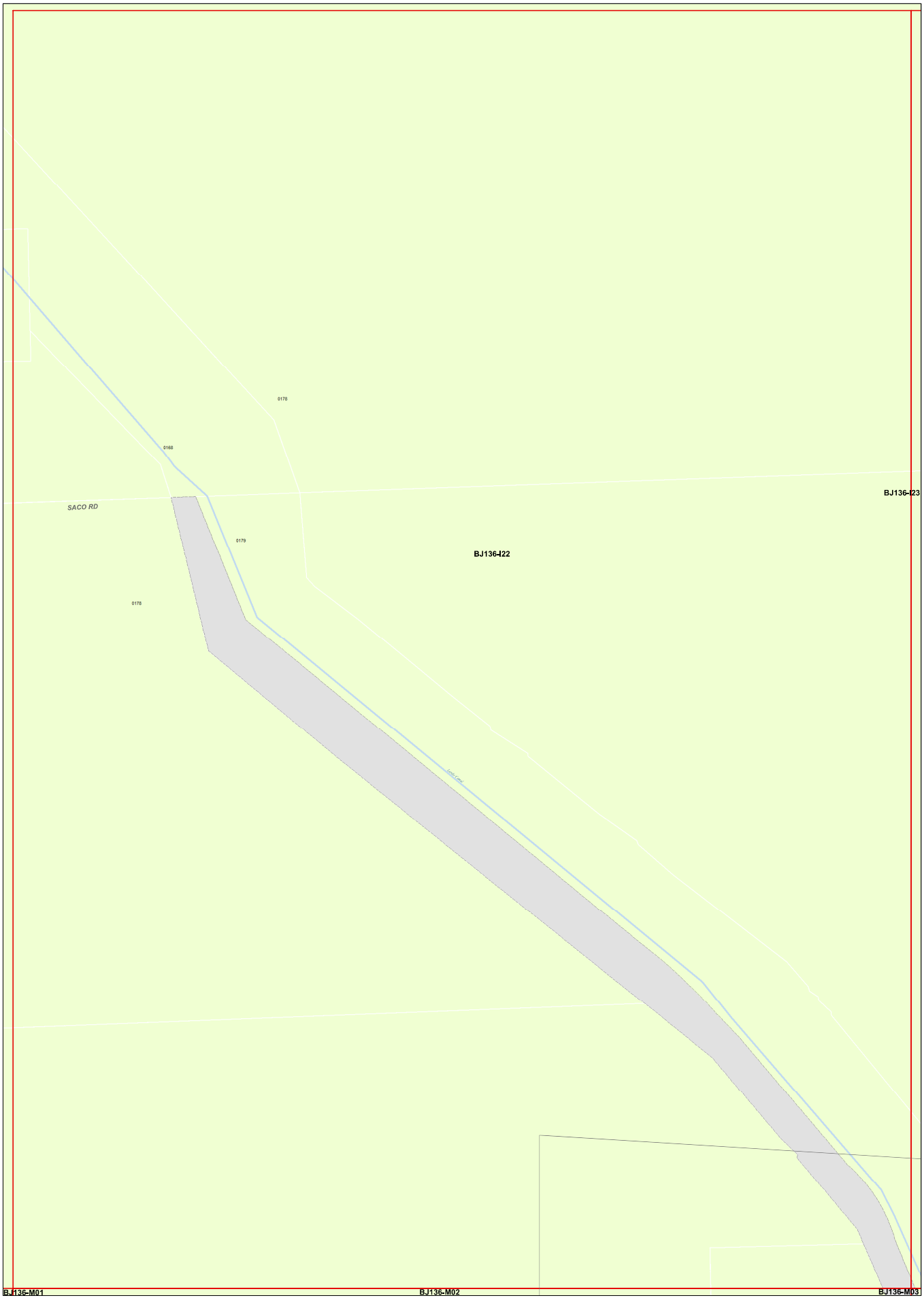

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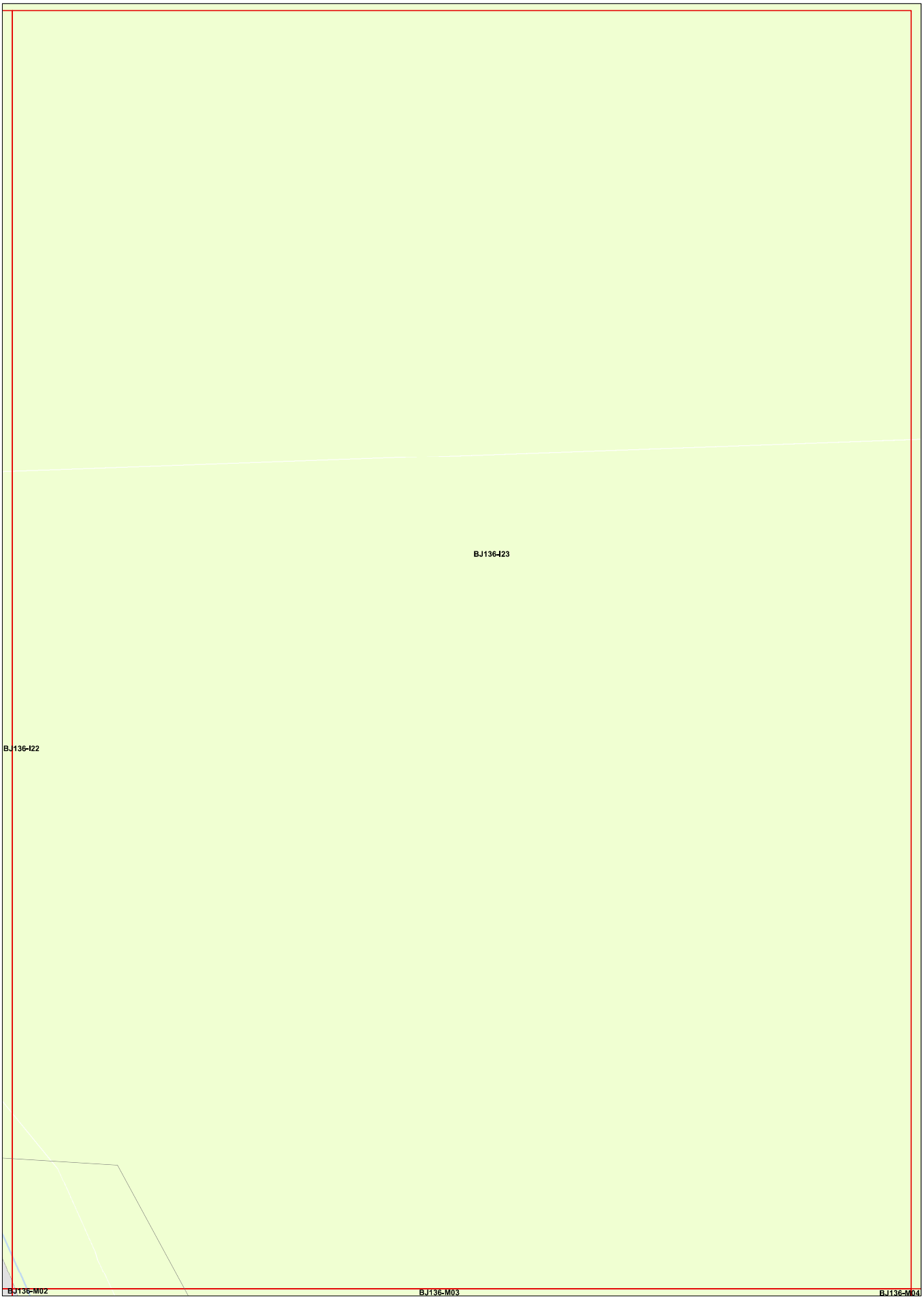

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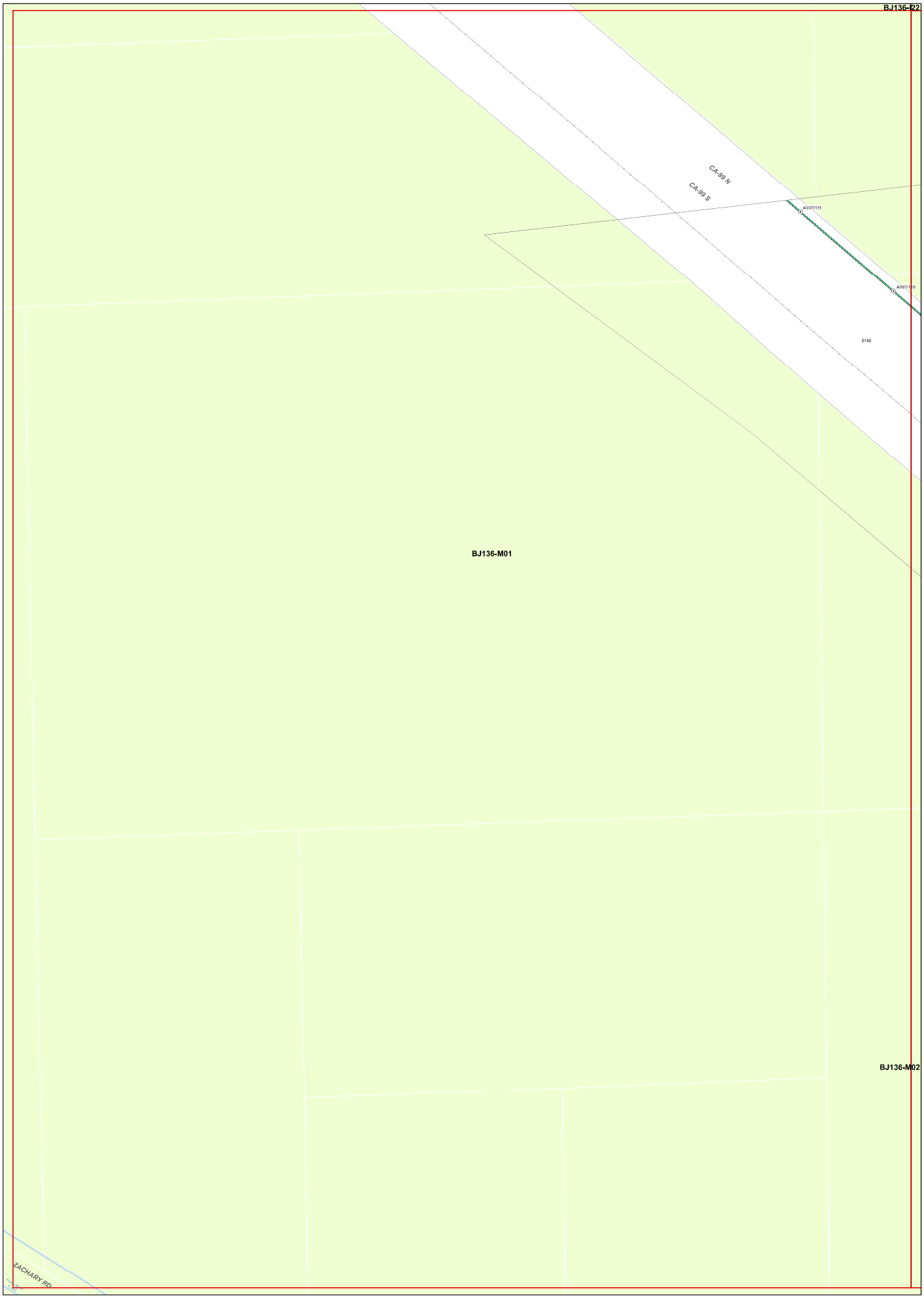

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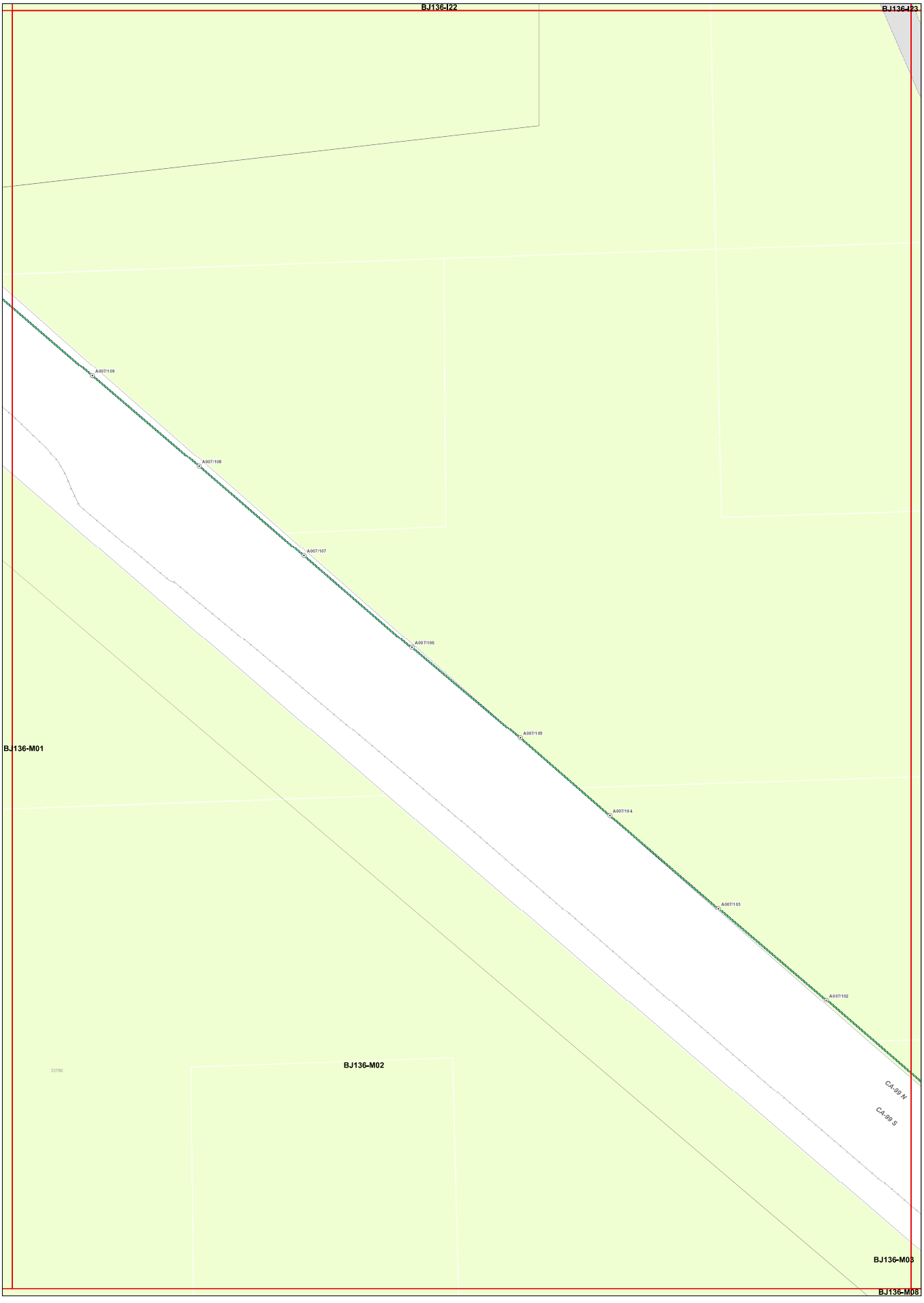

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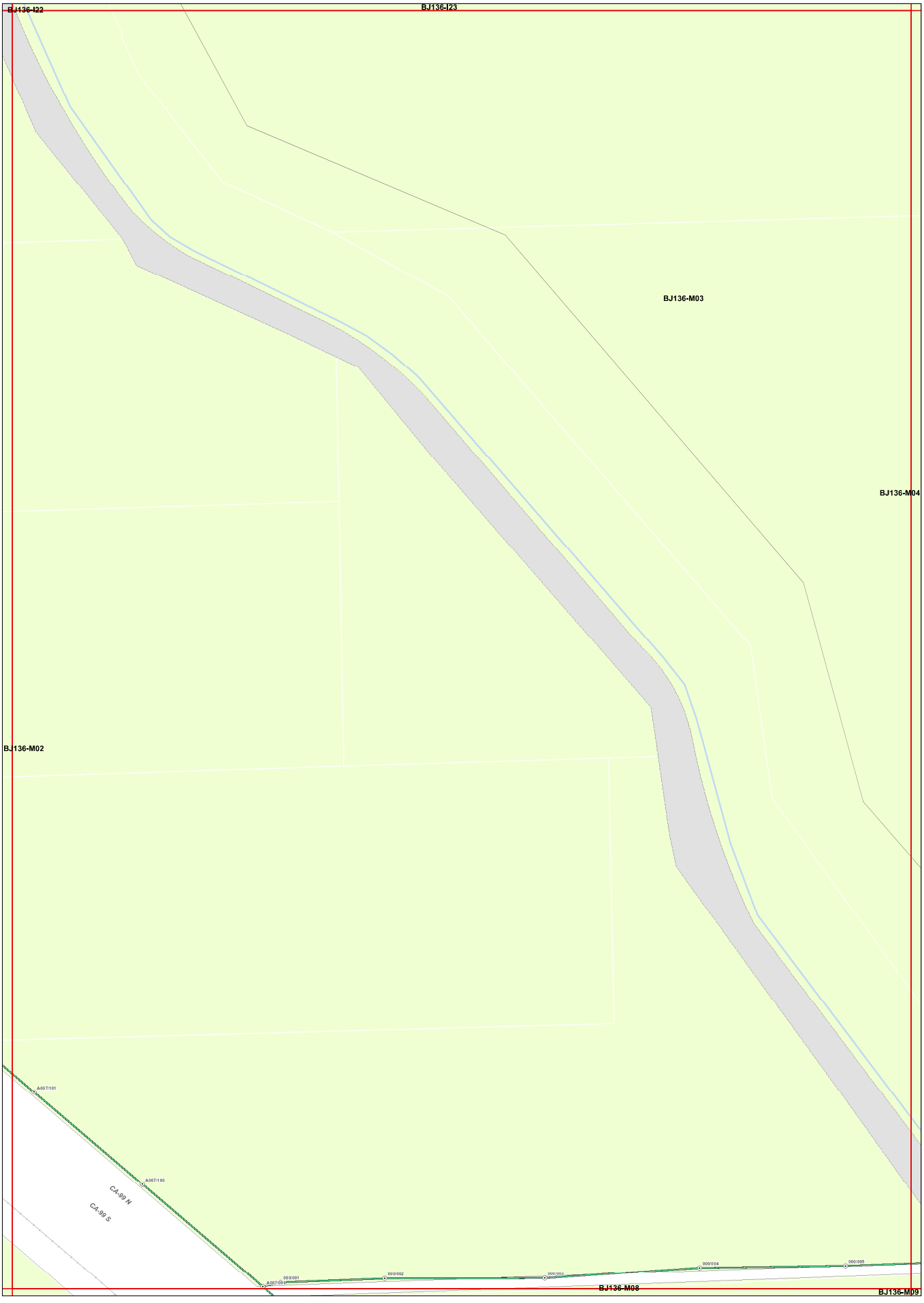

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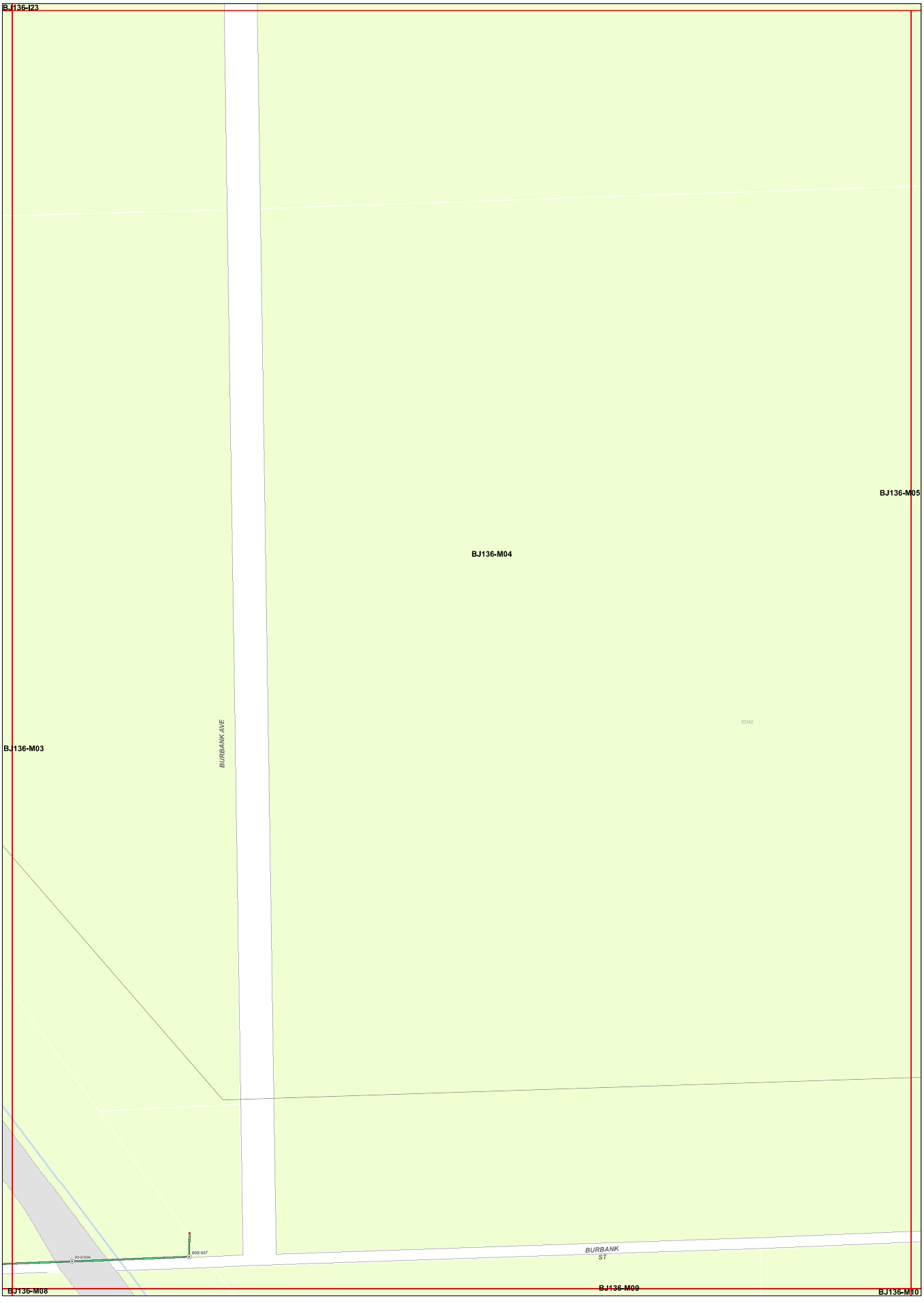

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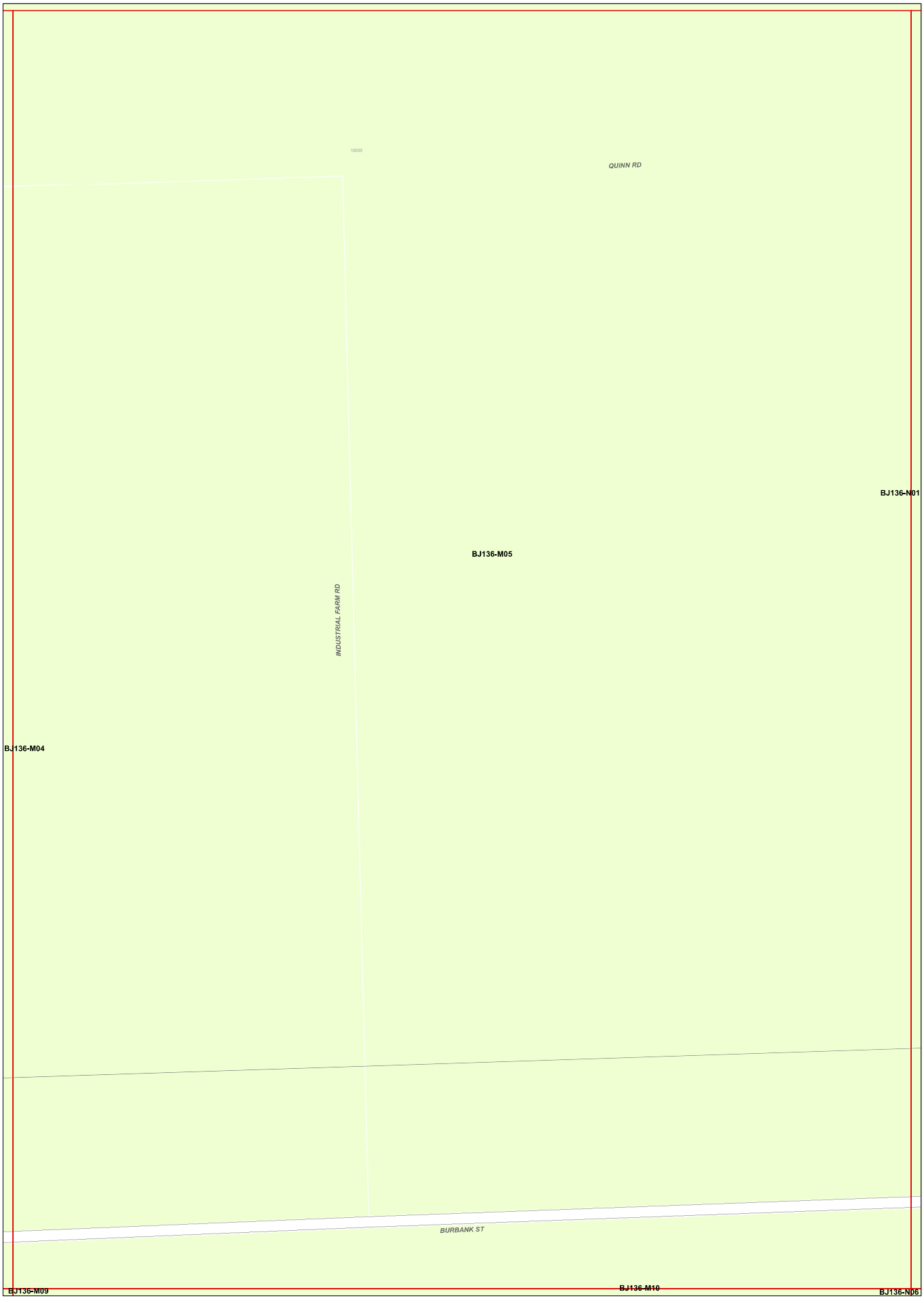

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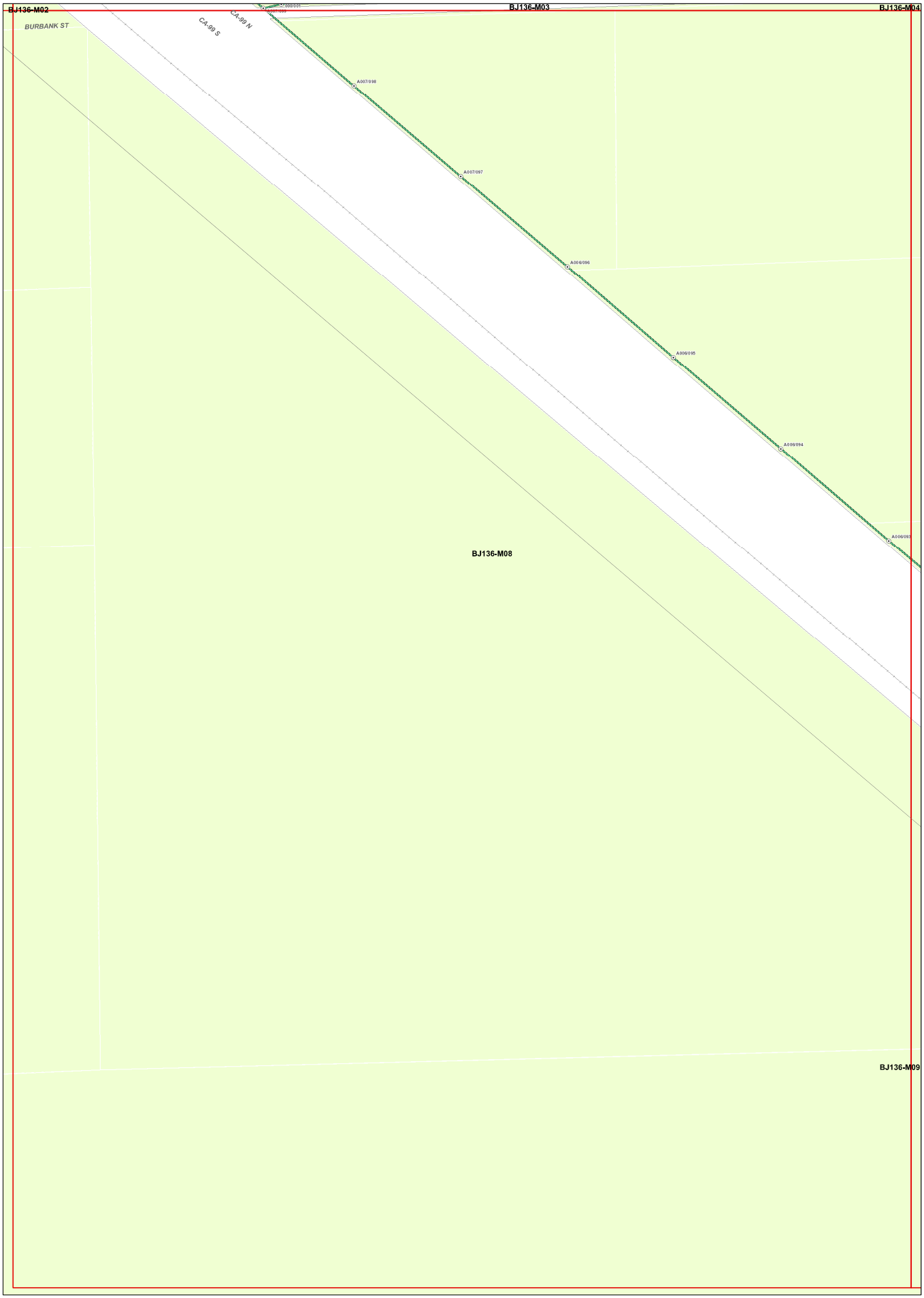

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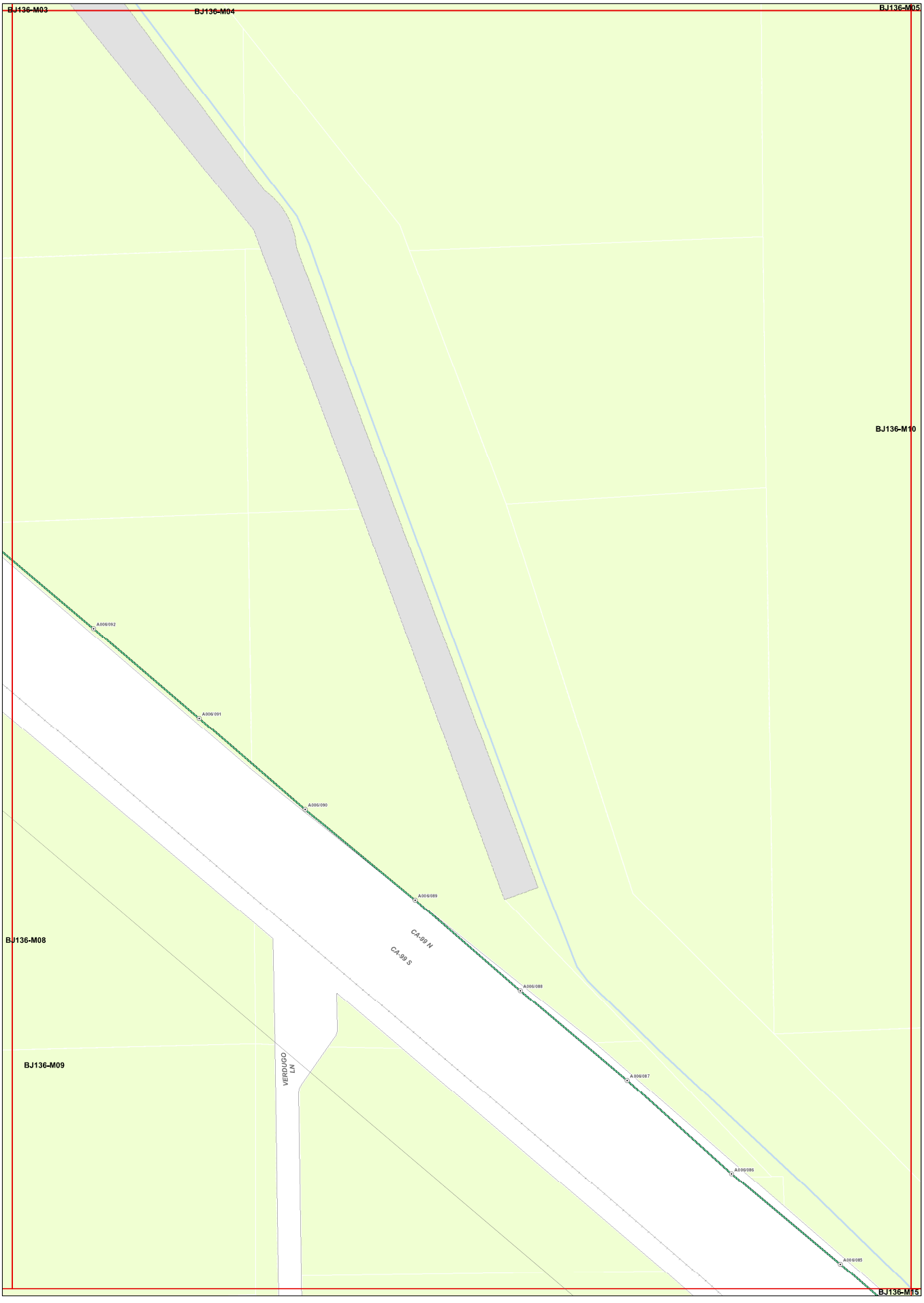

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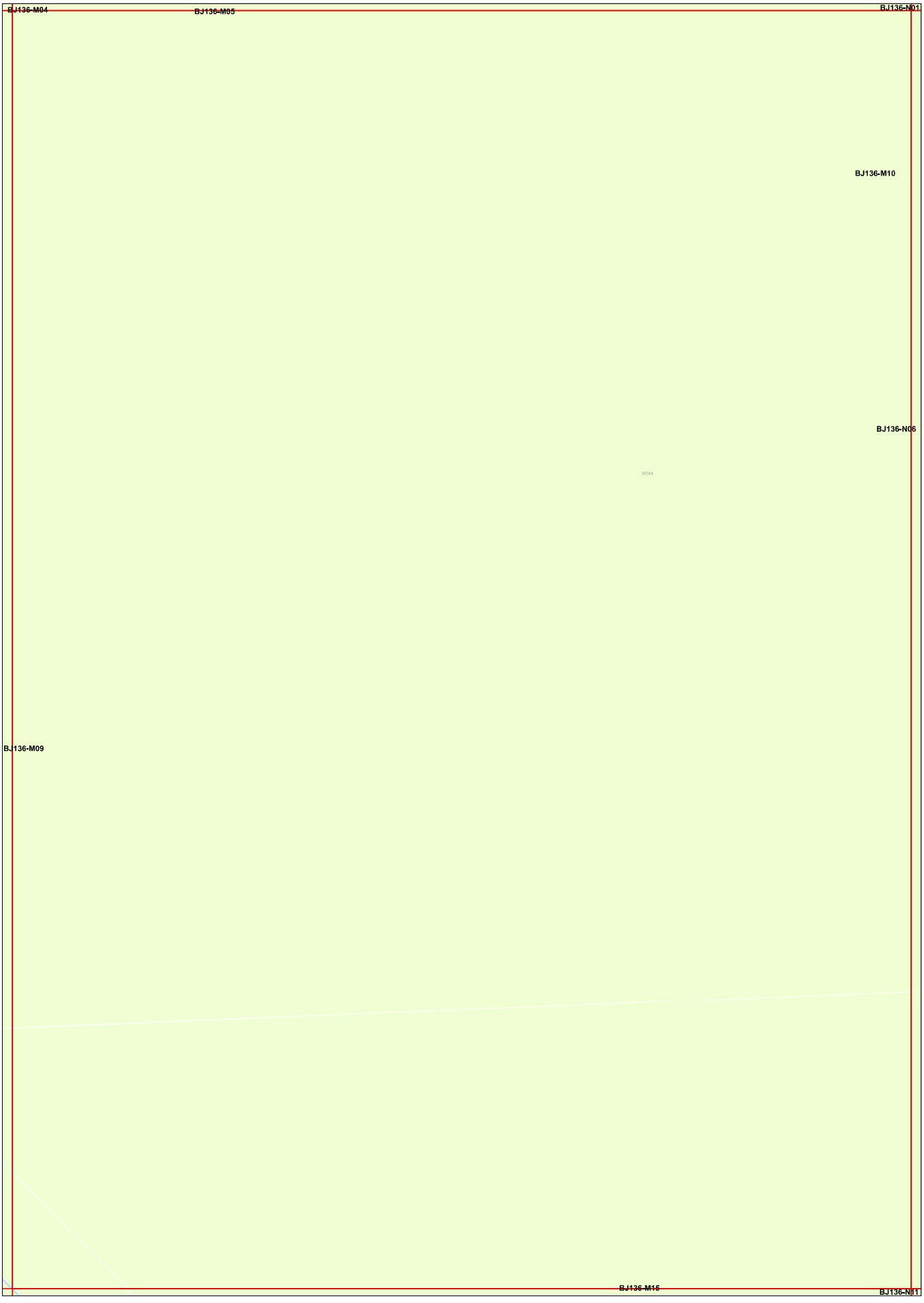

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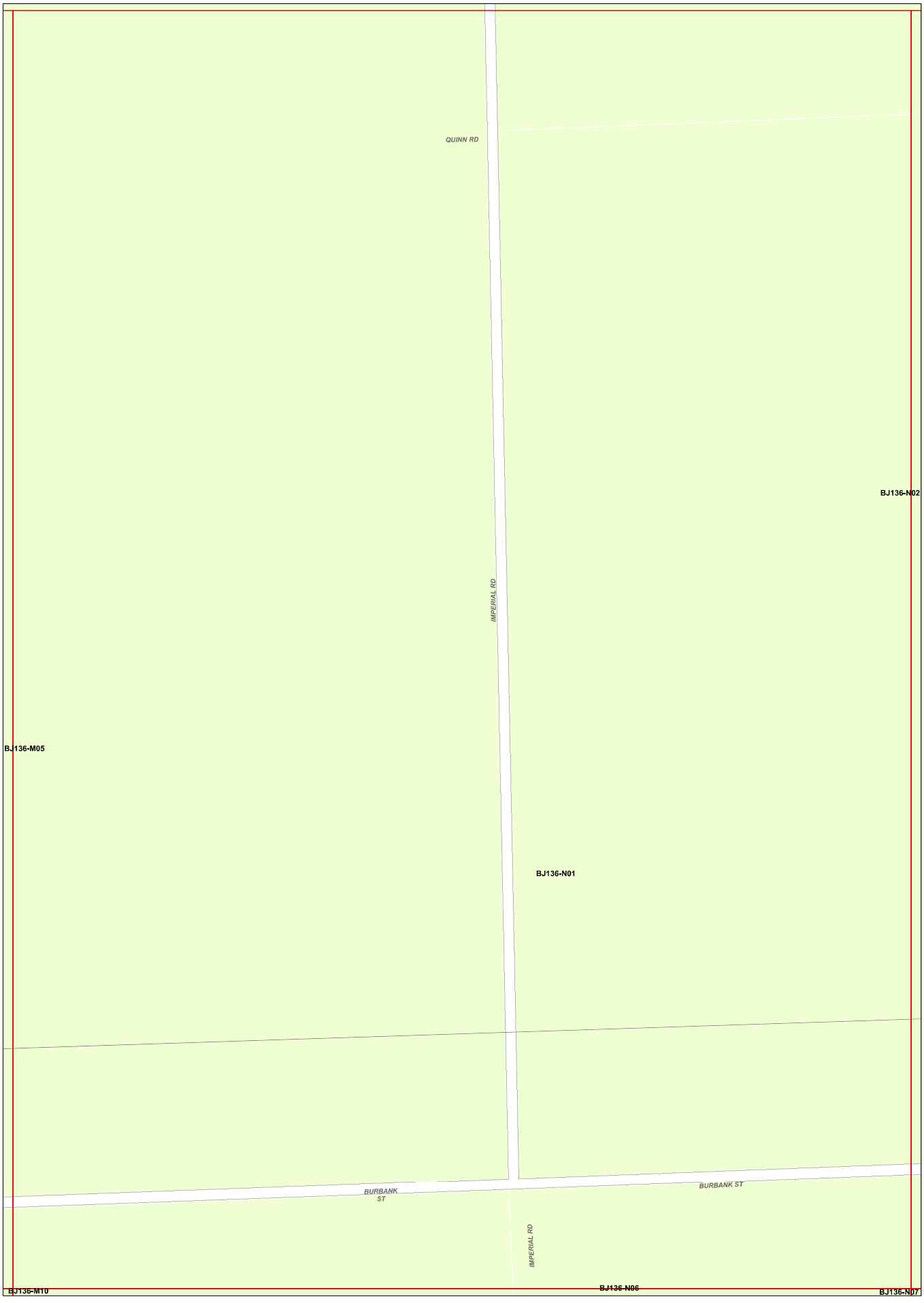

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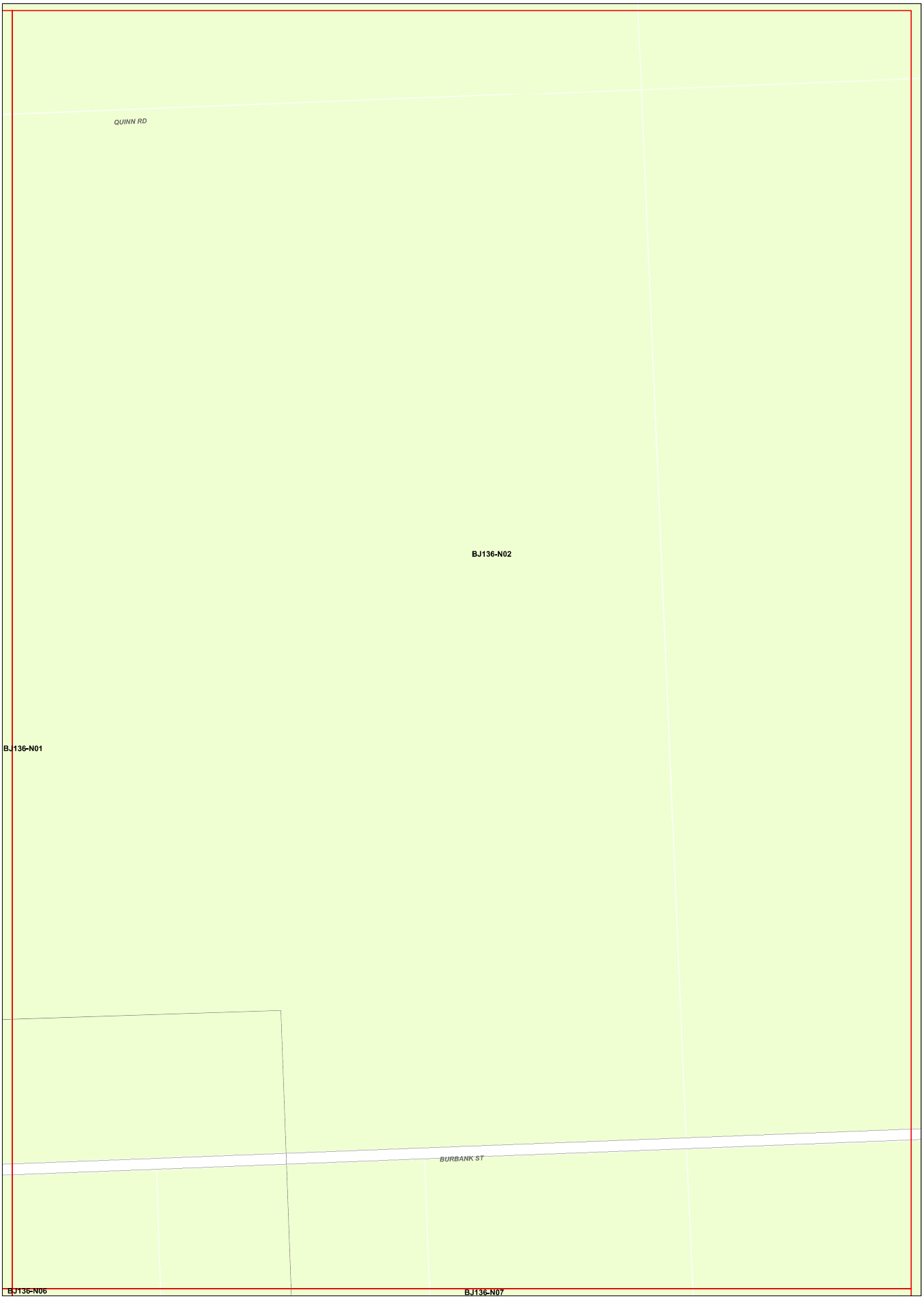

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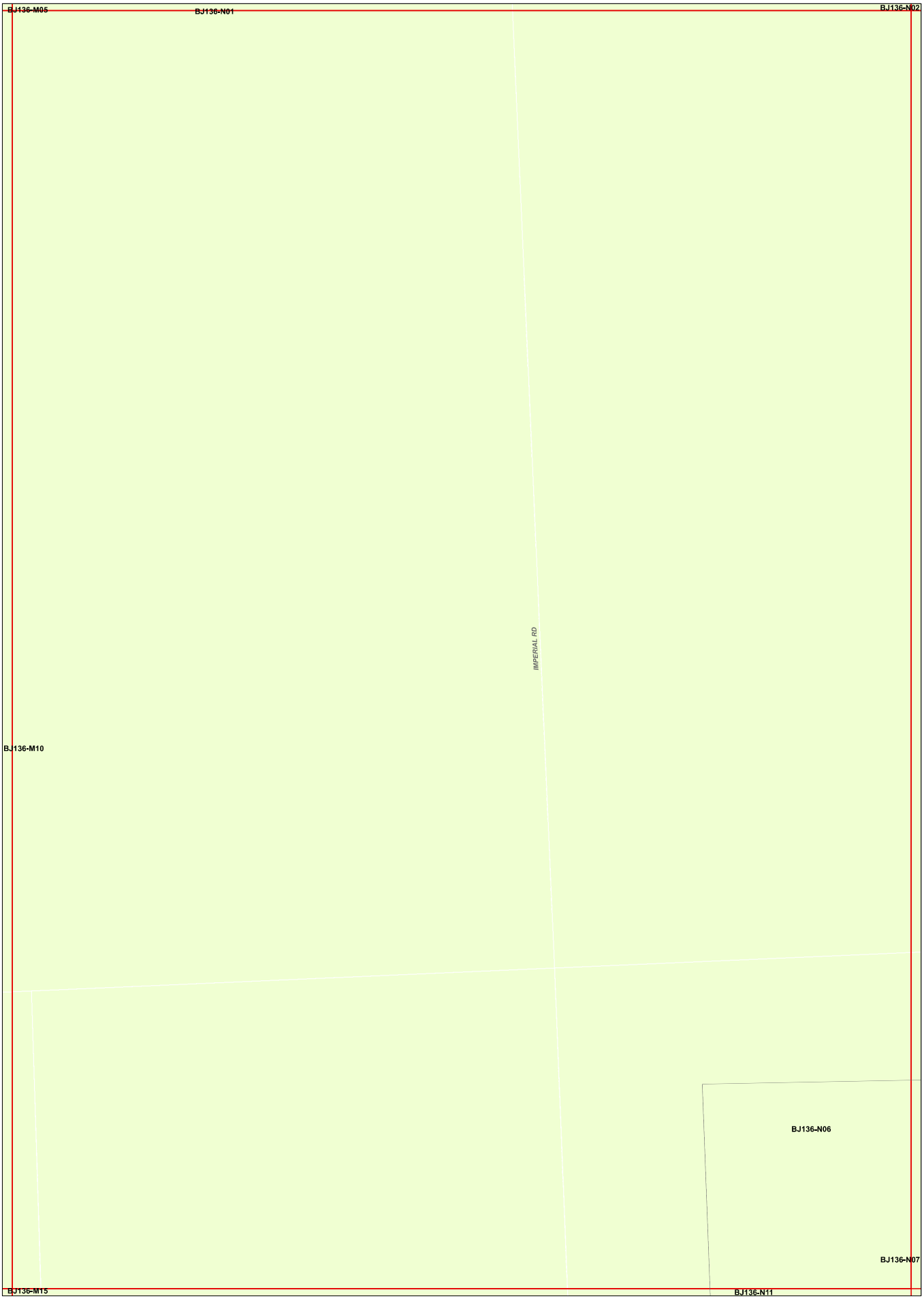

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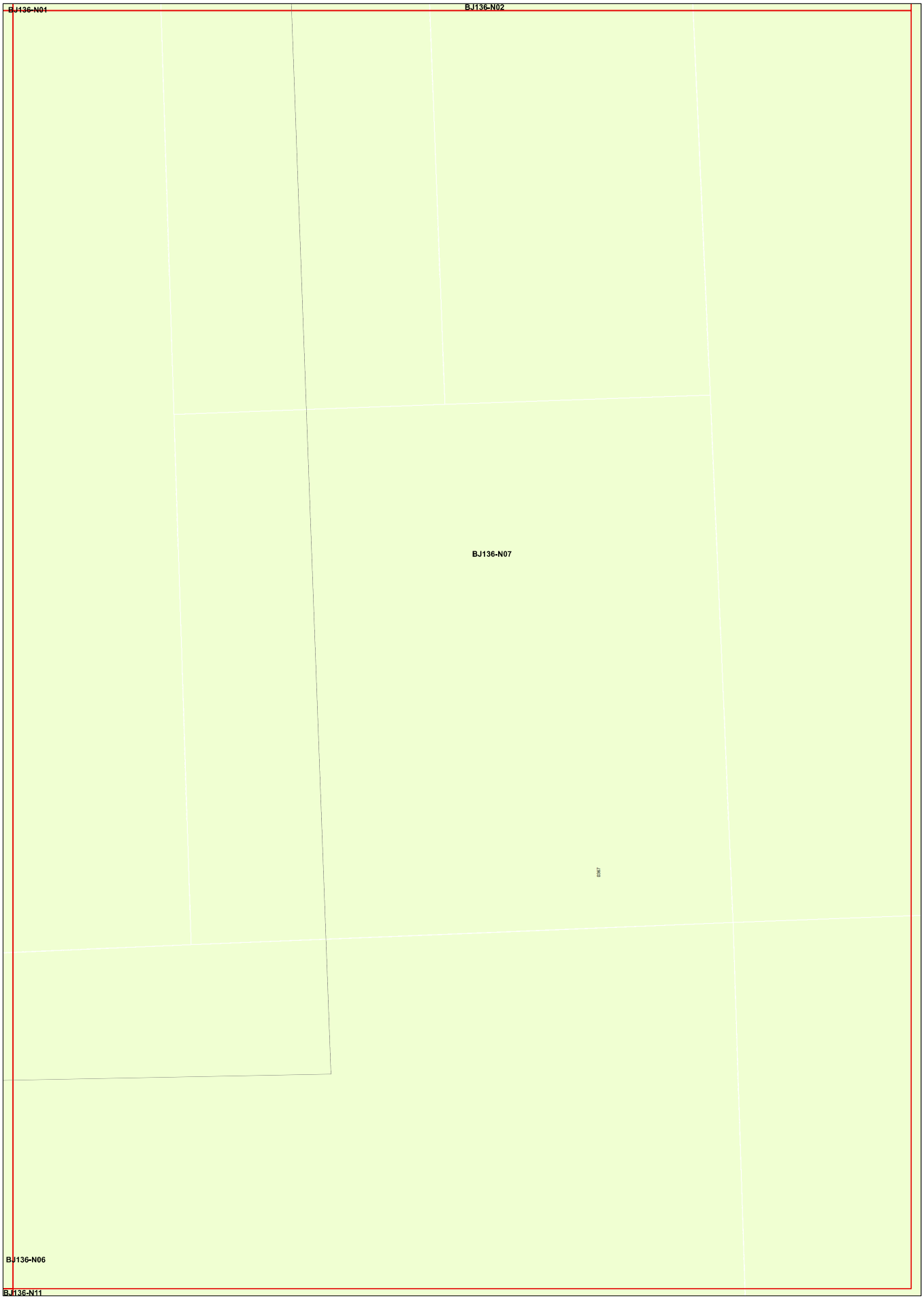

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Appendix K
Noise

Environmental Noise & Vibration Assessment

Malibu Vineyards Rezone Project – Phases 1 & 2

Kern County, California

BAC Job # 2019-141

Prepared For:

Malibu Vineyards, LP

Attn: Tom Murray
9777 Wilshire Boulevard, Suite 900
Beverly Hills, CA 90212

Prepared By:

Bollard Acoustical Consultants, Inc.

Dario Gotchet, Principal Consultant

April 5, 2022

BOLLARD
Acoustical Consultants

CEQA Checklist

NOISE AND VIBRATION **– Would the Project Result in:**	**NA – Not Applicable**	**Potentially Significant Impact**	**Less than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Generation of substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			**X**		
b) Generation of excessive groundborne vibration or groundborne noise levels?				**X**	
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				**X**	

Introduction

The proposed Malibu Vineyards Rezone Project Phases 1 & 2 (project) is located northeast of State Route 99 (SR 99) and Imperial Avenue in an unincorporated area of Kern County, California. The project proposes a general plan amendment and zone change from resource/agricultural uses to industrial uses on approximately 738 acres of land. Existing land uses in the project vicinity include agricultural both with and without residences. The project site is bordered by SR 99 to the south. The project area and site map are shown on Figures 1 and 2, respectively. Phase 1 and the southern portion of Phase 2 are within the Metropolitan Bakersfield General Plan (MBGP).

The purposes of this assessment are to quantify the existing noise and vibration environments, identify potential noise and vibration impacts resulting from the project, identify appropriate mitigation measures, and provide a quantitative and qualitative analysis of impacts associated with the project. Specifically, impacts are identified if project-related activities would cause a substantial increase in ambient noise or vibration levels at existing sensitive uses in the project vicinity, or if traffic or project generated noise or vibration levels would exceed applicable Kern County General Plan (KCGP) or Metropolitan Bakersfield General Plan (MBGP) standards at existing nearby sensitive uses or proposed industrial uses.

Noise and Vibration Fundamentals

Noise

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are designated as sound. The number of pressure variations per second is called the frequency of sound and is expressed as cycles per second, or Hertz (Hz). Definitions of acoustical terminology are provided in Appendix A.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals of pressure) as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in decibel levels correspond closely to human perception of relative loudness. Noise levels associated with common noise sources are provided in Figure 3.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by filtering the frequency response of a sound level meter by means of the standardized A-weighting network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of

environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (L_{eq}). The L_{eq} is the foundation of the day/night average noise descriptor, L_{dn}, and shows very good correlation with community response to noise.

The day/night average sound level (L_{dn}) is based on the average noise level over a 24-hour day, with a +10 decibel weighting applied to noise occurring during nighttime (10:00 PM to 7:00 AM) hours. The nighttime penalty is based on the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because L_{dn} represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Vibration

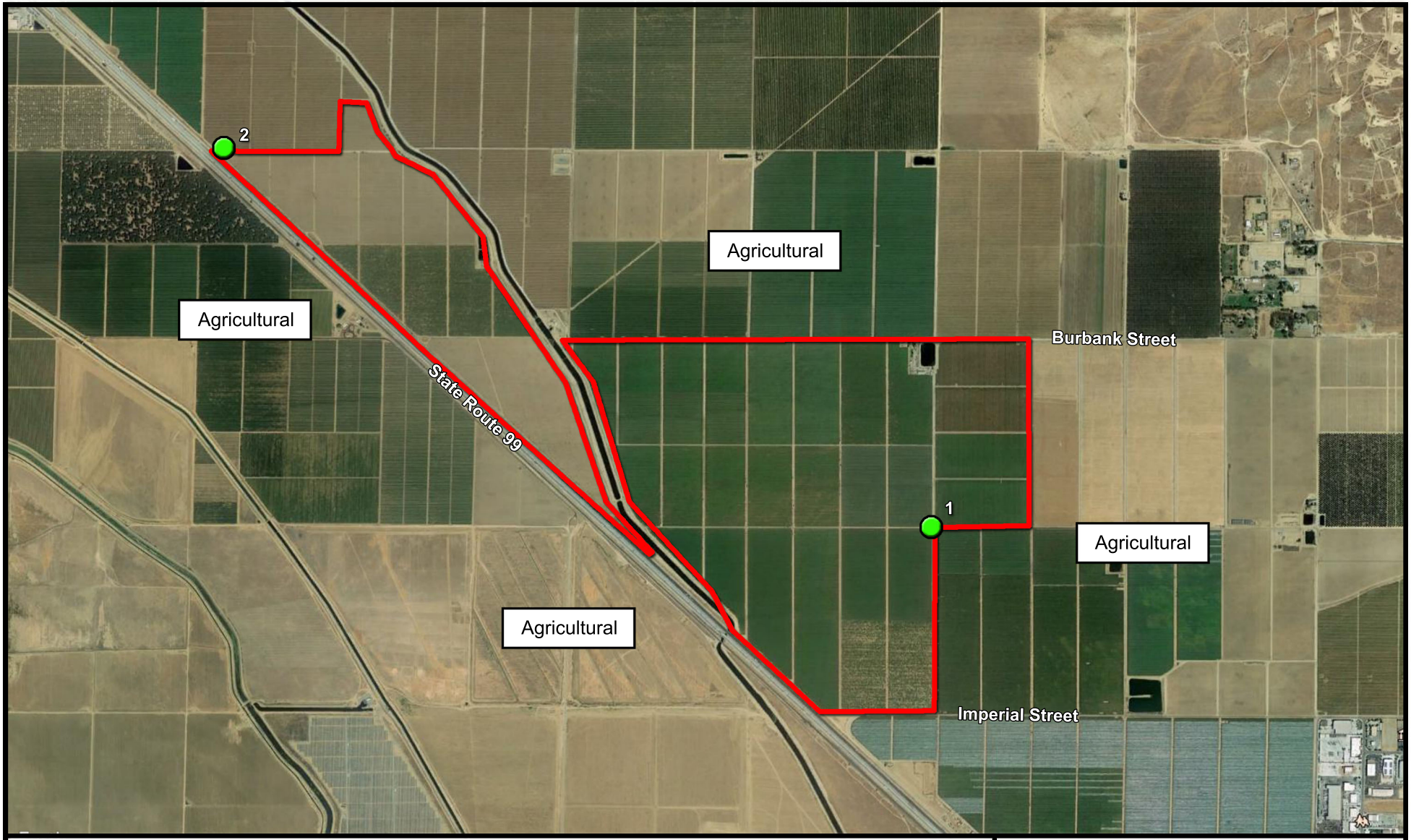
Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, while vibration is usually associated with transmission through the ground or structures. A person's response to vibration will depend on their individual sensitivity as well as the amplitude and frequency of the source.

Vibration can be described in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration in terms of velocity in inches per second peak particle velocity (IPS, PPV) or root-mean-square (VdB, RMS).

As vibrations travel outward from the source, they excite the particles of rock and soil through which they pass and cause them to oscillate. Differences in subsurface geologic conditions and distance from the source of vibration will result in different vibration levels characterized by different frequencies and intensities. In all cases, vibration amplitudes will decrease with increasing distance. The maximum rate, or velocity of particle movement, is the commonly accepted descriptor of the vibration "strength".

Human response to vibration is difficult to quantify. Vibration can be felt or heard well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does frequency. Generally, as the duration and vibration frequency increase, the potential for adverse human response increases.

According to the Transportation and Construction-Induced Vibration Guidance Manual (Caltrans, April 2020), operation of construction equipment and construction techniques generate ground vibration. Traffic traveling on roadways can also be a source of such vibration. At high enough amplitudes, ground vibration has the potential to damage structures and/or cause cosmetic damage. Ground vibration can also be a source of annoyance to individuals who live or work close to vibration-generating activities. However, traffic, rarely generates vibration amplitudes high enough to cause structural or cosmetic damage.



Legend

Project Border (Approximate)

Long-Term Noise & Vibration Measurement Locations (Approximate)

N

Scale (feet)

0 750 1,500

Malibu Vineyards Rezone Project
Phases 1 & 2
Kern County, California

Project Area

Figure 1

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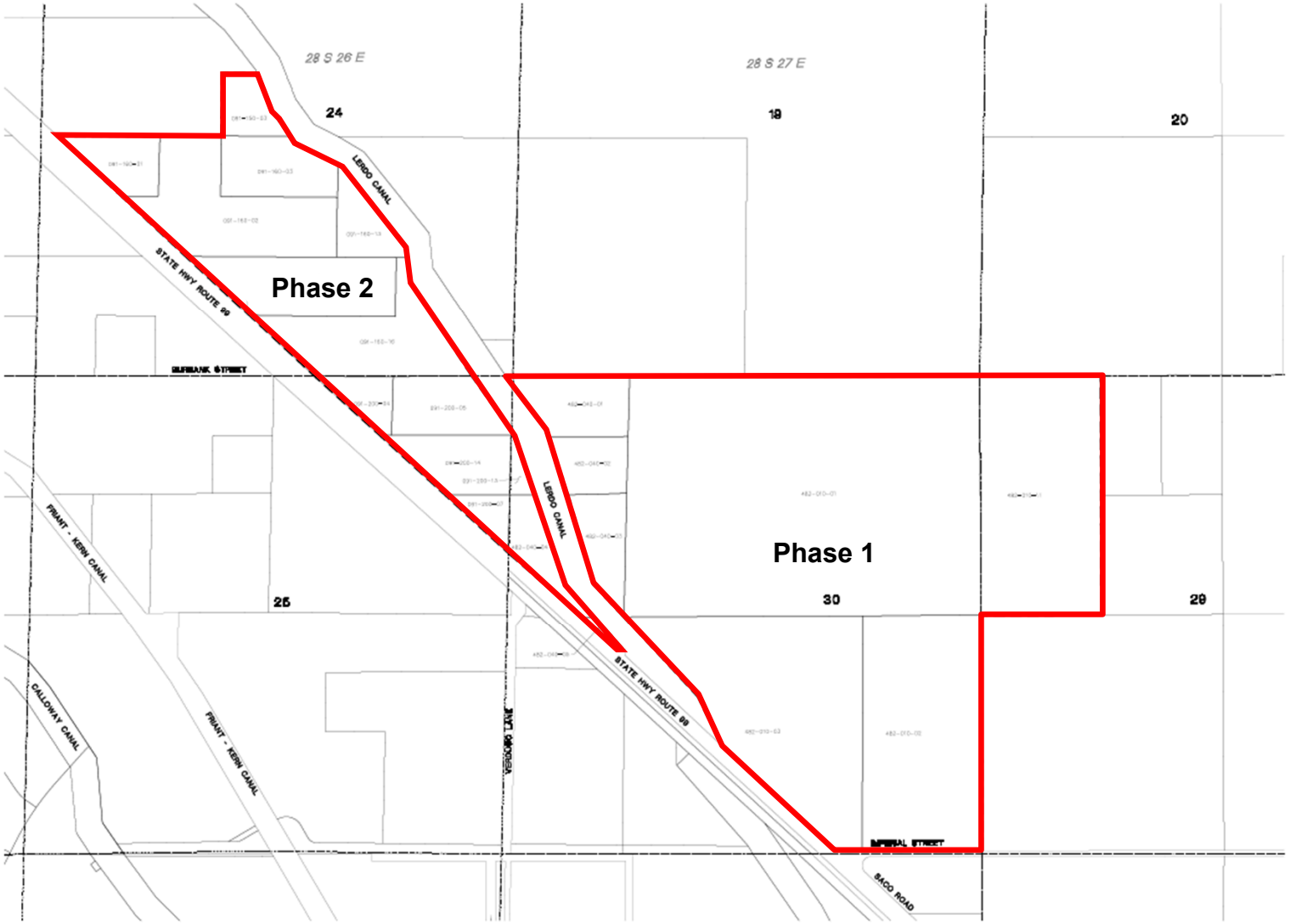

Legend

Project Boundaries

N

Scale (Feet)

0 750 1,500

Malibu Vineyards Rezone Project
Phases 1 & 2
Sacramento County, California

Project Site Map

Figure 2

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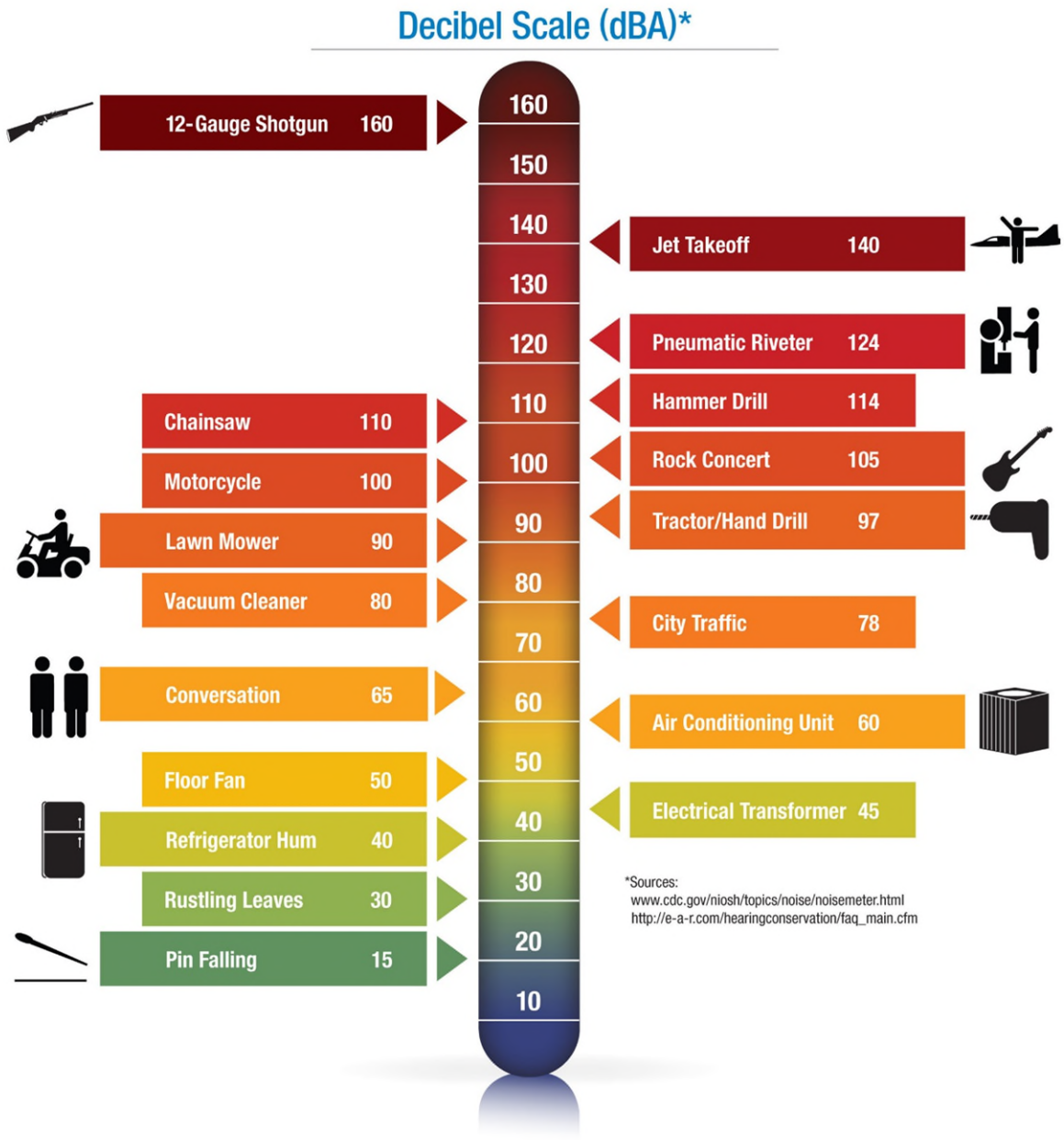
Figure 3
Noise Levels Associated with Common Noise Sources



Regulatory Setting: Criteria for Acceptable Noise and Vibration Exposure

Federal

There are no federal noise or vibration criteria which would be directly applicable to this project. However, the County of Kern does not currently have a policy for assessing noise impacts associated with increases in ambient noise levels from project-generated noise sources. As a result, the following federal noise criteria was applied to the project.

Federal Interagency Commission on Noise (FICON)

The Federal Interagency Commission on Noise (FICON) has developed a graduated scale for use in the assessment of project-related noise level increases. The criteria shown in Table 1 was developed by FICON as a means of developing thresholds for impact identification for project-related noise level increases. The FICON standards have been used extensively in recent years by the authors of this section in the preparation of the noise sections of Environmental Impact Reports that have been certified in many California cities and counties.

The use of the FICON standards are considered conservative relative to thresholds used by other agencies in the State of California. For example, the California Department of Transportation (Caltrans) requires a project-related traffic noise level increase of 12 dB for a finding of significance, and the California Energy Commission (CEC) considers project-related noise level increases between 5 to 10 dB significant, depending on local factors. Therefore, the use of the FICON standards, which set the threshold for finding of significant noise impacts as low as 1.5 dB, provides a very conservative approach to impact assessment for this project.

Table 1
Significance of Changes in Cumulative Noise Exposure

Ambient Noise Level Without Project (L_{dn} or CNEL)	Change in Ambient Noise Level Due to Project
<60 dB	+5.0 dB or more
60 to 65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more
Source: Federal Interagency Committee on Noise (FICON)	

Based on the FICON research, as shown in Table 1, a 5 dB increase in noise levels due to a project is required for a finding of significant noise impact where ambient noise levels without the project are less than 60 dB. Where pre-project ambient conditions are between 60 and 65 dB, a 3 dB increase is applied as the standard of significance. Finally, in areas already exposed to higher noise levels, specifically pre-project noise levels in excess of 65 dB, a 1.5 dB increase is considered by FICON as the threshold of significance.

State of California

California Environmental Quality Act (CEQA)

The State of California has established regulatory criteria that are applicable to this assessment. Specifically, Appendix G of the State of California Environmental Quality Act (CEQA) Guidelines are used to assess the potential significance of impacts pursuant to local General Plan policies, Municipal Code standards, or the applicable standards of other agencies. According to Appendix G of the CEQA guidelines, the project would result in a significant noise or vibration impact if the following occur:

A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or other applicable standards of other agencies?

B. Generation of excessive groundborne vibration or groundborne noise levels?

C. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

It should be noted that audibility is not a test of significance according to CEQA. If this were the case, any project which added any audible amount of noise to the environment would be considered significant according to CEQA. Because every physical process creates noise, the use of audibility alone as significance criteria would be unworkable. CEQA requires a substantial increase in noise levels before noise impacts are identified, not simply an audible change.

California Department of Transportation (Caltrans)

Neither the Kern County General Plan nor the Metropolitan Bakersfield General Plan currently have adopted standards for groundborne vibration. As a result, the vibration impact criteria developed by the California Department of Transportation (Caltrans) was applied to the project. The Caltrans criteria applicable to damage and annoyance from transient and continuous vibration typically associated with construction activities are presented in Tables 2 and 3. Equipment or activities typical of continuous vibration include: excavation equipment, static compaction equipment, tracked vehicles, traffic on a highway, vibratory pile drivers, pile-extraction equipment, and vibratory compaction equipment. Equipment or activities typical of single-impact (transient) or low-rate repeated impact vibration include impact pile drivers, blasting, drop balls, “pogo stick” compactors, and crack-and-seat equipment (California Department of Transportation 2013).

Table 2
Guideline Vibration Damage Potential Threshold Criteria

Structure and Condition	Maximum PPV (inches/second)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.20	0.10
Historic and some old buildings	0.50	0.25
Older residential structures	0.50	0.30
New residential structures	1.00	0.50
Modern industrial/commercial buildings	2.00	0.50

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

PPV = Peak Particle Velocity

Source: California Department of Transportation, Transportation and Construction Vibration Guidance Manual (2013).

Table 3
Guideline Vibration Annoyance Potential Criteria

Human Response	Maximum PPV (inches/second)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.40	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.90	0.10
Severe	2.00	0.40

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

PPV = Peak Particle Velocity

Source: California Department of Transportation, Transportation and Construction Vibration Guidance Manual (2013).

Local

Kern County General Plan

The Noise Element (Chapter 3) of the Kern County General Plan contains goals, policies, and implementation measures to ensure that City residents are not subjected to noise beyond acceptable levels. The following Kern County General Plan goals, policies, and implementation measures have been identified as having potential applicability to the project:

Goals

1. Ensure that residents of Kern County are protected from excessive noise and that moderate levels of noise are maintained.

Policies

1. Review discretionary industrial, commercial, or other noise-generating land use projects for compatibility with nearby noise-sensitive land uses.
2. Require noise level criteria applied to all categories of land uses to be consistent with the recommendations of the California Division of Occupational Safety and Health (DOSH).
3. Encourage vegetation and landscaping along roadways and adjacent to other noise sources in order to increase absorption of noise.
4. Utilize good land use planning principles to reduce conflicts related to noise emissions.
5. Prohibit new noise-sensitive land uses in noise-impacted areas unless effective mitigation measures are incorporated into the project design. Such mitigation shall be designed to reduce noise to the following levels:
    a. 65 dB L_{dn} or less in outdoor activity areas
    b. 45 dB L_{dn} or less within living spaces or other noise sensitive interior spaces
7. Employ the best available methods of noise control.

Implementation Measures

A. Utilize zoning regulations to assist in achieving noise-compatible land use patterns.

C. Review discretionary development plans, programs and proposals, including those initiated by both the public and private sectors, to ascertain and ensure their conformance to the policies outlined in this element.

E. Review discretionary development plans to ensure compatibility with adopted Airport Land Use Compatibility Plans.

F. Require proposed commercial and industrial uses or operations to be designed or arranged so that they will not subject residential or other noise sensitive land uses to exterior noise levels in excess of 65 dB L_{dn} and interior noise levels in excess of 45 dB L_{dn}.

G. At the time of any discretionary approval, such as a request for a General Plan Amendment, zone change or subdivision, the developer may be required to submit an acoustical report indicating the means by which the developer proposes to comply with the noise standards. The acoustical report shall:
    a. Be the responsibility of the applicant.
    b. Be prepared by a qualified acoustical consultant experienced in the fields of environmental noise assessment and architectural acoustics.

c. Be subject to the review and approval of the Kern County Planning Department and the County Public Health Services Department. All recommendations therein shall be complied with prior to final approval of the project.

I. Noise analyses shall include recommended mitigation, if required, and shall:

a. Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions.

b. Include estimated noise levels, in terms of CNEL, for existing and projected future (10 – 20 years hence) conditions, with a comparison made to the adopted policies of the Noise Element.

c. Include recommendations for appropriate mitigation to achieve compliance with the adopted policies and standards of the Noise Element.

d. Include estimates of noise exposure after the prescribed mitigation measures have been implemented. If compliance with the adopted standards and policies of the Noise Element will not be achieved, a rationale for acceptance of the project must be provided.

J. Develop implementation procedures to ensure that requirements imposed pursuant to the findings of an acoustical analysis are conducted as part of the project permitting process.

Kern County Municipal Code

The provisions of the Kern County Municipal Code which would be most applicable to this project are reproduced below.

Chapter 8.36 Noise

8.36.020 Prohibited sounds.

It is unlawful for any person to do, or cause to be done, any of the following acts within the unincorporated areas of the county:

H. Create noise from construction, between the hours of 9:00 p.m. and 6:00 a.m. on weekdays and 9:00 p.m. and 8:00 a.m. on weekends, which is audible to a person with average hearing faculties or capacity at a distance of 150 feet from the construction site, if the construction site is within 1,000 feet of an occupied residential dwelling.

Metropolitan Bakersfield General Plan

The Metropolitan Bakersfield General Plan Noise Element (Chapter 7) contains goals, policies, and implementation measures to ensure that residents of the Bakersfield Metropolitan Area are protected from excessive noise and existing moderate levels of noise are maintained. The following General Plan goals, policies, and implementation measures are applicable to the project are reproduced below.

Goals

1. Ensure that residents of the Bakersfield Metropolitan Area are protected from excessive noise and existing moderate levels of noise are maintained.

Policies

1. Identify noise-impact areas exposed to existing or projected noise levels exceeding 65 dB CNEL (exterior) or the performance standards described in Table 5. The noise exposure contour maps on file at the City of Bakersfield and County of Kern indicate areas where existing and projected noise exposures exceed 65 dB CNEL (exterior) for the major noise sources identified.
3. Review discretionary industrial, commercial, or other noise-generating land use projects for compatibility with nearby noise-sensitive land uses. Additionally, the development of new noise-generating land uses which are not preempted from local noise regulation will be reviewed if resulting noise levels will exceed the performance standards contained within Table 5 in areas containing residential or other noise-sensitive land uses.
4. Require noise level criteria applied to land uses other than residential or other noise-sensitive uses to be consistent with the recommendations of the California Office of Noise Control (See Table 4).
5. Encourage vegetation and landscaping along roadways and adjacent to other noise sources in order to increase absorption of noise.
6. Establish threshold standards for the determination of the existence of cumulative noise impacts that are significant and will therefore require mitigation to achieve acceptable noise standards that do not exceed the standards contained in this element.

Implementation

2. Review discretionary development plans, programs and proposals, including those initiated by both the public and private sectors, to ascertain and ensure their conformance to the policy framework outlined in this element.
4. Require proposed commercial and industrial uses or operations to be designed or arranged so that they will not subject residential or other noise sensitive land uses to exterior noise levels in excess of 65 dB CNEL and interior noise levels in excess of 45 dB CNEL and so that impacts on noise sensitive uses shall not exceed the performance standards in Table 5.

   At time of any discretionary approval, such as a request for zone change or subdivision, the developer may be required to submit an acoustical report indicating the means by which the developer proposes to comply with the noise standards. The acoustical report shall:

   a. Be the responsibility of the applicant.

b. Be prepared by a qualified acoustical consultant experienced in the fields of environmental noise assessment and architectural acoustics.
c. Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions.
d. Include estimated noise levels in terms of CNEL and the standards of Table 5 (if applicable) for existing and projected future (10-20 years hence) conditions, with a comparison made to the adopted policies of the Noise Element.
e. Include recommendations for appropriate mitigation to achieve compliance with the adopted policies and standards of the Noise Element.
f. Include estimates of noise exposure after the prescribed mitigation measures have been implemented. If compliance with the adopted standards and policies of the Noise Element will not be achieved, a rationale for acceptance of the project must be provided.

5. Develop implementation procedures to ensure that requirements imposed pursuant to the findings of an acoustical analysis are conducted as part of the project permitting process.
6. Enforce the State Noise Insulation Standards (California Administrative Code, Title 24) and Chapter 35 of the Uniform Building Code concerning the construction of new multiple-occupancy dwellings such as hotels, apartments, and condominiums.

10. The following standards shall be used to determine the existence of significant cumulative noise impacts expected to result from proposed construction or development projects. The projected occurrence of such significant cumulative impacts shall require the adoption of practical and feasible mitigation measures to be identified in an Environmental Impact Report or Negative Declaration, whichever is applicable.

    Standards for Cumulative Noise Impacts

    A significant increase in ambient noise levels affecting existing noise-sensitive land uses (receptors), requiring the adoption of practical and feasible mitigation measures, is deemed to occur where a project will cause:

    An increase in ambient noise level of 1 dB or more over 65 dB CNEL, where the existing ambient level is 65 dB CNEL or less, or

    -The ambient noise level is less than 60 dB CNEL and the project increases noise levels by 5 dB or more;

    -The ambient noise level is 60 to 65 dB CNEL and the project increases noise levels by 3 dB or more;

    -The ambient noise level is greater than 65 dB CNEL and the project increases noise levels by 1.5 dB or more.

Table 4

LAND USE COMPATABLILTY FOR COMMUNITY NOISE ENVIRONMENTS

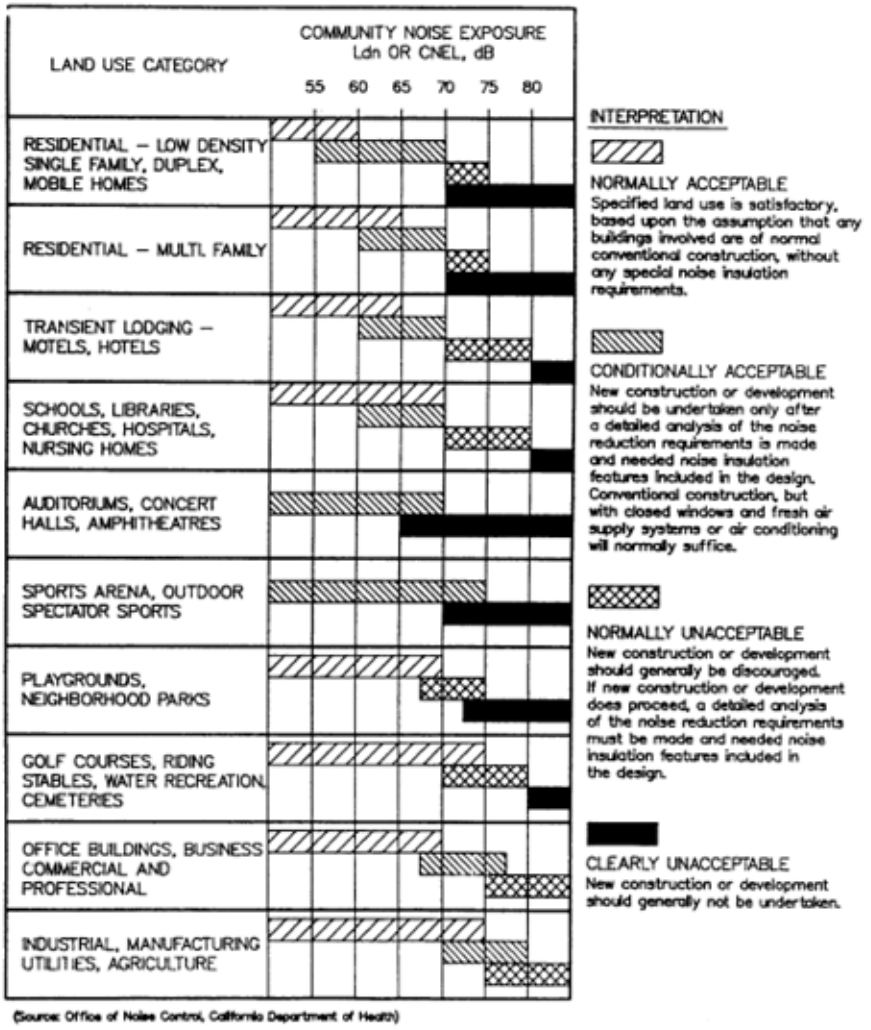


Table 5
Noise Level Performance Standards – Non-Transportation Noise Sources

Noise Level Descriptor (dB)	Daytime (7 a.m. – 10 p.m.)	Nighttime (10 p.m. – 7 a.m.)
L_{50}	55	50
L_{25}	60	55
L_{8}	65	60
L_{2}	70	65
L_{max}	75	70
Source: Metropolitan Bakersfield General Plan, Noise Element, Table VII-2		

Bakersfield Municipal Code

The provisions of the Bakersfield Municipal Code which would be most applicable to this project are reproduced below.

Chapter 9.22 Noise

9.22.050 Noise during construction.

A. Except as provided herein or in subsection B, C or D of this section, it is unlawful for any person, firm or corporation to erect, demolish, alter or repair any building, or to grade or excavate land, streets or highways, other than between the hours of six a.m. and nine p.m. on weekdays, and between eight a.m. and nine p.m. on weekends; provided, however, that city crews and those of the city's contractors performing street work between nine p.m. and six a.m. are exempt herefrom if the city engineer has directed that work be performed between such hours to alleviate potential traffic congestion.

B. Notwithstanding any other provisions of this chapter, if the city manager determines that the public health and safety will not be impaired by the erection, demolition, alteration or repair of any building or the excavating and grading of land, streets or highways between the hours of nine p.m. and six a.m., and if he or she further determines that loss or inconvenience would result to any party in interest by virtue of the requirements provided in subsection A of this section, he or she may grant a permit for such work to be done between the hours of nine p.m. and six a.m., upon application being made at the time the permit for the work is awarded or during the progress of the work. Such permit may be granted for a period not to exceed three days and may be extended by the city manager for a period not to exceed three days.

C. The provisions of this section shall not apply to any work of construction performed one thousand feet or more from the nearest residential dwelling.

D. The provisions of this section shall not apply to performance of emergency work as defined in this chapter.

Environmental Setting – Existing Ambient Noise and Vibration Environment

Noise-Sensitive Land Uses in the Project Vicinity

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely affect the primary intended use of the land. Places where people live, sleep, recreate, worship, and study are generally considered to be sensitive to noise because intrusive noise can be disruptive to these activities.

The existing noise-sensitive land uses which would potentially be affected by the project consist of residential uses. Specifically, single-family residences have been identified on agriculturally

zoned parcels within the project vicinity. The project area and surrounding land uses are shown on Figure 1.

Existing Traffic Noise Levels along Project Area Roadway Network

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used to develop existing noise contours expressed in terms of L_{dn} for major roadways within the project study area. The FHWA Model predicts hourly L_{eq} values for free-flowing traffic conditions. Estimates of the hourly distribution of traffic for a typical 24-hour period were used to develop L_{dn} values from L_{eq} values.

Traffic data in the form of AM and PM peak hour turning movements for existing conditions were obtained from the project traffic impact study prepared by Ruettgers & Schuler Civil Engineers in June 2020. Average daily traffic volumes were conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour conditions. Using these data and the FHWA Model, traffic noise levels were calculated. The traffic noise level at 100 feet from the roadway centerline and distances from the centerlines of selected roadways to the 60 dB, 65 dB, and 70 dB L_{dn} contours are summarized in Table 6.

In many cases, the actual distances to noise level contours may vary from the distances predicted by the FHWA Model. Factors such as roadway curvature, roadway grade, shielding from local topography or structures, elevated roadways, or elevated receivers may affect actual sound propagation.

It is also recognized that existing sensitive land uses within the project vicinity are located at various distances from the centerlines of the local roadway network. The 100 foot reference distance is utilized in this analysis to provide a reference position at which changes in existing and future traffic noise levels resulting from the project can be evaluated. Appendix B contains the FWHA Model inputs for existing conditions.

Table 6
Existing (2019) Traffic Noise Modeling Results

Seg.	Intersection	Direction	L_{dn} 100 Feet from Roadway	Distance to Contour (feet)		
				70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
1	SR 99 SB Ramps / Lerdo Highway	North	62	30	64	137
2		South	66	55	118	254
3		East	64	38	81	175
4		West	66	52	112	241
5	SR 99 NB Ramps / Lerdo Highway	North	47	3	7	14
6		South	67	65	141	303
7		East	60	21	46	99
8		West	64	38	82	176
9	SR 65 / Lerdo Highway	North	65	44	94	202
10		South	66	53	115	248
11		East	--	--	--	--
12		West	61	24	52	111
13	SR 65 / James Road	North	66	53	115	247
14		South	65	47	101	218

Table 6
Existing (2019) Traffic Noise Modeling Results

Seg.	Intersection	Direction	L_{dn} 100 Feet from Roadway	Distance to Contour (feet)		
				70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
15		East	60	20	44	95
16		West	47	3	6	14
17	Quinn Road / Imperial Street	North	--	--	--	--
18		South	49	4	9	20
19		East	49	4	9	20
20		West	--	--	--	--
21	SR 65 / Imperial Street	North	66	51	111	238
22		South	66	52	111	239
23		East	30	0	0	1
24		West	45	2	5	10
25	Quinn Road / Saco Road-McMurtney Ave	North	56	12	26	55
26		South	58	16	34	73
27		East	47	3	7	14
28		West	55	10	21	46
29	Calloway Drive / 7th Standard Road	North	57	14	31	67
30		South	62	28	61	131
31		East	69	86	186	400
32		West	67	63	136	293
33	Coffee Road / 7th Standard Road	North	52	6	13	28
34		South	63	37	79	171
35		East	70	101	218	470
36		West	69	85	183	395
37	Golden State Highway / 7th Standard Road	North	66	56	121	260
38		South	65	46	100	215
39		East	70	101	217	468
40		West	70	102	219	471
41	Quinn / SR 99 NBR/ M. Haggard / 7th Standard Road	North	58	16	34	74
42		South	60	22	47	102
43		East	66	54	117	252
44		West	70	94	202	436
45	Industrial Parkway / Merle Haggard Drive	North	52	6	13	28
46		South	54	9	20	42
47		East	66	54	116	249
48		West	66	55	118	255
49	SR 65 / Merle Haggard Drive	North	67	59	126	272
50		South	67	65	140	301
51		East	66	58	124	267
52		West	66	55	118	254
53	Pegasus Drive / Merle Haggard Drive	North	--	--	--	--
54		South	62	29	63	136
55		East	65	46	98	212
56		West	66	56	120	259
57	Wings Way / Merle Haggard Drive	North	43	2	4	8
58		South	51	5	11	23
59		East	66	56	122	262

Table 6
Existing (2019) Traffic Noise Modeling Results

Seg.	Intersection	Direction	L_{dn} 100 Feet from Roadway	Distance to Contour (feet)		
				70 dB L_{dn}	65 dB L_{dn}	60 dB L_{dn}
60		West	64	43	92	198
61	Landings Way / Merle Haggard Drive	North	33	0	1	2
62		South	--	--	--	--
63		East	65	45	97	209
64		West	67	62	133	286
65	Airport Drive / Merle Haggard Drive	North	60	22	47	101
66		South	60	23	49	105
67		East	63	35	76	164
68		West	65	44	96	206
69	McCray Street / Merle Haggard Drive	North	56	12	26	55
70		South	56	12	26	55
71		East	63	32	69	149
72		West	63	36	77	166
73	N. Chester Avenue / Merle Haggard Drive	North	62	30	66	141
74		South	60	23	49	105
75		East	64	39	84	181
76		West	63	33	71	154

Source: FHWA-RD-77-108 with inputs from Ruettgers & Schuler. Appendix B contains the FHWA model inputs.

Existing Overall Ambient Noise Environment at the Project Site

The existing ambient noise environment within the project vicinity is defined primarily by noise from traffic on SR 99, and to a lesser extent by agricultural activities. To generally quantify the existing ambient noise environment at the nearest existing sensitive uses to the project site, BAC conducted long-term (48-hour) ambient noise level surveys at two locations on the project site from August 17-18, 2019. The noise survey locations are shown on Figure 1. Photographs of the noise survey locations are provided in Appendix C.

Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters were used to complete the noise level measurement surveys. The meters were calibrated immediately before and after use with an LDL Model CA200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all specifications of the American National Standards Institute requirements for Type 1 sound level meters (ANSI S1.4).

The noise level measurement survey results are summarized in Table 7. The detailed results of the ambient noise surveys are contained in Appendix D in tabular format and graphically in Appendix E.

Table 7
Long-Term Noise Level Measurement Results – August 17-18, 2019[1]

			Average Measured Hourly Noise Levels, dBA			
			Daytime[3]		Nighttime[4]	
Site Description[2]	Date	L_{dn}	L_{eq}	L_{max}	L_{eq}	L_{max}
Site 1: Eastern boundary of project Phase 1 near Imperial Road, approx. 3,000' from SR 99 centerline	8/17/19	59	55	74	52	63
	8/18/19	56	52	72	48	60
Site 2: Northwestern boundary of project Phase 2, approx. 175' from SR 99 centerline	8/17/19	77	71	81	71	82
	8/18/19	76	71	80	69	80

[1] Detailed summaries of the noise monitoring results are provided in Appendices D and E.
[2] Long-term ambient noise monitoring locations are identified on Figure 1.
[3] Daytime hours: 7:00 AM to 10:00 PM
[4] Nighttime hours: 10:00 PM to 7:00 AM
Source: Bollard Acoustical Consultants, Inc. (2019)

As shown in Table 7, measured average noise levels were highest at site 2. This was due to the proximity of measurement site 2 to SR 99. The noise level measurements conducted at sites 1 and 2 were intended to quantify the existing general ambient noise environment at the project site, including the noise generation of traffic on SR 99.

Existing Ambient Vibration Environment

During a site visit on August 16, 2019, vibration levels were below the threshold of perception at the project site. Nonetheless, to quantify existing vibration levels at the project site, BAC conducted short-term (15-minute) vibration measurements at the two locations identified on Figure 1. Photographs of the vibration survey locations are provided in Appendix C.

A Larson-Davis Laboratories Model LxT precision integrating sound level meter equipped with a vibration transducer was used to complete the measurements. The results are summarized in Table 8.

Table 8
Summary of Ambient Vibration Level Survey Results – August 16, 2019

Site Description	Time	Average Measured Vibration Level, PPV (in. sec)[1]
Site 1: Eastern boundary of project Phase 1 near Imperial Road	2:46 PM	0.009
Site 2: Northwestern boundary of project Phase 2 near SR 99	3:19 PM	<0.001

[1] PPV = Peak Particle Velocity (inches/second)
Source: Bollard Acoustical Consultants, Inc. (2019)

The Table 8 data indicate that the measured average vibration levels during the monitoring period ranged from less than 0.001 to 0.009 in/sec PPV.

Impacts and Mitigation Measures

Thresholds of Significance

For the purposes of this report, a noise and vibration impact is considered significant if the project would result in:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or other applicable standards of other agencies; or

- Generation of excessive groundborne vibration or groundborne noise levels; or

- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

The following criteria based on standards established by the Federal Interagency Commission on Noise (FICON), California Department of Transportation (Caltrans), Kern County General Plan, Kern County Municipal Code, and Metropolitan Bakersfield General Plan were used to evaluate the significance of environmental noise and vibration resulting from the project:

- A significant noise impact would be identified if the project would expose persons to or generate noise levels that would exceed applicable noise standards presented in the Kern County General Plan, Kern County Municipal Code, or Metropolitan Bakersfield General Plan.

- A significant impact would be identified if off-site traffic noise exposure or on-site activities generated by the project would substantially increase noise levels at existing sensitive receptors in the vicinity. A substantial increase would be identified relative to the FICON standards provided in Table 1 and criteria established by the Metropolitan Bakersfield General Plan. It should be noted that the FICON and MBGP criteria are identical.
- A significant impact would be identified if project construction activities or proposed on-site operations would expose noise-sensitive receptors to excessive groundborne vibration levels. Specifically, an impact would be identified if groundborne vibration levels due to these sources would exceed the Caltrans vibration impact criteria.

Noise Impacts Associated with Project-Generated Increases in Off-Site Traffic

With development of the project, traffic volumes on the local roadway network will increase. Those increases in daily traffic volumes will result in a corresponding increase in traffic noise levels at existing uses located along those roadways. The FHWA Model was used with traffic input data from the traffic impact analysis (prepared by Ruettgers & Schuler Civil Engineers) to predict project traffic noise level increases relative to Existing (2019), 2030, and 2040 project and no project conditions.

Impact 1: Increases in Existing Traffic Noise Levels due to the Project (Phase 1)

Traffic data in the form of AM and PM peak hour turning movements for Existing and Existing Plus Project Phase 1 conditions in the project area roadway network were obtained from the project transportation impact analysis completed by Ruettgers & Schuler Civil Engineers in June 2020. Average daily traffic (ADT) volumes were conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour conditions.

Impact 1 evaluates noise impacts at sensitive receptors located along the roadway network utilized by project traffic resulting from the project-related increase in traffic noise levels at those receptors. Existing and Existing Plus Project Phase 1 traffic noise levels on the local roadway network are shown in Table 9, as well as the increases in existing traffic noise levels resulting from the project. The Table 9 data are provided in terms of L_{dn} at a standard distance of 100 feet from the centerlines of the project-area roadways. Appendix B contains the FWHA model inputs.

Table 9
Traffic Noise Modeling Results and Project-Related Traffic Noise Increases
Existing vs. Existing Plus Project Phase 1 Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB L_{dn}			Substantial Increase?
			E	E+P	Increase	
1	SR 99 SB Ramps / Lerdo Highway	North	62.1	62.6	0.5	No
2		South	66.1	66.1	0.0	No
3		East	63.6	63.9	0.3	No
4		West	65.7	65.8	0.1	No
5	SR 99 NB Ramps / Lerdo Highway	North	47.4	47.4	0.0	No
6		South	67.2	67.4	0.2	No
7		East	60.0	60.9	0.9	No
8		West	63.7	64.0	0.3	No
9	SR 65 / Lerdo Highway	North	64.6	64.7	0.1	No
10		South	65.9	66.4	0.5	No
11		East	ND	ND	--	--
12		West	60.7	62.0	1.3	No
13	SR 65 / James Road	North	65.9	66.4	0.5	No
14		South	65.9	66.4	0.5	No
15		East	65.1	65.7	0.6	No
16		West	59.7	59.7	0.0	No
17	Quinn Road / Imperial Street	North	47.1	47.1	0.0	No
18		South	ND	ND	--	--
19		East	49.4	52.6	3.2	No
20		West	49.4	60.7	11.3	Yes
21	SR 65 / Imperial Street	North	NA	60.8	60.8	Yes
22		South	65.7	66.2	0.5	No
23		East	65.7	67.9	2.2	Yes
24		West	29.7	29.7	0.0	No
25	Quinn Road / Saco Road-McMurtney Ave	North	45.1	60.5	15.4	Yes
26		South	56.2	57.1	0.9	No
27		East	58.0	59.1	1.1	No

Table 9
Traffic Noise Modeling Results and Project-Related Traffic Noise Increases
Existing vs. Existing Plus Project Phase 1 Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB L_{dn}			Substantial Increase?
			E	E+P	Increase	
28		West	47.3	47.3	0.0	No
29	Calloway Drive / 7th Standard Road	North	54.9	56.0	1.1	No
30		South	57.4	57.4	0.0	No
31		East	61.7	61.9	0.2	No
32		West	69.0	69.2	0.2	No
33	Coffee Road / 7th Standard Road	North	67.0	67.2	0.2	No
34		South	51.7	51.8	0.1	No
35		East	63.5	63.7	0.2	No
36		West	70.1	70.3	0.2	No
37	Golden State Highway / 7th Standard Road	North	69.0	69.2	0.2	No
38		South	66.2	66.6	0.4	No
39		East	65.0	65.0	0.0	No
40		West	70.1	70.4	0.3	No
41	Quinn / SR 99 NBR/ M. Haggard / 7th Standard Road	North	70.1	70.4	0.3	No
42		South	58.0	59.1	1.1	No
43		East	60.1	60.3	0.2	No
44		West	66.0	66.6	0.6	No
45	Industrial Parkway / Merle Haggard Drive	North	69.6	70.0	0.4	No
46		South	51.6	51.6	0.0	No
47		East	54.4	54.4	0.0	No
48		West	66.0	66.6	0.6	No
49	SR 65 / Merle Haggard Drive	North	66.1	66.7	0.6	No
50		South	66.5	68.5	2.0	Yes
51		East	67.2	68.3	1.1	No
52		West	66.4	66.6	0.2	No
53	Pegasus Dr / Merle Haggard Drive	North	66.1	66.7	0.6	No
54		South	ND	ND	--	--
55		East	62.0	62.0	0.0	No
56		West	64.9	65.2	0.3	No
57	Wings Way / Merle Haggard Drive	North	66.2	66.5	0.3	No
58		South	43.2	43.2	0.0	No
59		East	66.3	67.2	0.9	No
60		West	64.5	65.3	0.8	No
61	Landings Way / Merle Haggard Dr	North	33.5	33.5	0.0	No
62		South	ND	ND	--	--
63		East	64.8	65.2	0.4	No
64		West	66.8	67.2	0.4	No
65	Airport Drive / Merle Haggard Drive	North	60.0	60.0	0.0	No
66		South	60.3	60.7	0.4	No
67		East	63.2	63.6	0.4	No
68		West	64.7	65.1	0.4	No
69	McCray St / Merle Haggard Drive	North	56.1	56.1	0.0	No
70		South	56.1	56.2	0.1	No

Table 9
Traffic Noise Modeling Results and Project-Related Traffic Noise Increases
Existing vs. Existing Plus Project Phase 1 Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB L_{dn}			Substantial Increase?
			E	E+P	Increase	
71		East	62.6	63.0	0.4	No
72		West	63.3	63.6	0.3	No
73	N. Chester Ave / Merle Haggard Dr	North	62.2	62.2	0.0	No
74		South	60.3	60.6	0.3	No
75		East	63.9	64.0	0.1	No
76		West	62.8	63.1	0.3	No

ND = Roadway segments for which no traffic data was provided
NA = Roadway segments that previously did not exist
Source: FHWA-RD-77-108 with inputs from Ruettgers & Schuler. Appendix B contains the FHWA model inputs.

As indicated in Table 9, the project-generated increase in existing traffic noise levels is predicted to be substantial along five of the roadway segments evaluated in Table 9 (segments 20, 21, 23, 25 and 50). Analysis of those five roadway segments revealed that there are no residences or other sensitive land uses along those roadway segments. Because the project-related increase in traffic noise levels would not exceed the standards of significance at existing sensitive receptors located along the project roadway network, this impact is identified as being ***less than significant***.

Impact 2: Increases in 2030 Traffic Noise Levels due to the Project (Phase 1)

Traffic data in the form of AM and PM peak hour turning movements for 2030 and 2030 Plus Project Phase 1 conditions in the project area roadway network were obtained from the project transportation impact analysis completed by Ruettgers & Schuler Civil Engineers in June 2020. Average daily traffic (ADT) volumes were conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour conditions.

Impact 2 evaluates noise impacts at sensitive receptors located along the roadway network utilized by project traffic resulting from the project-related increase in 2030 traffic noise levels at those receptors. Year 2030 Baseline and 2030 Baseline Plus Phase 1 Project traffic noise levels on the local roadway network are shown in Table 10, as well as the increases in traffic noise levels resulting from the project. The Table 10 data are provided in terms of L_{dn} at a standard distance of 100 feet from the centerlines of the project-area roadways. Appendix B contains the FWHA model inputs.

Table 10
Traffic Noise Modeling Results and Project-Related Traffic Noise Increases
2030 vs. 2030 Plus Project Phase 1 Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB L_{dn}			Substantial Increase?
			2030	2030+P	Increase	
1	SR 99 SB Ramps / Lerdo Highway	North	63.1	63.6	0.5	No
2		South	66.8	66.8	0.0	No
3		East	65.1	65.3	0.2	No
4		West	66.8	66.9	0.1	No
5	SR 99 NB Ramps / Lerdo Highway	North	48.4	48.4	0.0	No
6		South	68.1	68.2	0.1	No
7		East	61.6	62.3	0.7	No
8		West	64.7	64.9	0.2	No
9	SR 65 / Lerdo Highway	North	65.6	65.7	0.1	No
10		South	67.0	67.4	0.4	No
11		East	ND	ND	--	--
12		West	62.0	63.0	1.0	No
13	SR 65 / James Road	North	67.1	67.5	0.4	No
14		South	66.3	66.8	0.5	No
15		East	60.5	60.5	0.0	No
16		West	47.8	47.8	0.0	No
17	Quinn Road / Imperial Street	North	ND	ND	--	--
18		South	49.6	52.7	3.1	No
19		East	49.6	60.7	11.1	Yes
20		West	NA	60.8	60.8	Yes
21	SR 65 / Imperial Street	North	67.0	67.4	0.4	No
22		South	67.0	68.8	1.8	Yes
23		East	29.7	29.7	0.0	No
24		West	46.0	60.6	14.6	Yes
25	Quinn Road / Saco Road-McMurtney Ave	North	56.4	57.2	0.8	No
26		South	58.2	59.3	1.1	No
27		East	47.4	47.4	0.0	No
28		West	55.2	56.2	1.0	No
29	Calloway Drive / 7th Standard Road	North	58.0	58.0	0.0	No
30		South	62.8	63.0	0.2	No
31		East	70.4	70.6	0.2	No
32		West	68.5	68.6	0.1	No
33	Coffee Road / 7th Standard Road	North	52.7	52.8	0.1	No
34		South	65.5	65.7	0.2	No
35		East	72.0	72.2	0.2	No
36		West	70.7	70.9	0.2	No
37	Golden State Highway / 7th Standard Road	North	67.8	68.1	0.3	No
38		South	66.3	66.3	0.0	No
39		East	72.2	72.4	0.2	No
40		West	72.0	72.1	0.1	No
41	Quinn / SR 99 NBR/ M. Haggard / 7th Standard Road	North	59.4	60.3	0.9	No
42		South	61.7	61.8	0.1	No
43		East	68.8	69.2	0.4	No

Table 10
Traffic Noise Modeling Results and Project-Related Traffic Noise Increases
2030 vs. 2030 Plus Project Phase 1 Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB L_{dn}			Substantial Increase?
			2030	2030+P	Increase	
44		West	72.0	72.2	0.2	No
45	Industrial Parkway / Merle Haggard Drive	North	52.3	52.3	0.0	No
46		South	55.1	54.8	-0.3	No
47		East	68.6	68.9	0.3	No
48		West	68.7	69.0	0.3	No
49	SR 65 / Merle Haggard Drive	North	67.7	69.2	1.5	Yes
50		South	70.1	70.7	0.6	No
51		East	70.2	70.4	0.2	No
52		West	68.7	69.2	0.5	No
53	Pegasus Dr / Merle Haggard Drive	North	ND	ND	--	--
54		South	62.6	62.6	0.0	No
55		East	69.4	69.5	0.1	No
56		West	70.0	70.1	0.1	No
57	Wings Way / Merle Haggard Drive	North	61.4	61.4	0.0	No
58		South	56.8	56.8	0.0	No
59		East	69.9	70.1	0.2	No
60		West	69.6	69.7	0.1	No
61	Landings Way / Merle Haggard Dr	North	61.6	61.6	0.0	No
62		South	ND	ND	--	--
63		East	67.1	67.3	0.2	No
64		West	69.7	69.9	0.2	No
65	Airport Drive / Merle Haggard Drive	North	60.6	60.6	0.0	No
66		South	63.0	63.2	0.2	No
67		East	65.0	65.2	0.2	No
68		West	66.9	67.1	0.2	No
69	McCray St / Merle Haggard Drive	North	56.6	56.6	0.0	No
70		South	58.3	58.3	0.0	No
71		East	64.2	64.5	0.3	No
72		West	65.2	65.4	0.2	No
73	N. Chester Ave / Merle Haggard Dr	North	62.9	62.9	0.0	No
74		South	61.6	61.8	0.2	No
75		East	65.1	65.2	0.1	No
76		West	64.5	64.7	0.2	No

ND = Roadway segments for which no traffic data was provided
NA = Roadway segments that previously did not exist
Source: FHWA-RD-77-108 with inputs from Ruettgers & Schuler. Appendix B contains the FHWA model inputs.

As indicated in Table 10, the project-generated increase in existing traffic noise levels is predicted to be substantial along five of the roadway segments evaluated in Table 10 (segments 18, 19, 22, 24, and 49). Analysis of those five roadway segments revealed that there are no residences or other sensitive land uses along those roadway segments. Because the project-related increase in traffic noise levels would not exceed the standards of significance at existing sensitive receptors

located along the project roadway network, this impact is identified as being ***less than significant***.

Impact 3: Increases in 2040 Traffic Noise Levels due to the Project (Phase 1 & 2)

Traffic data in the form of AM and PM peak hour turning movements for 2040 and 2040 Plus Project Phase 1 & 2 conditions in the project area roadway network were obtained from the project transportation impact analysis completed by Ruettgers & Schuler Civil Engineers in June 2020. Average daily traffic (ADT) volumes were conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour conditions.

Impact 3 evaluates noise impacts at sensitive receptors located along the roadway network utilized by project traffic resulting from the project-related increase in 2040 traffic noise levels at those receptors. Year 2040 Baseline and 2040 Baseline Plus Phase 1 & 2 Project traffic noise levels on the local roadway network are shown in Table 11, as well as the increases in traffic noise levels resulting from the project. The Table 11 data are provided in terms of L_{dn} at a standard distance of 100 feet from the centerlines of the project-area roadways. Appendix B contains the FWHA model inputs.

Table 11
Traffic Noise Modeling Results and Project-Related Traffic Noise Increases
2040 vs. 2040 Plus Project Phase 1 & 2 Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB L_{dn}			Substantial Increase?
			2040	2040+P	Increase	
1	SR 99 SB Ramps / Lerdo Highway	North	63.7	64.2	0.5	No
2		South	67.4	67.4	0.0	No
3		East	66.3	66.5	0.2	No
4		West	67.9	68.0	0.1	No
5	SR 99 NB Ramps / Lerdo Highway	North	49.2	49.2	0.0	No
6		South	68.8	69.0	0.2	No
7		East	62.7	63.4	0.7	No
8		West	65.6	65.8	0.2	No
9	SR 65 / Lerdo Highway	North	66.3	66.5	0.2	No
10		South	67.7	68.2	0.5	No
11		East	ND	ND	--	--
12		West	62.7	63.8	1.1	No
13	SR 65 / James Road	North	67.8	68.3	0.5	No
14		South	67.0	67.6	0.6	No
15		East	61.3	61.3	0.0	No
16		West	48.5	48.5	0.0	No
17	Quinn Road / Imperial Street	North	ND	ND	--	--
18		South	49.8	53.4	3.6	No
19		East	49.8	61.8	12.0	Yes
20		West	NA	61.8	61.8	Yes
21	SR 65 / Imperial Street	North	67.8	68.3	0.5	No
22		South	67.9	69.7	1.8	Yes
23		East	32.7	32.7	0.0	No

Table 11
Traffic Noise Modeling Results and Project-Related Traffic Noise Increases
2040 vs. 2040 Plus Project Phase 1 & 2 Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB L_{dn}			Substantial Increase?
			2040	2040+P	Increase	
24		West	47.1	61.6	14.5	Yes
25	Quinn Road / Saco Road-McMurtney Ave	North	56.6	57.6	1.0	No
26		South	58.5	59.7	1.2	No
27		East	47.8	47.8	0.0	No
28		West	55.4	56.6	1.2	No
29	Calloway Drive / 7th Standard Road	North	58.5	58.5	0.0	No
30		South	63.2	63.3	0.1	No
31		East	71.3	71.5	0.2	No
32		West	69.7	69.8	0.1	No
33	Coffee Road / 7th Standard Road	North	53.6	53.8	0.2	No
34		South	66.4	66.5	0.1	No
35		East	73.0	73.2	0.2	No
36		West	71.9	72.1	0.2	No
37	Golden State Highway / 7th Standard Road	North	68.1	68.4	0.3	No
38		South	67.4	67.4	0.0	No
39		East	73.2	73.4	0.2	No
40		West	73.0	73.2	0.2	No
41	Quinn / SR 99 NBR/ M. Haggard / 7th Standard Road	North	60.7	61.5	0.8	No
42		South	62.9	63.0	0.1	No
43		East	69.6	70.0	0.4	No
44		West	72.9	73.2	0.3	No
45	Industrial Parkway / Merle Haggard Drive	North	53.0	53.0	0.0	No
46		South	55.8	55.8	0.0	No
47		East	69.2	69.6	0.4	No
48		West	69.3	69.6	0.3	No
49	SR 65 / Merle Haggard Drive	North	68.4	70.1	1.7	Yes
50		South	70.6	71.2	0.6	No
51		East	70.6	70.0	-0.6	No
52		West	69.3	68.7	-0.6	No
53	Pegasus Dr / Merle Haggard Drive	North	ND	ND	--	--
54		South	63.0	63.0	0.0	No
55		East	69.6	69.8	0.2	No
56		West	70.3	70.4	0.1	No
57	Wings Way / Merle Haggard Drive	North	61.4	61.4	0.0	No
58		South	57.1	57.1	0.0	No
59		East	70.4	70.6	0.2	No
60		West	69.9	70.1	0.2	No
61	Landings Way / Merle Haggard Dr	North	61.6	61.6	0.0	No
62		South	ND	ND	--	--
63		East	67.6	67.8	0.2	No
64		West	70.2	70.4	0.2	No
65	Airport Drive / Merle Haggard Drive	North	60.9	60.9	0.0	No
66		South	63.3	63.5	0.2	No
67		East	65.5	65.8	0.3	No

Table 11
Traffic Noise Modeling Results and Project-Related Traffic Noise Increases
2040 vs. 2040 Plus Project Phase 1 & 2 Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB L_{dn}			Substantial Increase?
			2040	2040+P	Increase	
68		West	67.3	67.6	0.3	No
69	McCray St / Merle Haggard Drive	North	57.0	57.0	0.0	No
70		South	58.6	58.7	0.1	No
71		East	65.0	65.3	0.3	No
72		West	65.8	66.1	0.3	No
73	N. Chester Ave / Merle Haggard Dr	North	63.5	63.5	0.0	No
74		South	62.1	62.3	0.2	No
75		East	65.9	66.0	0.1	No
76		West	65.4	65.6	0.2	No

ND = Roadway segments for which no traffic data was provided
NA = Roadway segments that previously did not exist
Source: FHWA-RD-77-108 with inputs from Ruettgers & Schuler. Appendix B contains the FHWA model inputs.

As indicated in Table 11, the project-generated increase in year 2040 traffic noise levels is predicted to be substantial along five of the roadway segments evaluated in Table 11 (segments 19, 20, 22, 24 and 49). Analysis of those five roadway segments revealed that there are no residences or other sensitive land uses along those roadway segments. Because the project-related increase in traffic noise levels would not exceed the standards of significance at existing sensitive receptors located along the project roadway network, this impact is identified as being ***less than significant***.

Impact 4: Increases in 2040 Traffic Noise Levels due to Project (Phase 1 & 2 Imperial)

Traffic data in the form of AM and PM peak hour turning movements for 2040 and 2040 Plus Project Phase 1 & 2 Imperial conditions in the project area roadway network were obtained from the project transportation impact analysis completed by Ruettgers & Schuler Civil Engineers in June 2020. Average daily traffic (ADT) volumes were conservatively estimated by applying a factor of 5 to the sum of AM and PM peak hour conditions.

Impact 4 evaluates noise impacts at sensitive receptors located along the roadway network utilized by project traffic resulting from the Phase 1 & 2 Imperial Project-related increase in 2040 traffic noise levels at those receptors. Year 2040 Baseline and 2040 Baseline Plus Phase 1 & 2 Imperial Project traffic noise levels on the local roadway network are shown in Table 12, as well as the increases in traffic noise levels resulting from the project. The Table 12 data are provided in terms of L_{dn} at a standard distance of 100 feet from the centerlines of the project-area roadways. Appendix B contains the FWHA model inputs.

Table 12
Traffic Noise Modeling Results and Project-Related Traffic Noise Increases
2040 vs. 2040 Plus Project Phase 1 & 2 Imperial Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB L_{dn}			Substantial Increase?
			2040	2040+P	Increase	
1	SR 99 SB Ramps / Lerdo Highway	North	63.7	64.1	0.4	No
2		South	67.4	67.4	0.0	No
3		East	66.3	66.4	0.1	No
4		West	67.9	67.9	0.0	No
5	SR 99 NB Ramps / Lerdo Highway	North	49.2	49.2	0.0	No
6		South	68.8	69.0	0.2	No
7		East	62.7	63.3	0.6	No
8		West	65.6	65.8	0.2	No
9	SR 65 / Lerdo Highway	North	66.3	66.4	0.1	No
10		South	67.7	68.1	0.4	No
11		East	ND	ND	--	--
12		West	62.7	63.7	1.0	No
13	SR 65 / James Road	North	67.8	68.2	0.4	No
14		South	67.0	67.5	0.5	No
15		East	61.3	61.3	0.0	No
16		West	48.5	48.5	0.0	No
17	Quinn Road / Imperial Street	North	ND	ND	--	--
18		South	49.8	53.1	3.3	No
19		East	49.8	61.3	11.5	Yes
20		West	NA	61.4	61.4	Yes
21	SR 65 / Imperial Street	North	67.8	68.2	0.4	No
22		South	67.9	71.2	3.3	Yes
23		East	32.7	59.8	27.1	Yes
24		West	47.1	61.2	14.1	Yes
25	Quinn Road / Saco Road-	North	56.6	57.5	0.9	No
26	McMurtney Ave	South	58.5	59.6	1.1	No
27		East	47.8	47.8	0.0	No
28		West	55.4	56.5	1.1	No
29	Calloway Drive / 7th Standard Road	North	58.5	58.5	0.0	No
30		South	63.2	63.3	0.1	No
31		East	71.3	71.5	0.2	No
32		West	69.7	69.8	0.1	No
33	Coffee Road / 7th Standard Road	North	53.6	53.7	0.1	No
34		South	66.4	66.5	0.1	No
35		East	73.0	73.2	0.2	No
36		West	71.9	72.0	0.1	No
37	Golden State Highway / 7th	North	68.1	68.4	0.3	No
38	Standard Road	South	67.4	67.4	0.0	No
39		East	73.2	73.4	0.2	No
40		West	73.0	73.2	0.2	No
41	Quinn / SR 99 NBR/ M. Haggard /	North	60.7	61.4	0.7	No
42	7th Standard Road	South	62.9	63.0	0.1	No

Table 12
Traffic Noise Modeling Results and Project-Related Traffic Noise Increases
2040 vs. 2040 Plus Project Phase 1 & 2 Imperial Conditions

Segment	Intersection	Direction	Traffic Noise Level at 100 feet, dB L_{dn}			Substantial Increase?
			2040	2040+P	Increase	
43		East	69.6	69.9	0.3	No
44		West	72.9	73.2	0.3	No
45	Industrial Parkway / Merle Haggard Drive	North	53.0	53.0	0.0	No
46		South	55.8	55.8	0.0	No
47		East	69.2	69.5	0.3	No
48		West	69.3	69.6	0.3	No
49	SR 65 / Merle Haggard Drive	North	68.4	71.5	3.1	Yes
50		South	70.6	71.2	0.6	No
51		East	70.6	69.6	-1.0	No
52		West	69.3	69.6	0.3	No
53	Pegasus Dr / Merle Haggard Drive	North	ND	ND	--	--
54		South	63.0	63.0	0.0	No
55		East	69.6	68.5	-1.1	No
56		West	70.3	69.2	-1.1	No
57	Wings Way / Merle Haggard Drive	North	61.4	57.1	-4.3	No
58		South	57.1	57.1	0.0	No
59		East	70.4	70.6	0.2	No
60		West	69.9	68.9	-1.0	No
61	Landings Way / Merle Haggard Dr	North	61.6	61.6	0.0	No
62		South	ND	ND	--	--
63		East	67.6	67.8	0.2	No
64		West	70.2	70.4	0.2	No
65	Airport Drive / Merle Haggard Drive	North	60.9	60.9	0.0	No
66		South	63.3	63.5	0.2	No
67		East	65.5	65.8	0.3	No
68		West	67.3	67.5	0.2	No
69	McCray St / Merle Haggard Drive	North	57.0	57.0	0.0	No
70		South	58.6	58.7	0.1	No
71		East	65.0	65.2	0.2	No
72		West	65.8	66.0	0.2	No
73	N. Chester Ave / Merle Haggard Dr	North	63.5	63.5	0.0	No
74		South	62.1	62.3	0.2	No
75		East	65.9	66.0	0.1	No
76		West	65.4	65.6	0.2	No

ND = Roadway segments for which no traffic data was provided
NA = Roadway segments that previously did not exist
Source: FHWA-RD-77-108 with inputs from Ruettgers & Schuler. Appendix B contains the FHWA model inputs.

As indicated in Table 12, the project-generated increase in year 2040 traffic noise levels is predicted to be substantial along six of the roadway segments evaluated in Table 12 (segments 19, 20, 22-24 and 49). Analysis of those six roadway segments revealed that there are no residences or other sensitive land uses along those roadway segments. Because the project-related increase in traffic noise levels would not exceed the standards of significance at existing

sensitive receptors located along the project roadway network, this impact is identified as being ***less than significant***.

Off-Site Noise Impacts Associated with Proposed On-Site Industrial Operations

Impact 5: Project Industrial Noise Levels at Existing Noise-Sensitive Receptors

The project proposes industrial zoning within two primary areas identified as Phases 1 and 2. At the time of writing this report, the types of future industrial uses which would develop within these areas are unknown. However, within the project area, the types of uses which would typically develop would likely include a mix of light industrial, manufacturing and warehouse/distribution type uses. Primary noise sources associated with these types of uses which affect the exterior noise environment tend to consist of on-site heavy truck circulation, loading dock activities, and mechanical equipment. Noise generated by equipment and processes occurring within buildings tends to be contained by the building envelope. Reference noise levels for the exterior industrial noise sources identified above can vary but are would likely range from 50-60 dB L_{eq} and 70-75 dB L_{max} at a distance of 100 feet from the noise sources.

The nearest identified existing sensitive receptor has been identified as a residence located on the south side of SR 99, approximately 350 feet from the project boundary. When projected to a distance of 350 feet, noise levels from the exterior industrial noise sources indicated above are calculated to be approximately 50 dB L_{eq} and 65 dB L_{max}. However, this residence is located approximately 250 feet from the centerline of SR 99, and is exposed to an extremely high ambient noise environment (traffic). It is expected that the elevated ambient noise level environment associated with SR 99 traffic would effectively mask project industrial noise levels at this residence. The next-nearest existing residence is located approximately 2,100 feet from the project area. When projected to a distance of 2,100 feet, noise levels from exterior industrial noise sources are expected to be approximately 35 dB L_{eq} and 50 dB L_{max}. According to the results from the BAC ambient noise level survey, specifically at measurement site 1 which was furthest removed from the SR 99 (a primary noise source in the area), average measured hourly noise levels ranged from 48 to 55 dB L_{eq} and from 60 to 74 dB L_{max} during the 48-hour monitoring period (Table 7). After a comparison of the locations of both BAC site 1 and the previously identified existing residence located 2,100 feet from the project area, it is reasonably assumed that measured ambient conditions at site 1 would be generally acoustically equivalent of existing ambient conditions at that residence. Based on this assumption, the predicted industrial operations noise levels of 35 dB L_{eq} and 50 dB L_{max} at that residence would be well below the established ambient noise level environment at that residence.

Based on the analysis provided above, project industrial operations noise levels at the nearest existing sensitive receptors are expected to be below ambient noise conditions at those locations. It is further expected that project industrial operations noise exposure would satisfy applicable Kern County General Plan and Metropolitan Bakersfield General Plan noise level criteria at those locations. As a result, this impact is considered to be ***less than significant***.

Noise Impacts Associated with Project Construction Activities

Impact 6: Project Construction Noise Levels at Existing Sensitive Uses

During project construction, heavy equipment would be used for grading excavation, paving, and building construction, which would increase ambient noise levels when in use. Noise levels would vary depending on the type of equipment used, how it is operated, and how well it is maintained. Noise exposure at any single point outside the project work area would also vary depending upon the proximity of equipment activities to that point. The nearest identified existing sensitive receptor (residence) is located south of SR-99, approximately 350 feet away from where construction activities would occur on the project site.

Table 13 includes the range of maximum (L_{max}) noise levels for equipment commonly used in general construction projects at full-power operation at a distance of 50 feet. Not all of these construction activities would be required of this project. The Table 13 data also include predicted maximum equipment noise levels at the nearest sensitive use located approximately 350 feet away, which assume a standard spherical spreading loss of 6 dB per doubling of distance.

Table 13
Construction Equipment Reference Noise Levels and Predicted Noise Levels 350 Feet

Equipment Description	Maximum Noise Level at 50 Feet, L_{max} (dB)	Predicted Maximum Noise Level at 350 feet, L_{max} (dB)
Air compressor	80	63
Backhoe	80	63
Ballast equalizer	82	65
Ballast tamper	83	66
Compactor	82	65
Concrete mixer	85	68
Concrete pump	82	65
Concrete vibrator	76	59
Crane, mobile	83	66
Dozer	85	68
Generator	82	65
Grader	85	68
Impact wrench	85	68
Jack hammer	88	71
Loader	80	63
Paver	85	68
Pneumatic tool	85	68
Pump	77	60
Rail saw	90	73
Saw	76	59
Scarifier	83	66
Scraper	85	68
Shovel	82	65
Spike driver	77	60
Tie cutter	84	67
Tie handler	80	63
Tie inserter	85	68
Truck	84	67

Source: FTA Transit Noise and Vibration Impact Assessment Manual, Table 7-1 (2018)

Based on the equipment noise levels in Table 13, worst-case on-site project construction equipment noise levels at the nearest existing residence located approximately 350 feet away are expected to range from approximately 59 to 73 dB L_{max}. However, as mentioned previously, this residence is exposed to an elevated noise level environment located within close proximity to SR 99. It is expected that SR 99 traffic noise exposure would effectively mask project construction noise levels at this residence. The next-nearest existing residence is located approximately 2,100 feet from where project construction could occur. When projected to this distance, worst-case project construction equipment noise levels are expected to range from 44 to 58 dB L_{max}. According to the results from the BAC ambient noise level survey, specifically at measurement site 1 which was furthest removed from the SR 99 (a primary noise source in the area), average measured maximum noise levels ranged from 60 to 74 dB L_{max} during the 48-hour monitoring period (Table 7). After a comparison of the locations of both BAC site 1 and the previously identified existing residence located 2,100 feet from the project area, it is reasonably assumed that measured ambient conditions at site 1 would be generally acoustically equivalent of existing ambient conditions at that residence. Based on this assumption, the predicted construction maximum noise levels of 44 to 58 dB L_{max} at that residence would be below the established ambient noise level environment at that residence.

Based on the analysis provided above, project construction noise levels at the nearest existing sensitive receptors are expected to be below ambient noise conditions at those locations. It is further expected that project construction noise exposure would satisfy applicable Kern County General Plan and Metropolitan Bakersfield General Plan noise level criteria at those locations. As a result, this impact is identified as being ***less than significant***. Nevertheless, the following measures should be incorporated into the project construction operations to the maximum extent possible to reduce the potential for annoyance at residences in the general vicinity of the construction:

- Noise-generating construction activities shall not occur within the hours and days identified in Section 8.36.020 of the Kern County General Plan.
- Noise-generating construction activities shall occur pursuant to the criteria identified in Section 9.22.050 of the Bakersfield Municipal Code.
- All noise-producing project equipment and vehicles using internal-combustion engines shall be equipped with manufacturers-recommended mufflers and be maintained in good working condition.
- All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, state, or local agency shall comply with such regulations while in the course of project activity.
- Electrically powered equipment shall be used instead of pneumatic or internal-combustion-powered equipment, where feasible.
- Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive receptors.
- Project area and site access road speed limits shall be established and enforced during the construction period.

Vibration Impacts Associated with Project Activities

Impact 7: Vibration Generated by Project Construction and On-Site Operations

During project construction, heavy equipment would be used for grading, excavation, paving, and building construction, which would generate localized vibration in the immediate vicinity of the construction. The nearest identified existing sensitive receptor is a residential structure located approximately 350 feet from construction activities which would occur within the project site.

Table 14 includes the range of vibration levels for equipment commonly used in general construction projects at a distance of 25 feet. The Table 14 data also include predicted equipment vibration levels at the nearest existing residences to the project site located approximately 350 feet away.

Table 14
Vibration Source Levels for Construction Equipment and Predicted Levels at 350 Feet

	Maximum PPV (inches/second)[1]	
Equipment	**Maximum PPV at 25 Feet[2]**	**Predicted PPV at 350 Feet**
Hoe ram	0.089	0.002
Large bulldozer	0.089	0.002
Caisson drilling	0.089	0.002
Loaded trucks	0.076	0.001
Jackhammer	0.035	<0.001
Small bulldozer	0.003	<0.001

[1] PPV = Peak Particle Velocity
[2] Reference vibration level obtained from the Federal Transit Administration (FTA), Transit Noise and Vibration Impact Assessment Manual (2018).

As indicated in Table 14, vibration levels generated from on-site construction activities at the nearest existing residence located approximately 350 feet away are predicted to be well below the strictest Caltrans thresholds for damage to residential structures of 0.30 in/sec PPV shown in Table 2. Further, the predicted vibration levels in Table 14 are well below the threshold for a severe human response as defined by Caltrans in Table 3 (vibration damage potential threshold criteria). Therefore, on-site construction within the project area is not expected to result in excessive groundborne vibration levels at nearby existing residential uses.

Results from the ambient vibration level monitoring at the project site (Table 8) indicate that measured average vibration levels were below the strictest Caltrans thresholds for damage to structures and thresholds for annoyance. Therefore, it is expected that the project would not result in the exposure of persons to excessive groundborne vibration levels at proposed uses of the project.

The project proposes medium industrial (M-2) uses within the development. After a review of types of industrial uses allowed by Kern County within the M-2 zoning, it is expected that the equipment associated with those uses would not produce appreciable vibration. Specifically, vibration levels that would be generated by the types of equipment within the industrial project

dissipate very rapidly with distance, and are expected to be well below Caltrans thresholds for damage to structures and thresholds for annoyance at the nearest existing residence located approximately 350 feet away.

Because vibration levels due to and upon the proposed project are expected to satisfy the applicable Caltrans groundborne impact vibration criteria at the nearest existing sensitive receptors, this impact is considered to be ***less than significant***.

Noise Impacts Upon the Development

The California Supreme Court issued an opinion in *California Building Industry Association v. Bay Area Air Quality Management District (2015)* holding that CEQA is primarily concerned with the impacts of a project on the environment and generally does not require agencies to analyze the impact of existing conditions on a project's future users. Nevertheless, the Kern County General Plan and Metropolitan Bakersfield General Plan have policies that address existing/future conditions affecting the proposed project, which are discussed in the following section. The following section includes an assessment of future traffic and aircraft operations noise exposure at proposed industrial uses within the development and recommended conditions to ensure consistency with the applicable noise requirements.

On-Site Traffic Noise Impacts

Issue 1: Future Traffic Noise Levels at the Proposed Industrial Development

The worst-case traffic noise exposure at the development is expected to occur at the industrial uses proposed nearest to SR 99. Although the project site map identifies the development boundaries (Figure 2), the locations of the industrial uses within the project area are currently unknown. The development boundaries proposed nearest to SR 99 maintain a separation of approximately 100 feet from the centerline of the roadway.

The FHWA Model was used with future traffic data to predict SR 99 traffic noise levels at the proposed development. The future Average Daily Traffic (ADT) for SR 99 was conservatively estimated by increasing the existing ADT volume by a factor of 50% to account for regional growth in the next twenty years. The existing (2019) ADT volume for the segment of SR 99 adjacent to the proposed development was obtained from published Caltrans traffic volume data. The day/night distribution and truck percentages were derived from BAC file data and published Caltrans data. A complete listing of FHWA Model inputs for future SR 99 traffic is provided as Appendix F.

Based on the above information, future day-night average (L_{dn}) traffic noise exposure from the segment of SR 99 adjacent to the proposed development is predicted to be approximately 75 dB L_{dn} at a distance of 350 feet from the centerline of SR 99. The Kern County General Plan does not contain exterior noise level limits for industrial uses. However, the Metropolitan Bakersfield General Plan establishes a normally acceptable exterior noise level limit of 75 dB L_{dn} for industrial uses. Exterior areas of industrial uses are not inherently considered to be noise-sensitive. Rather, the noise-sensitivity at industrial uses typically occurs within indoor offices, break rooms, conference rooms, etc. Based on the noise level reduction achieved from standard building

construction (minimum of 15 dB with windows open), adverse reaction to traffic noise level exposure within the indoor sensitive areas of proposed industrial buildings is not expected. However, should outdoor break areas be proposed within 350 feet from the centerline of SR 99, it is possible that future SR 99 traffic noise exposure could exceed the applicable Metropolitan Bakersfield General Plan 75 dB L_{dn} exterior noise level limit at those locations. As a result, this impact is identified as being **potentially significant**.

Recommendation 1:

In order to satisfy the applicable Metropolitan Bakersfield General Plan exterior noise level limit at potential outdoor areas of industrial uses, one of the following measures is recommended:

RM 1: Ensure that sensitive outdoor areas of future industrial uses within the development (if any) maintain a minimum setback of 350 feet from the centerline of SR 99.

OR

RM 2: Should outdoor areas of future industrial uses be proposed within 350 feet from the centerline of SR 99, ensure that the areas are sufficiently shielded so as noise levels would not exceed 75 dB L_{dn} at those locations.

Issue 2: Airport Operations Noise at the Proposed Industrial Development

The project site is located approximately 8,700 feet (1.65 miles) to the northwest of Meadows Field Airport (a public airport). According to the Noise Contours Map identified in the County of Kern Airport Land Use Compatibility Plan, the project area is geographically located outside of the 60 dB CNEL noise contour. In addition, the results from the ambient noise level survey indicate that measured day-night average (L_{dn}) noise levels at the project site (excluding the data obtained at site 2 which was adjacent to SR 99) were below 60 dB L_{dn} (site 1).

Based on the information above, the results from the BAC conducted noise level survey at the project site, and after consideration of the exterior to interior noise level reduction achieved within standard building construction (at least 25 dB with windows closed and approximately 15 dB with windows open), noise generated from normal aircraft operations at the Meadows Field Airport is not expected to exceed the applicable Metropolitan Bakersfield General Plan exterior noise level criteria at the proposed development, or result in adverse reaction within the interior areas of the proposed industrial buildings. As a result, this impact is considered to be ***less than significant***.

This concludes BAC's noise and vibration assessment of the Malibu Vineyards Rezone Project Phases 1 & 2 project in Kern County, California. Please contact BAC at (530) 537-2328 or info@bacnoise.com if you have any comments or questions regarding this report.

Appendix A

Acoustical Terminology

Acoustics The science of sound.

Ambient Noise The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.

Attenuation The reduction of an acoustic signal.

A-Weighting A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.

Decibel or dB Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.

CNEL Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.

Frequency The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.

Ldn Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.

Leq Equivalent or energy-averaged sound level.

Lmax The highest root-mean-square (RMS) sound level measured over a given period of time.

Loudness A subjective term for the sensation of the magnitude of sound.

Masking The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.

Noise Unwanted sound.

Peak Noise The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the Maximum level, which is the highest RMS level.

RT_{60} The time it takes reverberant sound to decay by 60 dB once the source has been removed.

Sabin The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 sabin.

SEL A rating, in decibels, of a discrete event, such as an aircraft flyover or train passby, that compresses the total sound energy of the event into a 1-s time period.

Threshold of Hearing The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.

Threshold of Pain Approximately 120 dB above the threshold of hearing.

Appendix B-1
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 01 Existing
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	SR 99 SB Ramps / Lerdo Highway	North	2,190	80	20	2	2	70	100
2		South	5,495	80	20	2	2	70	100
3		East	9,110	80	20	2	2	45	100
4		West	14,755	80	20	2	2	45	100
5	SR 99 NB / Lerdo Highway	North	590	80	20	2	2	25	100
6		South	7,185	80	20	2	2	70	100
7		East	3,900	80	20	2	2	45	100
8		West	9,195	80	20	2	2	45	100
9	SR 65 / Lerdo Highway	North	7,100	80	20	2	2	55	100
10		South	9,645	80	20	2	2	55	100
11		East							
12		West	2,895	80	20	2	2	55	100
13	SR 65 / James Road	North	9,590	80	20	2	2	55	100
14		South	7,930	80	20	2	2	55	100
15		East	3,650	80	20	2	2	45	100
16		West	200	80	20	2	2	45	100
17	Quinn Road / Imperial Street	North							
18		South	585	80	20	2	2	35	100
19		East	585	80	20	2	2	35	100
20		West							
21	SR 65 / Imperial Street	North	9,075	80	20	2	2	55	100
22		South	9,145	80	20	2	2	55	100
23		East	10	80	20	2	2	25	100
24		West	220	80	20	2	2	35	100
25	Quinn Road / Saco Road-McMurtrey Avenue	North	2,795	80	20	2	2	35	100
26		South	4,265	80	20	2	2	35	100
27		East	365	80	20	2	2	35	100
28		West	2,105	80	20	2	2	35	100
29	Calloway Drive / 7th Standard Road	North	3,705	80	20	2	2	35	100
30		South	10,115	80	20	2	2	35	100
31		East	19,740	80	20	2	2	55	100
32		West	12,400	80	20	2	2	55	100
33	Coffee Road / 7th Standard Road	North	995	80	20	2	2	35	100
34		South	8,780	80	20	2	2	45	100

Appendix B-1
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 01 Existing
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
35		East	25,115	80	20	2	2	55	100
36		West	19,380	80	20	2	2	55	100
37	Golden State Highway / 7th Standard Road	North	5,715	80	20	2	2	70	100
38		South	4,295	80	20	2	2	70	100
39		East	24,990	80	20	2	2	55	100
40		West	25,240	80	20	2	2	55	100
41	Quinn Rd / SR 99 NB Ramp / Merle Haggard / 7th Standard	North	4,275	80	20	2	2	35	100
42		South	6,990	80	20	2	2	35	100
43		East	15,795	80	20	2	2	45	100
44		West	22,440	80	20	2	2	55	100
45	Industrial Parkway / Merle Haggard Drive	North	980	80	20	2	2	35	100
46		South	1,865	80	20	2	2	35	100
47		East	15,505	80	20	2	2	45	100
48		West	16,030	80	20	2	2	45	100
49	SR 65 / Merle Haggard Drive	North	11,095	80	20	2	2	55	100
50		South	12,885	80	20	2	2	55	100
51		East	17,185	80	20	2	2	45	100
52		West	15,975	80	20	2	2	45	100
53	Pegasus Drive / Merle Haggard Drive	North							
54		South	6,240	80	20	2	2	45	100
55		East	12,640	80	20	1	2	45	100
56		West	16,440	80	20	2	2	45	100
57	Wings Way / Merle Haggard Drive	North	225	80	20	2	2	25	100
58		South	770	80	20	2	2	35	100
59		East	10,470	80	20	2	2	55	100
60		West	10,985	80	20	2	2	45	100
61	Landings Way / Merle Haggard Drive	North	15	80	20	2	2	35	100
62		South							
63		East	11,940	80	20	2	2	45	100
64		West	11,935	80	20	2	2	55	100
65	Airport Drive / Merle Haggard Drive	North	3,975	80	20	2	2	45	100
66		South	4,250	80	20	2	2	45	100
67		East	8,295	80	20	2	2	45	100
68		West	11,660	80	20	2	2	45	100

Appendix B-1
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 01 Existing
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
69	McCray Street / Merle Haggard Drive	North	2,085	80	20	2	2	40	100
70		South	2,090	80	20	2	2	40	100
71		East	7,190	80	20	2	2	45	100
72		West	8,405	80	20	2	2	45	100
73	N. Chester Avenue / Merle Haggard Drive	North	6,605	80	20	2	2	45	100
74		South	4,210	80	20	2	2	45	100
75		East	9,575	80	20	2	2	45	100
76		West	7,510	80	20	2	2	45	100

Note: Blank cells represent roadways for which no traffic data was provided.

Appendix B-2
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 02 Existing+Project Phase 1
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	SR 99 SB Ramps / Lerdo Highway	North	2,485	80	20	2	2	70	100
2		South	5,495	80	20	2	2	70	100
3		East	9,765	80	20	2	2	45	100
4		West	15,115	80	20	2	2	45	100
5	SR 99 NB / Lerdo Highway	North	590	80	20	2	2	25	100
6		South	7,525	80	20	2	2	70	100
7		East	4,895	80	20	2	2	45	100
8		West	9,850	80	20	2	2	45	100
9	SR 65 / Lerdo Highway	North	7,340	80	20	2	2	55	100
10		South	10,875	80	20	2	2	55	100
11		East							
12		West	3,885	80	20	2	2	55	100
13	SR 65 / James Road	North	10,825	80	20	2	2	55	100
14		South	9,165	80	20	2	2	55	100
15		East	3,650	80	20	2	2	45	100
16		West	200	80	20	2	2	45	100
17	Quinn Road / Imperial Street	North							
18		South	1,230	80	20	2	2	35	100
19		East	8,020	80	20	2	2	35	100
20		West	8,080	80	20	2	2	35	100
21	SR 65 / Imperial Street	North	10,310	80	20	2	2	55	100
22		South	15,345	80	20	2	2	55	100
23		East	10	80	20	2	2	25	100
24		West	7,655	80	20	2	2	35	100
25	Quinn Road / Saco Road-McMurtrey Avenue	North	3,440	80	20	2	2	35	100
26		South	5,505	80	20	2	2	35	100
27		East	365	80	20	2	2	35	100
28		West	2,700	80	20	2	2	35	100
29	Calloway Drive / 7th Standard Road	North	3,735	80	20	2	2	35	100
30		South	10,565	80	20	2	2	35	100
31		East	20,725	80	20	2	2	55	100
32		West	12,905	80	20	2	2	55	100
33	Coffee Road / 7th Standard Road	North	1,030	80	20	2	2	35	100
34		South	9,280	80	20	2	2	45	100

Appendix B-2
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 02 Existing+Project Phase 1
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
35		East	26,635	80	20	2	2	55	100
36		West	20,365	80	20	2	2	55	100
37	Golden State Highway / 7th Standard Road	North	6,185	80	20	2	2	70	100
38		South	4,295	80	20	2	2	70	100
39		East	26,985	80	20	2	2	55	100
40		West	26,765	80	20	2	2	55	100
41	Quinn Rd / SR 99 NB Ramp / Merle Haggard / 7th Standard	North	5,515	80	20	2	2	35	100
42		South	7,285	80	20	2	2	35	100
43		East	18,170	80	20	2	2	45	100
44		West	24,890	80	20	2	2	55	100
45	Industrial Parkway / Merle Haggard Drive	North	980	80	20	2	2	35	100
46		South	1,865	80	20	2	2	35	100
47		East	17,880	80	20	2	2	45	100
48		West	18,405	80	20	2	2	45	100
49	SR 65 / Merle Haggard Drive	North	17,295	80	20	2	2	55	100
50		South	16,580	80	20	2	2	55	100
51		East	18,185	80	20	2	2	45	100
52		West	18,350	80	20	2	2	45	100
53	Pegasus Drive / Merle Haggard Drive	North							
54		South	6,240	80	20	2	2	45	100
55		East	13,640	80	20	1	2	45	100
56		West	17,440	80	20	2	2	45	100
57	Wings Way / Merle Haggard Drive	North	225	80	20	2	2	25	100
58		South	770	80	20	2	2	35	100
59		East	12,970	80	20	2	2	55	100
60		West	13,485	80	20	2	2	45	100
61	Landings Way / Merle Haggard Drive	North	15	80	20	2	2	35	100
62		South							
63		East	12,940	80	20	2	2	45	100
64		West	12,935	80	20	2	2	55	100
65	Airport Drive / Merle Haggard Drive	North	3,975	80	20	2	2	45	100
66		South	4,600	80	20	2	2	45	100
67		East	8,945	80	20	2	2	45	100
68		West	12,660	80	20	2	2	45	100

Appendix B-2
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 02 Existing+Project Phase 1
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
69	McCray Street / Merle Haggard Drive	North	2,085	80	20	2	2	40	100
70		South	2,155	80	20	2	2	40	100
71		East	7,775	80	20	2	2	45	100
72		West	9,055	80	20	2	2	45	100
73	N. Chester Avenue / Merle Haggard Drive	North	6,605	80	20	2	2	45	100
74		South	4,490	80	20	2	2	45	100
75		East	9,880	80	20	2	2	45	100
76		West	8,095	80	20	2	2	45	100

Note: Blank cells represent roadways for which no traffic data was provided.

Appendix B-3
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 03 2030
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	SR 99 SB Ramps / Lerdo Highway	North	2,785	80	20	2	2	70	100
2		South	6,470	80	20	2	2	70	100
3		East	12,605	80	20	2	2	45	100
4		West	19,050	80	20	2	2	45	100
5	SR 99 NB / Lerdo Highway	North	735	80	20	2	2	25	100
6		South	8,745	80	20	2	2	70	100
7		East	5,655	80	20	2	2	45	100
8		West	11,655	80	20	2	2	45	100
9	SR 65 / Lerdo Highway	North	8,960	80	20	2	2	55	100
10		South	12,435	80	20	2	2	55	100
11		East							
12		West	3,905	80	20	2	2	55	100
13	SR 65 / James Road	North	12,570	80	20	2	2	55	100
14		South	10,485	80	20	2	2	55	100
15		East	4,445	80	20	2	2	45	100
16		West	240	80	20	2	2	45	100
17	Quinn Road / Imperial Street	North							
18		South	615	80	20	2	2	35	100
19		East	615	80	20	2	2	35	100
20		West							
21	SR 65 / Imperial Street	North	12,255	80	20	2	2	55	100
22		South	12,345	80	20	2	2	55	100
23		East	10	80	20	2	2	25	100
24		West	270	80	20	2	2	35	100
25	Quinn Road / Saco Road-McMurtrey Avenue	North	2,950	80	20	2	2	35	100
26		South	4,505	80	20	2	2	35	100
27		East	375	80	20	2	2	35	100
28		West	2,220	80	20	2	2	35	100
29	Calloway Drive / 7th Standard Road	North	4,260	80	20	2	2	35	100
30		South	12,935	80	20	2	2	35	100
31		East	27,255	80	20	2	2	55	100
32		West	17,360	80	20	2	2	55	100
33	Coffee Road / 7th Standard Road	North	1,250	80	20	2	2	35	100
34		South	14,030	80	20	2	2	45	100

Appendix B-3
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 03 2030
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
35		East	38,965	80	20	2	2	55	100
36		West	29,175	80	20	2	2	55	100
37	Golden State Highway / 7th Standard Road	North	8,215	80	20	2	2	70	100
38		South	5,855	80	20	2	2	70	100
39		East	40,805	80	20	2	2	55	100
40		West	38,795	80	20	2	2	55	100
41	Quinn Rd / SR 99 NB Ramp / Merle Haggard / 7th Standard	North	5,940	80	20	2	2	35	100
42		South	9,930	80	20	2	2	35	100
43		East	30,040	80	20	2	2	45	100
44		West	38,970	80	20	2	2	55	100
45	Industrial Parkway / Merle Haggard Drive	North	1,150	80	20	2	2	35	100
46		South	2,215	80	20	2	2	35	100
47		East	28,375	80	20	2	2	45	100
48		West	29,010	80	20	2	2	45	100
49	SR 65 / Merle Haggard Drive	North	14,365	80	20	2	2	55	100
50		South	25,440	80	20	2	2	55	100
51		East	41,010	80	20	2	2	45	100
52		West	28,975	80	20	2	2	45	100
53	Pegasus Drive / Merle Haggard Drive	North							
54		South	7,205	80	20	2	2	45	100
55		East	35,290	80	20	1	2	45	100
56		West	39,015	80	20	2	2	45	100
57	Wings Way / Merle Haggard Drive	North	14,690	80	20	2	2	25	100
58		South	3,250	80	20	2	2	35	100
59		East	24,030	80	20	2	2	55	100
60		West	35,730	80	20	2	2	45	100
61	Landings Way / Merle Haggard Drive	North	9,875	80	20	2	2	35	100
62		South							
63		East	20,040	80	20	2	2	45	100
64		West	23,255	80	20	2	2	55	100
65	Airport Drive / Merle Haggard Drive	North	4,540	80	20	2	2	45	100
66		South	7,895	80	20	2	2	45	100
67		East	12,460	80	20	2	2	45	100
68		West	19,195	80	20	2	2	45	100

Appendix B-3
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 03 2030
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
69	McCray Street / Merle Haggard Drive	North	2,350	80	20	2	2	40	100
70		South	3,425	80	20	2	2	40	100
71		East	10,460	80	20	2	2	45	100
72		West	12,925	80	20	2	2	45	100
73	N. Chester Avenue / Merle Haggard Drive	North	7,665	80	20	2	2	45	100
74		South	5,635	80	20	2	2	45	100
75		East	12,740	80	20	2	2	45	100
76		West	11,120	80	20	2	2	45	100

Note: Blank cells represent roadways for which no traffic data was provided.

Appendix B-4
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 04 2030+Project Phase 1
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	SR 99 SB Ramps / Lerdo Highway	North	3,080	80	20	2	2	70	100
2		South	6,470	80	20	2	2	70	100
3		East	13,260	80	20	2	2	45	100
4		West	19,410	80	20	2	2	45	100
5	SR 99 NB / Lerdo Highway	North	735	80	20	2	2	25	100
6		South	9,085	80	20	2	2	70	100
7		East	6,650	80	20	2	2	45	100
8		West	12,310	80	20	2	2	45	100
9	SR 65 / Lerdo Highway	North	9,200	80	20	2	2	55	100
10		South	13,665	80	20	2	2	55	100
11		East							
12		West	4,895	80	20	2	2	55	100
13	SR 65 / James Road	North	13,805	80	20	2	2	55	100
14		South	11,720	80	20	2	2	55	100
15		East	4,445	80	20	2	2	45	100
16		West	240	80	20	2	2	45	100
17	Quinn Road / Imperial Street	North							
18		South	1,260	80	20	2	2	35	100
19		East	8,050	80	20	2	2	35	100
20		West	8,080	80	20	2	2	35	100
21	SR 65 / Imperial Street	North	13,490	80	20	2	2	55	100
22		South	18,545	80	20	2	2	55	100
23		East	10	80	20	2	2	25	100
24		West	7,705	80	20	2	2	35	100
25	Quinn Road / Saco Road-McMurtrey Avenue	North	3,595	80	20	2	2	35	100
26		South	5,745	80	20	2	2	35	100
27		East	375	80	20	2	2	35	100
28		West	2,815	80	20	2	2	35	100
29	Calloway Drive / 7th Standard Road	North	4,290	80	20	2	2	35	100
30		South	13,385	80	20	2	2	35	100
31		East	28,240	80	20	2	2	55	100
32		West	17,865	80	20	2	2	55	100
33	Coffee Road / 7th Standard Road	North	1,285	80	20	2	2	35	100
34		South	14,530	80	20	2	2	45	100

Appendix B-4
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 04 2030+Project Phase 1
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
35		East	40,485	80	20	2	2	55	100
36		West	30,160	80	20	2	2	55	100
37	Golden State Highway / 7th Standard Road	North	8,685	80	20	2	2	70	100
38		South	5,855	80	20	2	2	70	100
39		East	42,800	80	20	2	2	55	100
40		West	40,320	80	20	2	2	55	100
41	Quinn Rd / SR 99 NB Ramp / Merle Haggard / 7th Standard	North	7,180	80	20	2	2	35	100
42		South	10,225	80	20	2	2	35	100
43		East	32,415	80	20	2	2	45	100
44		West	41,420	80	20	2	2	55	100
45	Industrial Parkway / Merle Haggard Drive	North	1,150	80	20	2	2	35	100
46		South	2,065	80	20	2	2	35	100
47		East	30,600	80	20	2	2	45	100
48		West	31,385	80	20	2	2	45	100
49	SR 65 / Merle Haggard Drive	North	20,565	80	20	2	2	55	100
50		South	29,135	80	20	2	2	55	100
51		East	43,510	80	20	2	2	45	100
52		West	32,850	80	20	2	2	45	100
53	Pegasus Drive / Merle Haggard Drive	North							
54		South	7,205	80	20	2	2	45	100
55		East	36,290	80	20	1	2	45	100
56		West	40,015	80	20	2	2	45	100
57	Wings Way / Merle Haggard Drive	North	14,690	80	20	2	2	25	100
58		South	3,250	80	20	2	2	35	100
59		East	25,030	80	20	2	2	55	100
60		West	36,730	80	20	2	2	45	100
61	Landings Way / Merle Haggard Drive	North	9,875	80	20	2	2	35	100
62		South							
63		East	21,040	80	20	2	2	45	100
64		West	24,255	80	20	2	2	55	100
65	Airport Drive / Merle Haggard Drive	North	4,540	80	20	2	2	45	100
66		South	8,245	80	20	2	2	45	100
67		East	13,110	80	20	2	2	45	100
68		West	20,195	80	20	2	2	45	100

Appendix B-4
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 04 2030+Project Phase 1
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
69	McCray Street / Merle Haggard Drive	North	2,350	80	20	2	2	40	100
70		South	3,490	80	20	2	2	40	100
71		East	11,045	80	20	2	2	45	100
72		West	13,575	80	20	2	2	45	100
73	N. Chester Avenue / Merle Haggard Drive	North	7,665	80	20	2	2	45	100
74		South	5,915	80	20	2	2	45	100
75		East	13,045	80	20	2	2	45	100
76		West	11,705	80	20	2	2	45	100

Note: Blank cells represent roadways for which no traffic data was provided.

Appendix B-5
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 05 2040
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	SR 99 SB Ramps / Lerdo Highway	North	3,200	80	20	2	2	70	100
2		South	7,510	80	20	2	2	70	100
3		East	16,650	80	20	2	2	45	100
4		West	24,160	80	20	2	2	45	100
5	SR 99 NB / Lerdo Highway	North	900	80	20	2	2	25	100
6		South	10,270	80	20	2	2	70	100
7		East	7,330	80	20	2	2	45	100
8		West	14,240	80	20	2	2	45	100
9	SR 65 / Lerdo Highway	North	10,585	80	20	2	2	55	100
10		South	14,660	80	20	2	2	55	100
11		East							
12		West	4,585	80	20	2	2	55	100
13	SR 65 / James Road	North	15,025	80	20	2	2	55	100
14		South	12,460	80	20	2	2	55	100
15		East	5,335	80	20	2	2	45	100
16		West	280	80	20	2	2	45	100
17	Quinn Road / Imperial Street	North							
18		South	650	80	20	2	2	35	100
19		East	650	80	20	2	2	35	100
20		West							
21	SR 65 / Imperial Street	North	15,000	80	20	2	2	55	100
22		South	15,110	80	20	2	2	55	100
23		East	20	80	20	2	2	25	100
24		West	350	80	20	2	2	35	100
25	Quinn Road / Saco Road-McMurtrey Avenue	North	3,105	80	20	2	2	35	100
26		South	4,750	80	20	2	2	35	100
27		East	405	80	20	2	2	35	100
28		West	2,340	80	20	2	2	35	100
29	Calloway Drive / 7th Standard Road	North	4,760	80	20	2	2	35	100
30		South	14,025	80	20	2	2	35	100
31		East	33,440	80	20	2	2	55	100
32		West	22,925	80	20	2	2	55	100
33	Coffee Road / 7th Standard Road	North	1,550	80	20	2	2	35	100
34		South	17,095	80	20	2	2	45	100

Appendix B-5
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 05 2040
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
35		East	49,760	80	20	2	2	55	100
36		West	38,355	80	20	2	2	55	100
37	Golden State Highway / 7th Standard Road	North	8,870	80	20	2	2	70	100
38		South	7,515	80	20	2	2	70	100
39		East	52,080	80	20	2	2	55	100
40		West	49,755	80	20	2	2	55	100
41	Quinn Rd / SR 99 NB Ramp / Merle Haggard / 7th Standard	North	7,910	80	20	2	2	35	100
42		South	13,250	80	20	2	2	35	100
43		East	36,145	80	20	2	2	45	100
44		West	48,305	80	20	2	2	55	100
45	Industrial Parkway / Merle Haggard Drive	North	1,340	80	20	2	2	35	100
46		South	2,585	80	20	2	2	35	100
47		East	32,560	80	20	2	2	45	100
48		West	33,285	80	20	2	2	45	100
49	SR 65 / Merle Haggard Drive	North	17,195	80	20	2	2	55	100
50		South	28,050	80	20	2	2	55	100
51		East	45,195	80	20	2	2	45	100
52		West	33,290	80	20	2	2	45	100
53	Pegasus Drive / Merle Haggard Drive	North							
54		South	7,810	80	20	2	2	45	100
55		East	37,705	80	20	1	2	45	100
56		West	41,735	80	20	2	2	45	100
57	Wings Way / Merle Haggard Drive	North	14,755	80	20	2	2	25	100
58		South	3,495	80	20	2	2	35	100
59		East	27,030	80	20	2	2	55	100
60		West	38,890	80	20	2	2	45	100
61	Landings Way / Merle Haggard Drive	North	9,875	80	20	2	2	35	100
62		South							
63		East	22,650	80	20	2	2	45	100
64		West	25,865	80	20	2	2	55	100
65	Airport Drive / Merle Haggard Drive	North	4,825	80	20	2	2	45	100
66		South	8,420	80	20	2	2	45	100
67		East	14,090	80	20	2	2	45	100
68		West	21,175	80	20	2	2	45	100

Appendix B-5
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 05 2040
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
69	McCray Street / Merle Haggard Drive	North	2,555	80	20	2	2	40	100
70		South	3,740	80	20	2	2	40	100
71		East	12,450	80	20	2	2	45	100
72		West	15,045	80	20	2	2	45	100
73	N. Chester Avenue / Merle Haggard Drive	North	8,740	80	20	2	2	45	100
74		South	6,365	80	20	2	2	45	100
75		East	15,430	80	20	2	2	45	100
76		West	13,545	80	20	2	2	45	100

Note: Blank cells represent roadways for which no traffic data was provided.

Appendix B-6
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 06 2040+Project Phase 1 and 2
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	SR 99 SB Ramps / Lerdo Highway	North	3,600	80	20	2	2	70	100
2		South	7,510	80	20	2	2	70	100
3		East	17,495	80	20	2	2	45	100
4		West	24,605	80	20	2	2	45	100
5	SR 99 NB / Lerdo Highway	North	900	80	20	2	2	25	100
6		South	10,710	80	20	2	2	70	100
7		East	8,615	80	20	2	2	45	100
8		West	15,085	80	20	2	2	45	100
9	SR 65 / Lerdo Highway	North	10,900	80	20	2	2	55	100
10		South	16,260	80	20	2	2	55	100
11		East							
12		West	5,870	80	20	2	2	55	100
13	SR 65 / James Road	North	16,625	80	20	2	2	55	100
14		South	14,060	80	20	2	2	55	100
15		East	5,335	80	20	2	2	45	100
16		West	280	80	20	2	2	45	100
17	Quinn Road / Imperial Street	North							
18		South	1,475	80	20	2	2	35	100
19		East	10,180	80	20	2	2	35	100
20		West	10,355	80	20	2	2	35	100
21	SR 65 / Imperial Street	North	16,600	80	20	2	2	55	100
22		South	23,035	80	20	2	2	55	100
23		East	20	80	20	2	2	25	100
24		West	9,875	80	20	2	2	35	100
25	Quinn Road / Saco Road-McMurtrey Avenue	North	3,930	80	20	2	2	35	100
26		South	6,360	80	20	2	2	35	100
27		East	405	80	20	2	2	35	100
28		West	3,125	80	20	2	2	35	100
29	Calloway Drive / 7th Standard Road	North	4,795	80	20	2	2	35	100
30		South	14,605	80	20	2	2	35	100
31		East	34,680	80	20	2	2	55	100
32		West	23,550	80	20	2	2	55	100
33	Coffee Road / 7th Standard Road	North	1,610	80	20	2	2	35	100
34		South	17,720	80	20	2	2	45	100

Appendix B-6
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 06 2040+Project Phase 1 and 2
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
35		East	51,685	80	20	2	2	55	100
36		West	39,595	80	20	2	2	55	100
37	Golden State Highway / 7th Standard Road	North	9,385	80	20	2	2	70	100
38		South	7,515	80	20	2	2	70	100
39		East	54,600	80	20	2	2	55	100
40		West	51,580	80	20	2	2	55	100
41	Quinn Rd / SR 99 NB Ramp / Merle Haggard / 7th Standard	North	9,520	80	20	2	2	35	100
42		South	13,630	80	20	2	2	35	100
43		East	39,180	80	20	2	2	45	100
44		West	51,410	80	20	2	2	55	100
45	Industrial Parkway / Merle Haggard Drive	North	1,340	80	20	2	2	35	100
46		South	2,585	80	20	2	2	35	100
47		East	35,595	80	20	2	2	45	100
48		West	36,320	80	20	2	2	45	100
49	SR 65 / Merle Haggard Drive	North	25,115	80	20	2	2	55	100
50		South	32,775	80	20	2	2	55	100
51		East	39,140	80	20	2	2	45	100
52		West	28,950	80	20	2	2	45	100
53	Pegasus Drive / Merle Haggard Drive	North							
54		South	7,810	80	20	2	2	45	100
55		East	39,025	80	20	1	2	45	100
56		West	43,055	80	20	2	2	45	100
57	Wings Way / Merle Haggard Drive	North	14,755	80	20	2	2	25	100
58		South	3,495	80	20	2	2	35	100
59		East	28,350	80	20	2	2	55	100
60		West	40,210	80	20	2	2	45	100
61	Landings Way / Merle Haggard Drive	North	9,875	80	20	2	2	35	100
62		South							
63		East	23,970	80	20	2	2	45	100
64		West	27,185	80	20	2	2	55	100
65	Airport Drive / Merle Haggard Drive	North	4,825	80	20	2	2	45	100
66		South	8,900	80	20	2	2	45	100
67		East	14,935	80	20	2	2	45	100
68		West	22,500	80	20	2	2	45	100

Appendix B-6
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 06 2040+Project Phase 1 and 2
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
69	McCray Street / Merle Haggard Drive	North	2,555	80	20	2	2	40	100
70		South	3,815	80	20	2	2	40	100
71		East	13,220	80	20	2	2	45	100
72		West	15,890	80	20	2	2	45	100
73	N. Chester Avenue / Merle Haggard Drive	North	8,740	80	20	2	2	45	100
74		South	6,760	80	20	2	2	45	100
75		East	15,805	80	20	2	2	45	100
76		West	14,315	80	20	2	2	45	100

Note: Blank cells represent roadways for which no traffic data was provided.

Appendix B-7
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 07 2040+Project Phase 1 and 2 Imperial
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	SR 99 SB Ramps / Lerdo Highway	North	3,525	80	20	2	2	70	100
2		South	7,510	80	20	2	2	70	100
3		East	17,380	80	20	2	2	45	100
4		West	24,565	80	20	2	2	45	100
5	SR 99 NB / Lerdo Highway	North	900	80	20	2	2	25	100
6		South	10,690	80	20	2	2	70	100
7		East	8,480	80	20	2	2	45	100
8		West	14,970	80	20	2	2	45	100
9	SR 65 / Lerdo Highway	North	10,865	80	20	2	2	55	100
10		South	16,085	80	20	2	2	55	100
11		East							
12		West	5,730	80	20	2	2	55	100
13	SR 65 / James Road	North	16,455	80	20	2	2	55	100
14		South	13,890	80	20	2	2	55	100
15		East	5,335	80	20	2	2	45	100
16		West	280	80	20	2	2	45	100
17	Quinn Road / Imperial Street	North							
18		South	1,395	80	20	2	2	35	100
19		East	9,215	80	20	2	2	35	100
20		West	9,310	80	20	2	2	35	100
21	SR 65 / Imperial Street	North	16,430	80	20	2	2	55	100
22		South	32,400	80	20	2	2	55	100
23		East	10,175	80	20	2	2	25	100
24		West	8,915	80	20	2	2	35	100
25	Quinn Road / Saco Road-McMurtrey Avenue	North	3,850	80	20	2	2	35	100
26		South	6,185	80	20	2	2	35	100
27		East	405	80	20	2	2	35	100
28		West	3,030	80	20	2	2	35	100
29	Calloway Drive / 7th Standard Road	North	4,795	80	20	2	2	35	100
30		South	14,540	80	20	2	2	35	100
31		East	34,565	80	20	2	2	55	100
32		West	23,500	80	20	2	2	55	100
33	Coffee Road / 7th Standard Road	North	1,595	80	20	2	2	35	100
34		South	17,665	80	20	2	2	45	100

Appendix B-7
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 07 2040+Project Phase 1 and 2 Imperial
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
35		East	51,500	80	20	2	2	55	100
36		West	39,480	80	20	2	2	55	100
37	Golden State Highway / 7th Standard Road	North	9,380	80	20	2	2	70	100
38		South	7,515	80	20	2	2	70	100
39		East	54,335	80	20	2	2	55	100
40		West	51,500	80	20	2	2	55	100
41	Quinn Rd / SR 99 NB Ramp / Merle Haggard / 7th Standard	North	9,345	80	20	2	2	35	100
42		South	13,570	80	20	2	2	35	100
43		East	38,900	80	20	2	2	45	100
44		West	51,115	80	20	2	2	55	100
45	Industrial Parkway / Merle Haggard Drive	North	1,340	80	20	2	2	35	100
46		South	2,585	80	20	2	2	35	100
47		East	35,315	80	20	2	2	45	100
48		West	36,040	80	20	2	2	45	100
49	SR 65 / Merle Haggard Drive	North	34,485	80	20	2	2	55	100
50		South	32,320	80	20	2	2	55	100
51		East	36,210	80	20	2	2	45	100
52		West	36,045	80	20	2	2	45	100
53	Pegasus Drive / Merle Haggard Drive	North							
54		South	7,810	80	20	2	2	45	100
55		East	29,000	80	20	1	2	45	100
56		West	33,030	80	20	2	2	45	100
57	Wings Way / Merle Haggard Drive	North	5,480	80	20	2	2	25	100
58		South	3,495	80	20	2	2	35	100
59		East	28,200	80	20	2	2	55	100
60		West	30,785	80	20	2	2	45	100
61	Landings Way / Merle Haggard Drive	North	9,875	80	20	2	2	35	100
62		South							
63		East	23,820	80	20	2	2	45	100
64		West	27,035	80	20	2	2	55	100
65	Airport Drive / Merle Haggard Drive	North	4,825	80	20	2	2	45	100
66		South	8,840	80	20	2	2	45	100
67		East	14,840	80	20	2	2	45	100
68		West	22,345	80	20	2	2	45	100

Appendix B-7
FHWA Highway Traffic Noise Prediction Model Data Inputs
Malibu Vineyards Rezone Project Phases 1 and 2
File Name: 2019-141 07 2040+Project Phase 1 and 2 Imperial
Model Run Date: 6/22/2020

Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
69	McCray Street / Merle Haggard Drive	North	2,555	80	20	2	2	40	100
70		South	3,810	80	20	2	2	40	100
71		East	13,130	80	20	2	2	45	100
72		West	15,795	80	20	2	2	45	100
73	N. Chester Avenue / Merle Haggard Drive	North	8,740	80	20	2	2	45	100
74		South	6,700	80	20	2	2	45	100
75		East	15,775	80	20	2	2	45	100
76		West	14,225	80	20	2	2	45	100

Note: Blank cells represent roadways for which no traffic data was provided.









Legend

- A Site 1: Noise Measurement Location
- B Site 1: Vibration Measurement Location
- C Site 2: Noise Measurement Location
- D Site 2: Vibration Measurement Location

Note: Long-term noise and vibration monitoring completed August 16-19, 2019.

Malibu Vineyards Rezone Project
Phases 1 & 2
Kern County, California

Noise and Vibration Survey Photographs

Appendix C

BOLLARD Acoustical Consultants

Appendix D-1
Ambient Noise Monitoring Results - Site 1
Malibu Vineyards Rezone Project (Phases 1 & 2) - Kern County, California
Saturday, August 17, 2019

Hour	Leq	Lmax	L50	L90
12:00 AM	48	62	45	42
1:00 AM	49	68	45	43
2:00 AM	47	56	46	44
3:00 AM	50	57	49	45
4:00 AM	51	59	50	47
5:00 AM	53	78	48	44
6:00 AM	58	77	52	46
7:00 AM	56	73	52	47
8:00 AM	63	81	50	36
9:00 AM	53	77	40	35
10:00 AM	53	72	41	37
11:00 AM	56	79	41	38
12:00 PM	56	79	41	37
1:00 PM	56	76	40	37
2:00 PM	52	72	40	38
3:00 PM	51	72	41	39
4:00 PM	55	75	43	39
5:00 PM	52	71	43	41
6:00 PM	52	70	45	41
7:00 PM	52	70	47	44
8:00 PM	49	71	49	47
9:00 PM	51	67	50	47
10:00 PM	50	59	50	47
11:00 PM	45	52	45	43

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	63	49	55	58	45	52
Lmax (Maximum)	81	67	74	78	52	63
L50 (Median)	52	40	44	52	45	48
L90 (Background)	47	35	40	47	42	45

Computed Ldn, dB	59
% Daytime Energy	78%
% Nighttime Energy	22%

GPS Coordinates	35°27'47.78"N
	119° 6'3.36"W

BOLLARD
Acoustical Consultants

Appendix D-2
Ambient Noise Monitoring Results - Site 1
Malibu Vineyards Rezone Project (Phases 1 & 2) - Kern County, California
Sunday, August 18, 2019

Hour	Leq	Lmax	L50	L90
12:00 AM	42	52	41	39
1:00 AM	45	55	44	40
2:00 AM	43	52	42	40
3:00 AM	43	56	41	38
4:00 AM	46	60	43	39
5:00 AM	49	72	40	35
6:00 AM	55	77	46	43
7:00 AM	52	77	41	36
8:00 AM	52	71	39	35
9:00 AM	53	72	39	36
10:00 AM	53	74	40	37
11:00 AM	53	72	41	38
12:00 PM	53	72	41	38
1:00 PM	51	72	39	37
2:00 PM	52	72	40	37
3:00 PM	51	71	40	38
4:00 PM	53	74	40	38
5:00 PM	51	71	42	39
6:00 PM	52	71	44	41
7:00 PM	53	71	48	45
8:00 PM	52	71	50	48
9:00 PM	51	65	50	48
10:00 PM	50	57	50	46
11:00 PM	44	56	43	39

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	53	51	52	55	42	48
Lmax (Maximum)	77	65	72	77	52	60
L50 (Median)	50	39	42	50	40	43
L90 (Background)	48	35	39	46	35	40

Computed Ldn, dB	56
% Daytime Energy	80%
% Nighttime Energy	20%

GPS Coordinates	35°27'47.78"N
	119° 6'3.36"W

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Acoustical Consultants

Appendix D-3
Ambient Noise Monitoring Results - Site 2
Malibu Vineyards Rezone Project (Phases 1 & 2) - Kern County, California
Saturday, August 17, 2019

Hour	Leq	Lmax	L50	L90
12:00 AM	71	98	69	64
1:00 AM	69	80	67	63
2:00 AM	70	79	68	64
3:00 AM	70	79	68	63
4:00 AM	71	83	70	65
5:00 AM	74	81	74	70
6:00 AM	73	82	73	69
7:00 AM	73	81	72	68
8:00 AM	72	79	72	68
9:00 AM	71	81	71	67
10:00 AM	70	80	69	65
11:00 AM	71	88	70	66
12:00 PM	70	83	70	66
1:00 PM	67	80	66	62
2:00 PM	67	74	67	63
3:00 PM	69	82	68	65
4:00 PM	70	78	69	66
5:00 PM	72	78	72	68
6:00 PM	73	85	72	69
7:00 PM	72	80	72	68
8:00 PM	72	82	71	67
9:00 PM	70	80	69	66
10:00 PM	69	76	68	65
11:00 PM	69	77	68	64

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	73	67	71	74	69	71
Lmax (Maximum)	88	74	81	98	76	82
L50 (Median)	72	66	70	74	67	70
L90 (Background)	69	62	66	70	63	65

Computed Ldn, dB	77
% Daytime Energy	62%
% Nighttime Energy	38%

GPS Coordinates	35°28'39.51"N
	119° 8'4.04"W

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Acoustical Consultants

Appendix D-4
Ambient Noise Monitoring Results - Site 2
Malibu Vineyards Rezone Project (Phases 1 & 2) - Kern County, California
Sunday, August 18, 2019

Hour	Leq	Lmax	L50	L90
12:00 AM	71	87	70	64
1:00 AM	70	78	68	63
2:00 AM	68	79	67	61
3:00 AM	67	79	65	58
4:00 AM	67	79	65	58
5:00 AM	70	82	69	64
6:00 AM	71	78	70	65
7:00 AM	71	77	70	65
8:00 AM	69	81	68	64
9:00 AM	70	81	69	65
10:00 AM	69	83	68	64
11:00 AM	69	84	68	63
12:00 PM	70	84	69	64
1:00 PM	69	78	68	64
2:00 PM	70	79	69	65
3:00 PM	69	75	68	64
4:00 PM	70	77	69	66
5:00 PM	71	81	71	68
6:00 PM	73	80	72	69
7:00 PM	74	82	73	70
8:00 PM	73	80	73	69
9:00 PM	72	79	71	68
10:00 PM	69	77	69	65
11:00 PM	70	78	69	64

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	74	69	71	71	67	69
Lmax (Maximum)	84	75	80	87	77	80
L50 (Median)	73	68	70	70	65	68
L90 (Background)	70	63	66	65	58	62

Computed Ldn, dB	76
% Daytime Energy	69%
% Nighttime Energy	31%

GPS Coordinates	35°28'39.51"N
	119° 8'4.04"W

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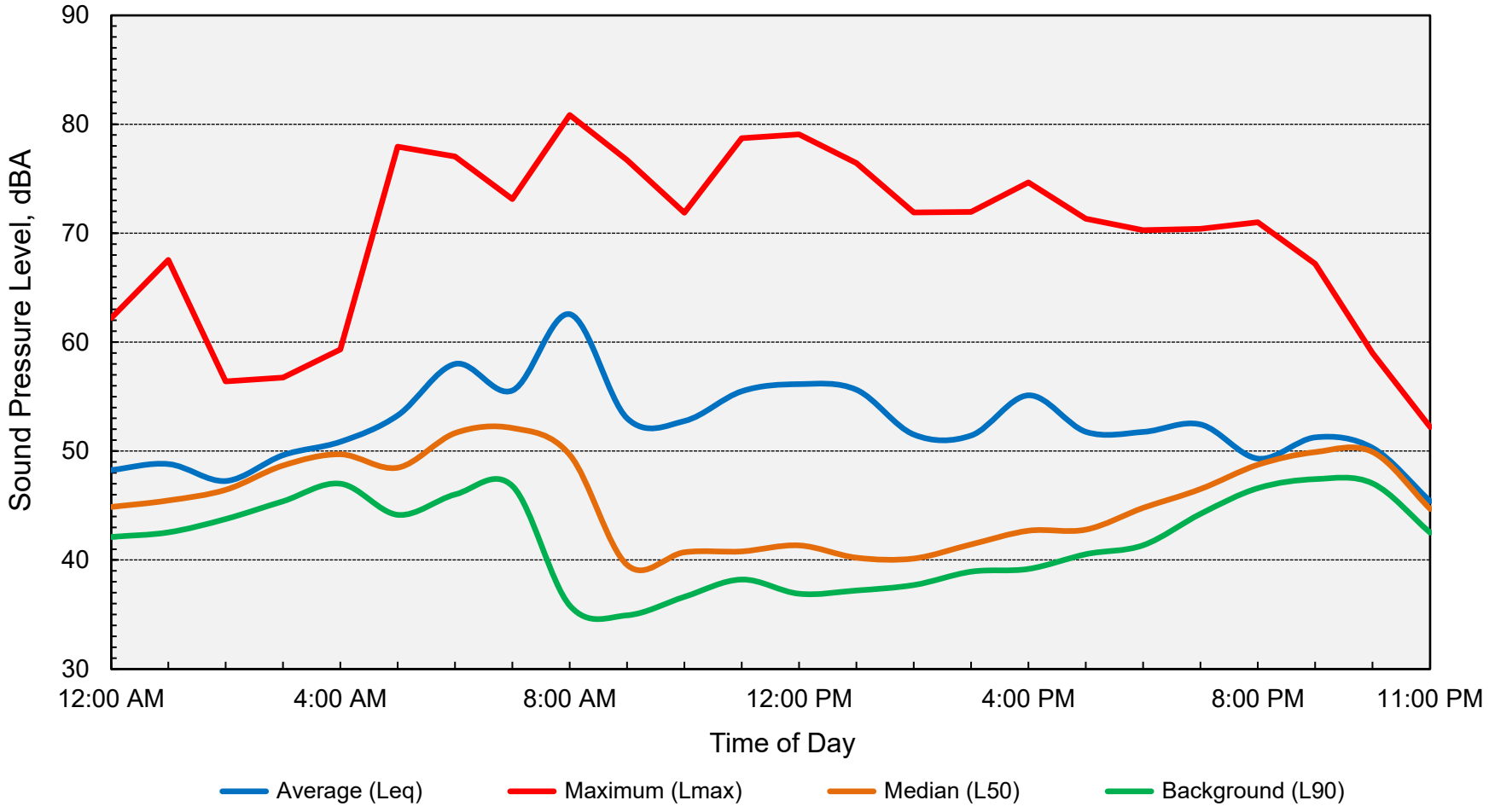
Appendix E-1
Ambient Noise Monitoring Results - Site 1
Malibu Vineyards Rezone Project (Phases 1 & 2) - Kern County, California
Saturday, August 17, 2019



Computed Ldn = 59 dB

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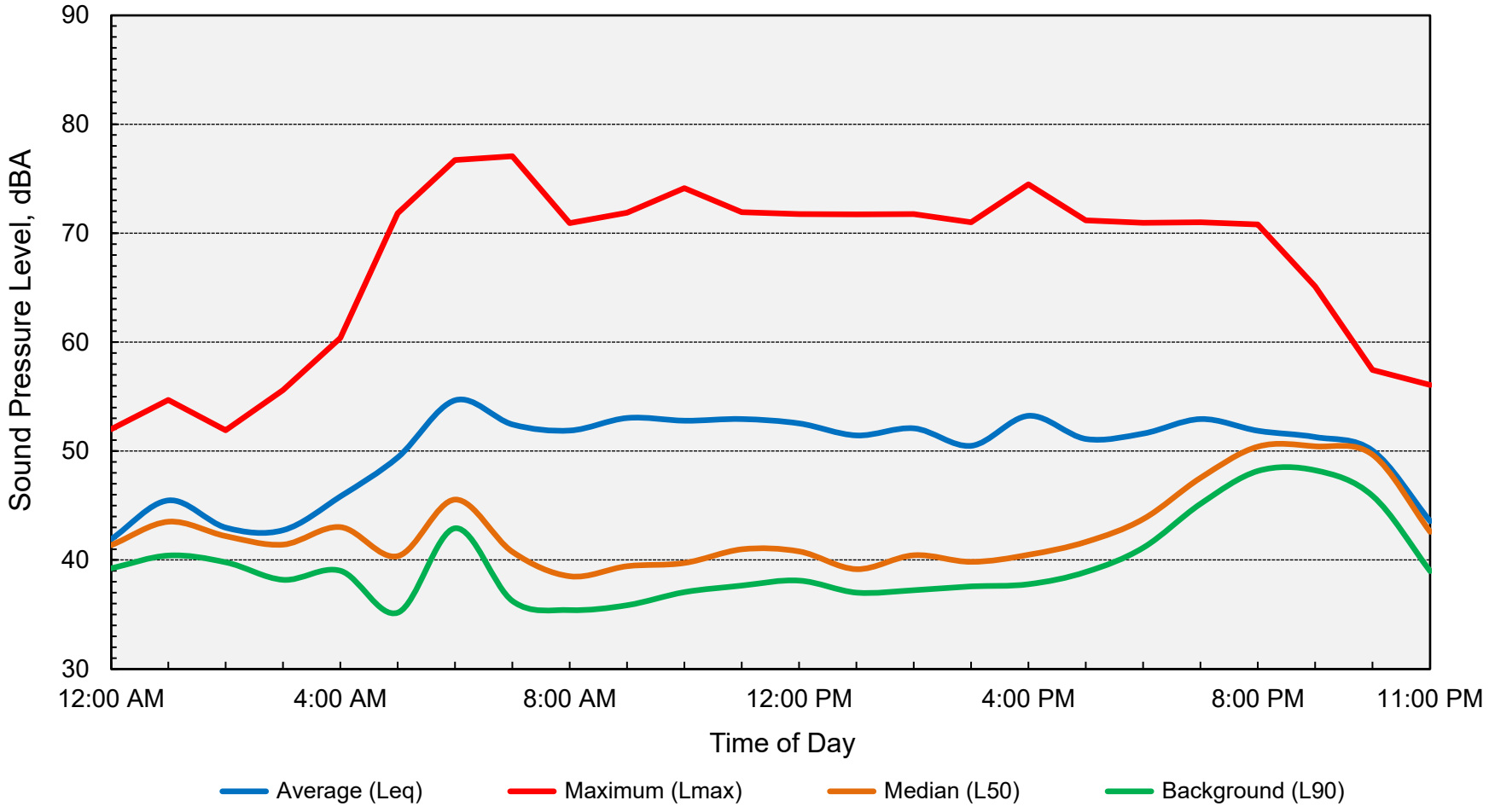
Appendix E-2
Ambient Noise Monitoring Results - Site 1
Malibu Vineyards Rezone Project (Phases 1 & 2) - Kern County, California
Sunday, August 18, 2019



Computed Ldn = 56 dB

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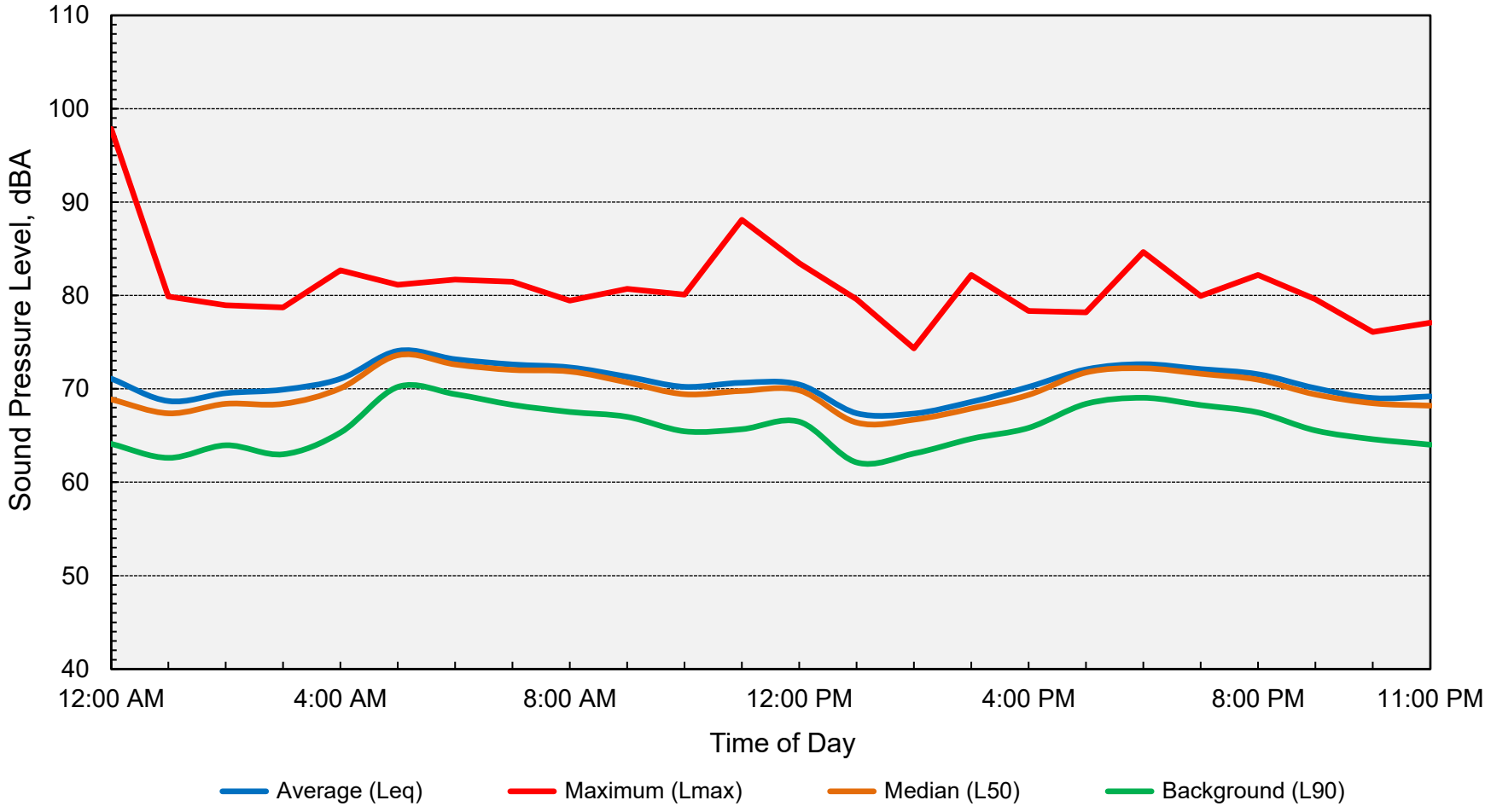
Appendix E-3
Ambient Noise Monitoring Results - Site 2
Malibu Vineyards Rezone Project (Phases 1 & 2) - Kern County, California
Saturday, August 17, 2019



Computed Ldn = 77 dB

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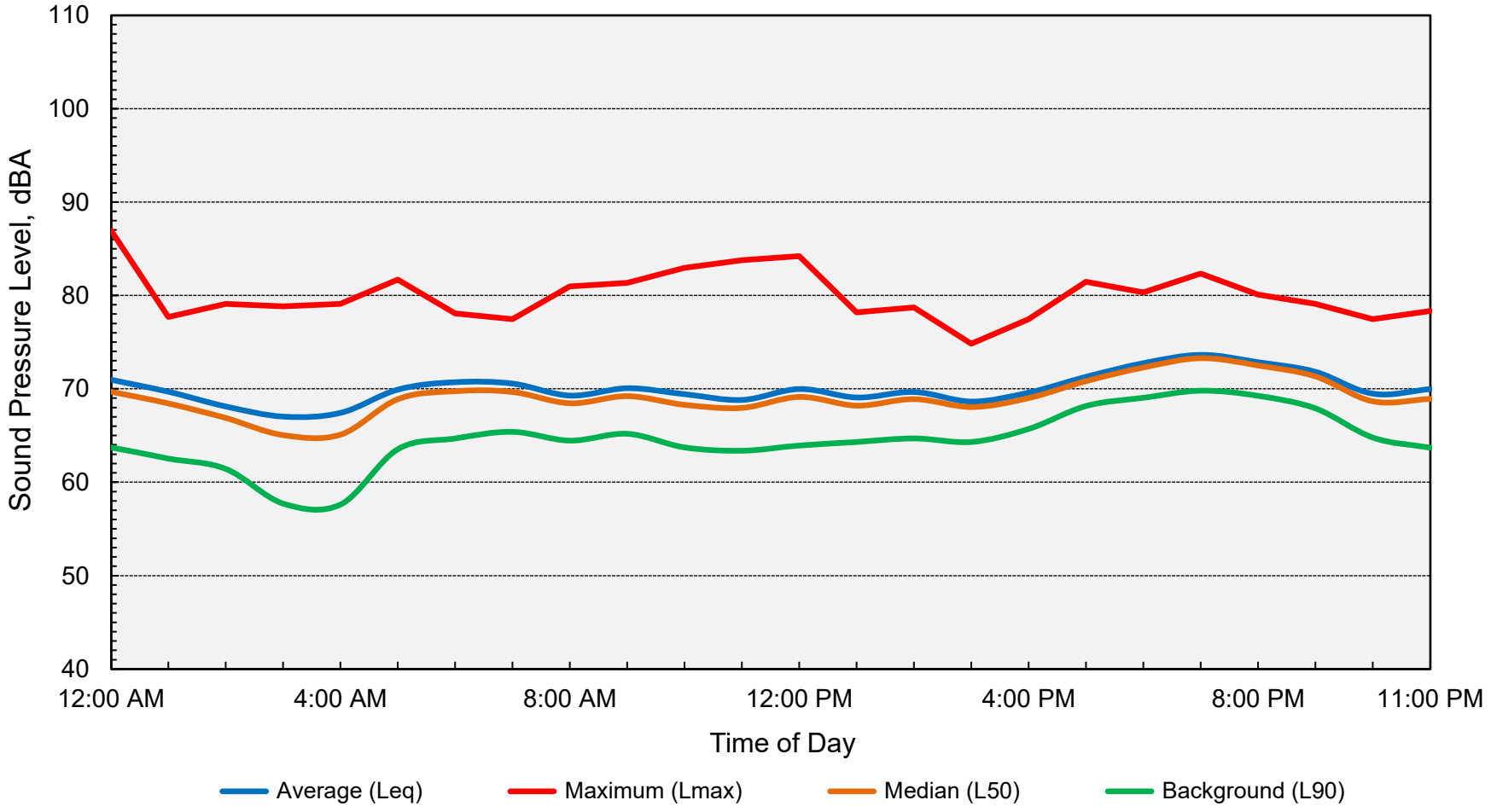
Appendix E-4
Ambient Noise Monitoring Results - Site 2
Malibu Vineyards Rezone Project (Phases 1 & 2) - Kern County, California
Sunday, August 18, 2019



Computed Ldn = 76 dB

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Appendix F
FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)
Noise Prediction Worksheet

Project Information:

Job Number: 2019-141
Project Name: Malibu Vineyards Rezone Phases 1 & 2
Roadway Name: State Route 99

Traffic Data:

Year: Future
Average Daily Traffic Volume: 123,000
Percent Daytime Traffic: 66
Percent Nighttime Traffic: 34
Percent Medium Trucks (2 axle): 5
Percent Heavy Trucks (3+ axle): 14
Assumed Vehicle Speed (mph): 70
Intervening Ground Type (hard/soft): **Soft**

Traffic Noise Levels:

				---------- L_{dn} (dB) ----------			
Location	**Description**	**Distance**	**Offset (dB)**	**Autos**	**Medium Trucks**	**Heavy Trucks**	**Total**
1	Future SR 99 Traffic	350		71	65	73	75

Traffic Noise Contours (No Calibration Offset):

L_{dn} Contour (dB)	Distance from Centerline (ft)
75	377
70	812
65	1750
60	3770

Notes: 1. Future ADT volume for SR-99 was conservatively estimated by increasing the existing ADT volume by a factor of 50% to account for regional growth in the next twenty years. Existing (2019) ADT volume for the segment of SR 99 adjacent to the proposed development was obtained from published Caltrans traffic volume data (SR 99 - Lerdo Hwy to 7th Standard Rd). The day/night distribution and truck percentages were derived from BAC file data and published Caltrans traffic data, respectively.

Appendix L

Traffic Study

Project No: 346-05

TRAFFIC STUDY

GENERAL PLAN AMENDMENT AND ZONE CHANGE
NORTHEAST OF HIGHWAY 99 AND IMPERIAL AVENUE
KERN COUNTY, CALIFORNIA

Prepared for:

McIntosh & Associates

June 2022

(updated October 2023)

Prepared by:

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INTRODUCTION

The purpose of this study is to evaluate the potential traffic deficiencies of a proposed General Plan Amendment (GPA) and zone change (ZC) from resource/agricultural use to industrial use on 740-acres, located northeast of State Route 99 and Imperial Avenue in the unincorporated area of Kern County, California. Traffic deficiencies are evaluated for vehicle miles travelled (VMT) in accordance with current CEQA requirements. A vicinity map, location map, and site plan are presented in Figures 1 through 3 respectively.

Additionally, this study provides an operational analysis of the existing and future street system with the addition of project traffic, for the purpose of evaluating consistency with Kern County's General Plan goals relating to intersection and roadway level of service.

A. Project Description and Land Use

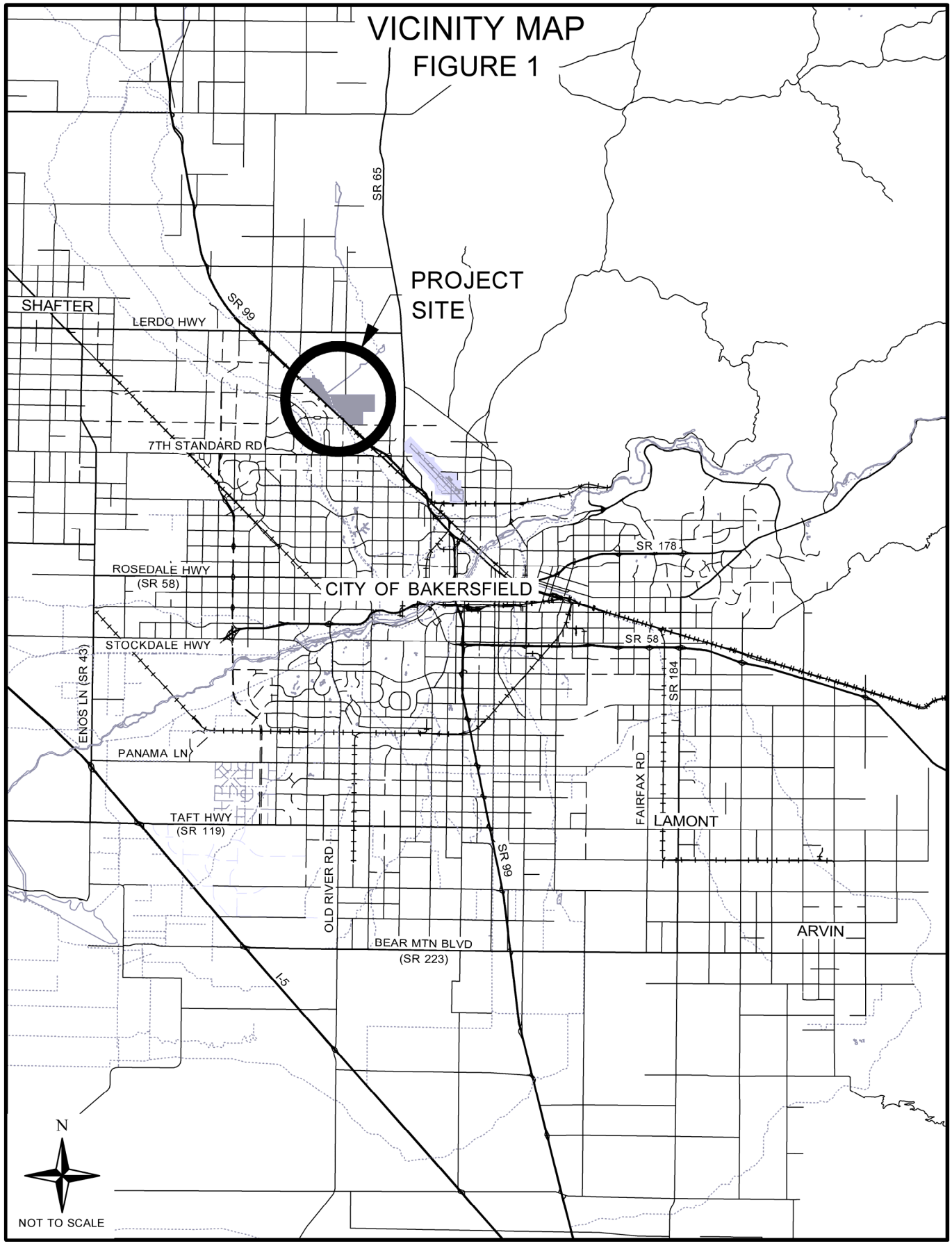
The existing land use designation and zoning are R-IA (Resource-Intensive Agriculture) and A (Exclusive Agriculture) respectively. The proposed GPA and ZC are to SI (Service Industrial) and M-2 PD (Medium Industrial Precise Development) respectively. All of Phase 1 and the southerly portion of Phase 2 are within the Metropolitan Bakersfield General Plan area. It is anticipated that the project would consist of approximately 8,800,000 square feet of industrial space, comprised of 24 buildings, developed over two phases.

B. Existing Site Uses and Site Access

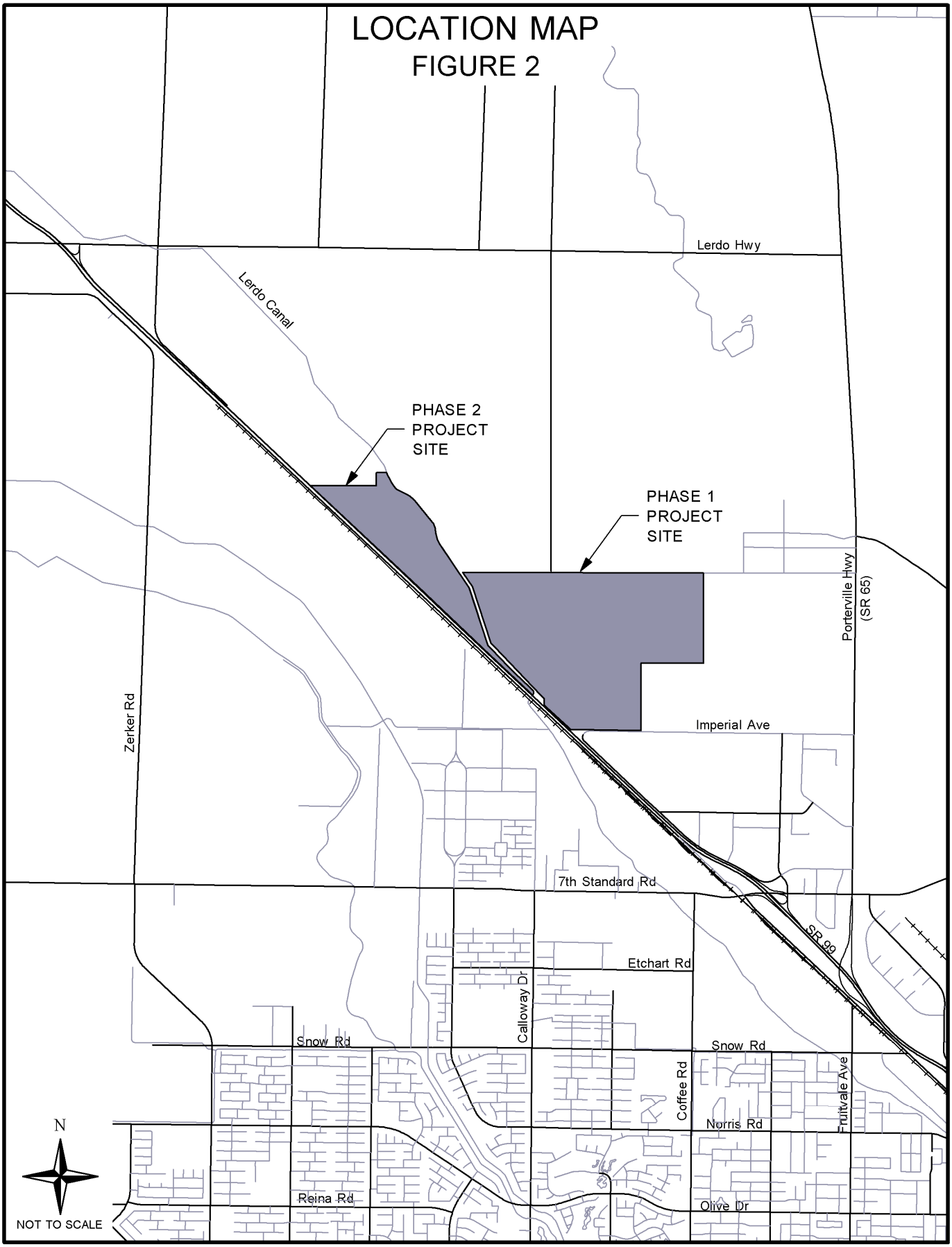
The project site is currently used for agricultural production. As currently planned, access to the proposed development would be provided along Imperial Avenue and Saco Road.

C. Existing Uses in Vicinity of the Site

Existing land uses in the vicinity of the project site are primarily agricultural and industrial related. Agricultural and oil production exist to the north and northeast. Industrial uses, including the Meadows Field airport exist to the south and southeast. Highway commercial uses exist along Merle Haggard Drive in the vicinity of State Route 99, and residential development exists west of State Route 99 and east of Airport Drive.

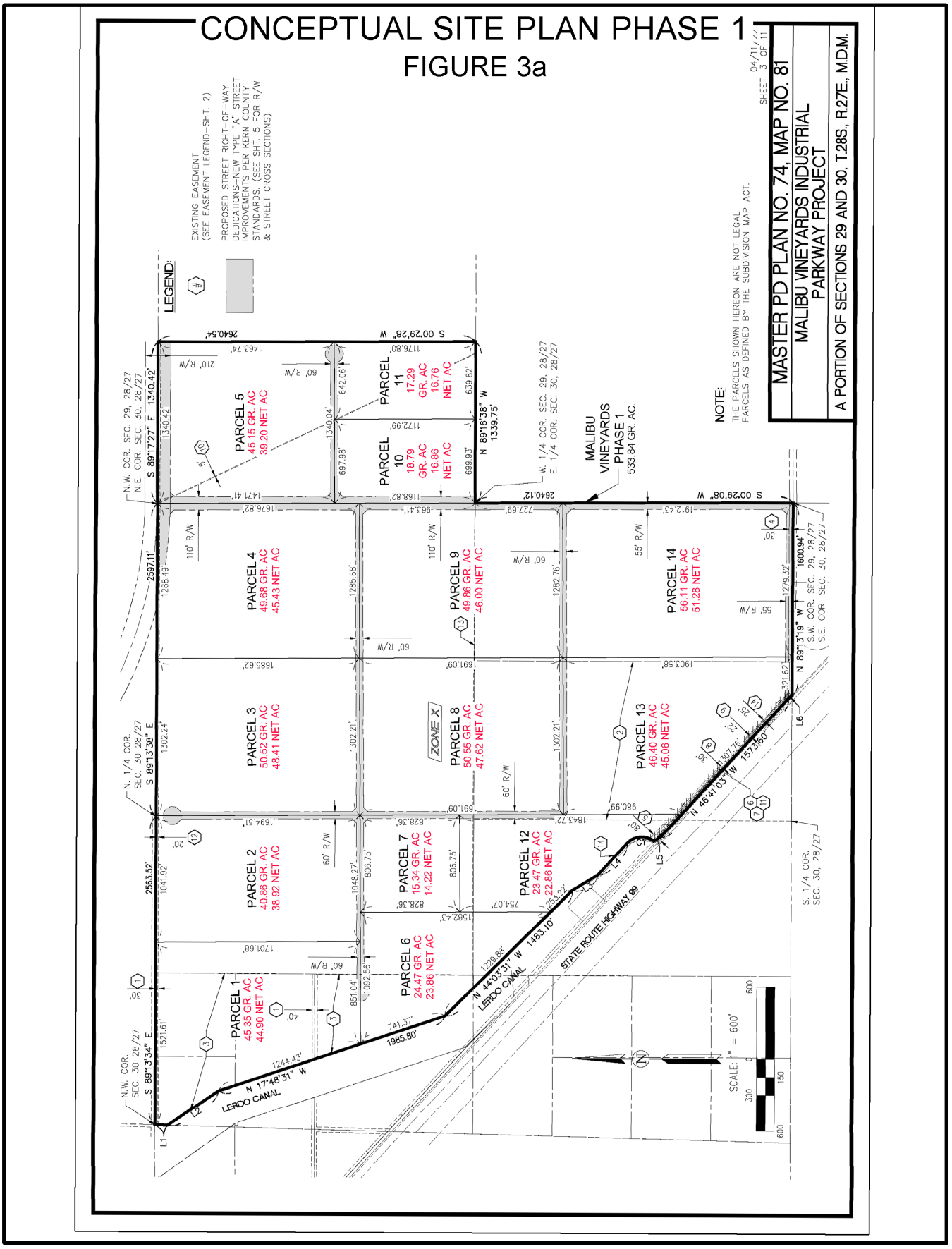

VICINITY MAP
FIGURE 1
PROJECT SITE
SHAFTER
LERDO HWY
SR 99
SR 65
7TH STANDARD RD
ROSEDALE HWY
(SR 58)
CITY OF BAKERSFIELD
SR 178
SR 58
STOCKDALE HWY
ENOS LN (SR 43)
PANAMA LN
SR 184
FAIRFAX RD
LAMONT
TAFT HWY
(SR 119)
OLD RIVER RD
SR 99
ARVIN
BEAR MTN BLVD
(SR 223)
I-5
N
NOT TO SCALE

LOCATION MAP
FIGURE 2



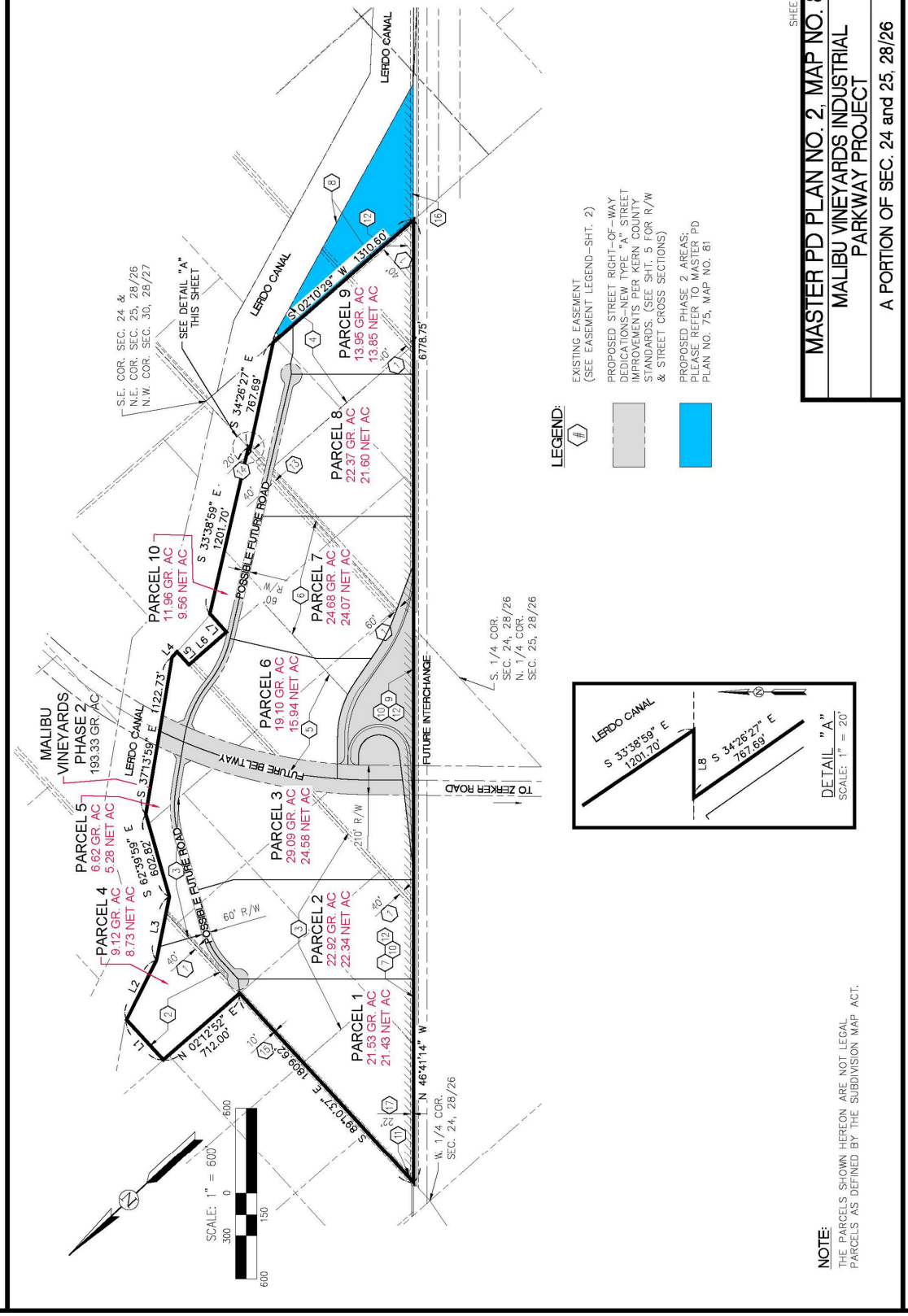
CONCEPTUAL SITE PLAN PHASE 1

FIGURE 3a



CONCEPTUAL SITE PLAN PHASE 2

FIGURE 3b



D. Roadway Descriptions

7th Standard Road /Merle Haggard Drive is a major east-west route in the north metropolitan Bakersfield area. It extends from west of Interstate 5 (I-5) to Chester Avenue and Manor Street in Oildale. It is designated as an expressway between Santa Fe Way and State Route 99 and as an arterial for the remaining segments. It has interchanges at both I-5 and State Route 99, intersection connections with State Route 43 and State Route 65 and grade separated crossings of the BNSF Railway and Union Pacific Railroad. It exists at various stages of widening from 2 lanes/undivided west of the BNSF overcrossing and between Airport Drive and Landing Road, and from to 4 to 6 lanes with raised median elsewhere within the project vicinity. This corridor provides access to residential, commercial, industrial and agricultural land uses, as well as the William Thomas Terminal at Meadows Field. The segment from State Route 99 to Chester Avenue was renamed "Merle Haggard Drive" in 2006.

The local agencies have completed several major widening and improvement projects over the past fifteen years to provide a major corridor from the William Thomas Terminal at Meadows Field to I-5 through the metro area, with the intent of providing a 6 lane facility to accommodate anticipated regional growth. However, the roadway section at the airport, which runs under the runway and taxiway only provides for 4 lanes of travel and is constrained by the existing runway and roadway structure configuration.

The Locally Generated Alternative (LGA) alignment of the California High Speed Rail (HSR) is planned to cross 7th Standard Road between Coffee Road and the Union Pacific Railroad. This crossing will necessitate the reconstruction of the 7th Standard Road and State Route 99 interchange into an elevated configuration over the HSR. Construction is currently anticipated to occur between 2027 and 2030.

Airport Drive is an arterial that extends north through Oildale from its interchange connection at State Route 99. It operates as a four-lane roadway with a raised median between State Route 99 and W China Grade Loop, and as an undivided two-lane roadway at various stages of widening and improvement adjacent to development north W China Grade Loop. Airport Drive provides access to residential, commercial and industrial land uses.

Burbank Street/Future Beltway is designated as a future arterial. The City of Shafter has planned for a "North Beltway" along the Burbank Street alignment west of State Route 99, with an interchange at State Route 99. The County has developed a conceptual plan for extension of this beltway from State

Route 99 to Porterville Highway (SR 65). The Kern Council of Governments has included this future facility in their KARGO study, which is currently in process. The alignment of the beltway and the State Route 99 interchange are depicted in the Phase 2 plan (see Figure 3b). No formal alignments have been adopted or funding defined for this facility and the anticipated timing for construction is beyond the 20 year horizon of this study.

Calloway Drive is one of two major north-south arterials, which extend through the metropolitan area west of State Route 99 from south of Taft Highway (SR 119) to 7th Standard Road (Calloway Drive extends south of Stockdale Highway on the Old River Road alignment). Within the study area, south of 7th Standard Road, it exists from 2 to 6 lanes at various stages of widening adjacent to development. It provides access to residential and commercial areas.

China Grade Loop is an east-west arterial that extends from Airport Drive to the east. In the vicinity of the project, it exists as a four-lane fully improved facility and as a two-lane facility east of Manor Street. China Grade Loop provides access to residential and industrial land uses.

Coffee Road is the second of two major north-south arterials, which extend through the metropolitan area west of State Route 99 from south of Taft Highway (SR 119) to 7th Standard Road (Coffee Road extends south of Stockdale Highway on the Gosford Road alignment). In the study area it exists as a two-lane roadway with graded shoulders south of 7th Standard Road and at various stages of widening adjacent to development south of Snow Road.

Freeway 99 (SR 99) is a major north-south highway that extends through the central valley of California from Interstate 5 to Sacramento. In the vicinity of the project it exists as a six-lane freeway.

Imperial Avenue is designated as an east-west collector from Saco Road to James Road. It currently exists as a two-lane road at various stages of improvement between Saco Road and State Route 65. It is stop controlled at State Route 65. East of State Route 65 it exists as a dirt road for approximately ½ mile. It provides access to agricultural and industrial land uses. It is anticipated that the project will construct Imperial Avenue improvements between Saco Road and State Route 65 as needed to support project traffic operations. Future extension of Imperial Avenue from State Route 65 to James Road is planned to occur with development, however, no timeframe is currently defined.

Industry Parkway Drive is a north-south local roadway that provides access to commercial land uses. In the vicinity of the project, it exists as a two-lane roadway with curb and gutter.

James Road is a two-lane arterial that extends northwest from the northerly terminus of N Chester Avenue to Porterville Highway (State Route 65). It provides access primarily to industrial and oil production land uses. James Road has paved shoulders and is widened adjacent to development in the vicinity of the project.

Lerdo Highway is an east-west two-lane arterial that extends west from Porterville Highway (State Route 65) to State Route 33. It provides access to the City of Shafter as well as agricultural land uses.

Landings Way is a north-south collector, which extends along the east side of the Landing Logistic Center and Amazon fulfillment center. It has recently been improved north of Merle Haggard Drive adjacent to new development.

McCray Street is a fully improved two-lane collector that extends north from Norris Road to North Chester Avenue. It provides access to residential land uses as well as North High School.

North Chester Avenue is a major north-south arterial, which crosses the Kern River. It provides access from central Bakersfield north through Oildale. North of Merle Haggard Drive it continues on the James Road alignment to State Route 65.

Olive Drive is an east-west arterial with an interchange connection at State Route 99. It is a major access route for traffic between State Route 99 and commercial and residential areas to the west and the community of Oildale to the east.

Pegasus Drive is a north-south collector that extends from Norris Road to Merle Haggard Drive. It exists as a two-lane facility with curb and gutter in the vicinity of the project and provides access to industrial and commercial land uses.

Quinn Road is a north-south collector that extends from Merle Haggard Drive to Imperial Avenue. It exists as a two-lane facility at various stages of widening with curb and gutter adjacent to development. Quinn Road provides access to industrial and agricultural land uses.

State Route 65 (Porterville Highway) is a major highway that extends from State Route 99 to Lindsay, California. State Route 65 is a two-lane highway in the vicinity of the project, with an interchange at State Route 99. It is designated as a four-lane expressway from State Route 99 to Imperial Avenue.

Wings Way is a collector street, which runs easterly of the Meadows Field Airport and intersects Merle Haggard Drive approximately 0.75 miles west of Airport Drive. It provides access to the William Thomas Terminal and industrial land uses south of Merle Haggard Drive and planned industrial uses to the north. A Specific Plan Line was recently adopted by the County for the ultimate alignment and connection to Imperial Avenue for a future connection to State Route 65. The connection of Wings Way/Imperial Avenue from Merle Haggard Drive to State Route 65 has been planned as a secondary route for east-west travel in the area due to the four-lane constraint on Merle Haggard Drive under the airport runway.

STUDY APPROACH

In 2013 the State of California approved legislation (SB 743) to change the primary basis of evaluation of traffic deficiencies in CEQA from Level of Service (LOS) to Vehicle Miles Traveled (VMT). CEQA Guidelines section 15064.3 was approved in December 2018 and became effective in early 2019. Section 15064.3 required agencies to begin implementing the new VMT requirement no later than July 1, 2020. The Governor's Office of Planning and Research (OPR) released a Technical Advisory On Evaluating Transportation Impacts In CEQA in December 2018, which provides guidelines and recommendations for VMT evaluation and thresholds. As of June 2022, the Kern County Planning Department has not finalized or adopted any policies or thresholds for VMT analysis, therefore the OPR Technical Advisory was used as the basis for this evaluation.

In addition to the VMT evaluation, this study also provides an operational analysis of the existing and future street system with the addition of project traffic. The operation analysis includes LOS analysis for peak hour intersection and daily roadway operations as well as queueing and signal warrant evaluation. The purpose of the operational analysis is to evaluate consistency with the County's planning goals relating to intersection and roadway level of service and identify potential LOS or geometric deficiencies.

VEHICLE MILES TRAVELED (VMT)

The Technical Advisory provides initial screening criteria and thresholds of significance for the VMT evaluation. The VMT evaluation is limited to automobiles and light trucks. A 15% reduction in VMT per capita or per employee is recommended for residential and office land uses. No specific recommendations are provided for industrial land uses, therefore an assessment consistent with office employees was used for the industrial use. The industrial use was evaluated as an office project because, like office projects, most of the passenger vehicle trips are generated by employees. The focus of the per employee evaluation is the home-based work trips.

The regional transportation model, maintained by the Kern Council of Governments (KernCOG), was used to estimate baseline VMT and project VMT for existing and future cumulative scenarios. The KernCOG model is developed for use in adoption of the Regional Transportation Plan (RTP) and Sustainable Communities Strategy (SCS). The KernCOG model contains "gateway" points to State

transportation model data and the VMT scripts within the KernCOG model account for Statewide travel, to assure that the model does not terminate at TAZ or jurisdictional boundaries. The current model baseline year is 2018. The model run for the cumulative future year for the RTP is 2042. Model runs were prepared by KernCOG with and without the project for the years 2018 and 2042. The model is comprised of several Traffic Analysis Zones (TAZ) in which specific land use data is loaded. The Malibu Vineyards project is located within TAZs 2242, 2379 and 2442. Model runs were prepared by KernCOG with and without the project for the years 2018 and 2042, which allow the differentiation of the Malibu Vineyards project traffic within the TAZ and the region. The output from the KernCOG model provides a detailed breakdown of the number of employees and the trips and VMT by purpose for both the TAZ and county wide.

The employment and associated VMT for home-to-work trips for the county wide values and associated threshold are shown in Table 1 and the Malibu Vineyards values are shown in Table 2.

Table 1
County Wide Employment, VMT and Threshold

Year	Area	Employees	VMT Home-to-work	VMT per Employee	VMT Threshold (85%)
2018	County wide	307,783	5,899,656	19.17	16.29

Table 2
Malibu Vineyards Employment and VMT

Year	Area	Employees	VMT Home-to-work	VMT per Employee
2018	Malibu Vineyards	8,825	136,672	15.49
2042	Malibu Vineyards	8,825	130,785	14.82

From Table 2, the Malibu Vineyards VMT/employee compared to the 2018 baseline of 19.17 miles is 80.90% and 77.31% for 2018 and 2042 respectively. These values are below the 15% OPR recommendations, therefore, the project traffic VMT impact should be considered less than significant.

OPERATIONAL ANALYSIS

The study area is generally bounded by Lerdo Highway on the north, 7th Standard Road/Merle Haggard Drive on the south, North Chester Avenue on the east, and Calloway Drive and State Route 99 on the west. The study includes a total of 19 intersections (14 signalized and 5 unsignalized). The scope of the study was developed in association with the Kern County Public Works Department, the City of Bakersfield Public Works Department, the City of Shafter Planning Department and Caltrans District 6.

PROJECT TRIP GENERATION AND DESIGN HOUR VOLUMES

The trip generation and design hour volumes for all land uses were calculated using the Institute of Transportation Engineers (ITE) Trip Generation, 10th Edition. Trip generation and design hour volumes for all land uses are shown in Table 1.

A mix of different types of industrial/warehousing trip rates was used to represent the probable combination of businesses that will operate within the development. The ADT, AM and PM peak hour rate equations, and peak hour directional splits for ITE Land Use Codes 150 (Warehousing) and 154 (High-Cube Transload and Short-Term Storage) were used to estimate the project traffic. The peak hour of adjacent street traffic was determined from the count data to be from 7:00 AM to 8:00 AM and 4:15 PM to 5:15 PM.

Table 1
Project Trip Generation
Phase I

General Information			Daily Trips		AM Peak Hour Trips				PM Peak Hour Trips			
ITE Code	Vehicle Type	Variable	ADT RATE	ADT	Rate	In % Split/ Trips	Out % Split/ Trips	Total	Rate	In % Split/ Trips	Out % Split/ Trips	Total
Warehouse 2,897,000 Square Feet Gross Floor Area												
150a	Passenger Cars	2,897 1000 sq ft GFA	1.11	3,216	0.15	77% 335	23% 100	435	0.15	28% 122	72% 313	435
150b	Trucks (2-axle)	2,897 1000 sq ft GFA	0.096	278	0.0032	52% 5	48% 4	9	0.0048	52% 7	48% 7	14
150b	Trucks (3-axle)	2,897 1000 sq ft GFA	0.132	382	0.0044	52% 7	48% 6	13	0.0066	52% 10	48% 9	19
150b	Trucks (4+-axle)	2,897 1000 sq ft GFA	0.372	1,078	0.0124	52% 19	48% 17	36	0.0186	52% 28	48% 26	54
Warehousing Totals		Passenger Cars:		3,216		335	100	435		122	313	435
		Trucks:		1,738		31	27	58		45	42	87
		Total Trips:		4,954		366	127	493		167	355	522
High-Cube Transload and Short Term Storage Warehouse 4,346,000 Square Feet Gross Floor Area												
154a	Passenger Cars	4346 1000 sq ft GFA	1.18	5,128	0.06	77% 201	23% 60	261	0.09	28% 110	72% 282	392
154b	Trucks (2-axle)	4346 1000 sq ft GFA	0.0352	153	0.0032	49% 7	51% 7	14	0.0016	47% 3	53% 4	7
154b	Trucks (3-axle)	4346 1000 sq ft GFA	0.0484	210	0.0044	49% 9	51% 10	19	0.0022	47% 4	53% 5	9
154b	Trucks (4+-axle)	4346 1000 sq ft GFA	0.1364	593	0.0124	49% 26	51% 27	53	0.0062	47% 13	53% 14	27
High-Cube Totals		Passenger Cars:		5,128		201	60	261		110	282	392
		Trucks:		956		42	44	86		20	23	43
		Total Trips:		6,084		243	104	347		130	305	435
Combined Totals		Passenger Cars:		8,344		536	160	696		232	595	827
		Trucks:		2,694		73	71	144		65	65	130
		Total Trips:		11,038		609	231	840		297	660	957

Phase I & II

General Information			Daily Trips		AM Peak Hour Trips				PM Peak Hour Trips			
ITE Code	Vehicle Type	Variable	ADT RATE	ADT	Rate	In % Split/ Trips	Out % Split/ Trips	Total	Rate	In % Split/ Trips	Out % Split/ Trips	Total
Warehouse 3,562,000 Square Feet Gross Floor Area												
150a	Passenger Cars	3,562 1000 sq ft GFA	1.11	3,954	0.15	77% 411	23% 123	534	0.15	28% 150	72% 385	535
150b	Trucks (2-axle)	3,562 1000 sq ft GFA	0.096	342	0.0032	52% 6	48% 5	11	0.0048	52% 9	48% 8	17
150b	Trucks (3-axle)	3,562 1000 sq ft GFA	0.132	470	0.0044	52% 8	48% 8	16	0.0066	52% 12	48% 11	23
150b	Trucks (4+-axle)	3,562 1000 sq ft GFA	0.372	1,325	0.0124	52% 23	48% 21	44	0.0186	52% 34	48% 32	66
Warehousing Totals		Passenger Cars:		3,954		411	123	534		150	385	535
		Trucks:		2,137		37	34	71		55	51	106
		Total Trips:		6,091		448	157	605		205	436	641
High-Cube Transload and Short Term Storage Warehouse 5,346,000 Square Feet Gross Floor Area												
154a	Passenger Cars	5346 1000 sq ft GFA	1.18	6,308	0.06	77% 247	23% 74	321	0.09	28% 135	72% 346	481
154b	Trucks (2-axle)	5346 1000 sq ft GFA	0.0352	188	0.0032	49% 8	51% 9	17	0.0016	47% 4	53% 5	9
154b	Trucks (3-axle)	5346 1000 sq ft GFA	0.0484	259	0.0044	49% 12	51% 12	24	0.0022	47% 6	53% 6	12
154b	Trucks (4+-axle)	5346 1000 sq ft GFA	0.1364	729	0.0124	49% 32	51% 34	66	0.0062	47% 16	53% 18	34
High-Cube Totals		Passenger Cars:		6,308		247	74	321		135	346	481
		Trucks:		1,176		52	55	107		26	29	55
		Total Trips:		7,484		299	129	428		161	375	536
Combined Totals		Passenger Cars:		10,262		658	197	855		285	731	1,016
		Trucks:		3,313		89	89	178		81	80	161
		Total Trips:		13,575		747	286	1,033		366	811	1,177

TRIP DISTRIBUTION AND ASSIGNMENT

The project trip distribution in Table 2 represents the most likely travel routes for traffic accessing the project. Project traffic distribution was estimated based on a review of the potential draw from population centers within the region and the types of land uses involved. These assumptions were used to distribute project traffic as shown in Figure 4.

Table 2
Project Trip Distribution

Direction	Percent
North	25
East	10
South	45
West	20

EXISTING AND FUTURE TRAFFIC

Weekday peak hour turning movements were counted at the following intersections in November 2019. Intersections along 7th Standard Road/Merle Haggard from Calloway Dr to Airport Dr were updated in March 2021 due to significant changes in development along this corridor. (see Appendix for count data).

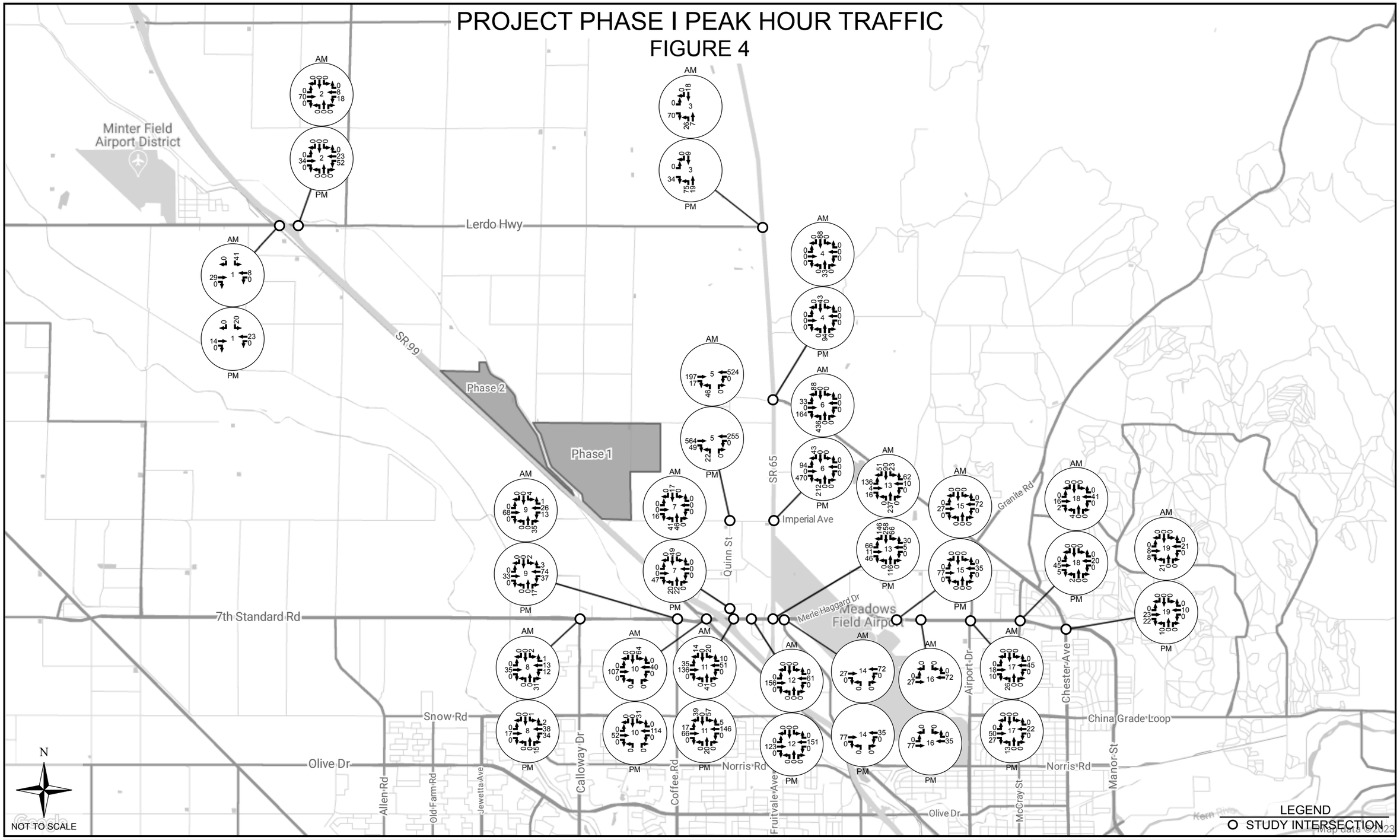
- State Route 99 Southbound Ramps & Lerdo Highway
- State Route 99 Northbound Ramps & Lerdo Highway
- Porterville Highway (SR 65) & Lerdo Highway
- Porterville Highway (SR 65) & James Road
- Quinn Road & Imperial Avenue
- Porterville Highway (SR 65) & Imperial Avenue
- Quinn Road & Saco Road/McMurtrey Avenue
- Calloway Drive & 7th Standard Road
- Coffee Road & 7th Standard Road
- Golden State Highway & 7th Standard Road
- Quinn Road/SR 99 NB Ramp & Merle Haggard Drive/7th Standard Road
- Industrial Parkway & Merle Haggard Drive
- Porterville Highway (SR 65) & Merle Haggard Drive
- Pegasus Drive & Merle Haggard Drive
- Wings Way & Merle Haggard Drive
- Landings Way & Merle Haggard Drive
- Airport Drive & Merle Haggard Drive
- McCray Street & 7th Standard Drive
- N. Chester Avenue & 7th Standard Road

Traffic counts were conducted between the hours of 6:30 to 8:30 AM and 4:00 to 6:00 PM and are shown in Figure 5. Existing + Project peak hour volumes are shown in Figure 6.

Annual growth rates ranging between 0.15% and 3% were applied to existing traffic volumes to estimate future traffic volumes for the year 2042. These growth rates were estimated based on a review of existing and approved future developments in the vicinity of the project and KernCOG traffic model data. The anticipated project traffic from the SilverWings Commerce Center and Landings Industrial Center was included in 2032 and 2042 future peak hour traffic. Future peak hour volumes are shown in Figures 7 through 10.

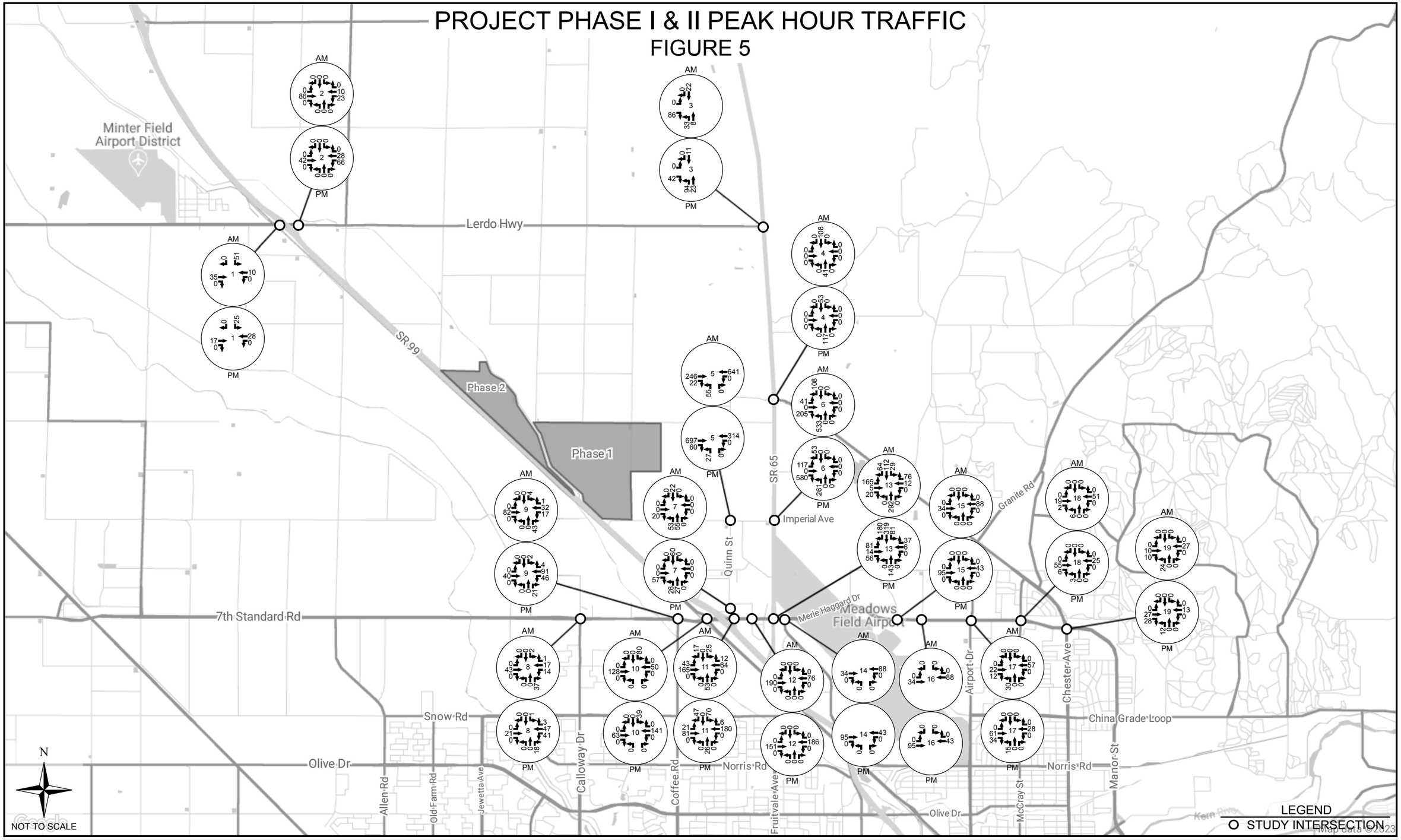
PROJECT PHASE I PEAK HOUR TRAFFIC

FIGURE 4

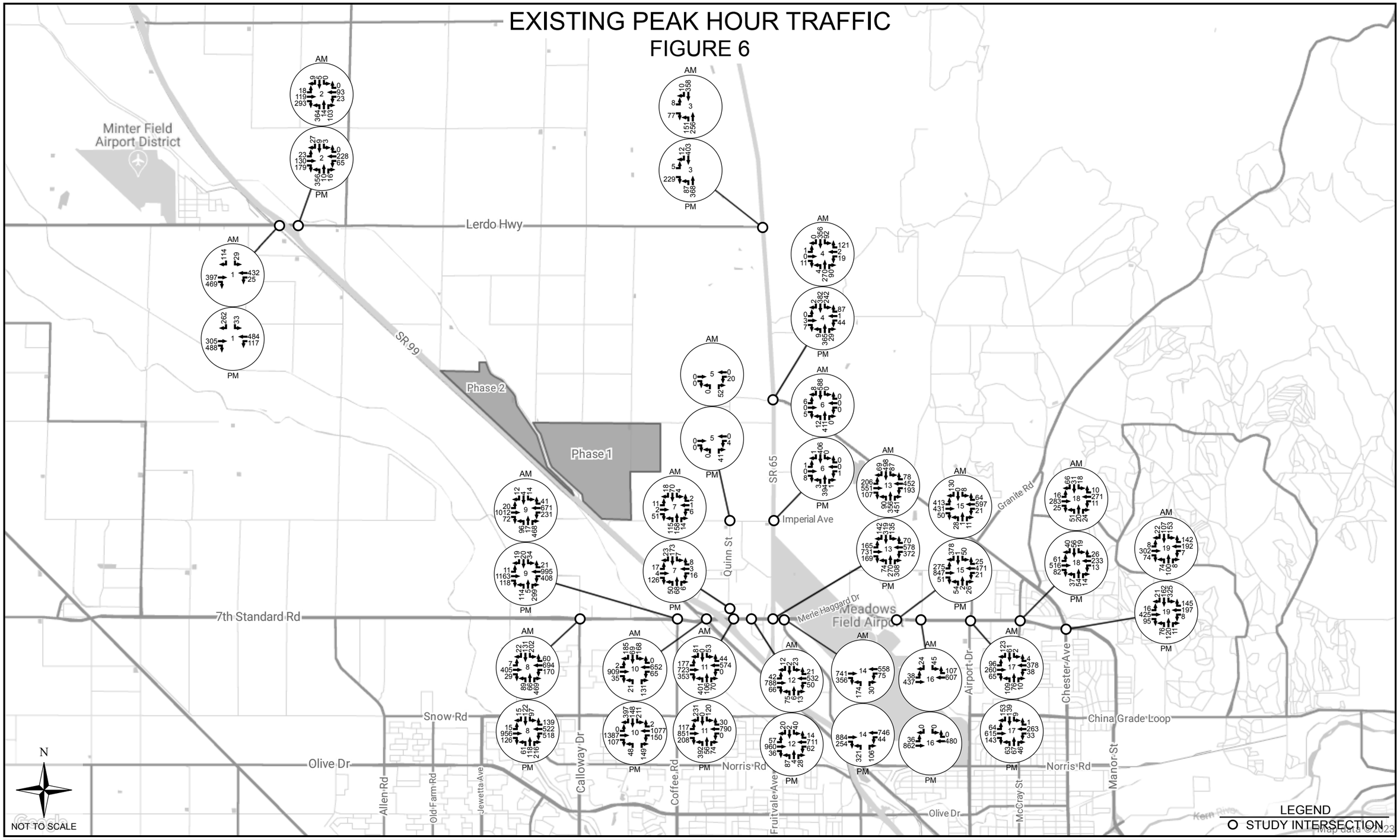


PROJECT PHASE I & II PEAK HOUR TRAFFIC

FIGURE 5

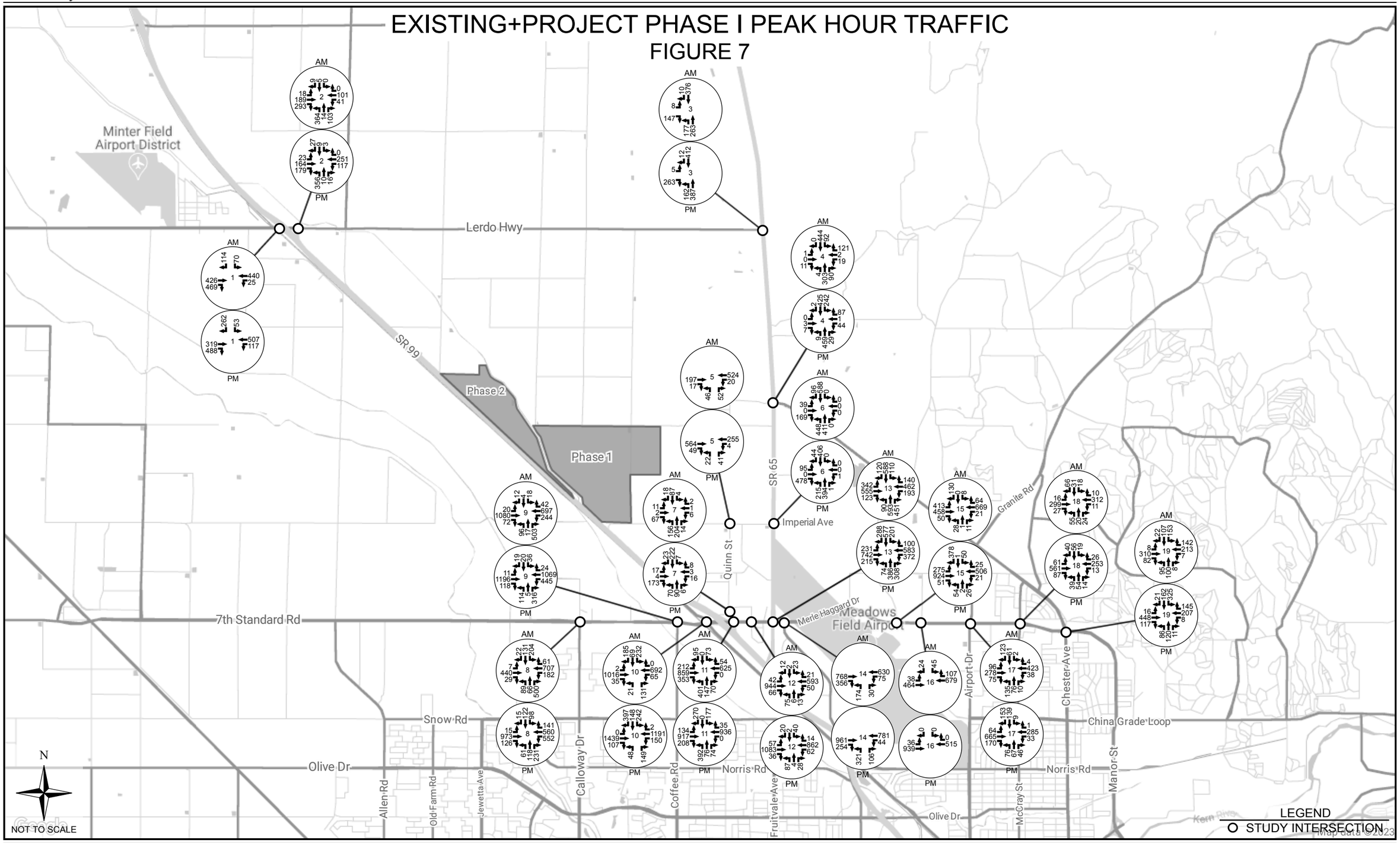


EXISTING PEAK HOUR TRAFFIC
FIGURE 6

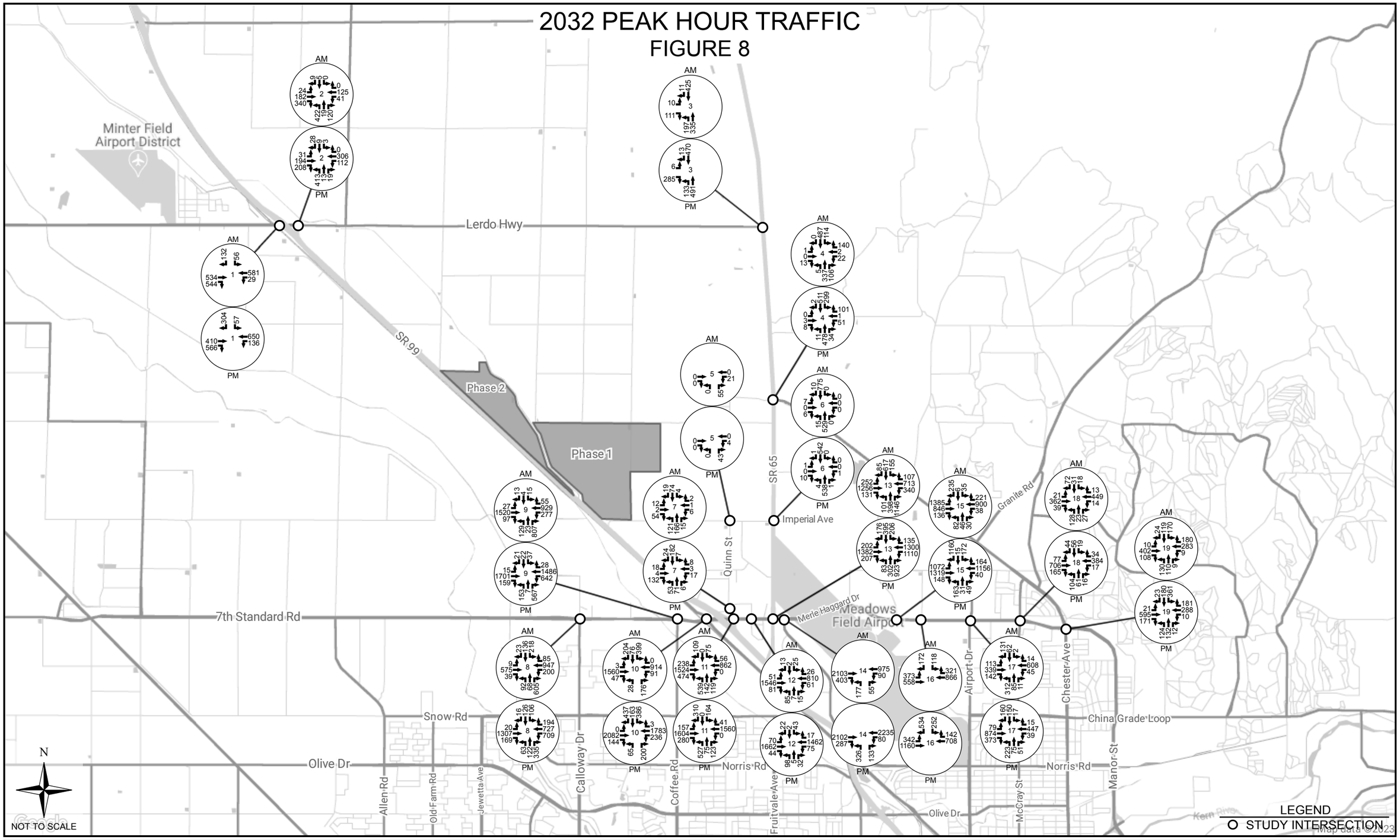


EXISTING+PROJECT PHASE I PEAK HOUR TRAFFIC

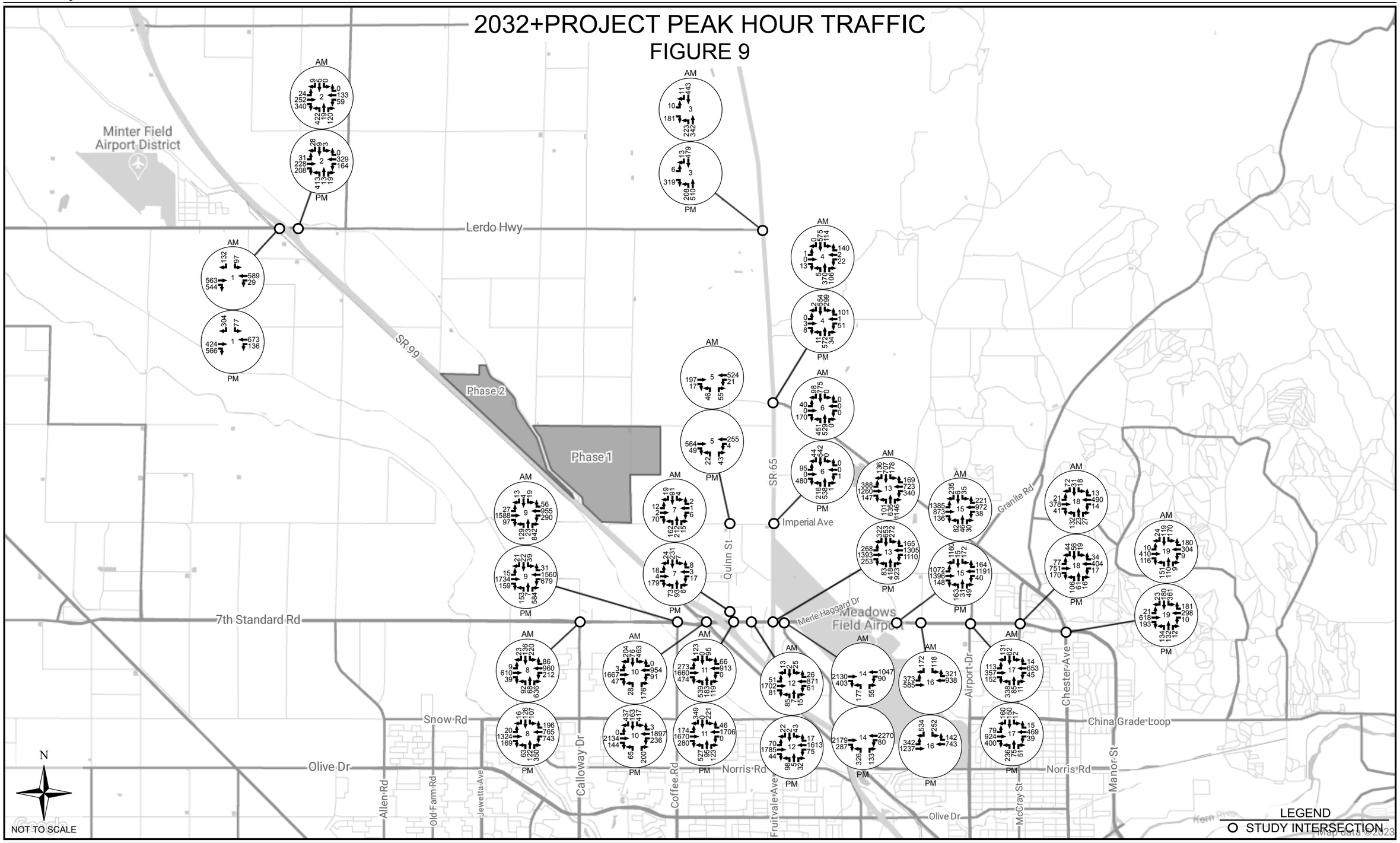
FIGURE 7



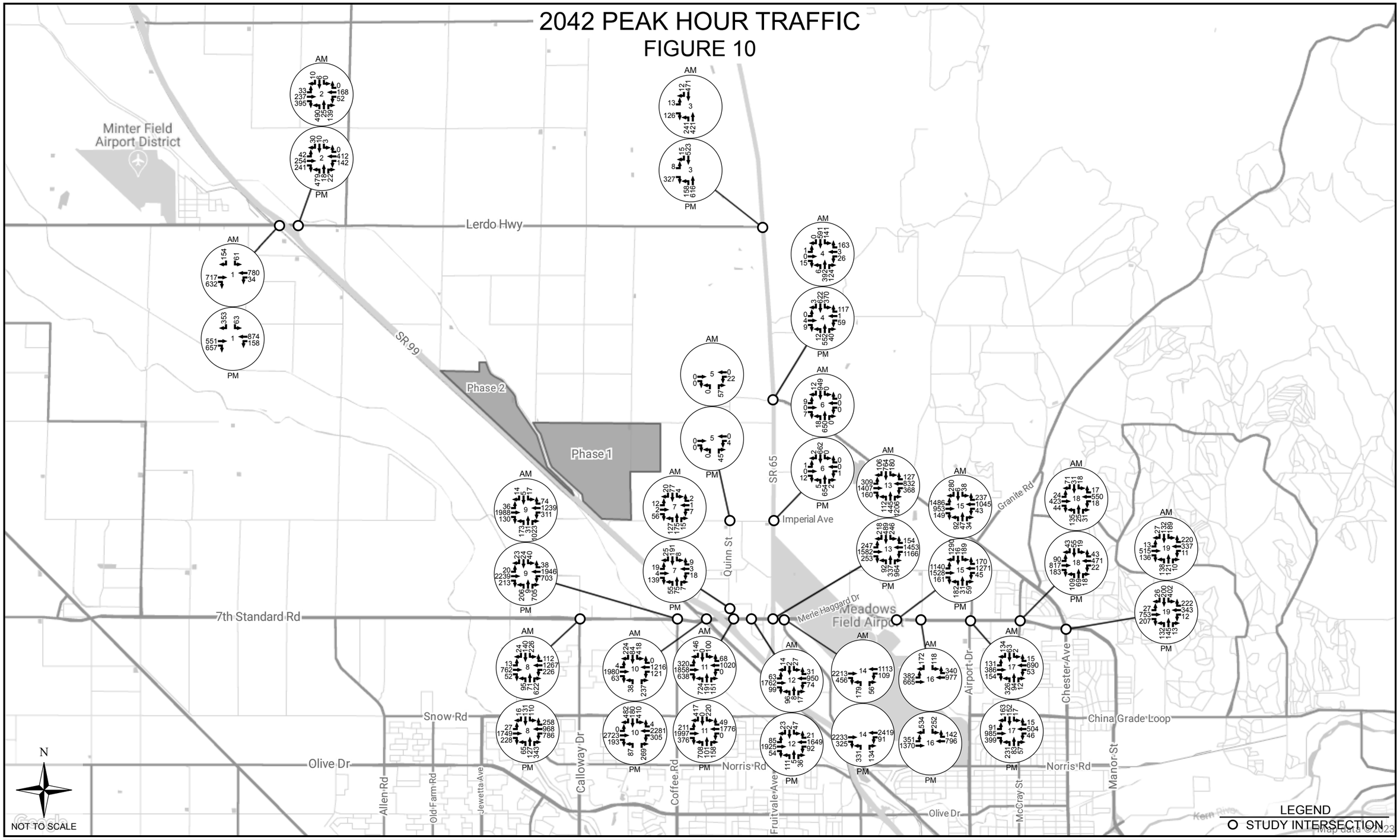
2032 PEAK HOUR TRAFFIC
FIGURE 8



2032+PROJECT PEAK HOUR TRAFFIC
FIGURE 9

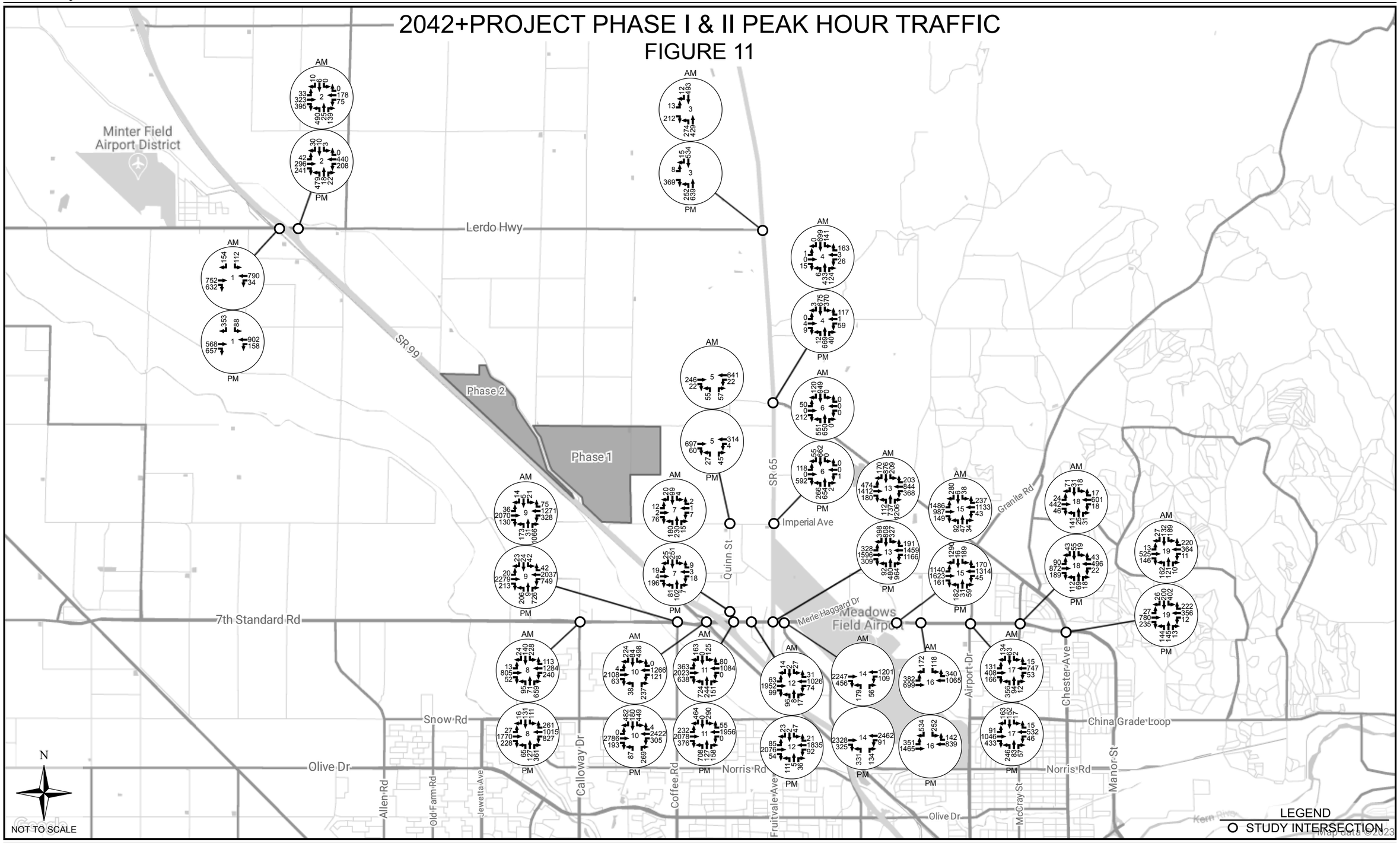


2042 PEAK HOUR TRAFFIC
FIGURE 10



2042+PROJECT PHASE I & II PEAK HOUR TRAFFIC

FIGURE 11



INTERSECTION ANALYSIS

A capacity analysis of the study intersections was conducted using Synchro 9 software from Trafficware. This software utilizes the 2010 capacity analysis methodology in the Transportation Research Board's Highway Capacity Manual. The analysis was performed for each of the following traffic scenarios.

- Existing (2022)
- Existing (2022) + Project Phase 1
- Build Year (2032)
- Build Year (2032) + Project Phase 1
- Future (2042)
- Future (2042) + Project Phases 1 & 2

Criteria for intersection level of service (LOS) are shown in the tables below.

LEVEL OF SERVICE CRITERIA
UNSIGNALIZED INTERSECTION

Average Control Delay (sec/veh)	Level of Service	Expected Delay to Minor Street Traffic
≤ 10	A	Little or no delay
> 10 and ≤ 15	B	Short traffic delays
> 15 and ≤ 25	C	Average traffic delays
> 25 and ≤ 35	D	Long traffic delays
> 35 and ≤ 50	E	Very long traffic delays
> 50	F	Extreme delays

LEVEL OF SERVICE CRITERIA
SIGNALIZED INTERSECTIONS

Volume/Capacity	Control Delay (sec/veh)	Level of Service
< 0.60	≤ 10	A
0.61 - 0.70	> 10 and ≤ 20	B
0.71 - 0.80	> 20 and ≤ 35	C
0.81 - 0.90	> 35 and ≤ 55	D
0.91 - 1.00	> 55 and ≤ 80	E
> 1.0	> 80	F

Level of service for the study intersections is presented in Tables 3a, 3b, 4a, and 4b. The level of service goal for roadway facilities in Kern County is LOS "C" within the metropolitan Bakersfield area and LOS "D" outside the metro area. Intersection delays are shown for all intersections that operate below LOS "C".

Table 3a
PM Intersection Level of Service

#	Intersection	Control Type	Existing	Existing+ Project Phase I	2032	2032+ Project Phase I	2032+ Project Phase I w/Improvements[1]	2042	2042+ Project Phase I & II	2042+ Project Phase I & II w/ Improvements[1]
1	SR 99 SB Ramps & Lerdo Hwy	Signal	-	-	-	-	C	-	-	C
		SB Stop	B	C	C	D (29.0)	-	F (57.2)	F (109.1)	-
2	SR 99 NB Ramps & Lerdo Hwy	Signal	C	C	C	D (39.9)	C	F (298.7)	F (>300)	C
3	Porterville Hwy (SR 65) & Lerdo Hwy	Signal	-	-	-	-	C	-	-	C
		EB Stop	B	C	C	C	-	D (26.5)	D (34.5)	-
4	Porterville Hwy (SR 65) & James Rd	Signal	-	-	-	-	A	-	-	C
		EB Stop	C	C	D (30.0)	E (36.5)	-	F (62.0)	F (89.7)	-
		WB Stop	E (48.1)	F (84.8)	F (>300)	F (>300)	-	F (>300)	F (>300)	-
5	Quinn Rd & Imperial Ave	NB Stop	-	C	-	C	-	-	C	-
6	Porterville Hwy (SR 65) & Imperial Ave	Signal	-	-	-	-	C	-	-	C
		EB Stop	B	F (>300)	B	F (>300)	-	C	F (>300)	-
7	Quinn Rd & Saco Rd/Mc Murtrey Ave	AWSC	A	B	A	B	-	A	B	-
8	Calloway Dr & 7th Standard Rd	Signal	D (47.1)	D (41.8)	F (104.2)	F (114.1)	D (44.4)	F (185.4)	F (200.4)	F (80.2)
9	Coffee Rd & 7th Standard Rd	Signal	D (49.2)	D (47.7)	F (176.3)	F (197.0)	D (46.3)	F (>300)	F (>300)	F (141.8)
10	Golden State Hwy & 7th Standard Rd	Signal	C	C	F (83.1)	F (92.7)	E (58.0)	F (180.2)	F (209.9)	F (140.1)

[1]See Table 8 for details.

Table 3a
PM Intersection Level of Service Continued

#	Intersection	Control Type	Existing	Existing+ Project Phase I	2032	2032+ Project Phase I	2032+ Project Phase I w/Improvements[1]	2042	2042+ Project Phase I & II	2042+ Project Phase I & II w/ Improvements[1]
11	Quinn Rd/SR 99 NB Ramp & Merle Haggard Dr/7th Standard Rd	Signal	B	B	B	C	-	C	C	-
12	Industrial Pkwy Dr & Merle Haggard Dr	Signal	B	B	B	B	-	C	C	-
13	Porterville Hwy (SR 65) & Merle Haggard Dr	Signal	D (39.6)	D (52.6)	F (>300)	F (>300)	F (287.2)	F (>300)	F (>300)	F (292.1)
14	Pegasus Dr & Merle Haggard Dr	Signal	A	B	A	B	-	A	B	-
15	Wings Wy & Merle Haggard Dr	Signal	C	C	F (>300)	F (>300)	-	F (>300)	F (>300)	-
16	Landings Way & Merle Haggard Dr	Signal	C	C	D (47.1)	D (46.4)	C	D (53.4)	D (51.8)	C
17	Airport Dr & Merle Haggard Dr	Signal	C	C	C	C	-	C	C	-
18	McCray & Merle Haggard Dr	Signal	C	C	C	C	-	C	C	-
19	N Chester Ave & Merle Haggard Dr	Signal	C	C	C	D (36.4)	C	C	D (46.7)	C

[1]See Table 8 for details.

Table 3b
AM Intersection Level of Service

#	Intersection	Control Type	Existing	Existing+ Project Phase I	2032	2032+ Project Phase I	2032+ Project Phase I w/Improvements[1]	2042	2042+ Project Phase I & II	2042+ Project Phase I & II w/ Improvements[1]
1	SR 99 SB Ramps & Lerdo Hwy	Signal	-	-	-	-	C	-	-	C
		SB Stop	B	B	C	C	-	C	F (60.6)	-
2	SR 99 NB Ramps & Lerdo Hwy	Signal	C	C	E (63.5)	E (68.1)	C	F (88.2)	F (102.3)	C
3	Porterville Hwy (SR 65) & Lerdo Hwy	Signal	-	-	-	-	-	-	-	C
		EB Stop	B	B	B	C	-	C	C	-
4	Porterville Hwy (SR 65) & James Rd	Signal	-	-	-	-	A	-	-	B
		EB Stop	B	B	B	C	-	C	C	-
		WB Stop	B	C	C	C	-	E (35.1)	F (52.4)	-
5	Quinn Rd & Imperial Ave	NB Stop	-	B	-	B	-	-	C	-
6	Porterville Hwy (SR 65) & Imperial Ave	Signal	-	-	-	-	C	-	-	C
		EB Stop	C	F (>300)	C	F (>300)	-	E (38.4)	F (127.2)	
7	Quinn Rd & Saco Rd/Mc Murtrey Ave	AWSC	A	A	A	A	-	A	B	-
8	Calloway Dr & 7th Standard Rd	Signal	C	C	E (60.3)	E (62.7)	D (42.9)	E (63.4)	E (70.2)	D (51.5)
9	Coffee Rd & 7th Standard Rd	Signal	D (36.8)	D (42.6)	F (120.5)	F (137.4)	D (46.9)	F (231.1)	F (256.1)	D (47.9)

[1]See Table 8 for details.

Table 3b
AM Intersection Level of Service Continued

#	Intersection	Control Type	Existing	Existing+ Project Phase I	2032	2032+ Project Phase I	2032+ Project Phase I w/Improvements[1]	2042	2042+ Project Phase I & II	2042+ Project Phase I & II w/ Improvements[1]
10	Golden State Hwy & 7th Standard Rd	Signal	B	C	E (70.7)	F (93.4)	C	E (69.2)	F (95.3)	E (71.8)
11	Quinn Rd/SR 99 NB Ramp & Merle Haggard Dr/7th Standard Rd	Signal	C	C	C	C	-	C	C	-
12	Industrial Pkwy Dr & Merle Haggard Dr	Signal	A	A	C	C	-	C	C	-
13	Porterville Hwy (SR 65) & Merle Haggard Dr	Signal	D (39.2)	D (44.3)	F (203.3)	F (199.8)	F (105.8)	F (233.6)	F (245.3)	F (120.0)
14	Pegasus Dr & Merle Haggard Dr	Signal	A	A	A	A	-	B	C	-
15	Wings Wy & Merle Haggard Dr	Signal	A	A	F (154.4)	F (152.4)	-	F (210.6)	F (220.7)	-
16	Landings Way & Merle Haggard Dr	Signal	C	C	C	C	-	C	C	-
17	Airport Dr & Merle Haggard Dr	Signal	C	C	C	C	-	C	C	-
18	McCray & Merle Haggard Dr	Signal	C	C	C	C	-	C	C	-
19	N Chester Ave & Merle Haggard Dr	Signal	B	B	B	B	-	B	C	-

[1]See Table 8 for details.

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QUEUE LENGTH ANALYSIS

Existing volumes and future volumes, both with and without project traffic, were used to analyze movements at Porterville Highway (Stare Route 65) & Imperial Avenue, Golden State Highway & 7th Standard Road, State Route 99 Northbound off ramp & Merle Haggard Drive, and Porterville Highway (SR 65) & Merle Haggard Drive. Queue length analysis was conducted using Synchro 9 software. The queue analysis was performed at the request of Caltrans, however, Kern County has not defined or adopted any criteria or thresholds for evaluation of queue lengths for specific turning movements at intersection. The results of the queue length analysis are shown for informational purposes in Tables 4a and 4b below.

Table 4a
PM Queue Length Analysis

Intersection	Lerdo Hwy & SR 99 SB Ramps				Lerdo Hwy & SR 99 NB Ramps				Porterville Hwy (SR 65) & Imperial Ave	Golden State Hwy & 7th Standard Rd			SR 99 NB Off Ramp & Merle Haggard Dr		Porterville Hwy (SR 65) & Merle Haggard Dr							
Movement	EBR	WBL	SBL	SBR	EBR	WBL	NBL	NBR	EB	WBL	SBL	SBR	NBL	NBR	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
Storage Length	-	265	-	75	-	120	-	500	-	250	240	240	300	240	250	150	200	150	500	350	250	250
Existing	20	84	39	59	147	53	128	55	22	92	119	122	101	20	201	199	205	52	49	53	40	64
Existing+Project	38	83	84	82	145	87	206	45	265	168	243	205	176	37	135	219	127	37	65	23	92	125
2032	49	187	49	64	278	150	293	17	22	115	260	294	221	48	315	230	222	28	63	409	91	48
2032+Project	56	66	54	75	186	143	229	30	205	189	291	325	194	42	394	242	269	207	85	439	158	49
2042	20	229	276	131	172	162	175	26	29	320	289	295	251	117	319	237	225	239	73	414	145	120
2042+Project	39	193	205	136	221	156	227	39	570	302	269	323	366	76	379	229	223	242	103	411	205	108
2042+Project w/Mitigation	38	217	162	106	182	122	196	18	87	289	210	247	358	72	378	224	223	207	64	170	113	67

Notes:
NB = Northbound
SB = Southbound L = Left-Turn Lane
WB = Westbound T = Through Lane
EB = Eastbound R = Right-Turn Lane

Table 4b
AM Queue Length Analysis

Intersection	Lerdo Hwy & SR 99 SB Ramps				Lerdo Hwy & SR 99 NB Ramps				Porterville Hwy (SR 65) & Imperial Ave	Golden State Hwy & 7th Standard Rd			SR 99 NB Off Ramp & Merle Haggard Dr		Porterville Hwy (SR 65) & Merle Haggard Dr							
Movement	EBR	WBL	SBL	SBR	EBR	WBL	NBL	NBR	EB	WBL	SBL	SBR	NBL	NBR	EBL	EBR	WBL	WBR	NBL	NBR	SBL	SBR
Storage Length	-	265	-	75	-	120	-	500	-	250	240	240	300	240	250	150	200	150	500	350	250	250
Existing	59	32	39	61	123	0	91	19	21	51	175	119	172	40	248	154	196	37	65	88	23	47
Existing+Project	50	20	47	29	176	45	134	45	51	125	292	236	162	62	277	43	229	159	80	81	83	28
2032	39	47	52	30	204	25	154	30	30	76	261	234	212	70	326	152	220	153	133	373	114	49
2032+Project	14	40	140	111	380	15	95	51	72	155	264	67	185	43	295	244	275	231	102	376	106	51
2042	15	58	51	85	114	20	254	63	74	200	260	114	251	80	178	153	237	52	103	375	90	58
2042+Project	44	25	223	120	378	31	104	45	29	103	264	217	193	64	380	233	226	149	103	400	94	49
2042+Project w/Mitigation	45	60	57	95	284	25	207	62	19	110	278	134	294	106	330	154	246	157	159	214	95	40

Notes:
NB = Northbound
SB = Southbound L = Left-Turn Lane
WB = Westbound T = Through Lane
EB = Eastbound R = Right-Turn Lane

TRAFFIC SIGNAL WARRANT ANALYSIS

Peak hour signal warrants were evaluated for the unsignalized intersection within the study based on the California Manual on Uniform Traffic Control Devices (MUTCD). Peak hour signal warrants assess delay to traffic on the minor street approaches when entering or crossing a major street. Signal warrant analysis results for PM and AM peak hours are shown in Tables 5a and 5b respectively.

Table 5a

PM Traffic Signal Warrants

		Existing			2032			2042		
#	Intersection	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met
1	SR 99 SB Ramps at Lerdo Hwy	1394	295	YES	1805	367	YES	2240	416	YES
3	Porterville Hwy (SR 65) at Lerdo Hwy	870	234	YES	960	260	YES	1312	335	YES
4	Porterville Hwy (SR 65) at James Rd	1029	132	YES	1034	159	YES	1599	177	YES
5	Quinn Rd at Imperial Ave	41	4	NO	54	21	NO	45	4	NO
6	Porterville Hwy (SR 65) at Imperial Ave	805	9	NO	1298	13	NO	1325	13	NO
7	Quinn Rd at Saco Rd	327	147	NO	395	66	NO	361	162	NO

		Existing+Project Phase I			2032+Project Phase I			2042+Project Phase I & II		
#	Intersection	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met
1	SR 99 SB Ramps at Lerdo Hwy	1464	324	YES	1868	390	YES	2311	442	YES
3	Porterville Hwy (SR 65) at Lerdo Hwy	1029	278	YES	1066	322	YES	1444	371	YES
4	Porterville Hwy (SR 65) at James Rd	1231	134	YES	1167	161	YES	1767	180	YES
5	Quinn Rd at Imperial Ave	851	62	NO	768	72	NO	919	66	NO
6	Porterville Hwy (SR 65) at Imperial Ave	1035	584	YES	1510	523	YES	1582	636	YES
7	Quinn Rd at Saco Rd	424	196	NO	479	109	NO	460	215	NO

Table 5b
AM Traffic Signal Warrants

		Existing			2032			2040		
#	Intersection	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met
1	SR 99 SB Ramps at Lerdo Hwy	1323	143	YES	1729	191	YES	2240	416	YES
3	Porterville Hwy (SR 65) at Lerdo Hwy	775	85	NO	960	121	NO	1312	335	YES
4	Porterville Hwy (SR 65) at James Rd	812	142	NO	1034	159	YES	1599	177	YES
5	Quinn Rd at Imperial Ave	52	20	NO	54	21	NO	45	4	NO
6	Porterville Hwy (SR 65) at Imperial Ave	1019	11	NO	1298	13	NO	1325	13	NO
7	Quinn Rd at Saco Rd	379	64	NO	395	66	NO	361	162	NO

		Existing+Project Phase I			2032+Project Phase I			2040+Project Phase I & II		
#	Intersection	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met	Major Street Total Approach Vol	Minor Street High Approach Vol	Warrant Met
1	SR 99 SB Ramps at Lerdo Hwy	1388	205	YES	1787	236	YES	2304	440	YES
3	Porterville Hwy (SR 65) at Lerdo Hwy	848	186	NO	1063	195	YES	1440	370	YES
4	Porterville Hwy (SR 65) at James Rd	986	144	YES	1164	161	YES	1762	179	YES
5	Quinn Rd at Imperial Ave	738	103	NO	766	72	NO	916	66	NO
6	Porterville Hwy (SR 65) at Imperial Ave	1572	173	YES	1506	521	YES	1578	635	YES
7	Quinn Rd at Saco Rd	494	79	NO	478	108	NO	458	215	NO

ROADWAY ANALYSIS

Published ADT information and future projected traffic, as shown in Table 6, were used to calculate the volume-to-capacity ratios shown in Table 7.

A volume-to-capacity ratio (v/c) of greater than 0.80 corresponds to a LOS of less than "C", as defined in the Highway Capacity Manual. As mentioned previously, a level of service "C" is the accepted standard in Kern County within the metropolitan Bakersfield areas. LOS "D" is the County's standard outside the metro area.

Table 6
Roadway ADT & Capacity

Street Segment	Project Phase I ADT	Project Phase I & II ADT	Existing ADT	Existing+ Project Phase I	2032	2032+ Project Phase I	2042	2042+ Project Phase I & II	Existing Capacity	Mitigated Capacity
Lerdo Hwy: State Route 99 to Porterville Hwy (State Route 65)	1244	1520	6122	7366	8474	9718	11389	12909	15000	-
Imperial Ave: Quinn St to Porterville Hwy (State Route 65)	9257	11406	410	9667	457	9714	505	11911	15000	30000
7th Standard Rd: Calloway Dr to Coffee Rd	1190	1493	29685	30875	41091	42281	55223	56716	50000	60000
7th Standard Rd: Coffee Rd to Golden State Hwy	139	2313	29685	29824	41091	41230	55223	57536	40000	60000
7th Standard Rd: Golden State Hwy to Sr 99 NB Off Ramp/Quinn Rd	3023	3726	22761	25784	31507	34530	42342	46068	40000	60000
Merle Haggard Dr: Quinn Rd to Industry Pkwy Dr	3091	3833	18344	21435	22907	25998	28033	31866	50000	-
Merle Haggard Dr: Industry Pkwy Dr to Porterville Hwy (SR 65)	3091	3833	28683	31774	35574	38665	43266	47099	60000	-
Merle Haggard Dr: Porterville Hwy (SR 65) to Pegasus Dr	1271	1561	23604	24875	27043	28314	30601	32162	60000	-
Merle Haggard Dr: Pegasus Dr to Wings Way	1271	1561	23604	24875	28979	30250	34920	36481	40000	-
Merle Haggard Dr: Wings Way to Landings Way	1271	1561	10287	11558	12595	13866	15139	16700	40000	-
Merle Haggard Dr: Landings Way to Airport Dr	1271	1561	13230	14501	15536	16807	17980	19541	15000	40000
Merle Haggard Dr: Airport Dr to McCray St	803	996	7306	8109	8787	9590	10391	11387	40000	-
Merle Haggard Dr: McCray St to Chester Ave	723	901	7306	8029	9656	10379	12443	13344	40000	-
Porterville Hwy (State Route 65): Merle Haggard Dr to Imperial Ave	9496	9496	10611	20107	12499	21995	14506	24002	15000	40000
Porterville Hwy (State Route 65): Imperial Ave to James Rd	1910	9496	10590	12500	12340	14250	14181	23677	15000	40000
Porterville Hwy (State Route 65): James Rd to Lerdo Hwy	1551	1910	9272	10823	10922	12473	12675	14585	15000	40000

Table 7
Roadway Level of Service

Street Segment	v/c Existing	v/c Ext+Proj Phase I	v/c (Mitt) Ext+Proj Phase I	v/c 2032	v/c 2032+Proj Phase I	v/c (Mitt) 2032+Proj Phase I	v/c 2042	v/c 2042+Proj Phase I & II	v/c (Mitt) 2042+Proj Phase I & II
Lerdo Hwy: State Route 99 to Porterville Hwy (State Route 65)	0.41	0.49	-	0.56	0.65	-	0.76	0.86[1]	-
Imperial Ave: Quinn St to Porterville Hwy (State Route 65)	0.03	0.64	-	0.03	0.65	0.32	0.03	0.79	0.40
7th Standard Rd: Calloway Dr to Coffee Rd	0.59	0.62	-	**0.82**	**0.85**	0.70	**1.10**	**1.13**	**0.95**
7th Standard Rd: Coffee Rd to Golden State Hwy	0.74	0.75	-	**1.03**	**1.03**	0.69	**1.38**	**1.44**	**0.96**
7th Standard Rd: Golden State Hwy to Sr 99 NB Off Ramp/Quinn Rd	0.57	0.64	-	0.79	**0.86**	0.58	**1.06**	**1.15**	0.77
Merle Haggard Dr: Quinn Rd to Industry Pkwy Dr	0.37	0.43	-	0.46	0.52	-	0.56	0.64	-
Merle Haggard Dr: Industry Pkwy Dr to Porterville Hwy (SR 65)	0.48	0.53	-	0.59	0.64	-	0.72	0.78	-
Merle Haggard Dr: Porterville Hwy (SR 65) to Pegasus Dr	0.39	0.41	-	0.45	0.47	-	0.51	0.54	-
Merle Haggard Dr: Pegasus Dr to Wings Way	0.59	0.62	-	0.72	0.76	-	**0.87**	**0.91**	-
Merle Haggard Dr: Wings Way to Landings Way	0.26	0.29	-	0.31	0.35	-	0.38	0.42	-
Merle Haggard Dr: Landings Way to Airport Dr	**0.88**	**0.97**	0.36	**1.04**	**1.12**	0.42	**1.20**	**1.30**	0.49
Merle Haggard Dr: Airport Dr to McCray St	0.18	0.20	-	0.22	0.24	-	0.26	0.28	-
Merle Haggard Dr: McCray St to Chester Ave	0.18	0.20	-	0.24	0.26	-	0.31	0.33	-
Porterville Hwy (State Route 65): Merle Haggard Dr to Imperial Ave	0.71	**1.34**	0.50	**0.83**	**1.47**	0.55	**0.97**	**1.60**	0.60
Porterville Hwy (State Route 65): Imperial Ave to James Rd	0.71	**0.83**	0.31	**0.82**	**0.95**	0.36	**0.95**	**1.58**	0.59
Porterville Hwy (State Route 65): James Rd to Lerdo Hwy	0.62	0.72	0.27	0.73	**0.83**	0.31	**0.85**	**0.97**	0.36

[1]Acceptable Level of Service on Lerdo Hwy

IMPROVEMENTS

Regional Transportation Impact Fee Program

As stated in the Road Description section earlier in this report, the 7th Standard Road/Merle Haggard Drive corridor is a major east-west route in the north metropolitan area. Over the past 15 years the local agencies have accomplished significant widening improvements over from Wings Way to west of Santa Fe Way. These improvements have been accomplished with a variety of funding sources, including the Regional Transportation Improvement Program (RTIF) for metropolitan Bakersfield. There are two improvement projects on the RTIF, which remain to be accomplished on the 7th Standard Road/Merle Haggard Drive corridor. Additionally, there are projects listed for Porterville Highway (SR 65), Calloway Drive, Coffee Road and Norris Road. They are as follows:

- Merle Haggard Drive widening to four lanes, Wings Way to Airport Drive
- 7th Standard Road/SR 99 interchange - Eastbound bridge replacement and new ramps
- Porterville Highway (SR 65) widening to four lanes, Merle Haggard Drive to James Rd
- Calloway Drive widening to four lanes, south of 7th Standard Road
- Coffee Road widening to four lanes, south of 7th Standard Road
- Norris Road widening to four lanes, west of Airport Drive

The purpose of the RTIF is to provide a funding mechanism for roadway improvements which are regional in nature and for which cost sharing by all new development is appropriate. The metro RTIF is a program jointly developed, approved and administered by the County and the City of Bakersfield. The program was adopted in the 1980's and has been updated periodically to reflect the latest development growth patterns and construction costs. The current version of the RTIF is the fourth update to the program and was adopted in 2009. The current version has been held in place for an extended period of time as a stable reference for project within the Thomas Roads Improvement Program (TRIP). With the near conclusion of the TRIP program the County is working on an update of the RTIF, which would reflect current development conditions along the 7th Standard Road/Merle Haggard corridor, particularly in the vicinity of Meadows Field.

California High Speed Rail

The alignment for the California High Speed Rail (HSR) segment from Shafter to Bakersfield crosses 7th Standard Road between Coffee Road and the Union Pacific Railroad (UPRR). The current design for the HSR project places the HSR at "level2", keeps UPRR at "level1" and elevates 7th Standard Road over the top of both at "level3". This arrangement will require the complete reconstruction of 7th Standard Road and the SR 99/7th Standard Road interchange from the Beardsley Canal to east of the SR

99 northbound ramps. The Environmental Document for this section was approved in 2019. The High Speed Rail Authority is currently in the selection process for a design consultant, with final design to be complete by 2027. It is therefore assumed that reconstruction of the 7th Standard Road interchange will be completed by 2030. This reconstruction will supersede the interchange improvement listed in the RTIF. Additionally, the County, City of Bakersfield and Caltrans need to coordinate closely with the High Speed Rail Authority to assure the reconstruction along 7th Standard Road includes adequate facilities to accommodate both existing and anticipated future traffic.

Study Area Improvements

Intersection and roadway improvements needed by the year 2042 to maintain or improve the operational level of service of the street system in the vicinity of the project are shown in Tables 8 and 9. The RTIF Facilities List includes many of the facilities needed to maintain a level of service "C" or better for new growth or to prevent the degradation of facilities which are currently operating below LOS C. The RTIF program sets forth the fees to be collected from new development to provide funding for those projects, which are on the RTIF list. Tables 8 and 9 also identify local improvements not covered by the RTIF program or anticipated by adjacent development, and an estimate of the project's percent share responsibility for the improvement.

The percent share for local improvements is calculated using the following formula:

$$\% \text{ Share} = \frac{\text{Project Traffic}}{\text{(Future+Project Traffic) - Existing Traffic}} \text{ x100\%}$$

Table 8
Future Intersection Improvements

#	Intersection	Total Improvements Required by 2032	Total Improvements Required by 2042	Local Improvements (Improvements not covered by RTIF or adjacent development)	Project % Share for Local Improvements 2032 – Phase 1	Project % Share for Local Improvements 2042 – Phase 2
1	SR 99 SB Ramps & Lerdo Hwy	Signal	Signal, Add SBR	Signal, Add SBR	11.61%	2.38%
2	SR 99 NB Ramps & Lerdo Hwy	Add NBL	Add NBL	Add NBL	27.32%	7.85%
3	Porterville Hwy (SR 65) & Lerdo Hwy	-	Signal	Signal	-	11.70%
4	Porterville Hwy (SR 65) & James Rd	Signal	Signal	Signal	29.46%	10.22%
6	Porterville Hwy (SR 65) & Imperial Ave	Signal	Signal	Signal	74.32%	44.34%
		Add EBR, NBL	Add EBR, NBL	Add EBR, NBL	100%	100%
8	Calloway Dr & 7th Standard Rd	Add EBT, EBR, NBR	Add EBT, EBR, NBR	-	-	2.56%
9	Coffee Rd & 7th Standard Rd	Add WBT, 1 WBL, change NBT/R to NBT, 2NBR	Add WBT, 1 WBL, change NBT/R to NBT, 2NBR	-	-	3.21%
10	Golden State Hwy & 7th Standard Rd	Add SBL, SBR, change NBT/R to NBT, NBR	Add SBL, SBR, change NBT/R to NBT, NBR	-	-	3.11%
13	Porterville Hwy (SR 65) & Merle Haggard Dr	Add NBR	Add NBR	Add NBR	19.42%	15.27%
16	Landings Way & Merle Haggard Dr	Change WBR to WBTR	Change WBR to WBTR	-	-	7.81%
19	Chester Ave & Manor St/Merle Haggard Dr	Change 1 SBT to SBTL[1], split phase timing N-S	Change 1 SBT to SBTL[1], split phase timing N-S	Change 1 SBT to SBTL[1], split phase timing N-S	11.57%	2.67%

[1] Striping only

Notes:

NB = Northbound SB = Southbound WB = Westbound EB = Eastbound
T = Through Lane R = Right-Turn Lane L = Left-Turn Lane

Table 9
Future Roadway Improvements

Roadway	Total Improvements Required by 2032	Total Improvements Required by 2042	Local Improvements (Improvements not covered by RTIF or adjacent development)	Project % Share for Local Improvements 2032 – Phase 1	Project % Share for Local Improvements 2042 – Phase 2
Imperial Ave: Saco Rd to Quinn Rd	-	Construct 4 Lanes[1]	Add 4 Lanes[1]	-	100%
Imperial Ave: Quinn Rd to Porterville Hwy (State Route 65)	-	Construct 2 Lanes[1]	Add 2 Lanes[1]	-	100%
7th Standard Rd: Calloway Dr to Coffee Rd	Add 1 Lane	Add 1 Lane	-	-	-
7th Standard Rd: Coffee Rd to Golden State Hwy	Add 1 Lane[2]	Add 1 Lane[2]	-	-	-
7th Standard Rd: Golden State Hwy to SR 99 NB Off Ramp/Quinn Rd	Add 1 Lane[2]	Add 1 Lane[2]	-	-	-
Merle Haggard Dr: Landings Way to Airport Dr	Add 2 Lanes	Add 2 Lanes	-	-	-
Porterville Hwy (State Route 65): Merle Haggard Dr to Imperial Ave	Add 2 Lanes	Add 2 Lanes	-	-	-
Porterville Hwy (State Route 65): Imperial Ave to James Rd	Add 2 Lanes	Add 2 Lanes	-	-	-
Porterville Hwy (State Route 65): James Rd to Lerdo Hwy	Add 2 Lanes	Add 2 Lanes	Add 2 Lanes	48.45%	17.00%

[1]2-4 Lanes as needed to support development.

[2]Stripping Only

SUMMARY AND CONCLUSIONS

This study evaluated the potential traffic impacts of a proposed GPA and ZC from agricultural to industrial uses on a 740 acre site north of Imperial Avenue and east of State Route 99 in Kern County, California.

VMT

It was determined that project VMT impact is less than significant.

Operational Analysis

In general, the existing traffic operates at or near acceptable levels within the study area with the existing roadway facilities. The addition of project traffic to existing traffic would cause a deterioration in traffic operations on the existing street system along Porterville Highway (SR 65) between Merle Haggard Drive and Imperial Avenue and at the intersections of Imperial Avenue at Porterville Highway (SR 65), Lerdo Hwy at SR 99 southbound ramps and 7th Standard Road at Coffee Road. The anticipated growth in traffic volumes along the 7th Standard Road/Merle Haggard Corridor over the next 10 to 20 years is anticipated to result a substantial increase in congestion, with several locations operating below LOS C, with or without project traffic.

Conclusion

In conclusion, project traffic does not have a significant VMT impact. The addition of project traffic to the existing and future street system results in LOS deficiencies at several locations. Each of these deficiencies should be addressed with improvements as shown in Tables 8 and 9

Significant congestion is anticipated in the future along the 7th Standard Road/Merle Haggard corridor, due to traffic associated with regional growth and development. As a result, several intersections and roadway are anticipated to operate below LOS C in the future even with full standard widening and roadway improvements.

Therefore, the project should improve Imperial Avenue west of Porterville Highway (SR 65) to arterial standards, pay its proportional share for local improvements as listed in Tables 8 and 9 for Phases 1 and 2, and pay into the RTIF program in accordance with the current fee schedule during the building permit process for those portions of the project located within the RTIF boundary, which applies to Phase 1

only, as Phase 2 is located outside of the RTIF boundary and not required to pay into the program. The project should also coordinate with the County on development and funding of additional regional capacity to relieve congestion along the 7th Standard Road/Merle Haggard Drive corridor, including the extension of Imperial Avenue east of State Route 65 and construction of an additional freeway interchange(s) on State Route 99 in the vicinity of the Burbank Street alignment between 7th Standard Road and Lerdo Highway.

REFERENCES

1. Annual Traffic Census, KernCOG
2. Kern County General Plan, approved September 22, 2009
3. Highway Capacity Manual, Special Report 209, Transportation Research Board
4. California Manual on Uniform Traffic Control Devices for Streets and Highways, 2012 Edition, Federal Highway Administration (FHA)
5. Trip Generation, 11th Edition, Institute of Transportation Engineers (ITE)

APPENDIX

VEHICLE TURNING MOVEMENT COUNTS

Turning Movement Count Report AM

Location ID: 1
North/South: SR 99 SB On/Off Ramps
East/West: Lerdo Highway

Date: 12/11/19
City: Bakersfield, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:30	47	0	28	0	106	9	0	0	0	82	110	0	382
6:45	47	0	20	0	116	8	0	0	0	84	112	0	387
7:00	26	0	6	0	88	10	0	0	0	89	105	0	324
7:15	24	1	8	0	114	5	0	0	0	134	134	0	420
7:30	25	0	8	0	112	7	0	0	0	135	67	0	354
7:45	39	0	7	0	118	3	0	0	0	111	91	0	369
8:00	18	0	5	0	107	12	0	0	0	98	95	0	335
8:15	26	1	7	0	108	11	0	0	0	81	47	0	281
Total Volume:	252	2	89	0	869	65	0	0	0	814	761	0	2852
Approach %	73%	1%	26%	0%	93%	7%	0%	0%	0%	52%	48%	0%	
Peak Hr Begin:	6:30												
PHV	144	1	62	0	424	32	0	0	0	389	461	0	1513
PHF	0.690			0.919			0.000			0.793			0.901

Prepared by City Count, LLC. (www.citycount.com)

Turning Movement Count Report PM

Location ID: 1
North/South: SR 99 SB On/Off Ramps
East/West: Lerdo Highway

Date: 12/11/19
City: Bakersfield, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	71	0	2	0	117	48	0	0	0	98	72	0	408
16:15	78	0	11	0	128	34	0	0	0	95	63	0	409
16:30	53	0	8	0	110	35	0	0	0	126	97	0	429
16:45	71	0	5	0	130	23	0	0	0	99	92	0	420
17:00	60	0	9	0	116	25	0	0	0	168	53	0	431
17:15	55	0	8	0	157	35	0	0	0	103	63	0	421
17:30	43	0	7	0	134	24	0	0	0	89	52	0	349
17:45	44	0	3	0	104	16	0	0	0	83	36	0	286
Total Volume:	475	0	53	0	996	240	0	0	0	861	528	0	3153
Approach %	90%	0%	10%	0%	81%	19%	0%	0%	0%	62%	38%	0%	
Peak Hr Begin:	16:30												
PHV	239	0	30	0	513	118	0	0	0	496	305	0	1701
PHF	0.885			0.822			0.000			0.898			0.987

Prepared by City Count, LLC. (www.citycount.com)

Pedestrian/Bicycle Count Report

Location ID: 1
North/South: SR 99 SB On/Off Ramps
East/West: Lerdo Highway

Date: 12/11/19
City: Bakersfield, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

Prepared by City Count, LLC. (www.citycount.com)

Turning Movement Count Report AM

Location ID: 2
North/South: SR 99 NB On/Off Ramp
East/West: Lerdo Highway

Date: 12/11/19
City: Bakersfield, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:30	3	3	1	1	17	7	51	9	98	68	57	9	324
6:45	4	2	0	0	28	1	55	4	87	62	66	7	316
7:00	1	2	0	0	21	6	23	5	77	78	29	5	247
7:15	3	2	0	0	15	6	19	3	101	102	32	7	290
7:30	3	0	0	0	31	5	21	2	80	50	21	3	216
7:45	2	1	0	0	26	6	40	4	106	63	37	3	288
8:00	5	0	0	0	23	4	24	4	99	52	38	6	255
8:15	9	0	0	1	20	3	21	6	78	30	21	2	191
Total Volume:	30	10	1	2	181	38	254	37	726	505	301	42	2127
Approach %	73%	24%	2%	1%	82%	17%	25%	4%	71%	60%	35%	5%	
Peak Hr Begin:	6:30												
PHV	11	9	1	1	81	20	148	21	363	310	184	28	1177
PHF	0.750			0.879			0.842			0.926			0.908

Turning Movement Count Report PM

Location ID: 2
North/South: SR 99 NB On/Off Ramp
East/West: Lerdo Highway

Date: 12/11/19
City: Bakersfield, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	4	6	1	0	98	10	9	6	66	50	15	7	272
16:15	8	2	1	0	71	11	6	3	81	35	31	5	254
16:30	4	1	0	0	64	19	3	5	81	65	30	7	279
16:45	8	3	1	0	44	18	4	1	107	49	42	7	284
17:00	7	3	1	0	49	17	3	1	87	30	27	4	229
17:15	8	2	0	0	49	6	3	6	132	34	31	7	278
17:30	8	5	0	1	31	5	7	1	106	36	14	6	220
17:45	8	4	0	1	28	6	5	2	91	20	17	2	184
Total Volume:	55	26	4	2	434	92	40	25	751	319	207	45	2000
Approach %	65%	31%	5%	0%	82%	17%	5%	3%	92%	56%	36%	8%	
Peak Hr Begin:	16:00												
PHV	24	12	3	0	277	58	22	15	335	199	118	26	1089
PHF	0.813			0.775			0.830			0.841			0.959

Pedestrian/Bicycle Count Report

Location ID: 2
North/South: SR 99 NB On/Off Ramp
East/West: Lerdo Highway

Date: 12/11/19
City: Bakersfield, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

Turning Movement Count Report AM

Location ID: 3
North/South: SR 65
East/West: Lerdo Highway

Date: 12/11/19
City: Bakersfield, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:30	1	67	0	0	0	0	0	73	70	11	0	2	224
6:45	5	52	0	0	0	0	0	84	55	20	0	2	218
7:00	2	76	0	0	0	0	0	68	40	34	0	5	225
7:15	4	92	0	0	0	0	0	79	25	15	0	1	216
7:30	3	105	0	0	0	0	0	55	38	18	0	0	219
7:45	1	85	0	0	0	0	0	54	48	10	0	2	200
8:00	6	64	0	0	0	0	0	51	23	12	0	6	162
8:15	5	81	0	0	0	0	0	58	29	9	0	3	185
Total Volume:	27	622	0	0	0	0	0	522	328	129	0	21	1649
Approach %	4%	96%	0%	0%	0%	0%	0%	61%	39%	86%	0%	14%	
Peak Hr Begin:	6:30												
PHV	12	287	0	0	0	0	0	304	190	80	0	10	883
PHF	0.779			0.000			0.864			0.577			0.981

Turning Movement Count Report PM

Location ID: 3
North/South: SR 65
East/West: Lerdo Highway

Date: 12/11/19
City: Bakersfield, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	7	112	0	0	0	0	0	95	27	37	0	1	279
16:15	0	108	0	0	0	0	0	98	19	49	0	0	274
16:30	2	106	0	0	0	0	0	101	24	53	0	2	288
16:45	3	88	0	0	0	0	0	94	27	55	0	0	267
17:00	7	101	0	0	0	0	0	75	17	72	0	3	275
17:15	0	87	0	0	0	0	0	91	20	40	0	2	240
17:30	0	63	0	0	0	0	0	97	16	39	0	2	217
17:45	3	56	0	0	0	0	0	89	11	25	0	1	185
Total Volume:	22	721	0	0	0	0	0	740	161	370	0	11	2025
Approach %	3%	97%	0%	0%	0%	0%	0%	82%	18%	97%	0%	3%	
Peak Hr Begin:	16:00												
PHV	12	414	0	0	0	0	0	388	97	194	0	3	1108
PHF	0.895			0.000			0.970			0.895			0.962

Prepared by City Count, LLC. (www.citycount.com)

Pedestrian/Bicycle Count Report

Location ID: 3
North/South: SR 65
East/West: Lerdo Highway

Date: 12/11/19
City: Bakersfield, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

Prepared by City Count, LLC. (www.citycount.com)

Turning Movement Count Report AM

Location ID: 4
North/South: SR 65
East/West: James Road

Date: 12/11/19
City: Bakersfield, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:30	0	64	19	43	0	1	12	108	1	1	0	0	249
6:45	0	55	11	29	0	6	16	94	1	1	0	0	213
7:00	0	95	22	28	1	2	22	88	2	2	0	0	262
7:15	0	86	18	35	0	4	15	62	1	2	0	0	223
7:30	0	99	28	32	1	2	25	56	0	2	0	0	245
7:45	0	76	24	26	0	11	28	64	1	5	0	1	236
8:00	0	60	11	24	0	8	22	71	0	1	0	0	197
8:15	0	73	14	34	2	14	21	62	0	1	2	0	223
Total Volume:	0	608	147	251	4	48	161	605	6	15	2	1	1848
Approach %	0%	81%	19%	83%	1%	16%	21%	78%	1%	83%	11%	6%	
Peak Hr Begin:	7:00												
PHV	0	356	92	121	2	19	90	270	4	11	0	1	966
PHF	0.882			0.910			0.813			0.500			0.922

Turning Movement Count Report PM

Location ID: 4
North/South: SR 65
East/West: James Road

Date: 12/11/19
City: Bakersfield, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	1	97	55	33	0	11	11	98	1	1	1	0	309
16:15	1	106	55	25	1	6	8	85	6	2	1	0	296
16:30	0	105	60	27	0	13	6	101	3	1	1	0	317
16:45	0	80	59	18	0	8	10	100	0	3	1	0	279
17:00	1	91	68	17	0	17	5	79	0	1	0	0	279
17:15	0	90	56	18	1	7	2	92	0	1	0	0	267
17:30	0	59	37	21	1	4	3	99	2	1	0	0	227
17:45	0	62	28	8	1	5	4	94	1	1	0	0	204
Total Volume:	3	690	418	167	4	71	49	748	13	11	4	0	2178
Approach %	0%	62%	38%	69%	2%	29%	6%	92%	2%	73%	27%	0%	
Peak Hr Begin:	16:00												
PHV	2	388	229	103	1	38	35	384	10	7	4	0	1201
PHF	0.938			0.807			0.975			0.688			0.947

Prepared by City Count, LLC. (www.citycount.com)

Pedestrian/Bicycle Count Report

Location ID: 4
North/South: SR 65
East/West: James Road

Date: 12/11/19
City: Bakersfield, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

Turning Movement Count Report AM

Location ID: 5
North/South: Quinn Road
East/West: 7th Standard Road/Merle Haggard Drive

Date: 11/13/19
City: Bakersfield, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:30	21	0	22	14	123	0	13	47	92	64	165	39	600
6:45	12	0	7	16	141	0	20	42	78	62	170	80	628
7:00	14	0	9	12	150	0	19	16	62	94	147	46	569
7:15	24	0	11	10	132	0	18	16	67	96	194	48	616
7:30	14	0	17	6	156	0	23	10	76	91	170	23	586
7:45	29	0	10	16	136	0	21	25	89	72	212	60	670
8:00	24	0	7	14	107	0	20	14	63	58	201	37	545
8:15	25	0	10	11	122	0	22	17	48	36	122	29	442
Total Volume:	163	0	93	99	1067	0	156	187	575	573	1381	362	4656
Approach %	64%	0%	36%	8%	92%	0%	17%	20%	63%	25%	60%	16%	
Peak Hr Begin:	7:00												
PHV	81	0	47	44	574	0	81	67	294	353	723	177	2441
PHF	0.821			0.954			0.819			0.911			0.911

Prepared by City Count, LLC. (www.citycount.com)

Turning Movement Count Report PM

Location ID: 5
North/South: Quinn Road
East/West: 7th Standard Road/Merle Haggard Drive

Date: 11/13/19
City: Bakersfield, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	59	0	35	10	213	0	13	13	120	32	167	22	684
16:15	41	0	27	7	195	0	11	18	73	57	173	22	624
16:30	40	0	28	4	200	0	13	5	74	35	190	14	603
16:45	44	0	17	4	218	0	16	8	68	56	184	12	627
17:00	84	0	34	4	177	0	16	11	83	59	172	15	655
17:15	14	0	14	3	187	0	14	13	67	54	192	14	572
17:30	30	0	9	5	171	0	15	11	53	72	173	27	566
17:45	19	0	11	4	164	0	19	7	61	53	119	22	479
Total Volume:	331	0	175	41	1525	0	117	86	599	418	1370	148	4810
Approach %	65%	0%	35%	3%	97%	0%	15%	11%	75%	22%	71%	8%	
Peak Hr Begin:	16:00												
PHV	184	0	107	25	826	0	53	44	335	180	714	70	2538
PHF	0.774			0.954			0.740			0.956			0.928

Prepared by City Count, LLC. (www.citycount.com)

Pedestrian/Bicycle Count Report

Location ID: 5
North/South: Quinn Road
East/West: 7th Standard Road/Merle Haggard Drive
Date: 11/13/19
City: Bakersfield, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	2	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	2	0	0	0	0	0

Turning Movement Count Report AM

Location ID: 1
North/South: SR 65
East/West: Imperial Street

Date: 11/13/19
City: Bakersfield, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:30	0	52	0	0	0	0	0	152	0	1	0	5	210
6:45	0	115	1	0	0	1	0	140	4	4	0	5	270
7:00	1	141	0	0	0	0	0	106	3	2	0	0	253
7:15	4	175	0	0	0	0	0	92	4	3	0	2	280
7:30	1	134	0	0	0	0	0	116	3	0	0	1	255
7:45	2	138	0	0	0	0	0	97	2	0	0	3	242
8:00	2	106	0	0	0	0	0	111	1	2	0	2	224
8:15	0	87	0	0	0	0	0	95	0	2	0	3	187
Total Volume:	10	948	1	0	0	1	0	909	17	14	0	21	1921
Approach %	1%	99%	0%	0%	0%	100%	0%	98%	2%	40%	0%	60%	

Peak Hr Begin:	6:45												
PHV	6	565	1	0	0	1	0	454	14	9	0	8	1058
PHF	0.799			0.250			0.813			0.472			0.945

Turning Movement Count Report PM

Location ID: 1
North/South: SR 65
East/West: Imperial Street

Date: 11/13/19
City: Bakersfield, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	2	130	0	0	0	0	0	98	1	6	0	3	240
16:15	0	117	0	0	0	0	0	94	3	6	0	0	220
16:30	0	110	0	0	0	0	0	106	0	1	0	0	217
16:45	1	89	0	0	0	0	0	109	0	0	0	0	199
17:00	0	90	0	0	0	1	1	85	0	1	0	1	179
17:15	0	81	0	0	0	0	0	92	0	3	0	0	176
17:30	0	101	0	0	0	0	0	89	0	2	0	1	193
17:45	0	64	0	0	0	0	0	73	1	1	0	0	139
Total Volume:	3	782	0	0	0	1	1	746	5	20	0	5	1563
Approach %	0%	100%	0%	0%	0%	100%	0%	99%	1%	80%	0%	20%	
Peak Hr Begin:	16:00												
PHV	3	446	0	0	0	0	0	407	4	13	0	3	876
PHF	0.850			0.000			0.943			0.444			0.913

Pedestrian/Bicycle Count Report

Location ID: 1
North/South: SR 65
East/West: Imperial Street

Date: 11/13/19
City: Bakersfield, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	0	0	0	0	0	0
7:45	0	0	0	0	0	0	0	0
8:00	0	0	0	0	0	0	0	0
8:15	0	0	0	0	0	0	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	0	0	0	0	0	0	0	0
16:30	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

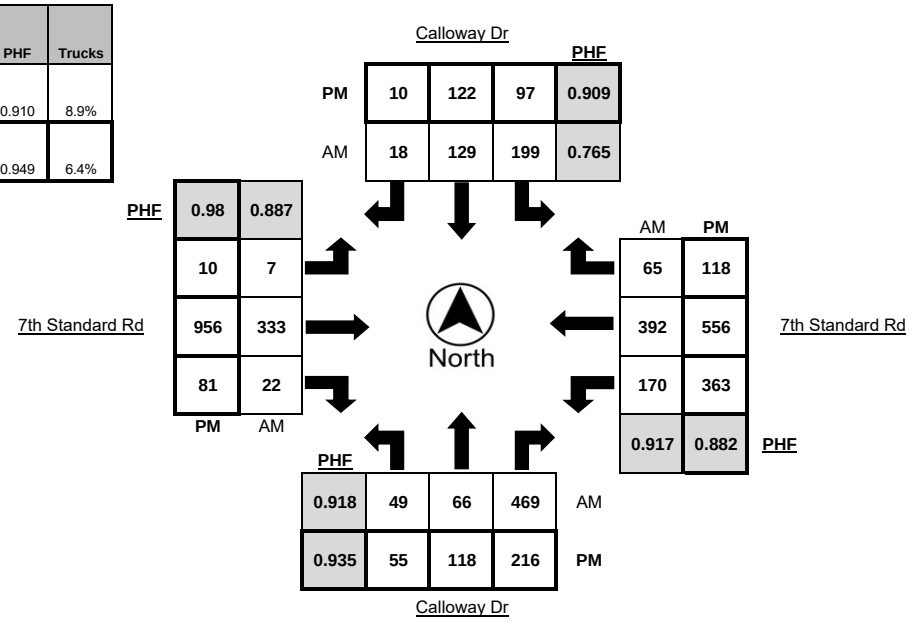
LOCATION 7th Standard Rd @ Calloway Dr
LATITUDE 35.4414
COUNTY Kern
LONGITUDE -119.1099
COLLECTION DATE Tuesday, March 23, 2021
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
5:00 AM - 5:15 AM	6	1	52	1	13	4	4	0	0	36	0	10	6	120	3	9
5:15 AM - 5:30 AM	11	0	55	1	16	3	3	0	0	26	1	4	4	158	2	15
5:30 AM - 5:45 AM	11	0	52	0	24	7	4	0	0	50	0	9	15	194	0	10
5:45 AM - 6:00 AM	12	1	65	1	17	1	3	0	1	57	2	11	10	222	0	5
6:00 AM - 6:15 AM	8	4	55	2	17	4	2	0	0	181	6	14	14	185	10	7
6:15 AM - 6:30 AM	12	7	82	2	20	8	5	0	3	197	2	19	19	129	15	8
6:30 AM - 6:45 AM	14	6	113	0	34	12	5	0	0	86	4	18	28	117	23	14
6:45 AM - 7:00 AM	16	5	124	2	28	17	2	0	0	93	5	18	28	143	25	21
7:00 AM - 7:15 AM	15	11	104	3	36	16	5	3	3	86	3	13	25	81	17	21
7:15 AM - 7:30 AM	20	14	125	4	42	31	7	1	3	91	4	17	41	91	11	23
7:30 AM - 7:45 AM	15	14	127	3	68	40	5	5	0	81	6	17	49	104	18	24
7:45 AM - 8:00 AM	4	16	117	3	56	44	5	2	3	92	7	22	45	100	14	16
8:00 AM - 8:15 AM	10	22	100	1	33	14	1	0	1	69	5	17	35	97	22	16
8:15 AM - 8:30 AM	16	13	83	3	23	13	2	1	1	72	4	15	38	77	11	23
8:30 AM - 8:45 AM	11	9	62	1	28	20	3	1	0	80	7	26	52	99	13	17
8:45 AM - 9:00 AM	12	19	63	2	22	15	0	3	1	72	4	19	34	69	13	21
TOTAL	**193**	**142**	**1379**	**29**	**477**	**249**	**56**	**16**	**16**	**1369**	**60**	**249**	**443**	**1986**	**197**	**250**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
3:00 PM - 3:15 PM	13	28	46	1	20	39	0	2	3	252	12	23	57	162	26	15
3:15 PM - 3:30 PM	13	25	56	0	30	27	5	0	2	234	26	19	102	159	33	14
3:30 PM - 3:45 PM	19	29	56	1	32	27	4	2	3	236	17	26	108	142	35	24
3:45 PM - 4:00 PM	10	36	58	3	15	29	1	0	2	234	26	29	96	93	24	13
4:00 PM - 4:15 PM	10	25	53	0	21	22	4	0	1	140	13	11	130	136	27	17
4:15 PM - 4:30 PM	15	20	45	2	26	24	2	1	1	123	23	18	127	104	31	11
4:30 PM - 4:45 PM	10	19	55	2	21	22	0	1	1	248	24	20	105	97	27	16
4:45 PM - 5:00 PM	13	17	51	1	14	37	2	0	4	131	28	13	114	75	17	15
5:00 PM - 5:15 PM	18	40	45	2	33	20	0	0	4	136	15	13	130	92	39	15
5:15 PM - 5:30 PM	20	34	55	1	32	25	5	0	6	117	24	15	129	91	31	14
5:30 PM - 5:45 PM	14	27	53	1	18	18	5	0	2	115	17	13	116	65	38	15
5:45 PM - 6:00 PM	14	30	50	3	17	26	3	1	0	100	18	21	95	77	31	12
6:00 PM - 6:15 PM	8	24	56	0	13	23	1	0	2	52	8	9	95	53	24	12
6:15 PM - 6:30 PM	15	22	55	1	7	12	2	0	1	73	10	16	63	70	24	14
6:30 PM - 6:45 PM	11	23	47	1	17	14	4	0	1	55	9	12	61	37	19	10
6:45 PM - 7:00 PM	5	29	40	0	14	17	2	1	0	49	5	12	49	39	23	9
TOTAL	**208**	**428**	**821**	**19**	**330**	**382**	**40**	**8**	**33**	**2295**	**275**	**270**	**1577**	**1492**	**449**	**226**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	49	66	469	11	199	129	18	8	7	333	22	73	170	392	65	79
3:00 PM - 4:00 PM	55	118	216	5	97	122	10	4	10	956	81	97	363	556	118	66

	PHF	Trucks
AM	0.910	8.9%
PM	0.949	6.4%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
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Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

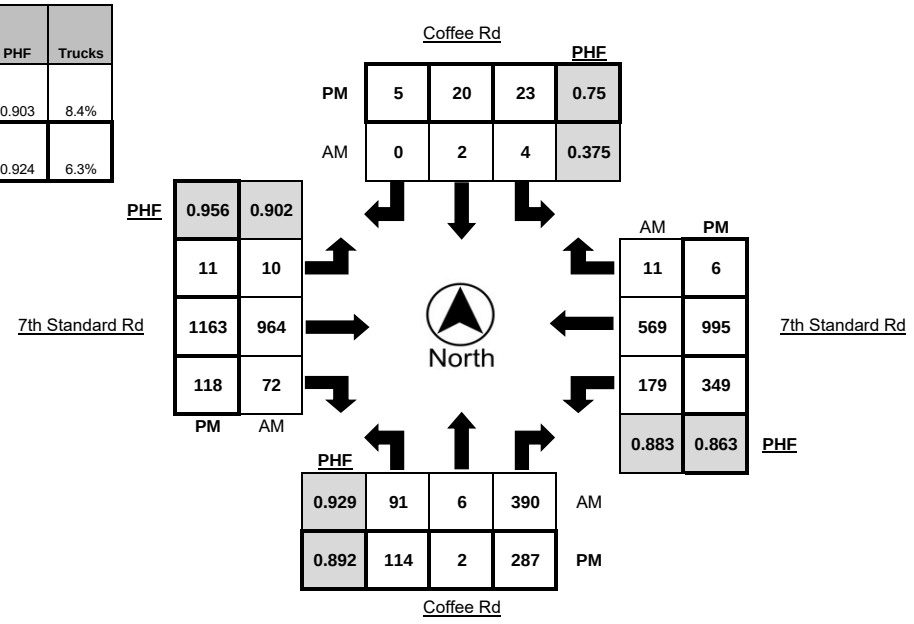
LOCATION Coffee Rd @ 7th Standard Rd
LATITUDE 35.4413
COUNTY Kern
LONGITUDE -119.0922
COLLECTION DATE Tuesday, March 23, 2021
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
5:00 AM - 5:15 AM	13	1	37	3	0	0	6	0	0	90	3	10	8	114	0	14
5:15 AM - 5:30 AM	15	1	40	6	3	0	5	4	0	94	1	6	6	138	1	12
5:30 AM - 5:45 AM	26	0	48	2	1	0	1	1	0	118	6	8	16	205	4	9
5:45 AM - 6:00 AM	21	2	53	5	1	0	0	0	1	135	8	11	18	215	3	8
6:00 AM - 6:15 AM	14	0	70	1	3	0	2	3	0	216	13	12	11	201	2	5
6:15 AM - 6:30 AM	16	2	74	2	0	0	0	0	0	304	14	22	22	152	0	5
6:30 AM - 6:45 AM	10	2	77	4	0	0	0	0	2	221	9	19	35	178	1	15
6:45 AM - 7:00 AM	26	1	114	0	1	0	0	0	4	261	9	22	23	180	3	20
7:00 AM - 7:15 AM	10	3	99	4	1	0	0	0	2	202	9	17	29	105	5	24
7:15 AM - 7:30 AM	23	2	88	4	2	0	0	0	3	251	11	20	36	132	2	21
7:30 AM - 7:45 AM	23	0	108	7	0	0	0	0	2	270	18	21	58	152	5	31
7:45 AM - 8:00 AM	23	3	93	3	0	0	0	0	1	250	29	28	51	143	2	17
8:00 AM - 8:15 AM	22	1	101	3	2	2	0	0	4	193	14	15	34	142	2	24
8:15 AM - 8:30 AM	10	1	85	5	0	2	0	0	1	168	10	16	43	114	7	26
8:30 AM - 8:45 AM	17	1	68	5	3	0	1	1	4	156	13	26	56	133	5	16
8:45 AM - 9:00 AM	10	1	75	6	4	0	1	0	0	154	9	27	50	112	3	23
TOTAL	**279**	**21**	**1230**	**60**	**21**	**4**	**16**	**9**	**24**	**3083**	**176**	**280**	**496**	**2416**	**45**	**270**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
3:00 PM - 3:15 PM	39	0	74	5	8	6	2	1	7	257	25	28	80	226	3	21
3:15 PM - 3:30 PM	27	1	73	2	2	3	2	0	1	300	37	19	87	304	0	18
3:30 PM - 3:45 PM	29	0	68	2	9	7	0	2	0	299	32	28	77	247	2	22
3:45 PM - 4:00 PM	19	1	72	1	4	4	1	1	3	307	24	29	105	218	1	17
4:00 PM - 4:15 PM	25	0	68	2	4	6	1	1	0	180	28	13	116	293	3	18
4:15 PM - 4:30 PM	28	1	48	1	2	2	0	0	0	190	23	22	83	233	0	16
4:30 PM - 4:45 PM	21	1	77	2	1	0	3	0	0	275	23	15	110	213	0	20
4:45 PM - 5:00 PM	26	0	67	2	3	1	3	0	1	176	26	16	96	186	2	14
5:00 PM - 5:15 PM	29	0	68	1	5	1	4	0	2	216	15	17	119	259	2	13
5:15 PM - 5:30 PM	27	0	77	2	5	4	3	0	5	196	21	14	95	241	0	18
5:30 PM - 5:45 PM	22	0	79	0	1	1	0	0	1	167	22	12	71	188	1	16
5:45 PM - 6:00 PM	27	0	75	0	4	1	2	0	0	138	23	25	96	185	0	12
6:00 PM - 6:15 PM	29	2	57	3	0	1	0	0	1	115	8	10	78	160	2	11
6:15 PM - 6:30 PM	19	0	57	1	1	1	1	0	1	126	14	16	59	120	0	16
6:30 PM - 6:45 PM	16	0	44	1	1	1	0	0	1	103	16	13	52	112	2	12
6:45 PM - 7:00 PM	14	0	46	1	2	1	0	1	2	99	5	12	48	94	0	14
TOTAL	**397**	**6**	**1050**	**26**	**52**	**40**	**22**	**6**	**25**	**3144**	**342**	**289**	**1372**	**3279**	**18**	**258**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	91	6	390	17	4	2	0	0	10	964	72	84	179	569	11	93
3:00 PM - 4:00 PM	114	2	287	10	23	20	5	4	11	1163	118	104	349	995	6	78

	PHF	Trucks
AM	0.903	8.4%
PM	0.924	6.3%



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Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

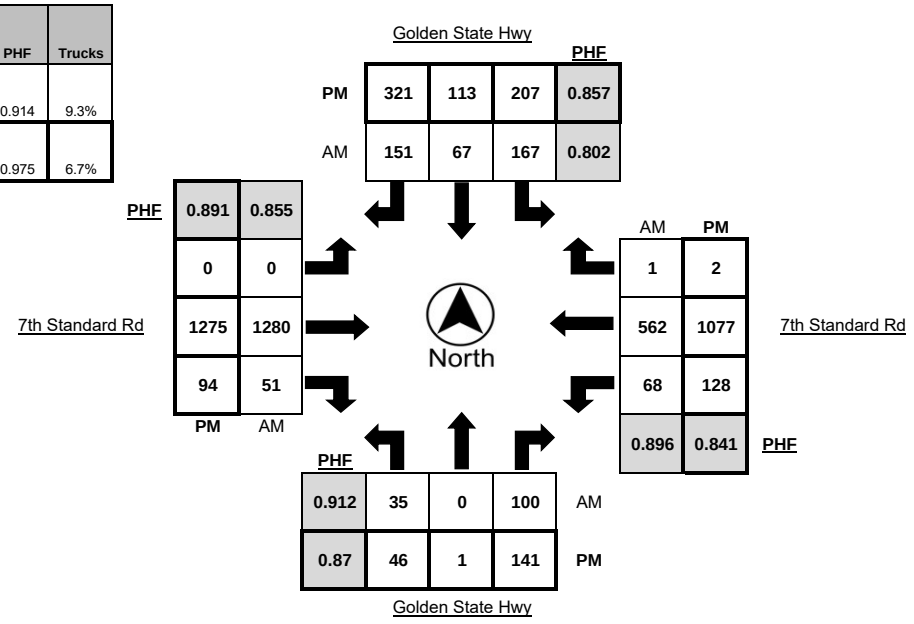
LOCATION 7th Standard Rd @ Golden State Hwy
LATITUDE 35.4411
COUNTY Kern
LONGITUDE -119.0866
COLLECTION DATE Tuesday, March 23, 2021
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
5:00 AM - 5:15 AM	6	0	13	0	15	2	6	3	0	128	3	9	2	115	0	25
5:15 AM - 5:30 AM	13	0	7	2	15	1	5	3	0	137	1	9	3	127	0	22
5:30 AM - 5:45 AM	20	0	8	2	22	1	12	1	0	171	3	1	7	180	0	14
5:45 AM - 6:00 AM	12	0	12	0	33	5	12	2	0	201	6	16	5	221	0	17
6:00 AM - 6:15 AM	20	0	15	2	24	3	8	1	1	281	7	11	4	188	0	9
6:15 AM - 6:30 AM	9	0	8	5	25	7	25	2	0	396	9	20	5	142	1	16
6:30 AM - 6:45 AM	8	0	14	1	34	10	30	3	0	281	8	19	4	160	0	24
6:45 AM - 7:00 AM	15	0	22	3	46	10	22	5	1	361	17	16	14	157	2	25
7:00 AM - 7:15 AM	3	0	26	5	23	6	22	4	0	268	12	20	17	104	0	25
7:15 AM - 7:30 AM	13	0	24	3	30	19	33	10	0	314	8	21	17	115	0	24
7:30 AM - 7:45 AM	8	0	23	4	39	15	44	10	0	372	17	19	10	147	0	23
7:45 AM - 8:00 AM	10	0	27	6	50	25	45	12	0	329	17	23	25	150	1	23
8:00 AM - 8:15 AM	4	0	26	5	48	8	29	5	0	265	9	19	16	150	0	23
8:15 AM - 8:30 AM	4	0	47	5	42	7	32	8	1	221	8	17	19	136	0	24
8:30 AM - 8:45 AM	8	0	28	6	36	2	35	9	1	215	12	23	16	151	0	14
8:45 AM - 9:00 AM	5	0	30	5	42	4	27	5	0	208	6	29	14	125	0	22
TOTAL	**158**	**0**	**330**	**54**	**524**	**125**	**387**	**83**	**4**	**4148**	**143**	**272**	**178**	**2368**	**4**	**330**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
3:00 PM - 3:15 PM	13	0	21	1	33	12	50	6	0	333	24	22	40	275	0	26
3:15 PM - 3:30 PM	13	0	32	5	38	25	75	11	0	360	24	14	25	280	1	18
3:30 PM - 3:45 PM	8	0	29	3	57	24	68	16	0	348	29	30	28	266	0	23
3:45 PM - 4:00 PM	14	1	37	2	57	37	93	12	0	346	20	22	32	215	1	19
4:00 PM - 4:15 PM	11	0	43	6	55	27	85	11	0	221	21	16	43	316	0	19
4:15 PM - 4:30 PM	8	0	44	5	51	35	81	6	0	239	21	17	37	249	0	19
4:30 PM - 4:45 PM	9	0	30	4	57	29	80	8	0	301	24	14	27	211	0	17
4:45 PM - 5:00 PM	3	0	39	2	48	31	88	5	0	230	19	20	24	223	0	16
5:00 PM - 5:15 PM	15	0	36	2	55	24	75	6	0	247	19	13	42	261	1	16
5:15 PM - 5:30 PM	11	0	21	3	55	27	80	13	0	264	15	12	30	259	1	22
5:30 PM - 5:45 PM	3	0	27	0	55	17	54	3	0	216	25	10	20	217	0	19
5:45 PM - 6:00 PM	5	0	20	6	38	17	69	8	0	189	10	24	23	198	0	10
6:00 PM - 6:15 PM	4	0	19	3	30	7	47	6	1	153	7	11	19	193	1	14
6:15 PM - 6:30 PM	5	0	11	3	30	6	45	9	0	171	7	10	16	122	0	15
6:30 PM - 6:45 PM	1	0	11	0	22	7	43	7	0	132	8	13	15	130	0	14
6:45 PM - 7:00 PM	3	0	13	1	15	6	30	4	0	141	14	8	7	104	0	12
TOTAL	**126**	**1**	**433**	**46**	**696**	**331**	**1063**	**131**	**1**	**3891**	**287**	**256**	**428**	**3519**	**5**	**279**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	35	0	100	18	167	67	151	37	0	1280	51	82	68	562	1	93
3:15 PM - 4:15 PM	46	1	141	16	207	113	321	50	0	1275	94	82	128	1077	2	79

	PHF	Trucks
AM	0.914	9.3%
PM	0.975	6.7%



Metro Traffic Data Inc.
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www.metrotrafficdata.com

Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

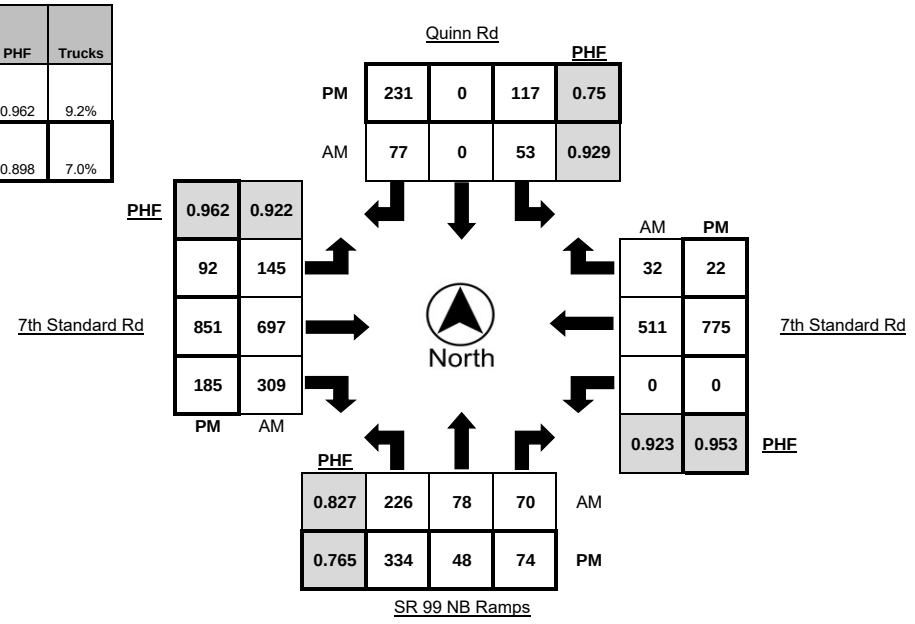
LOCATION 7th Standard Rd @ Quinn Rd / SR 99 NB Offramp
LATITUDE 35.4414
COUNTY Kern
LONGITUDE -119.0818
COLLECTION DATE Tuesday, March 23, 2021
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
5:00 AM - 5:15 AM	52	23	8	15	4	0	14	4	10	61	44	6	0	83	3	9
5:15 AM - 5:30 AM	75	13	8	15	2	0	12	4	22	72	43	12	0	88	3	11
5:30 AM - 5:45 AM	124	25	6	8	4	0	14	3	24	86	38	7	0	112	3	13
5:45 AM - 6:00 AM	150	45	10	9	8	0	10	0	35	111	38	10	0	105	5	9
6:00 AM - 6:15 AM	123	18	8	7	5	0	12	2	30	124	54	9	0	106	3	6
6:15 AM - 6:30 AM	82	29	13	13	5	0	13	0	40	115	68	18	0	102	11	5
6:30 AM - 6:45 AM	91	34	13	8	9	0	16	7	40	156	59	12	0	129	12	14
6:45 AM - 7:00 AM	84	44	14	13	6	0	13	8	82	172	82	13	0	109	21	19
7:00 AM - 7:15 AM	52	22	9	13	9	0	22	7	32	141	70	14	0	92	10	11
7:15 AM - 7:30 AM	44	22	17	9	10	0	21	6	33	151	91	15	0	133	12	17
7:30 AM - 7:45 AM	57	10	21	12	15	0	20	5	32	166	84	16	0	128	4	17
7:45 AM - 8:00 AM	61	34	18	20	13	0	16	0	38	174	70	22	0	139	8	15
8:00 AM - 8:15 AM	64	12	14	12	15	0	20	2	42	206	64	17	0	111	8	17
8:15 AM - 8:30 AM	60	12	16	17	11	0	19	0	32	189	32	13	0	98	8	13
8:30 AM - 8:45 AM	56	10	10	13	18	0	25	8	20	154	37	18	0	119	8	9
8:45 AM - 9:00 AM	43	12	18	12	10	0	15	1	22	156	40	17	0	132	17	11
TOTAL	**1218**	**365**	**203**	**196**	**144**	**0**	**262**	**57**	**534**	**2234**	**914**	**219**	**0**	**1786**	**136**	**196**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
3:00 PM - 3:15 PM	135	18	16	24	21	0	34	8	29	155	47	17	0	172	8	8
3:15 PM - 3:30 PM	118	13	23	13	16	0	42	2	31	163	58	12	0	166	8	7
3:30 PM - 3:45 PM	68	12	12	14	34	0	59	8	35	210	42	18	0	198	8	15
3:45 PM - 4:00 PM	71	13	18	18	22	0	50	1	22	217	54	14	0	176	6	11
4:00 PM - 4:15 PM	112	13	24	15	37	0	79	1	23	215	48	16	0	206	3	4
4:15 PM - 4:30 PM	83	10	20	19	24	0	43	4	12	209	41	20	0	195	5	12
4:30 PM - 4:45 PM	68	10	14	13	33	0	54	4	23	209	50	13	0	184	6	10
4:45 PM - 5:00 PM	66	10	18	14	21	0	25	5	20	191	41	11	0	159	2	9
5:00 PM - 5:15 PM	65	3	20	12	42	0	83	2	22	200	47	14	0	212	2	4
5:15 PM - 5:30 PM	83	7	10	13	10	0	30	2	13	176	66	17	0	213	2	13
5:30 PM - 5:45 PM	72	13	18	16	11	0	26	2	9	185	50	7	0	157	4	7
5:45 PM - 6:00 PM	50	8	13	12	9	0	28	2	16	151	45	12	0	201	5	6
6:00 PM - 6:15 PM	52	3	15	12	19	0	24	2	9	129	43	7	0	166	5	1
6:15 PM - 6:30 PM	40	3	4	10	11	0	9	1	11	96	45	11	0	110	4	6
6:30 PM - 6:45 PM	43	6	6	8	5	0	14	0	3	107	38	12	0	106	8	2
6:45 PM - 7:00 PM	49	3	13	11	8	0	5	0	5	102	27	4	0	78	6	4
TOTAL	**1175**	**145**	**244**	**224**	**323**	**0**	**605**	**44**	**283**	**2715**	**742**	**205**	**0**	**2699**	**82**	**119**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:15 AM - 8:15 AM	226	78	70	53	53	0	77	13	145	697	309	70	0	511	32	66
3:30 PM - 4:30 PM	334	48	74	66	117	0	231	14	92	851	185	68	0	775	22	42

	PHF	Trucks
AM	0.962	9.2%
PM	0.898	7.0%



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Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

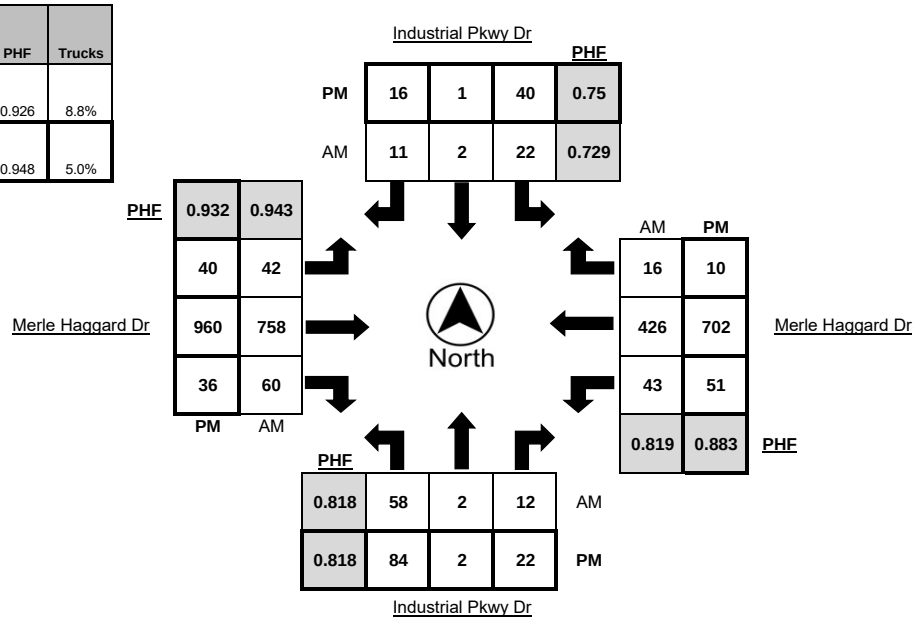
LOCATION Merle Haggard Dr @ Industry Pkwy Dr
LATITUDE 35.4414
COUNTY Kern
LONGITUDE -119.0787
COLLECTION DATE Tuesday, March 23, 2021
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
5:00 AM - 5:15 AM	6	0	1	1	0	0	0	0	5	71	1	8	0	84	0	11
5:15 AM - 5:30 AM	5	0	0	1	2	0	0	0	2	79	0	8	3	89	0	12
5:30 AM - 5:45 AM	6	1	1	0	1	0	0	0	4	87	0	7	4	113	0	14
5:45 AM - 6:00 AM	3	0	1	0	4	0	1	2	4	122	3	4	5	97	1	9
6:00 AM - 6:15 AM	3	0	0	0	2	0	0	0	9	133	4	13	8	102	1	8
6:15 AM - 6:30 AM	11	0	1	0	1	1	0	1	12	123	3	14	10	108	4	5
6:30 AM - 6:45 AM	11	1	1	3	2	0	1	0	15	179	3	11	5	118	3	12
6:45 AM - 7:00 AM	15	1	5	1	1	0	2	1	21	158	10	9	6	118	9	21
7:00 AM - 7:15 AM	9	1	3	1	1	0	2	0	8	148	8	15	8	89	4	10
7:15 AM - 7:30 AM	19	0	2	1	8	0	3	1	6	147	18	19	8	119	7	15
7:30 AM - 7:45 AM	18	0	4	0	5	0	1	1	8	175	11	14	9	121	3	13
7:45 AM - 8:00 AM	13	1	2	1	6	1	3	0	12	182	24	19	16	125	7	18
8:00 AM - 8:15 AM	13	0	3	2	4	0	3	0	10	197	13	17	6	87	4	18
8:15 AM - 8:30 AM	14	1	3	3	7	1	4	1	12	204	12	11	12	93	2	10
8:30 AM - 8:45 AM	6	3	3	0	4	0	4	1	10	151	11	12	19	113	4	10
8:45 AM - 9:00 AM	10	1	4	1	4	1	1	0	10	156	10	14	13	124	6	12
TOTAL	**162**	**10**	**34**	**15**	**52**	**4**	**25**	**8**	**148**	**2312**	**131**	**195**	**132**	**1700**	**55**	**198**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
3:00 PM - 3:15 PM	17	2	5	5	6	0	2	1	13	170	5	11	11	157	3	6
3:15 PM - 3:30 PM	18	1	6	1	9	0	0	0	14	194	8	12	11	149	1	7
3:30 PM - 3:45 PM	26	0	7	1	14	0	5	1	9	226	11	15	14	200	2	15
3:45 PM - 4:00 PM	20	1	3	4	5	1	2	0	11	241	6	10	12	154	2	10
4:00 PM - 4:15 PM	17	1	5	0	14	0	3	1	10	252	16	9	12	182	6	6
4:15 PM - 4:30 PM	21	0	7	3	7	0	6	0	10	241	3	13	13	166	0	11
4:30 PM - 4:45 PM	15	0	6	3	11	0	3	0	14	247	4	12	10	158	4	10
4:45 PM - 5:00 PM	16	0	2	1	5	0	5	0	16	221	3	11	12	137	3	8
5:00 PM - 5:15 PM	22	0	7	4	12	1	6	0	17	238	6	10	12	173	4	5
5:15 PM - 5:30 PM	19	0	7	0	2	0	2	0	7	194	9	10	18	180	0	12
5:30 PM - 5:45 PM	24	0	9	2	7	1	0	0	8	197	8	7	11	141	2	7
5:45 PM - 6:00 PM	19	0	5	2	6	0	2	0	14	164	3	9	21	168	5	6
6:00 PM - 6:15 PM	17	0	3	0	6	1	1	0	10	173	1	6	12	162	1	1
6:15 PM - 6:30 PM	10	0	4	1	4	0	5	3	11	114	4	8	14	80	2	3
6:30 PM - 6:45 PM	14	0	3	2	4	0	0	0	10	114	1	11	4	93	1	6
6:45 PM - 7:00 PM	11	0	1	2	2	0	1	1	8	112	0	0	8	74	0	6
TOTAL	**286**	**5**	**80**	**31**	**114**	**4**	**43**	**7**	**182**	**3098**	**88**	**154**	**195**	**2374**	**36**	**119**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:30 AM - 8:30 AM	58	2	12	6	22	2	11	2	42	758	60	61	43	426	16	59
3:30 PM - 4:30 PM	84	2	22	8	40	1	16	2	40	960	36	47	51	702	10	42

	PHF	Trucks
AM	0.926	8.8%
PM	0.948	5.0%



Metro Traffic Data Inc.
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Hanford, CA 93230

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Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

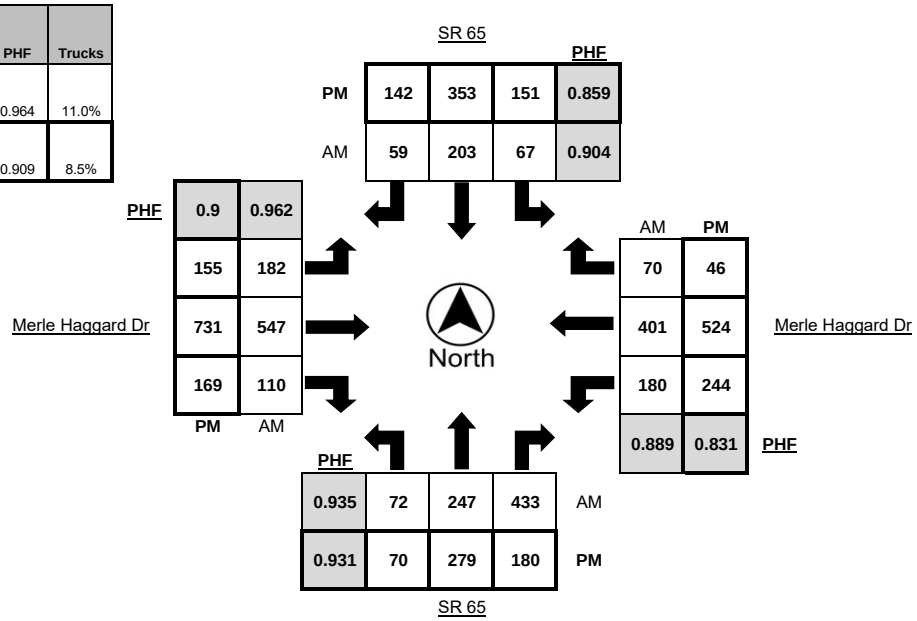
LOCATION SR 65 @ Merle Haggard Dr
LATITUDE 35.4414
COUNTY Kern
LONGITUDE -119.0747
COLLECTION DATE Tuesday, March 23, 2021
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
5:00 AM - 5:15 AM	12	50	40	14	7	23	9	18	23	39	7	7	19	64	8	13
5:15 AM - 5:30 AM	7	47	36	17	5	19	3	5	24	57	5	8	20	75	13	22
5:30 AM - 5:45 AM	12	73	45	17	10	40	14	14	30	65	10	5	23	84	13	17
5:45 AM - 6:00 AM	12	104	73	15	3	23	10	12	37	83	6	5	25	85	29	16
6:00 AM - 6:15 AM	12	117	53	16	16	59	12	22	51	82	17	13	30	83	12	10
6:15 AM - 6:30 AM	14	127	47	14	11	45	10	15	45	70	10	12	23	88	15	8
6:30 AM - 6:45 AM	24	124	64	13	12	62	11	19	63	92	23	10	47	92	26	18
6:45 AM - 7:00 AM	9	91	86	20	10	61	20	22	68	108	16	15	39	101	18	19
7:00 AM - 7:15 AM	20	102	54	28	17	48	15	13	48	85	18	15	39	77	12	18
7:15 AM - 7:30 AM	28	85	61	14	21	76	20	22	55	111	21	17	37	99	23	18
7:30 AM - 7:45 AM	14	91	68	27	11	70	12	22	52	113	23	19	32	106	18	12
7:45 AM - 8:00 AM	22	78	94	22	14	48	17	17	51	136	31	21	38	121	17	20
8:00 AM - 8:15 AM	14	72	115	26	14	57	15	24	46	144	23	17	46	77	20	19
8:15 AM - 8:30 AM	17	60	96	17	20	38	15	16	40	135	33	6	37	90	22	14
8:30 AM - 8:45 AM	19	37	128	13	19	60	12	23	45	132	23	14	59	113	11	14
8:45 AM - 9:00 AM	33	44	112	17	22	60	24	21	29	140	28	16	51	104	16	16
TOTAL	**269**	**1302**	**1172**	**290**	**212**	**789**	**219**	**285**	**707**	**1592**	**294**	**200**	**565**	**1459**	**273**	**254**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
3:00 PM - 3:15 PM	20	46	43	17	38	70	35	17	39	139	36	15	68	123	13	7
3:15 PM - 3:30 PM	17	80	44	31	19	69	32	17	38	140	44	9	57	115	12	12
3:30 PM - 3:45 PM	18	69	40	16	35	105	32	24	40	210	43	17	73	161	11	18
3:45 PM - 4:00 PM	19	75	48	27	39	84	43	14	28	191	43	12	48	118	11	11
4:00 PM - 4:15 PM	16	55	48	18	58	95	35	14	49	190	39	9	66	130	12	10
4:15 PM - 4:30 PM	16	39	35	10	29	56	41	15	47	187	41	13	40	119	10	12
4:30 PM - 4:45 PM	12	63	47	23	31	101	32	19	48	184	44	18	63	113	8	10
4:45 PM - 5:00 PM	13	62	61	18	40	72	26	14	31	192	28	13	40	116	10	8
5:00 PM - 5:15 PM	9	52	61	14	28	90	21	15	39	166	47	10	119	157	11	7
5:15 PM - 5:30 PM	25	44	67	10	23	72	28	14	31	184	22	13	60	142	7	15
5:30 PM - 5:45 PM	7	55	92	16	21	50	19	9	44	179	27	6	96	163	9	8
5:45 PM - 6:00 PM	19	39	88	14	25	60	39	13	31	120	27	12	97	109	7	10
6:00 PM - 6:15 PM	10	36	60	11	17	52	20	7	29	142	35	4	91	129	13	9
6:15 PM - 6:30 PM	7	42	39	14	15	45	16	13	34	94	28	8	37	74	9	9
6:30 PM - 6:45 PM	10	39	31	11	10	54	16	13	31	82	13	11	29	72	8	6
6:45 PM - 7:00 PM	11	35	22	14	10	36	8	5	30	80	11	3	30	62	7	13
TOTAL	**229**	**831**	**826**	**264**	**438**	**1111**	**443**	**223**	**589**	**2480**	**528**	**173**	**1014**	**1903**	**158**	**165**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
7:45 AM - 8:45 AM	72	247	433	78	67	203	59	80	182	547	110	58	180	401	70	67
3:15 PM - 4:15 PM	70	279	180	92	151	353	142	69	155	731	169	47	244	524	46	51

	PHF	Trucks
AM	0.964	11.0%
PM	0.909	8.5%



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Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

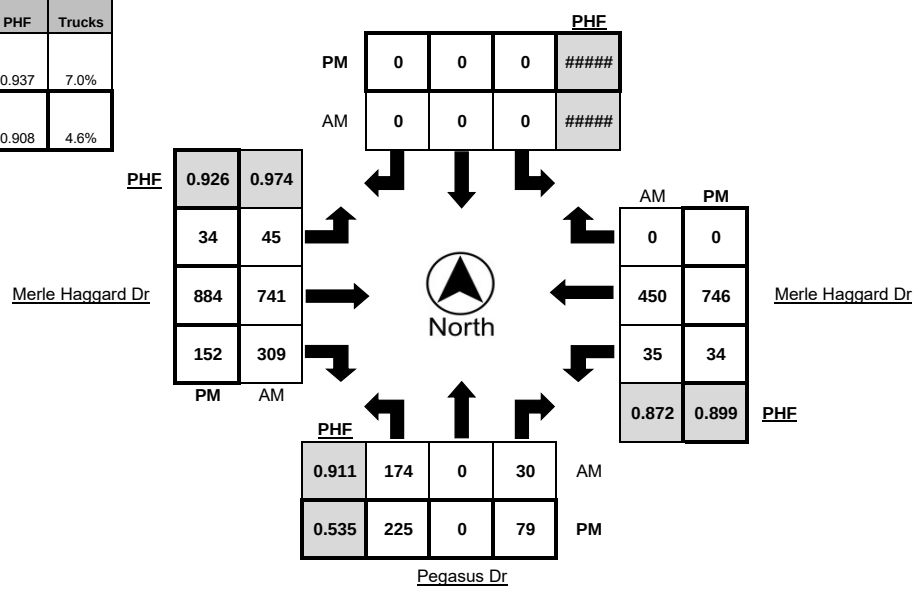
LOCATION Merle Haggard Dr @ Pegasus Dr
LATITUDE 35.4413
COUNTY Kern
LONGITUDE -119.0728
COLLECTION DATE Tuesday, March 23, 2021
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
5:00 AM - 5:15 AM	18	0	3	10	0	0	0	0	4	53	24	14	4	83	0	7
5:15 AM - 5:30 AM	17	0	1	8	0	0	0	0	6	54	41	8	2	91	0	11
5:30 AM - 5:45 AM	22	0	3	7	0	0	0	0	15	66	38	8	4	104	0	7
5:45 AM - 6:00 AM	29	0	2	10	0	0	0	0	10	73	71	5	17	94	0	8
6:00 AM - 6:15 AM	29	0	5	3	0	0	0	0	8	94	38	12	8	99	0	8
6:15 AM - 6:30 AM	28	0	3	2	0	0	0	0	18	73	38	14	7	84	0	5
6:30 AM - 6:45 AM	47	0	7	8	0	0	0	0	20	87	56	10	6	119	0	13
6:45 AM - 7:00 AM	21	0	5	5	0	0	0	0	22	89	102	12	10	110	0	11
7:00 AM - 7:15 AM	32	0	4	10	0	0	0	0	16	84	73	17	9	91	0	8
7:15 AM - 7:30 AM	42	0	4	16	0	0	0	0	8	103	76	17	12	107	0	5
7:30 AM - 7:45 AM	35	0	4	3	0	0	0	0	13	100	86	15	10	123	0	9
7:45 AM - 8:00 AM	49	0	1	12	0	0	0	0	7	116	121	22	26	108	0	9
8:00 AM - 8:15 AM	42	0	5	7	0	0	0	0	15	159	104	18	9	91	0	11
8:15 AM - 8:30 AM	45	0	3	8	0	0	0	0	9	172	79	13	12	101	0	8
8:30 AM - 8:45 AM	45	0	11	11	0	0	0	0	14	196	71	7	8	131	0	7
8:45 AM - 9:00 AM	42	0	11	9	0	0	0	0	7	214	55	16	6	127	0	9
TOTAL	**543**	**0**	**72**	**129**	**0**	**0**	**0**	**0**	**192**	**1733**	**1073**	**208**	**150**	**1663**	**0**	**136**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
3:00 PM - 3:15 PM	72	0	10	5	0	0	0	0	11	155	57	12	14	137	0	6
3:15 PM - 3:30 PM	59	0	13	4	0	0	0	0	8	141	54	16	10	119	0	9
3:30 PM - 3:45 PM	84	0	16	3	0	0	0	0	10	176	83	24	10	153	0	14
3:45 PM - 4:00 PM	56	0	21	3	0	0	0	0	10	208	60	16	10	125	0	8
4:00 PM - 4:15 PM	96	0	21	8	0	0	0	0	2	236	73	15	8	127	0	4
4:15 PM - 4:30 PM	46	0	22	6	0	0	0	0	4	186	57	6	10	109	0	8
4:30 PM - 4:45 PM	85	0	26	2	0	0	0	0	12	206	59	15	5	95	0	8
4:45 PM - 5:00 PM	65	0	20	3	0	0	0	0	3	214	57	16	5	106	0	5
5:00 PM - 5:15 PM	108	0	34	2	0	0	0	0	10	209	41	13	9	182	0	4
5:15 PM - 5:30 PM	46	0	17	5	0	0	0	0	8	228	39	15	11	171	0	12
5:30 PM - 5:45 PM	41	0	15	6	0	0	0	0	8	243	38	14	6	211	0	4
5:45 PM - 6:00 PM	30	0	13	7	0	0	0	0	8	204	34	14	8	182	0	4
6:00 PM - 6:15 PM	38	0	8	8	0	0	0	0	10	195	19	9	7	194	0	1
6:15 PM - 6:30 PM	22	0	5	7	0	0	0	0	4	112	27	12	3	83	0	3
6:30 PM - 6:45 PM	14	0	8	4	0	0	0	0	6	100	20	14	4	85	0	3
6:45 PM - 7:00 PM	22	0	1	9	0	0	0	0	2	92	15	7	7	72	0	4
TOTAL	**884**	**0**	**250**	**82**	**0**	**0**	**0**	**0**	**116**	**2905**	**733**	**218**	**127**	**2151**	**0**	**97**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
8:00 AM - 9:00 AM	174	0	30	35	0	0	0	0	45	741	309	54	35	450	0	35
5:00 PM - 6:00 PM	225	0	79	20	0	0	0	0	34	884	152	56	34	746	0	24

	PHF	Trucks
AM	0.937	7.0%
PM	0.908	4.6%



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Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

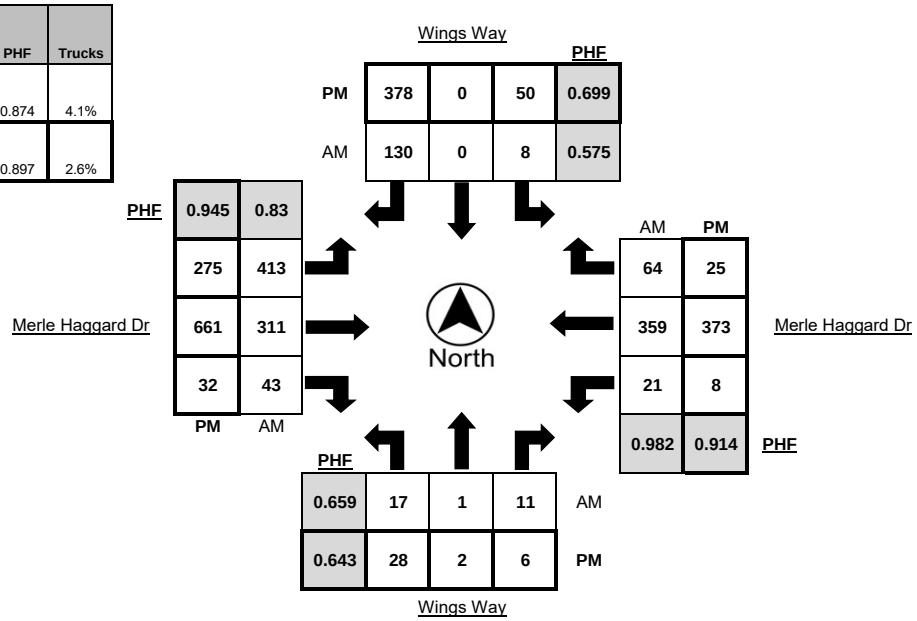
LOCATION Merle Haggard Dr @ Wings Way
LATITUDE 35.4413
COUNTY Kern
LONGITUDE -119.0523
COLLECTION DATE Tuesday, March 23, 2021
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
5:00 AM - 5:15 AM	9	0	2	0	1	0	16	2	10	26	18	5	0	61	0	3
5:15 AM - 5:30 AM	6	0	2	0	0	0	12	0	9	40	8	5	2	93	0	16
5:30 AM - 5:45 AM	6	0	0	0	0	0	11	0	7	44	12	1	0	90	0	3
5:45 AM - 6:00 AM	7	0	2	0	1	0	3	1	12	60	12	5	3	101	0	5
6:00 AM - 6:15 AM	9	0	3	0	0	0	7	3	2	88	10	9	1	92	0	8
6:15 AM - 6:30 AM	6	0	0	0	0	0	5	1	9	65	0	13	4	92	0	6
6:30 AM - 6:45 AM	0	0	3	0	0	1	9	3	5	81	3	8	0	111	0	10
6:45 AM - 7:00 AM	1	0	1	0	2	0	8	4	20	77	1	5	1	125	0	9
7:00 AM - 7:15 AM	6	0	1	0	1	0	5	1	7	68	6	9	0	88	0	7
7:15 AM - 7:30 AM	4	0	0	0	1	0	11	2	17	92	5	10	2	117	0	6
7:30 AM - 7:45 AM	3	0	1	0	0	0	14	0	18	67	5	6	0	123	2	7
7:45 AM - 8:00 AM	4	0	0	1	1	0	6	0	36	80	8	10	1	120	1	9
8:00 AM - 8:15 AM	1	0	1	0	1	0	15	4	71	81	5	9	6	96	6	6
8:15 AM - 8:30 AM	6	0	3	1	0	0	16	4	91	77	15	5	6	95	12	4
8:30 AM - 8:45 AM	6	0	5	0	3	0	57	3	114	72	10	5	7	86	20	4
8:45 AM - 9:00 AM	4	1	2	0	4	0	42	3	137	81	13	6	2	82	26	3
TOTAL	**78**	**1**	**26**	**2**	**15**	**1**	**237**	**31**	**565**	**1099**	**131**	**111**	**35**	**1572**	**67**	**106**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
3:00 PM - 3:15 PM	11	0	4	0	1	0	17	2	7	145	9	6	1	120	0	4
3:15 PM - 3:30 PM	11	0	3	0	1	0	24	6	15	137	13	9	5	106	1	7
3:30 PM - 3:45 PM	18	0	7	0	2	0	17	4	11	160	13	9	10	109	2	4
3:45 PM - 4:00 PM	14	0	12	0	1	0	20	4	12	212	16	9	5	108	1	3
4:00 PM - 4:15 PM	13	0	8	0	2	1	16	1	18	214	13	7	3	98	1	5
4:15 PM - 4:30 PM	7	0	4	0	0	0	11	3	16	207	2	8	3	94	0	4
4:30 PM - 4:45 PM	4	1	5	0	1	1	22	5	21	188	8	11	1	81	1	2
4:45 PM - 5:00 PM	4	1	1	1	3	0	19	4	51	194	4	9	1	88	3	3
5:00 PM - 5:15 PM	11	0	0	0	8	0	81	5	49	186	6	5	3	107	1	1
5:15 PM - 5:30 PM	5	1	1	0	5	0	59	7	51	187	5	8	2	97	4	3
5:30 PM - 5:45 PM	2	0	2	0	19	0	134	1	85	162	9	6	2	93	4	3
5:45 PM - 6:00 PM	10	1	3	0	18	0	104	3	90	126	12	3	1	76	16	2
6:00 PM - 6:15 PM	11	2	5	0	4	1	114	1	76	114	10	2	5	68	8	0
6:15 PM - 6:30 PM	6	0	3	0	2	0	23	4	30	93	8	2	1	59	2	0
6:30 PM - 6:45 PM	5	0	2	0	0	1	13	1	9	96	13	6	6	60	1	2
6:45 PM - 7:00 PM	11	0	10	0	2	0	21	1	4	81	7	4	3	62	0	1
TOTAL	**143**	**6**	**70**	**1**	**69**	**4**	**695**	**52**	**545**	**2502**	**148**	**104**	**52**	**1426**	**45**	**44**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
8:00 AM - 9:00 AM	17	1	11	1	8	0	130	14	413	311	43	25	21	359	64	17
5:00 PM - 6:00 PM	28	2	6	0	50	0	378	16	275	661	32	22	8	373	25	9

	PHF	Trucks
AM	0.874	4.1%
PM	0.897	2.6%



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Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

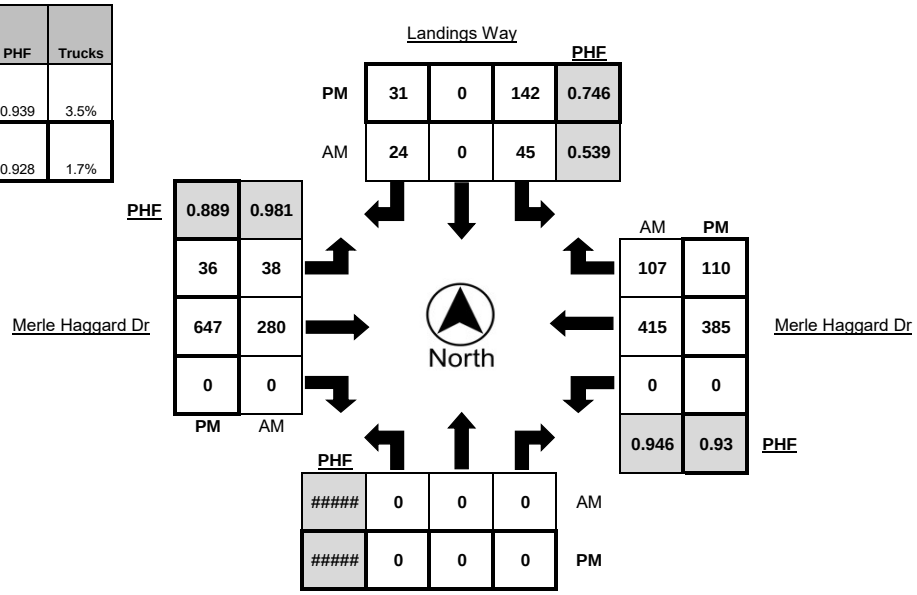
LOCATION Merle Haggard Dr @ Landings Way
LATITUDE 35.4412
COUNTY Kern
LONGITUDE -119.0477
COLLECTION DATE Tuesday, March 23, 2021
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
5:00 AM - 5:15 AM	0	0	0	0	2	0	0	0	2	29	0	2	0	70	3	6
5:15 AM - 5:30 AM	0	0	0	0	0	0	1	0	1	41	0	1	0	90	0	14
5:30 AM - 5:45 AM	0	0	0	0	5	0	1	0	2	40	0	0	0	86	2	4
5:45 AM - 6:00 AM	0	0	0	0	6	0	1	0	3	60	0	2	0	114	2	9
6:00 AM - 6:15 AM	0	0	0	0	1	0	0	0	1	72	0	5	0	88	0	4
6:15 AM - 6:30 AM	0	0	0	0	0	0	0	0	3	63	0	6	0	94	2	7
6:30 AM - 6:45 AM	0	0	0	0	1	0	1	0	2	84	0	4	0	117	2	13
6:45 AM - 7:00 AM	0	0	0	0	1	0	1	0	0	75	0	3	0	121	4	8
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	1	68	0	8	0	91	4	7
7:15 AM - 7:30 AM	0	0	0	0	1	0	3	0	4	81	0	4	0	119	2	6
7:30 AM - 7:45 AM	0	0	0	0	3	0	2	2	1	66	0	2	0	129	7	7
7:45 AM - 8:00 AM	0	0	0	0	4	0	2	0	1	79	0	5	0	128	8	11
8:00 AM - 8:15 AM	0	0	0	0	4	0	3	0	1	75	0	5	0	99	22	4
8:15 AM - 8:30 AM	0	0	0	0	6	0	2	2	11	70	0	5	0	110	28	4
8:30 AM - 8:45 AM	0	0	0	0	13	0	9	1	16	65	0	1	0	112	21	5
8:45 AM - 9:00 AM	0	0	0	0	22	0	10	0	10	70	0	4	0	94	36	1
TOTAL	**0**	**0**	**0**	**0**	**69**	**0**	**36**	**5**	**59**	**1038**	**0**	**57**	**0**	**1662**	**143**	**110**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
3:00 PM - 3:15 PM	0	0	0	0	3	0	4	0	1	141	0	3	0	119	0	3
3:15 PM - 3:30 PM	0	0	0	0	1	0	2	0	0	132	0	3	0	108	2	7
3:30 PM - 3:45 PM	0	0	0	0	5	0	2	0	0	163	0	3	0	126	2	3
3:45 PM - 4:00 PM	0	0	0	0	2	0	2	0	2	216	0	4	0	107	1	4
4:00 PM - 4:15 PM	0	0	0	0	3	0	2	1	0	211	0	1	0	103	2	4
4:15 PM - 4:30 PM	0	0	0	0	3	0	3	2	3	203	0	6	0	97	4	4
4:30 PM - 4:45 PM	0	0	0	0	5	0	2	0	3	187	0	7	0	84	7	2
4:45 PM - 5:00 PM	0	0	0	0	3	0	0	0	9	175	0	7	0	95	13	3
5:00 PM - 5:15 PM	0	0	0	0	32	0	7	0	8	184	0	1	0	111	22	1
5:15 PM - 5:30 PM	0	0	0	0	20	0	5	0	12	164	0	8	0	103	25	3
5:30 PM - 5:45 PM	0	0	0	0	40	0	11	0	6	163	0	2	0	84	28	4
5:45 PM - 6:00 PM	0	0	0	0	50	0	8	0	10	136	0	2	0	87	35	2
6:00 PM - 6:15 PM	0	0	0	0	55	0	10	0	3	112	0	1	0	75	25	0
6:15 PM - 6:30 PM	0	0	0	0	9	0	2	0	1	93	0	0	0	55	22	0
6:30 PM - 6:45 PM	0	0	0	0	4	0	0	0	0	103	0	3	0	65	2	2
6:45 PM - 7:00 PM	0	0	0	0	2	0	1	0	1	88	0	2	0	64	3	1
TOTAL	**0**	**0**	**0**	**0**	**237**	**0**	**61**	**3**	**59**	**2471**	**0**	**53**	**0**	**1483**	**193**	**43**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
8:00 AM - 9:00 AM	0	0	0	0	45	0	24	3	38	280	0	15	0	415	107	14
5:00 PM - 6:00 PM	0	0	0	0	142	0	31	0	36	647	0	13	0	385	110	10

	PHF	Trucks
AM	0.939	3.5%
PM	0.928	1.7%



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:
Ruettgers & Schuler Civil Engineers
1800 30th St, Ste 260
Bakersfield, CA 93301

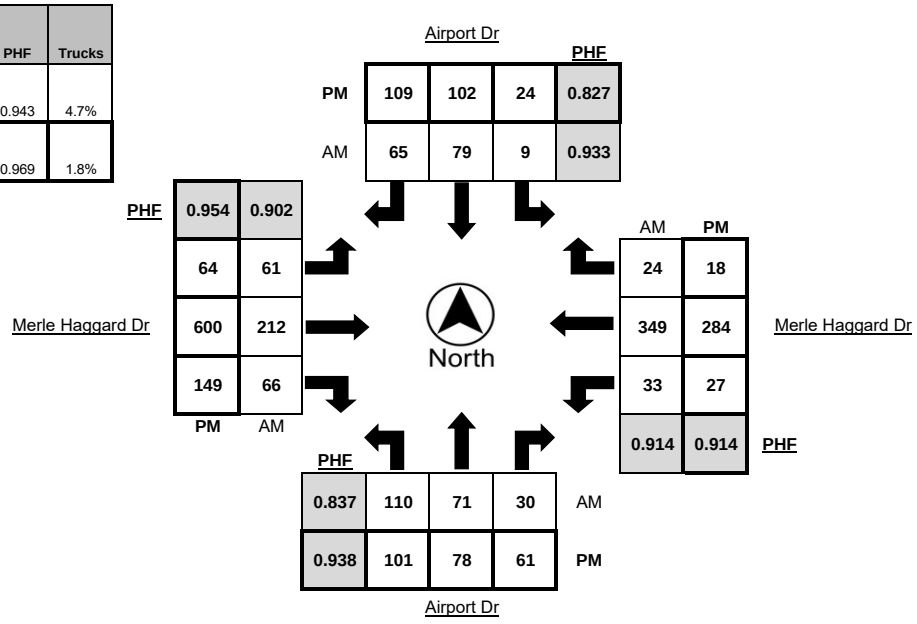
LOCATION Merle Haggard Dr @ Airport Dr
LATITUDE 35.4411
COUNTY Kern
LONGITUDE -119.0389
COLLECTION DATE Tuesday, March 23, 2021
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
5:00 AM - 5:15 AM	11	17	3	0	1	10	15	7	13	11	4	2	6	46	0	3
5:15 AM - 5:30 AM	12	29	0	0	0	6	19	11	19	20	5	4	1	56	1	5
5:30 AM - 5:45 AM	4	17	1	0	1	8	19	7	18	20	5	0	3	73	1	1
5:45 AM - 6:00 AM	21	33	1	2	0	6	14	6	27	31	3	3	5	79	1	3
6:00 AM - 6:15 AM	15	29	0	0	0	11	20	5	31	41	12	3	3	50	0	2
6:15 AM - 6:30 AM	18	28	4	0	0	9	17	7	19	40	5	8	2	67	1	6
6:30 AM - 6:45 AM	20	26	4	4	0	16	26	14	21	47	11	6	9	74	2	6
6:45 AM - 7:00 AM	18	43	5	1	0	20	19	13	33	42	7	3	16	85	1	5
7:00 AM - 7:15 AM	22	14	3	5	2	18	18	2	23	35	9	8	6	59	0	8
7:15 AM - 7:30 AM	18	26	9	3	0	16	19	7	16	63	10	7	19	84	0	3
7:30 AM - 7:45 AM	26	18	6	4	1	20	29	5	9	53	14	5	10	79	3	3
7:45 AM - 8:00 AM	17	20	2	1	1	14	24	5	15	52	11	7	15	91	5	7
8:00 AM - 8:15 AM	29	23	11	1	1	16	19	4	22	54	17	4	9	77	8	2
8:15 AM - 8:30 AM	25	11	9	4	4	11	20	2	12	48	13	6	8	95	3	2
8:30 AM - 8:45 AM	33	16	6	2	3	25	13	6	11	48	20	1	6	83	6	2
8:45 AM - 9:00 AM	23	21	4	3	1	27	13	4	16	62	16	7	10	94	7	2
TOTAL	**312**	**371**	**68**	**30**	**15**	**233**	**304**	**105**	**305**	**667**	**162**	**74**	**128**	**1192**	**39**	**60**

	Northbound				Southbound				Eastbound				Westbound			
Time	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
3:00 PM - 3:15 PM	15	15	7	4	2	25	26	2	15	96	33	7	9	78	1	4
3:15 PM - 3:30 PM	26	15	12	3	2	27	31	3	11	113	19	3	8	55	2	6
3:30 PM - 3:45 PM	26	15	13	4	2	30	46	2	14	118	37	5	6	57	0	3
3:45 PM - 4:00 PM	19	17	14	2	2	30	37	3	14	195	29	6	4	51	0	2
4:00 PM - 4:15 PM	13	16	19	2	3	36	37	3	21	166	44	3	10	55	0	1
4:15 PM - 4:30 PM	17	10	11	0	0	22	35	4	31	127	38	8	8	57	3	1
4:30 PM - 4:45 PM	20	10	14	2	0	23	19	1	22	162	31	8	9	52	2	1
4:45 PM - 5:00 PM	18	19	11	4	2	23	22	2	26	119	33	8	9	64	2	0
5:00 PM - 5:15 PM	22	23	14	3	4	26	41	0	8	166	33	3	2	74	4	2
5:15 PM - 5:30 PM	32	13	19	1	5	29	30	2	25	156	32	7	7	60	4	1
5:30 PM - 5:45 PM	24	16	15	1	5	23	20	0	17	146	38	2	15	69	4	3
5:45 PM - 6:00 PM	23	26	13	0	10	24	18	1	14	132	46	2	3	81	6	1
6:00 PM - 6:15 PM	22	12	17	0	5	13	8	0	12	149	22	0	9	70	4	0
6:15 PM - 6:30 PM	14	12	11	0	3	10	7	0	15	62	22	0	6	51	6	0
6:30 PM - 6:45 PM	10	14	7	1	0	14	11	2	13	74	16	4	8	49	0	0
6:45 PM - 7:00 PM	13	15	10	2	1	4	14	1	15	68	18	1	6	36	2	1
TOTAL	**314**	**248**	**207**	**29**	**46**	**359**	**402**	**26**	**273**	**2049**	**491**	**67**	**119**	**959**	**40**	**26**

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**	**Left**	**Thru**	**Right**	**Trucks**
8:00 AM - 9:00 AM	110	71	30	10	9	79	65	16	61	212	66	18	33	349	24	8
5:00 PM - 6:00 PM	101	78	61	5	24	102	109	3	64	600	149	14	27	284	18	7

	PHF	Trucks
AM	0.943	4.7%
PM	0.969	1.8%



Turning Movement Count Report AM

Location ID: 12
North/South: McCray Street
East/West: Merle Haggard Drive

Date: 11/13/19
City: Bakersfield, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:30	17	12	3	2	72	0	1	7	16	6	48	9	193
6:45	18	4	4	4	82	4	4	7	16	6	45	3	197
7:00	15	7	4	1	54	1	5	4	13	4	57	5	170
7:15	14	8	5	5	63	2	7	6	9	8	71	6	204
7:30	23	9	4	0	75	5	8	5	19	5	97	5	255
7:45	14	7	5	4	79	3	4	5	10	8	58	0	197
8:00	18	8	5	2	49	0	4	9	6	10	64	14	189
8:15	12	5	5	3	51	4	5	11	8	7	42	10	163
Total Volume:	131	60	35	21	525	19	38	54	97	54	482	52	1568
Approach %	58%	27%	15%	4%	93%	3%	20%	29%	51%	9%	82%	9%	
Peak Hr Begin:	7:15												
PHV	69	32	19	11	266	10	23	25	44	31	290	25	845
PHF	0.833			0.834			0.719			0.808			0.828

Turning Movement Count Report PM

Location ID: 12
North/South: McCray Street
East/West: Merle Haggard Drive

Date: 11/13/19
City: Bakersfield, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	9	13	9	3	67	2	4	8	11	27	142	14	309
16:15	12	16	8	5	54	3	3	17	5	15	103	12	253
16:30	12	13	6	5	62	4	2	12	11	15	138	14	294
16:45	4	11	3	7	64	1	5	8	15	26	134	19	297
17:00	12	16	2	9	53	5	4	17	6	26	141	16	307
17:15	11	16	4	11	71	4	2	17	6	18	139	18	317
17:30	16	16	12	8	59	5	3	20	13	13	98	16	279
17:45	8	10	5	10	40	3	2	10	6	17	77	15	203
Total Volume:	84	111	49	58	470	27	25	109	73	157	972	124	2259
Approach %	34%	45%	20%	10%	85%	5%	12%	53%	35%	13%	78%	10%	
Peak Hr Begin:	16:30												
PHV	39	56	15	32	250	14	13	54	38	85	552	67	1215
PHF	0.887			0.860			0.938			0.962			0.958

Prepared by City Count, LLC. (www.citycount.com)

Pedestrian/Bicycle Count Report

Location ID: 12
North/South: McCray Street
East/West: Merle Haggard Drive

Date: 11/13/19
City: Bakersfield, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:30	0	0	0	0	0	0	1	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	0	0	0	0
7:15	0	0	0	0	0	0	0	0
7:30	0	0	1	0	0	0	0	0
7:45	0	0	1	0	0	0	1	0
8:00	1	0	2	0	0	0	3	0
8:15	0	0	2	0	0	0	2	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	2	0	3	0	0	0	1	0
16:15	1	0	0	0	0	0	0	0
16:30	0	0	1	0	0	0	1	1
16:45	0	0	1	0	0	0	1	0
17:00	0	0	4	0	0	0	0	1
17:15	0	0	1	1	0	0	0	0
17:30	0	0	2	0	0	0	1	0
17:45	0	0	0	0	0	0	0	2

Turning Movement Count Report AM

Location ID: 13
North/South: N. Chester Avenue
East/West: Merle Haggard Drive/Manor Street
Date: 11/13/19
City: Bakersfield, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
6:30	2	14	39	49	64	1	0	12	10	11	40	3	245
6:45	6	10	29	51	57	1	2	17	14	9	41	2	239
7:00	4	18	26	45	37	0	1	13	14	14	60	1	233
7:15	6	32	47	27	37	5	3	22	23	20	83	1	306
7:30	6	41	41	39	62	2	3	27	13	22	103	5	364
7:45	6	16	39	31	56	0	1	38	24	18	56	1	286
8:00	3	20	24	28	36	2	5	15	14	25	56	2	230
8:15	3	22	16	29	36	3	2	17	16	9	37	6	196
Total Volume:	36	173	261	299	385	14	17	161	128	128	476	21	2099
Approach %	8%	37%	56%	43%	55%	2%	6%	53%	42%	20%	76%	3%	
Peak Hr Begin:	7:00												
PHV	22	107	153	142	192	7	8	100	74	74	302	8	1189
PHF	0.801			0.828			0.722			0.738			0.817

Prepared by City Count, LLC. (www.citycount.com)

Turning Movement Count Report PM

Location ID: 13
North/South: N. Chester Avenue
East/West: Merle Haggard Drive/Manor Street
Date: 11/13/19
City: Bakersfield, CA

	Southbound			*Westbound*			*Northbound*			*Eastbound*			
	1	2	3	4	5	6	7	8	9	10	11	12	Totals:
Movements:	R	T	L	R	T	L	R	T	L	R	T	L	
16:00	3	44	100	25	48	1	3	36	15	23	114	7	419
16:15	5	36	89	52	48	2	2	29	16	27	91	4	401
16:30	10	48	97	35	57	1	3	26	12	25	124	3	441
16:45	1	37	73	27	51	2	4	33	19	18	116	3	384
17:00	5	41	66	31	41	3	2	32	29	25	94	6	375
17:15	2	38	77	22	65	3	2	33	28	33	98	4	405
17:30	5	35	73	19	48	1	1	26	18	26	92	7	351
17:45	3	18	35	17	37	4	1	22	16	15	67	5	240
Total Volume:	34	297	610	228	395	17	18	237	153	192	796	39	3016
Approach %	4%	32%	65%	36%	62%	3%	4%	58%	38%	19%	78%	4%	
Peak Hr Begin:	16:00												
PHV	19	165	359	139	204	6	12	124	62	93	445	17	1645
PHF	0.876			0.855			0.884			0.913			0.933

Prepared by City Count, LLC. (www.citycount.com)

Pedestrian/Bicycle Count Report

Location ID: 13
North/South: N. Chester Avenue
East/West: Merle Haggard Drive/Manor Street
Date: 11/13/19
City: Bakersfield, CA

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
6:30	0	0	0	0	0	0	0	0
6:45	0	0	0	0	0	0	0	0
7:00	0	0	0	0	1	0	1	0
7:15	0	0	0	0	2	0	0	1
7:30	0	0	0	0	3	0	0	0
7:45	0	0	0	0	4	0	0	0
8:00	0	0	0	0	0	0	1	0
8:15	0	0	1	0	2	1	0	0

Leg:	North		East		South		West	
Class:	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle	Peds	Bicycle
16:00	0	0	0	0	0	0	0	0
16:15	2	0	2	0	0	0	0	0
16:30	0	0	1	0	2	0	4	0
16:45	0	0	2	0	0	0	0	0
17:00	0	0	0	0	0	0	1	0
17:15	0	0	0	0	0	0	0	0
17:30	0	0	0	0	0	0	2	0
17:45	0	0	0	0	1	0	1	0

LEVEL OF SERVICE

Intersection 1
SR 99 SB Ramps & Lerdo Hwy

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	305	488	117	484	0	0	0	0	33	0	262
Future Vol, veh/h	0	305	488	117	484	0	0	0	0	33	0	262
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	265	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	332	530	127	526	0	0	0	0	36	0	285

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	526	0	0	862	0	0			946	1642	263
Stage 1	-	-	-	-	-	-			780	780	-
Stage 2	-	-	-	-	-	-			166	862	-
Critical Hdwy	4.14	-	-	4.14	-	-			6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-			5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-			3.52	4.02	3.32
Pot Cap-1 Maneuver	1037	-	-	776	-	-			260	99	735
Stage 1	-	-	-	-	-	-			412	404	-
Stage 2	-	-	-	-	-	-			846	370	-
Platoon blocked, %		-	-		-	-					
Mov Cap-1 Maneuver	1037	-	-	776	-	-			217	0	735
Mov Cap-2 Maneuver	-	-	-	-	-	-			217	0	-
Stage 1	-	-	-	-	-	-			345	0	-
Stage 2	-	-	-	-	-	-			846	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.1	14.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1037	-	-	776	-	-	217	735
HCM Lane V/C Ratio	-	-	-	0.164	-	-	0.165	0.387
HCM Control Delay (s)	0	-	-	10.5	-	-	24.8	13
HCM Lane LOS	A	-	-	B	-	-	C	B
HCM 95th %tile Q(veh)	0	-	-	0.6	-	-	0.6	1.8

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	319	488	117	507	0	0	0	0	53	0	262
Future Vol, veh/h	0	319	488	117	507	0	0	0	0	53	0	262
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	265	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	347	530	127	551	0	0	0	0	58	0	285

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	551	0	0	877	0	0			978	1682	276
Stage 1	-	-	-	-	-	-			805	805	-
Stage 2	-	-	-	-	-	-			173	877	-
Critical Hdwy	4.14	-	-	4.14	-	-			6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-			5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-			3.52	4.02	3.32
Pot Cap-1 Maneuver	1015	-	-	766	-	-			248	94	721
Stage 1	-	-	-	-	-	-			400	393	-
Stage 2	-	-	-	-	-	-			840	364	-
Platoon blocked, %		-	-		-	-					
Mov Cap-1 Maneuver	1015	-	-	766	-	-			207	0	721
Mov Cap-2 Maneuver	-	-	-	-	-	-			207	0	-
Stage 1	-	-	-	-	-	-			334	0	-
Stage 2	-	-	-	-	-	-			840	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2	15.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1015	-	-	766	-	-	207	721
HCM Lane V/C Ratio	-	-	-	0.166	-	-	0.278	0.395
HCM Control Delay (s)	0	-	-	10.6	-	-	29	13.2
HCM Lane LOS	A	-	-	B	-	-	D	B
HCM 95th %tile Q(veh)	0	-	-	0.6	-	-	1.1	1.9

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	410	566	136	650	0	0	0	0	57	0	304
Future Vol, veh/h	0	410	566	136	650	0	0	0	0	57	0	304
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	265	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	446	615	148	707	0	0	0	0	62	0	330

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	707	0	0	1061	0	0	1225	2063	353
Stage 1	-	-	-	-	-	-	1002	1002	-
Stage 2	-	-	-	-	-	-	223	1061	-
Critical Hdwy	4.14	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	887	-	-	652	-	-	171	54	643
Stage 1	-	-	-	-	-	-	316	318	-
Stage 2	-	-	-	-	-	-	793	299	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	887	-	-	652	-	-	132	0	643
Mov Cap-2 Maneuver	-	-	-	-	-	-	132	0	-
Stage 1	-	-	-	-	-	-	244	0	-
Stage 2	-	-	-	-	-	-	793	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.1	22.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	887	-	-	652	-	-	132	643
HCM Lane V/C Ratio	-	-	-	0.227	-	-	0.469	0.514
HCM Control Delay (s)	0	-	-	12.1	-	-	54.4	16.4
HCM Lane LOS	A	-	-	B	-	-	F	C
HCM 95th %tile Q(veh)	0	-	-	0.9	-	-	2.1	2.9

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	424	566	136	673	0	0	0	0	77	0	304
Future Vol, veh/h	0	424	566	136	673	0	0	0	0	77	0	304
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	265	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	461	615	148	732	0	0	0	0	84	0	330

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	732	0	0	1076	0	0	1257	2103	366
Stage 1	-	-	-	-	-	-	1027	1027	-
Stage 2	-	-	-	-	-	-	230	1076	-
Critical Hdwy	4.14	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	868	-	-	644	-	-	163	51	631
Stage 1	-	-	-	-	-	-	306	310	-
Stage 2	-	-	-	-	-	-	786	294	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	868	-	-	644	-	-	126	0	631
Mov Cap-2 Maneuver	-	-	-	-	-	-	126	0	-
Stage 1	-	-	-	-	-	-	236	0	-
Stage 2	-	-	-	-	-	-	786	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.1	29
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	868	-	-	644	-	-	126	631
HCM Lane V/C Ratio	-	-	-	0.23	-	-	0.664	0.524
HCM Control Delay (s)	0	-	-	12.2	-	-	77.4	16.8
HCM Lane LOS	A	-	-	B	-	-	F	C
HCM 95th %tile Q(veh)	0	-	-	0.9	-	-	3.6	3



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	424	566	136	673	0	0	0	0	77	0	304
Future Volume (veh/h)	0	424	566	136	673	0	0	0	0	77	0	304
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1750	1716	1863	0				1716	0	1716
Adj Flow Rate, veh/h	0	461	615	148	732	0				84	0	330
Adj No. of Lanes	0	2	0	1	2	0				1	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	789	706	176	2097	0				538	0	845
Arrive On Green	0.00	0.45	0.45	0.11	0.59	0.00				0.33	0.00	0.33
Sat Flow, veh/h	0	1863	1583	1634	3632	0				1634	0	2567
Grp Volume(v), veh/h	0	461	615	148	732	0				84	0	330
Grp Sat Flow(s),veh/h/ln	0	1770	1583	1634	1770	0				1634	0	1283
Q Serve(g_s), s	0.0	22.4	40.5	10.2	12.2	0.0				4.2	0.0	11.4
Cycle Q Clear(g_c), s	0.0	22.4	40.5	10.2	12.2	0.0				4.2	0.0	11.4
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	789	706	176	2097	0				538	0	845
V/C Ratio(X)	0.00	0.58	0.87	0.84	0.35	0.00				0.16	0.00	0.39
Avail Cap(c_a), veh/h	0	869	778	324	2579	0				538	0	845
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.92	0.92	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	23.9	28.9	50.4	12.0	0.0				27.3	0.0	29.7
Incr Delay (d2), s/veh	0.0	0.8	9.9	9.6	0.1	0.0				0.6	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	11.1	19.5	5.1	5.9	0.0				2.0	0.0	4.2
LnGrp Delay(d),s/veh	0.0	24.7	38.8	60.0	12.1	0.0				27.9	0.0	31.0
LnGrp LOS		C	D	E	B					C		C
Approach Vol, veh/h		1076			880						414	
Approach Delay, s/veh		32.7			20.2						30.4	
Approach LOS		C			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			16.9	55.8		42.4		72.6
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s			22.8	56.5		22.2		83.8
Max Q Clear Time (g_c+I1), s			12.2	42.5		13.4		14.2
Green Ext Time (p_c), s			0.2	8.8		1.0		17.3

Intersection Summary	
HCM 2010 Ctrl Delay	27.7
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	9.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	551	657	158	874	0	0	0	0	63	0	353
Future Vol, veh/h	0	551	657	158	874	0	0	0	0	63	0	353
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	265	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	599	714	172	950	0	0	0	0	68	0	384

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	950	0	0	1313	0	0	1592	2606	475
Stage 1	-	-	-	-	-	-	1293	1293	-
Stage 2	-	-	-	-	-	-	299	1313	-
Critical Hdwy	4.14	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	719	-	-	523	-	-	98	24	536
Stage 1	-	-	-	-	-	-	221	231	-
Stage 2	-	-	-	-	-	-	726	226	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	719	-	-	523	-	-	~ 66	0	536
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 66	0	-
Stage 1	-	-	-	-	-	-	148	0	-
Stage 2	-	-	-	-	-	-	726	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.3	57.2
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	719	-	-	523	-	-	66	536
HCM Lane V/C Ratio	-	-	-	0.328	-	-	1.038	0.716
HCM Control Delay (s)	0	-	-	15.2	-	-	227.8	26.8
HCM Lane LOS	A	-	-	C	-	-	F	D
HCM 95th %tile Q(veh)	0	-	-	1.4	-	-	5.2	5.8

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	18.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	568	657	158	902	0	0	0	0	88	0	353
Future Vol, veh/h	0	568	657	158	902	0	0	0	0	88	0	353
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	265	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	617	714	172	980	0	0	0	0	96	0	384

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	980	0	0	1332	0	0	1633	2656	490
Stage 1	-	-	-	-	-	-	1324	1324	-
Stage 2	-	-	-	-	-	-	309	1332	-
Critical Hdwy	4.14	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	700	-	-	514	-	-	~ 92	22	524
Stage 1	-	-	-	-	-	-	213	224	-
Stage 2	-	-	-	-	-	-	718	222	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	700	-	-	514	-	-	~ 61	0	524
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 61	0	-
Stage 1	-	-	-	-	-	-	142	0	-
Stage 2	-	-	-	-	-	-	718	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.3	109.1
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	700	-	-	514	-	-	61	524
HCM Lane V/C Ratio	-	-	-	0.334	-	-	1.568	0.732
HCM Control Delay (s)	0	-	-	15.5	-	-	$ 432.6	28.4
HCM Lane LOS	A	-	-	C	-	-	F	D
HCM 95th %tile Q(veh)	0	-	-	1.5	-	-	8.5	6.1

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



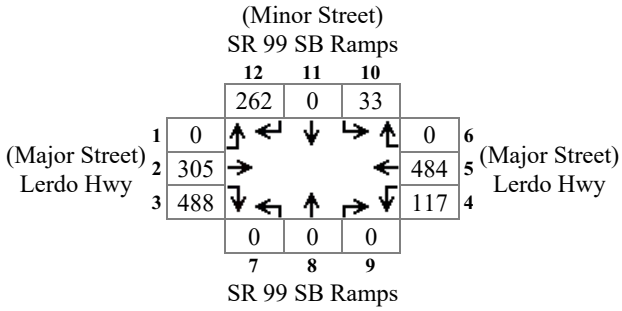
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	568	657	158	902	0	0	0	0	88	0	353
Future Volume (veh/h)	0	568	657	158	902	0	0	0	0	88	0	353
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1750	1716	1863	0				1716	0	1716
Adj Flow Rate, veh/h	0	617	714	172	980	0				96	0	384
Adj No. of Lanes	0	2	0	1	2	0				1	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	857	767	200	2286	0				451	0	708
Arrive On Green	0.00	0.48	0.48	0.12	0.65	0.00				0.28	0.00	0.28
Sat Flow, veh/h	0	1863	1583	1634	3632	0				1634	0	2567
Grp Volume(v), veh/h	0	617	714	172	980	0				96	0	384
Grp Sat Flow(s),veh/h/ln	0	1770	1583	1634	1770	0				1634	0	1283
Q Serve(g_s), s	0.0	31.7	48.7	11.9	15.6	0.0				5.2	0.0	14.7
Cycle Q Clear(g_c), s	0.0	31.7	48.7	11.9	15.6	0.0				5.2	0.0	14.7
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	857	767	200	2286	0				451	0	708
V/C Ratio(X)	0.00	0.72	0.93	0.86	0.43	0.00				0.21	0.00	0.54
Avail Cap(c_a), veh/h	0	869	778	324	2579	0				451	0	708
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.88	0.88	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	23.5	27.9	49.5	10.0	0.0				32.0	0.0	35.5
Incr Delay (d2), s/veh	0.0	2.9	17.6	10.9	0.1	0.0				1.1	0.0	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	16.1	25.0	6.0	7.7	0.0				2.5	0.0	5.5
LnGrp Delay(d),s/veh	0.0	26.4	45.5	60.4	10.1	0.0				33.1	0.0	38.4
LnGrp LOS		C	D	E	B					C		D
Approach Vol, veh/h		1331			1152						480	
Approach Delay, s/veh		36.6			17.6						37.4	
Approach LOS		D			B						D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			18.6	60.2		36.2		78.8
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s			22.8	56.5		22.2		83.8
Max Q Clear Time (g_c+I1), s			13.9	50.7		16.7		17.6
Green Ext Time (p_c), s			0.3	5.0		0.9		27.6

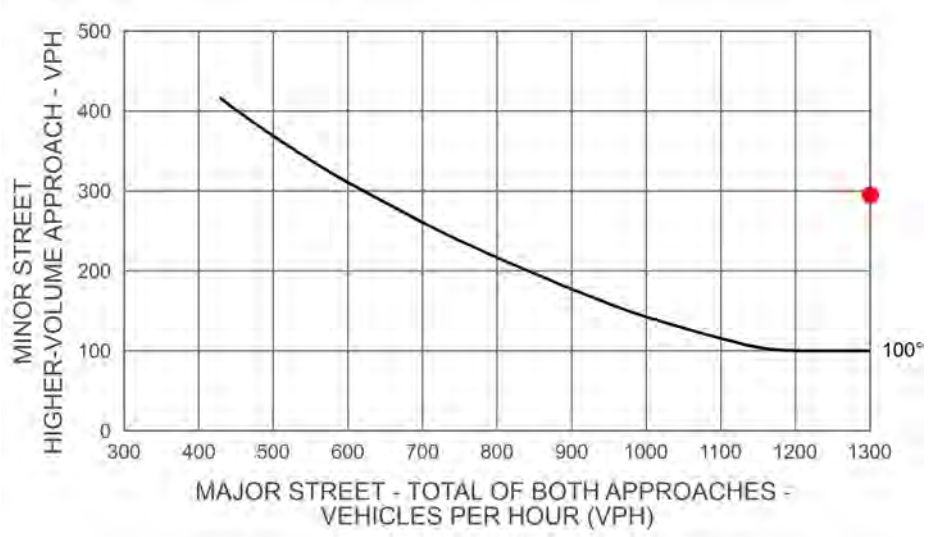
Intersection Summary	
HCM 2010 Ctrl Delay	29.3
HCM 2010 LOS	C

Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Existing
Intersection #: 1

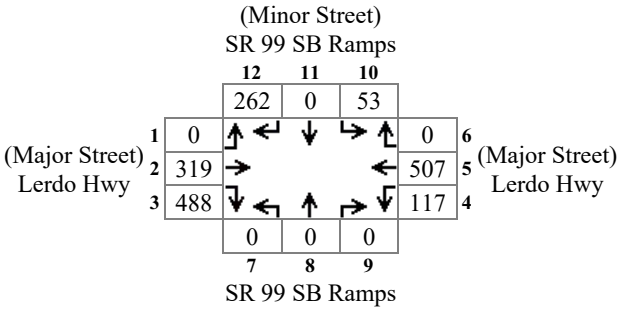


Major Total: 1394
Minor High Volume: 295

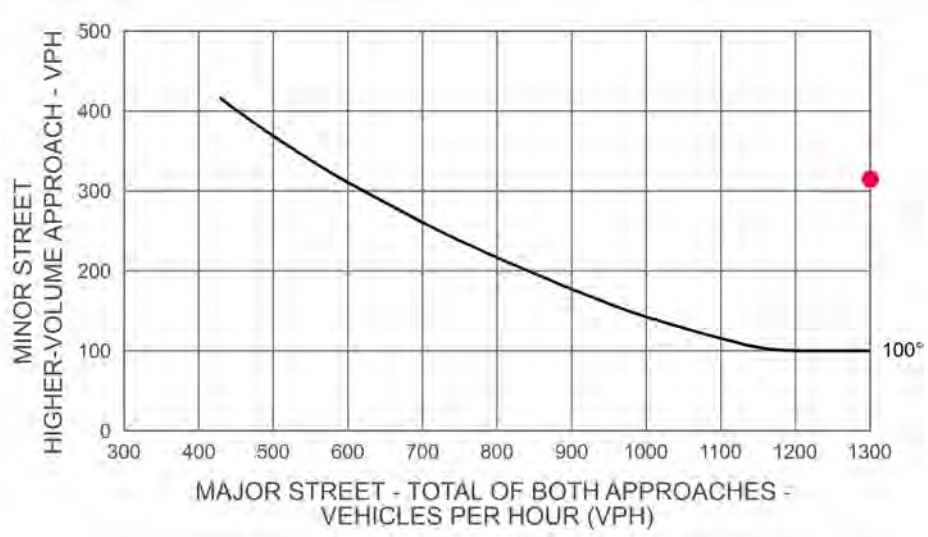


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Existing+Project Phase I
Intersection #: 1

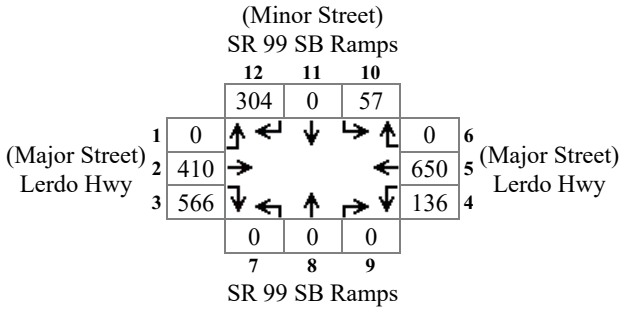


Major Total: 1431
Minor High Volume: 315

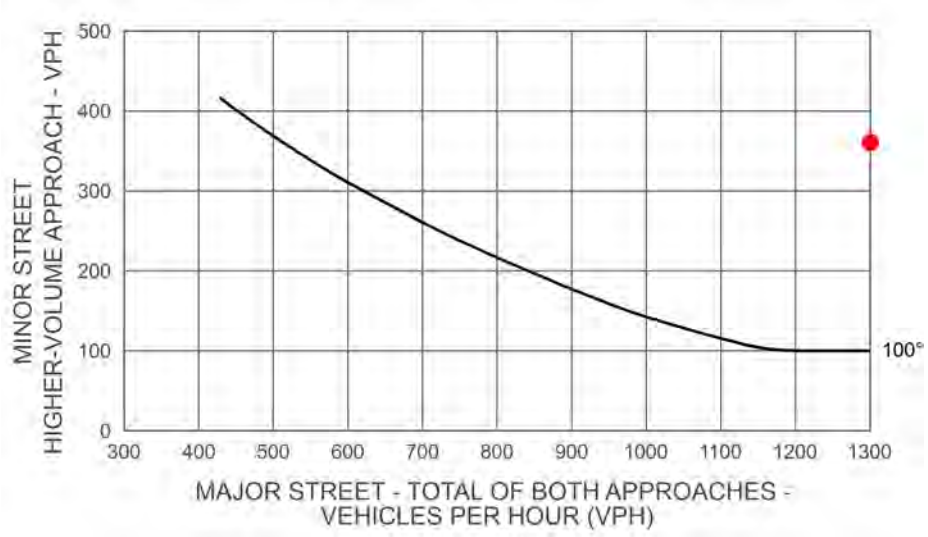


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future
Intersection #: 1

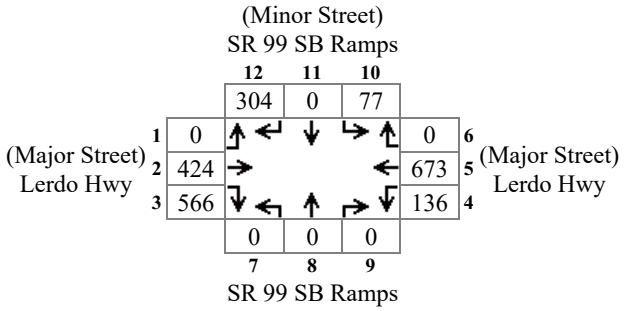


Major Total: 1762
Minor High Volume: 361

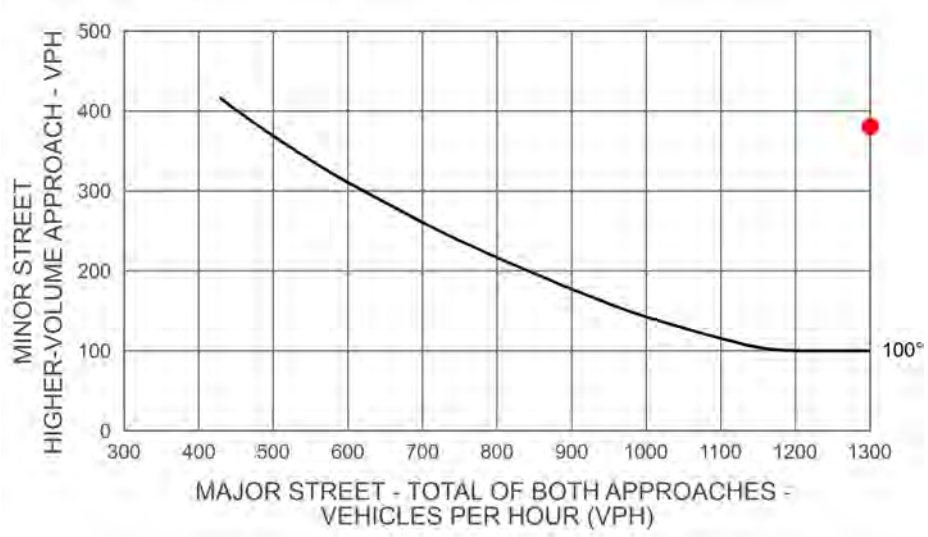


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future+Project
Intersection #: 1

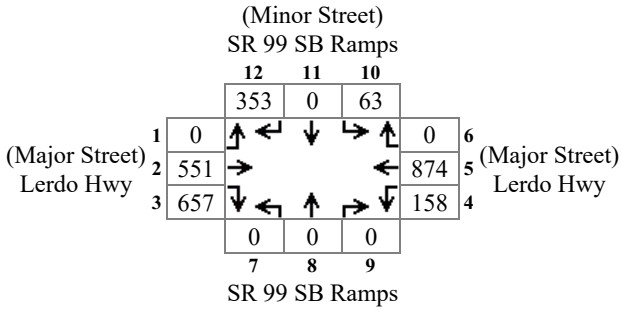


Major Total: 1799
Minor High Volume: 381

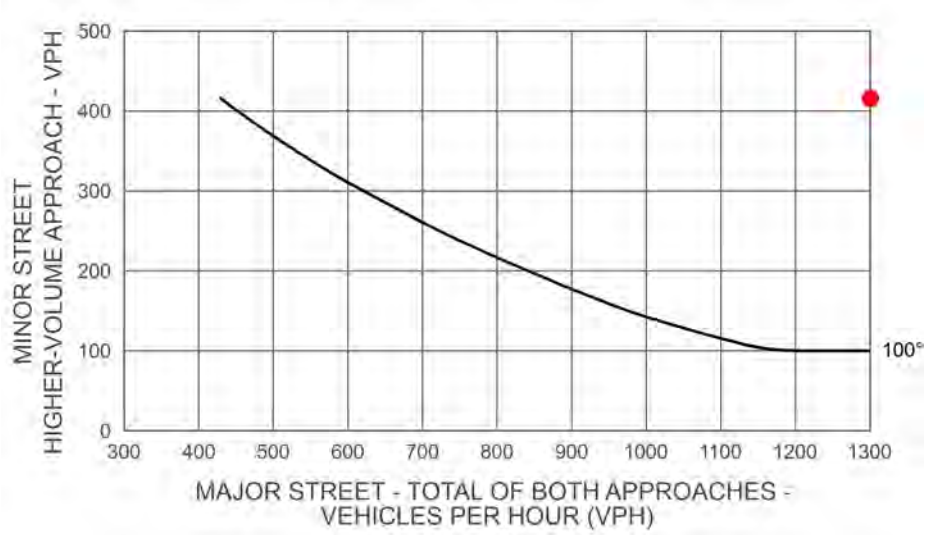


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future
Intersection #: 1

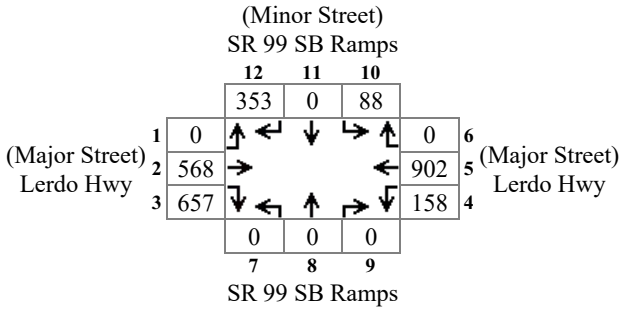


Major Total: 2240
Minor High Volume: 416

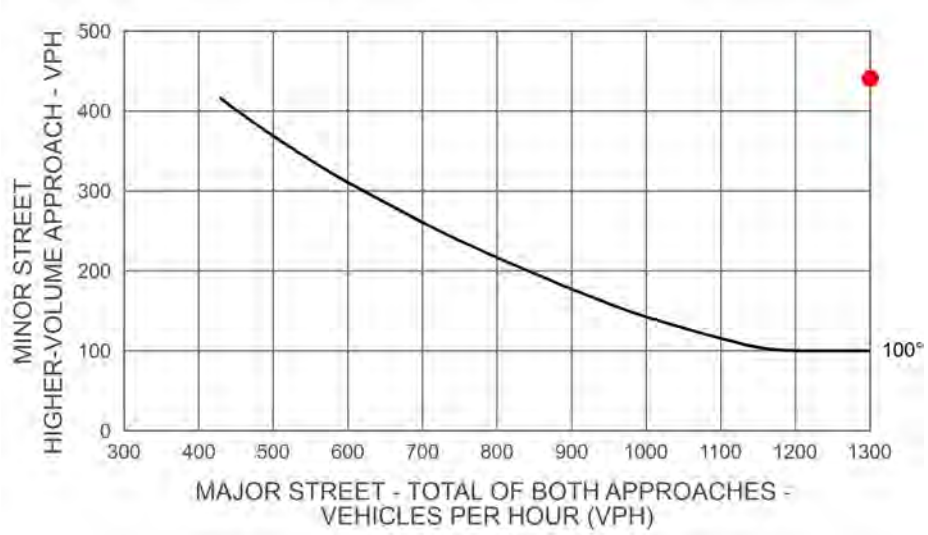


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future+Project Phase I & II
Intersection #: 1



Major Total: 2285
Minor High Volume: 441



Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	397	469	25	432	0	0	0	0	29	0	114
Future Vol, veh/h	0	397	469	25	432	0	0	0	0	29	0	114
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	265	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	432	510	27	470	0	0	0	0	32	0	124

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	470	0	0	941	0	0				740	1465	235
Stage 1	-	-	-	-	-	-				524	524	-
Stage 2	-	-	-	-	-	-				216	941	-
Critical Hdwy	4.14	-	-	4.14	-	-				6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-				5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-				3.52	4.02	3.32
Pot Cap-1 Maneuver	1088	-	-	724	-	-				352	127	767
Stage 1	-	-	-	-	-	-				559	528	-
Stage 2	-	-	-	-	-	-				799	340	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1088	-	-	724	-	-				339	0	767
Mov Cap-2 Maneuver	-	-	-	-	-	-				339	0	-
Stage 1	-	-	-	-	-	-				538	0	-
Stage 2	-	-	-	-	-	-				799	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.6	11.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1088	-	-	724	-	-	339	767
HCM Lane V/C Ratio	-	-	-	0.038	-	-	0.093	0.162
HCM Control Delay (s)	0	-	-	10.2	-	-	16.7	10.6
HCM Lane LOS	A	-	-	B	-	-	C	B
HCM 95th %tile Q(veh)	0	-	-	0.1	-	-	0.3	0.6

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	426	469	25	440	0	0	0	0	70	0	114
Future Vol, veh/h	0	426	469	25	440	0	0	0	0	70	0	114
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	265	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	463	510	27	478	0	0	0	0	76	0	124

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	478	0	0	973	0	0	765	1506	239
Stage 1	-	-	-	-	-	-	533	533	-
Stage 2	-	-	-	-	-	-	232	973	-
Critical Hdwy	4.14	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	1081	-	-	704	-	-	340	120	762
Stage 1	-	-	-	-	-	-	553	523	-
Stage 2	-	-	-	-	-	-	785	329	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	1081	-	-	704	-	-	327	0	762
Mov Cap-2 Maneuver	-	-	-	-	-	-	327	0	-
Stage 1	-	-	-	-	-	-	532	0	-
Stage 2	-	-	-	-	-	-	785	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.6	13.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1081	-	-	704	-	-	327	762
HCM Lane V/C Ratio	-	-	-	0.039	-	-	0.233	0.163
HCM Control Delay (s)	0	-	-	10.3	-	-	19.3	10.6
HCM Lane LOS	A	-	-	B	-	-	C	B
HCM 95th %tile Q(veh)	0	-	-	0.1	-	-	0.9	0.6

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	534	544	29	581	0	0	0	0	56	0	132
Future Vol, veh/h	0	534	544	29	581	0	0	0	0	56	0	132
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	265	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	580	591	32	632	0	0	0	0	61	0	143

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	632	0	0	1172	0	0	985	1867	316
Stage 1	-	-	-	-	-	-	695	695	-
Stage 2	-	-	-	-	-	-	290	1172	-
Critical Hdwy	4.14	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	947	-	-	592	-	-	245	72	680
Stage 1	-	-	-	-	-	-	456	442	-
Stage 2	-	-	-	-	-	-	734	264	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	947	-	-	592	-	-	232	0	680
Mov Cap-2 Maneuver	-	-	-	-	-	-	232	0	-
Stage 1	-	-	-	-	-	-	431	0	-
Stage 2	-	-	-	-	-	-	734	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.5	15.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	947	-	-	592	-	-	232	680
HCM Lane V/C Ratio	-	-	-	0.053	-	-	0.262	0.211
HCM Control Delay (s)	0	-	-	11.4	-	-	25.9	11.7
HCM Lane LOS	A	-	-	B	-	-	D	B
HCM 95th %tile Q(veh)	0	-	-	0.2	-	-	1	0.8

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	563	544	29	589	0	0	0	0	97	0	132
Future Vol, veh/h	0	563	544	29	589	0	0	0	0	97	0	132
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	265	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	612	591	32	640	0	0	0	0	105	0	143

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	640	0	0	1203	0	0				1009	1906	320
Stage 1	-	-	-	-	-	-				703	703	-
Stage 2	-	-	-	-	-	-				306	1203	-
Critical Hdwy	4.14	-	-	4.14	-	-				6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-				5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-				3.52	4.02	3.32
Pot Cap-1 Maneuver	940	-	-	576	-	-				237	68	676
Stage 1	-	-	-	-	-	-				452	438	-
Stage 2	-	-	-	-	-	-				720	256	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	940	-	-	576	-	-				224	0	676
Mov Cap-2 Maneuver	-	-	-	-	-	-				224	0	-
Stage 1	-	-	-	-	-	-				427	0	-
Stage 2	-	-	-	-	-	-				720	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.5	21.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	940	-	-	576	-	-	224	676
HCM Lane V/C Ratio	-	-	-	0.055	-	-	0.471	0.212
HCM Control Delay (s)	0	-	-	11.6	-	-	34.6	11.8
HCM Lane LOS	A	-	-	B	-	-	D	B
HCM 95th %tile Q(veh)	0	-	-	0.2	-	-	2.3	0.8



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	563	544	29	589	0	0	0	0	97	0	132
Future Volume (veh/h)	0	563	544	29	589	0	0	0	0	97	0	132
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1750	1716	1863	0				1716	0	1716
Adj Flow Rate, veh/h	0	612	591	32	640	0				105	0	143
Adj No. of Lanes	0	2	0	1	2	0				1	0	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	774	693	39	1771	0				688	0	1081
Arrive On Green	0.00	0.44	0.44	0.02	0.50	0.00				0.42	0.00	0.42
Sat Flow, veh/h	0	1863	1583	1634	3632	0				1634	0	2567
Grp Volume(v), veh/h	0	612	591	32	640	0				105	0	143
Grp Sat Flow(s),veh/h/ln	0	1770	1583	1634	1770	0				1634	0	1283
Q Serve(g_s), s	0.0	34.2	38.5	2.2	12.7	0.0				4.6	0.0	3.9
Cycle Q Clear(g_c), s	0.0	34.2	38.5	2.2	12.7	0.0				4.6	0.0	3.9
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	774	693	39	1771	0				688	0	1081
V/C Ratio(X)	0.00	0.79	0.85	0.82	0.36	0.00				0.15	0.00	0.13
Avail Cap(c_a), veh/h	0	869	778	324	2579	0				688	0	1081
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.90	0.90	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	27.8	29.0	55.9	17.5	0.0				20.6	0.0	20.4
Incr Delay (d2), s/veh	0.0	4.5	8.3	30.1	0.1	0.0				0.5	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	17.6	18.4	1.3	6.2	0.0				2.2	0.0	1.4
LnGrp Delay(d),s/veh	0.0	32.3	37.4	86.0	17.6	0.0				21.1	0.0	20.7
LnGrp LOS		C	D	F	B					C		C
Approach Vol, veh/h		1203			672						248	
Approach Delay, s/veh		34.8			20.9						20.8	
Approach LOS		C			C						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			7.2	54.8		52.9		62.1
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s			22.8	56.5		22.2		83.8
Max Q Clear Time (g_c+I1), s			4.2	40.5		6.6		14.7
Green Ext Time (p_c), s			0.0	9.8		0.7		17.9

Intersection Summary	
HCM 2010 Ctrl Delay	28.8
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	717	632	34	780	0	0	0	0	61	0	154
Future Vol, veh/h	0	717	632	34	780	0	0	0	0	61	0	154
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	265	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	779	687	37	848	0	0	0	0	66	0	167

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	848	0	0	1466	0	0	1312	2388	424
Stage 1	-	-	-	-	-	-	922	922	-
Stage 2	-	-	-	-	-	-	390	1466	-
Critical Hdwy	4.14	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	785	-	-	456	-	-	150	34	579
Stage 1	-	-	-	-	-	-	348	347	-
Stage 2	-	-	-	-	-	-	653	191	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	785	-	-	456	-	-	138	0	579
Mov Cap-2 Maneuver	-	-	-	-	-	-	138	0	-
Stage 1	-	-	-	-	-	-	320	0	-
Stage 2	-	-	-	-	-	-	653	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.6	24.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	785	-	-	456	-	-	138	579
HCM Lane V/C Ratio	-	-	-	0.081	-	-	0.48	0.289
HCM Control Delay (s)	0	-	-	13.6	-	-	53.1	13.7
HCM Lane LOS	A	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	0	-	-	0.3	-	-	2.2	1.2

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	752	632	34	790	0	0	0	0	112	0	154
Future Vol, veh/h	0	752	632	34	790	0	0	0	0	112	0	154
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	265	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	817	687	37	859	0	0	0	0	122	0	167

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	859	0	0	1504	0	0	1342	2437	429
Stage 1	-	-	-	-	-	-	933	933	-
Stage 2	-	-	-	-	-	-	409	1504	-
Critical Hdwy	4.14	-	-	4.14	-	-	6.84	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	5.84	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.84	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32
Pot Cap-1 Maneuver	778	-	-	441	-	-	143	31	574
Stage 1	-	-	-	-	-	-	343	343	-
Stage 2	-	-	-	-	-	-	639	183	-
Platoon blocked, %		-	-		-	-			
Mov Cap-1 Maneuver	778	-	-	441	-	-	131	0	574
Mov Cap-2 Maneuver	-	-	-	-	-	-	131	0	-
Stage 1	-	-	-	-	-	-	314	0	-
Stage 2	-	-	-	-	-	-	639	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.6	60.6
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	778	-	-	441	-	-	131	574
HCM Lane V/C Ratio	-	-	-	0.084	-	-	0.929	0.292
HCM Control Delay (s)	0	-	-	13.9	-	-	125	13.8
HCM Lane LOS	A	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	0	-	-	0.3	-	-	6.2	1.2



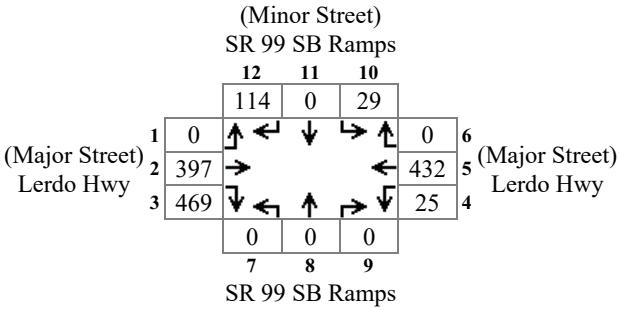
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	752	632	34	790	0	0	0	0	112	0	154
Future Volume (veh/h)	0	752	632	34	790	0	0	0	0	112	0	154
Number	7	4	14	3	8	18				1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1863	1750	1716	1863	0				1716	0	1716
Adj Flow Rate, veh/h	0	817	687	37	859	0				122	0	167
Adj No. of Lanes	0	2	0	1	2	0				1	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0				2	0	2
Cap, veh/h	0	906	731	46	1959	0				602	0	537
Arrive On Green	0.00	0.49	0.49	0.03	0.55	0.00				0.37	0.00	0.37
Sat Flow, veh/h	0	1956	1504	1634	3632	0				1634	0	1458
Grp Volume(v), veh/h	0	774	730	37	859	0				122	0	167
Grp Sat Flow(s),veh/h/ln	0	1770	1597	1634	1770	0				1634	0	1458
Q Serve(g_s), s	0.0	45.9	49.7	2.6	16.5	0.0				5.9	0.0	9.4
Cycle Q Clear(g_c), s	0.0	45.9	49.7	2.6	16.5	0.0				5.9	0.0	9.4
Prop In Lane	0.00		0.94	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	861	777	46	1959	0				602	0	537
V/C Ratio(X)	0.00	0.90	0.94	0.81	0.44	0.00				0.20	0.00	0.31
Avail Cap(c_a), veh/h	0	869	785	324	2579	0				602	0	537
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.85	0.85	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	27.0	27.9	55.6	15.1	0.0				24.8	0.0	25.9
Incr Delay (d2), s/veh	0.0	12.2	18.9	24.2	0.1	0.0				0.8	0.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	25.3	25.8	1.5	8.0	0.0				2.8	0.0	4.0
LnGrp Delay(d),s/veh	0.0	39.2	46.8	79.8	15.3	0.0				25.6	0.0	27.4
LnGrp LOS		D	D	E	B					C		C
Approach Vol, veh/h		1504			896						289	
Approach Delay, s/veh		42.9			17.9						26.6	
Approach LOS		D			B						C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs			3	4		6		8
Phs Duration (G+Y+Rc), s			7.7	60.4		46.9		68.1
Change Period (Y+Rc), s			4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s			22.8	56.5		22.2		83.8
Max Q Clear Time (g_c+I1), s			4.6	51.7		11.4		18.5
Green Ext Time (p_c), s			0.0	4.2		0.6		29.0

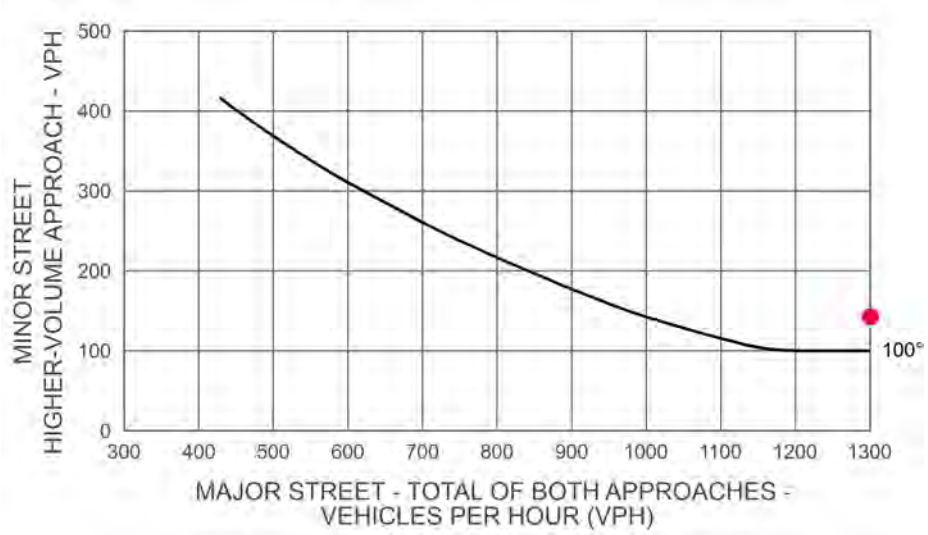
Intersection Summary	
HCM 2010 Ctrl Delay	32.8
HCM 2010 LOS	C

Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Existing
Intersection #: 1

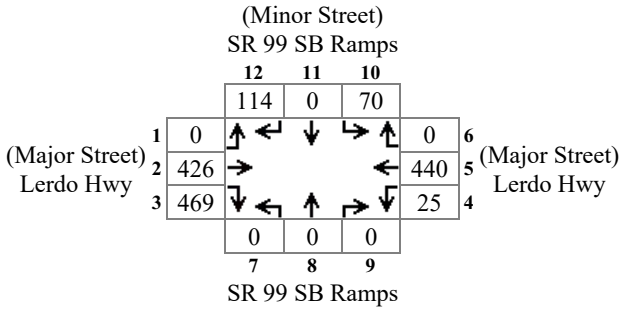


Major Total: 1323
Minor High Volume: 143

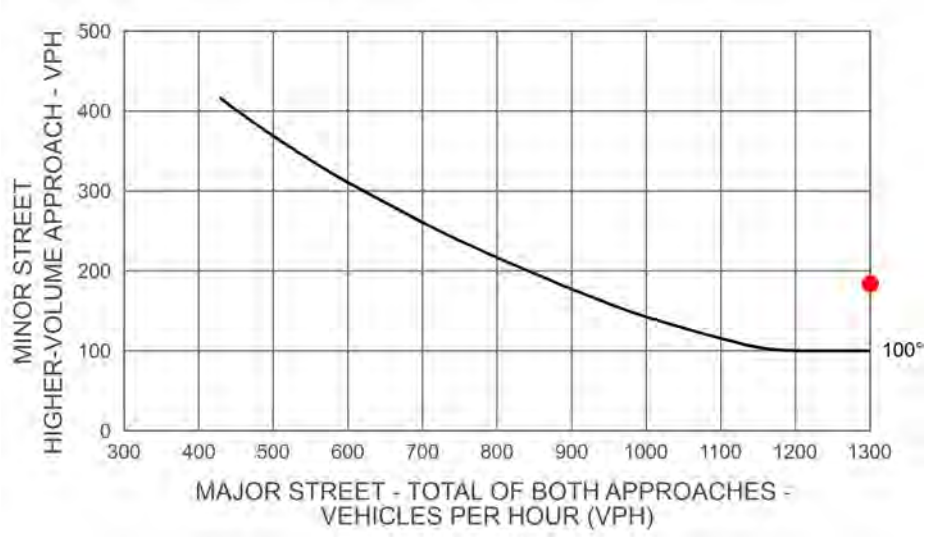


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Existing+Project Phase I
Intersection #: 1

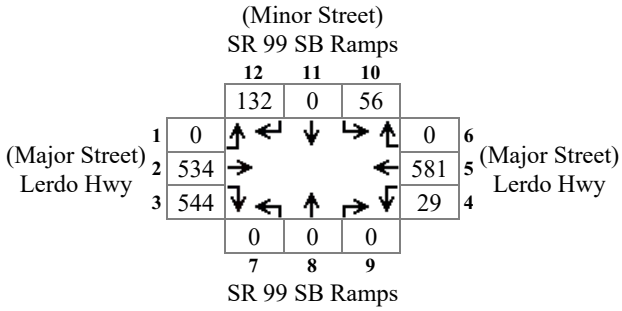


Major Total: 1360
Minor High Volume: 184



Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future
Intersection #: 1

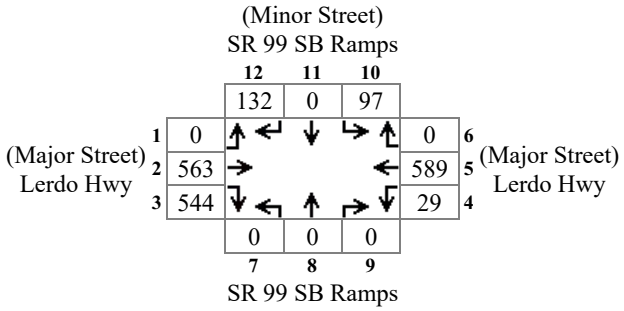


Major Total: 1688
Minor High Volume: 188



Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future+Project
Intersection #: 1

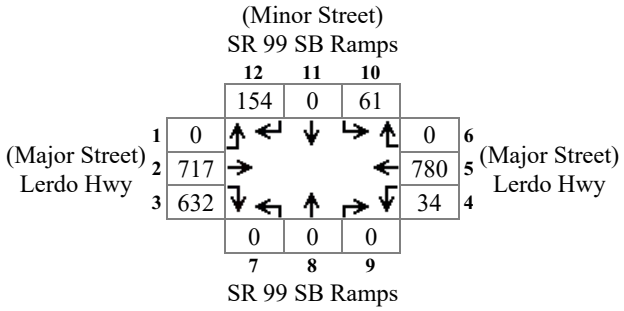


Major Total: 1725
Minor High Volume: 229



Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future
Intersection #: 1

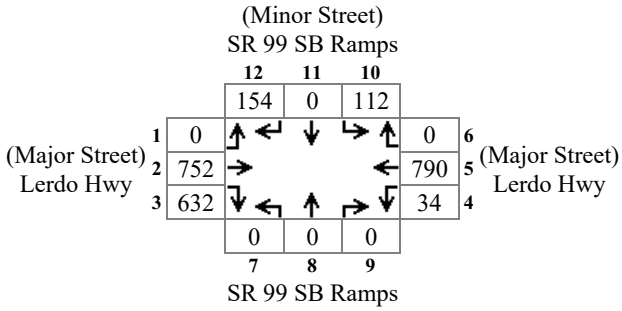


Major Total: 2163
Minor High Volume: 215

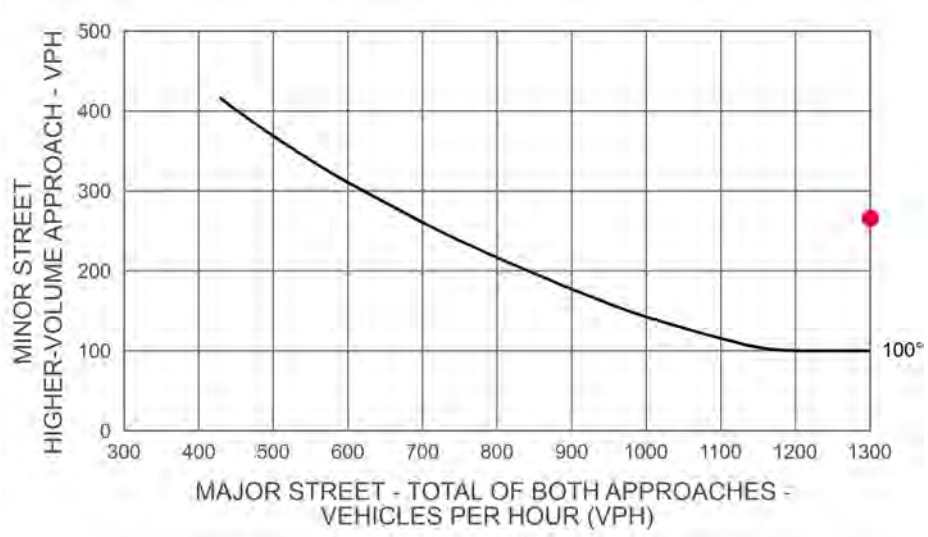


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future+Project Phase I & II
Intersection #: 1



Major Total: 2208
Minor High Volume: 266



Intersection 2
SR 99 NB Ramps & Lerdo Hwy



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	130	179	65	228	0	356	10	16	3	9	27
Future Volume (veh/h)	23	130	179	65	228	0	356	10	16	3	9	27
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1750	1863	1716	1750	1863	1750
Adj Flow Rate, veh/h	25	141	195	71	248	0	387	11	17	3	10	29
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	35	272	243	98	680	0	876	22	856	85	261	665
Arrive On Green	0.02	0.15	0.15	0.06	0.19	0.00	0.59	0.59	0.59	0.59	0.59	0.59
Sat Flow, veh/h	1634	1770	1583	1634	3632	0	1342	38	1458	63	445	1133
Grp Volume(v), veh/h	25	141	195	71	248	0	398	0	17	42	0	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1583	1634	1770	0	1380	0	1458	1641	0	0
Q Serve(g_s), s	1.2	5.9	9.5	3.4	4.9	0.0	12.3	0.0	0.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.2	5.9	9.5	3.4	4.9	0.0	13.2	0.0	0.4	0.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.97		1.00	0.07		0.69
Lane Grp Cap(c), veh/h	35	272	243	98	680	0	899	0	856	1011	0	0
V/C Ratio(X)	0.72	0.52	0.80	0.73	0.36	0.00	0.44	0.00	0.02	0.04	0.00	0.00
Avail Cap(c_a), veh/h	122	376	336	204	928	0	899	0	856	1011	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	39.0	31.2	32.7	37.0	28.1	0.0	9.5	0.0	6.9	7.0	0.0	0.0
Incr Delay (d2), s/veh	23.9	1.5	9.2	9.9	0.3	0.0	1.6	0.0	0.0	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	3.0	4.8	1.8	2.4	0.0	5.4	0.0	0.2	0.4	0.0	0.0
LnGrp Delay(d),s/veh	62.9	32.7	41.9	46.9	28.4	0.0	11.1	0.0	7.0	7.1	0.0	0.0
LnGrp LOS	E	C	D	D	C		B		A	A		
Approach Vol, veh/h		361			319			415			42	
Approach Delay, s/veh		39.8			32.5			10.9			7.1	
Approach LOS		D			C			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		51.0	10.8	18.3		51.0	7.7	21.4
Change Period (Y+Rc), s		4.0	6.0	6.0		4.0	6.0	6.0
Max Green Setting (Gmax), s		47.0	10.0	17.0		47.0	6.0	21.0
Max Q Clear Time (g_c+I1), s		15.2	5.4	11.5		2.9	3.2	6.9
Green Ext Time (p_c), s		3.3	0.6	0.8		3.4	0.0	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	26.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	164	179	117	251	0	356	10	16	3	9	27
Future Volume (veh/h)	23	164	179	117	251	0	356	10	16	3	9	27
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1750	1863	1716	1750	1863	1750
Adj Flow Rate, veh/h	25	178	195	127	273	0	387	11	17	3	10	29
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	35	273	244	172	843	0	816	21	789	81	242	613
Arrive On Green	0.02	0.15	0.15	0.11	0.24	0.00	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	1634	1770	1583	1634	3632	0	1344	38	1458	60	448	1133
Grp Volume(v), veh/h	25	178	195	127	273	0	398	0	17	42	0	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1583	1634	1770	0	1382	0	1458	1641	0	0
Q Serve(g_s), s	1.2	7.6	9.5	6.0	5.1	0.0	13.7	0.0	0.4	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.2	7.6	9.5	6.0	5.1	0.0	14.6	0.0	0.4	1.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.97		1.00	0.07		0.69
Lane Grp Cap(c), veh/h	35	273	244	172	843	0	836	0	789	936	0	0
V/C Ratio(X)	0.72	0.65	0.80	0.74	0.32	0.00	0.48	0.00	0.02	0.04	0.00	0.00
Avail Cap(c_a), veh/h	122	366	328	285	1085	0	836	0	789	936	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	39.0	31.9	32.7	34.8	25.2	0.0	11.7	0.0	8.5	8.7	0.0	0.0
Incr Delay (d2), s/veh	24.0	2.6	9.6	6.1	0.2	0.0	1.9	0.0	0.1	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	3.9	4.8	3.0	2.5	0.0	6.1	0.0	0.2	0.5	0.0	0.0
LnGrp Delay(d),s/veh	63.0	34.5	42.4	40.9	25.4	0.0	13.7	0.0	8.6	8.8	0.0	0.0
LnGrp LOS	E	C	D	D	C		B		A	A		
Approach Vol, veh/h		398			400			415			42	
Approach Delay, s/veh		40.2			30.3			13.5			8.8	
Approach LOS		D			C			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		47.4	14.4	18.4		47.4	7.7	25.1
Change Period (Y+Rc), s		4.0	6.0	6.0		4.0	6.0	6.0
Max Green Setting (Gmax), s		43.4	14.0	16.6		43.4	6.0	24.6
Max Q Clear Time (g_c+I1), s		16.6	8.0	11.5		3.0	3.2	7.1
Green Ext Time (p_c), s		3.2	0.9	0.8		3.4	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	27.1
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	194	208	112	306	0	413	13	19	3	9	28
Future Volume (veh/h)	31	194	208	112	306	0	413	13	19	3	9	28
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1750	1863	1716	1750	1863	1750
Adj Flow Rate, veh/h	34	211	226	122	333	0	449	14	21	3	10	30
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	42	295	264	145	814	0	838	24	827	79	245	648
Arrive On Green	0.03	0.17	0.17	0.09	0.23	0.00	0.57	0.57	0.57	0.57	0.57	0.57
Sat Flow, veh/h	1634	1770	1583	1634	3632	0	1339	42	1458	63	432	1143
Grp Volume(v), veh/h	34	211	226	122	333	0	463	0	21	43	0	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1583	1634	1770	0	1381	0	1458	1638	0	0
Q Serve(g_s), s	1.9	10.2	12.5	6.6	7.2	0.0	18.3	0.0	0.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.9	10.2	12.5	6.6	7.2	0.0	19.4	0.0	0.6	1.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.97		1.00	0.07		0.70
Lane Grp Cap(c), veh/h	42	295	264	145	814	0	862	0	827	971	0	0
V/C Ratio(X)	0.82	0.72	0.86	0.84	0.41	0.00	0.54	0.00	0.03	0.04	0.00	0.00
Avail Cap(c_a), veh/h	91	324	290	145	814	0	862	0	827	971	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	43.6	35.5	36.5	40.4	29.5	0.0	12.6	0.0	8.6	8.7	0.0	0.0
Incr Delay (d2), s/veh	30.6	6.6	20.3	33.3	0.3	0.0	2.4	0.0	0.1	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	5.5	6.9	4.3	3.6	0.0	7.9	0.0	0.2	0.5	0.0	0.0
LnGrp Delay(d),s/veh	74.2	42.1	56.8	73.7	29.8	0.0	15.0	0.0	8.6	8.8	0.0	0.0
LnGrp LOS	E	D	E	E	C		B		A	A		
Approach Vol, veh/h		471			455			484			43	
Approach Delay, s/veh		51.5			41.6			14.7			8.8	
Approach LOS		D			D			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		55.0	14.0	21.0		55.0	8.3	26.7
Change Period (Y+Rc), s		4.0	6.0	6.0		4.0	6.0	6.0
Max Green Setting (Gmax), s		49.5	8.0	16.5		49.5	5.0	19.5
Max Q Clear Time (g_c+I1), s		21.4	8.6	14.5		3.0	3.9	9.2
Green Ext Time (p_c), s		3.8	0.0	0.5		4.1	0.0	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	34.8
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	228	208	164	329	0	413	13	19	3	9	28
Future Volume (veh/h)	31	228	208	164	329	0	413	13	19	3	9	28
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1750	1863	1716	1750	1863	1750
Adj Flow Rate, veh/h	34	248	226	178	358	0	449	14	21	3	10	30
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	41	295	258	206	941	0	799	23	789	75	233	618
Arrive On Green	0.02	0.16	0.16	0.13	0.27	0.00	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	1634	1789	1567	1634	3632	0	1340	42	1458	64	432	1143
Grp Volume(v), veh/h	34	245	229	178	358	0	463	0	21	43	0	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1586	1634	1770	0	1382	0	1458	1638	0	0
Q Serve(g_s), s	2.0	12.8	13.4	10.2	7.9	0.0	20.6	0.0	0.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.0	12.8	13.4	10.2	7.9	0.0	21.7	0.0	0.6	1.2	0.0	0.0
Prop In Lane	1.00		0.99	1.00		0.00	0.97		1.00	0.07		0.70
Lane Grp Cap(c), veh/h	41	292	262	206	941	0	822	0	789	927	0	0
V/C Ratio(X)	0.84	0.84	0.87	0.86	0.38	0.00	0.56	0.00	0.03	0.05	0.00	0.00
Avail Cap(c_a), veh/h	86	307	275	206	941	0	822	0	789	927	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	46.2	38.5	38.8	40.8	28.5	0.0	14.9	0.0	10.2	10.3	0.0	0.0
Incr Delay (d2), s/veh	33.4	17.9	24.6	29.5	0.3	0.0	2.8	0.0	0.1	0.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	7.7	7.6	6.3	3.9	0.0	8.9	0.0	0.3	0.5	0.0	0.0
LnGrp Delay(d),s/veh	79.6	56.4	63.4	70.3	28.8	0.0	17.7	0.0	10.2	10.4	0.0	0.0
LnGrp LOS	E	E	E	E	C		B		B	B		
Approach Vol, veh/h		508			536			484			43	
Approach Delay, s/veh		61.1			42.6			17.4			10.4	
Approach LOS		E			D			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		55.5	18.0	21.7		55.5	8.4	31.3
Change Period (Y+Rc), s		4.0	6.0	6.0		4.0	6.0	6.0
Max Green Setting (Gmax), s		51.5	12.0	16.5		51.5	5.0	23.5
Max Q Clear Time (g_c+I1), s		23.7	12.2	15.4		3.2	4.0	9.9
Green Ext Time (p_c), s		3.8	0.0	0.3		4.1	0.0	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	39.9
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	228	208	164	329	0	413	13	19	3	9	28
Future Volume (veh/h)	31	228	208	164	329	0	413	13	19	3	9	28
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1716	1863	1716	1750	1863	1750
Adj Flow Rate, veh/h	34	248	226	178	358	0	449	14	21	3	10	30
Adj No. of Lanes	1	2	0	1	2	0	2	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	42	641	562	213	1640	0	984	621	486	58	150	382
Arrive On Green	0.03	0.36	0.36	0.13	0.46	0.00	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1634	1789	1567	1634	3632	0	2433	1863	1458	47	450	1147
Grp Volume(v), veh/h	34	245	229	178	358	0	449	14	21	43	0	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1586	1634	1770	0	1217	1863	1458	1644	0	0
Q Serve(g_s), s	1.9	9.3	9.7	9.6	5.4	0.0	11.4	0.5	0.9	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.9	9.3	9.7	9.6	5.4	0.0	13.0	0.5	0.9	1.6	0.0	0.0
Prop In Lane	1.00		0.99	1.00		0.00	1.00		1.00	0.07		0.70
Lane Grp Cap(c), veh/h	42	634	569	213	1640	0	984	621	486	591	0	0
V/C Ratio(X)	0.82	0.39	0.40	0.84	0.22	0.00	0.46	0.02	0.04	0.07	0.00	0.00
Avail Cap(c_a), veh/h	127	634	569	399	1640	0	984	621	486	591	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.54	0.54	0.54	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	43.6	21.5	21.6	38.2	14.4	0.0	24.2	20.2	20.3	20.5	0.0	0.0
Incr Delay (d2), s/veh	18.4	1.0	1.1	8.3	0.3	0.0	1.5	0.1	0.2	0.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	4.7	4.4	4.8	2.7	0.0	4.7	0.2	0.4	0.8	0.0	0.0
LnGrp Delay(d),s/veh	62.1	22.5	22.8	46.5	14.7	0.0	25.7	20.2	20.5	20.8	0.0	0.0
LnGrp LOS	E	C	C	D	B		C	C	C	C		
Approach Vol, veh/h		508			536			484			43	
Approach Delay, s/veh		25.3			25.3			25.3			20.8	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		34.0	17.7	38.3		34.0	8.3	47.7
Change Period (Y+Rc), s		4.0	6.0	6.0		4.0	6.0	6.0
Max Green Setting (Gmax), s		30.0	22.0	22.0		30.0	7.0	37.0
Max Q Clear Time (g_c+I1), s		15.0	11.6	11.7		3.6	3.9	7.4
Green Ext Time (p_c), s		2.2	0.3	3.3		2.5	0.0	4.9

Intersection Summary	
HCM 2010 Ctrl Delay	25.2
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	254	241	142	412	0	479	18	22	3	10	30
Future Volume (veh/h)	42	254	241	142	412	0	479	18	22	3	10	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1750	1863	1716	1750	1863	1750
Adj Flow Rate, veh/h	46	276	262	154	448	0	521	20	24	3	11	33
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	324	290	145	842	0	188	4	802	43	129	305
Arrive On Green	0.03	0.18	0.18	0.09	0.24	0.00	0.55	0.55	0.55	0.55	0.55	0.55
Sat Flow, veh/h	1634	1770	1583	1634	3632	0	199	8	1458	0	235	555
Grp Volume(v), veh/h	46	276	262	154	448	0	541	0	24	47	0	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1583	1634	1770	0	206	0	1458	790	0	0
Q Serve(g_s), s	2.5	13.6	14.6	8.0	9.9	0.0	0.0	0.0	0.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.5	13.6	14.6	8.0	9.9	0.0	49.5	0.0	0.7	49.5	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.00	0.96		1.00	0.06		0.70
Lane Grp Cap(c), veh/h	56	324	290	145	842	0	192	0	802	477	0	0
V/C Ratio(X)	0.82	0.85	0.90	1.06	0.53	0.00	2.82	0.00	0.03	0.10	0.00	0.00
Avail Cap(c_a), veh/h	91	324	290	145	842	0	192	0	802	477	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	43.2	35.6	36.0	41.0	29.9	0.0	30.4	0.0	9.3	13.1	0.0	0.0
Incr Delay (d2), s/veh	25.3	18.9	29.2	91.6	0.6	0.0	832.6	0.0	0.1	0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	8.3	8.7	7.3	4.9	0.0	49.1	0.0	0.3	0.6	0.0	0.0
LnGrp Delay(d),s/veh	68.5	54.5	65.2	132.7	30.6	0.0	863.0	0.0	9.3	13.5	0.0	0.0
LnGrp LOS	E	D	E	F	C		F		A	B		
Approach Vol, veh/h		584			602			565			47	
Approach Delay, s/veh		60.4			56.7			826.7			13.5	
Approach LOS		E			E			F			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		53.5	14.0	22.5		53.5	9.1	27.4
Change Period (Y+Rc), s		4.0	6.0	6.0		4.0	6.0	6.0
Max Green Setting (Gmax), s		49.5	8.0	16.5		49.5	5.0	19.5
Max Q Clear Time (g_c+I1), s		51.5	10.0	16.6		51.5	4.5	11.9
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0	0.0	3.2

Intersection Summary	
HCM 2010 Ctrl Delay	298.7
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	296	241	208	440	0	479	18	22	3	10	30
Future Volume (veh/h)	42	296	241	208	440	0	479	18	22	3	10	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1750	1863	1716	1750	1863	1750
Adj Flow Rate, veh/h	46	322	262	226	478	0	521	20	24	3	11	33
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	322	257	204	929	0	178	4	782	40	123	291
Arrive On Green	0.03	0.17	0.17	0.13	0.26	0.00	0.54	0.54	0.54	0.54	0.54	0.54
Sat Flow, veh/h	1634	1875	1493	1634	3632	0	194	7	1458	0	230	542
Grp Volume(v), veh/h	46	303	281	226	478	0	541	0	24	47	0	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1599	1634	1770	0	201	0	1458	771	0	0
Q Serve(g_s), s	2.7	16.5	16.5	12.0	11.1	0.0	0.0	0.0	0.7	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.7	16.5	16.5	12.0	11.1	0.0	51.5	0.0	0.7	51.5	0.0	0.0
Prop In Lane	1.00		0.93	1.00		0.00	0.96		1.00	0.06		0.70
Lane Grp Cap(c), veh/h	56	304	275	204	929	0	182	0	782	454	0	0
V/C Ratio(X)	0.82	1.00	1.02	1.11	0.51	0.00	2.98	0.00	0.03	0.10	0.00	0.00
Avail Cap(c_a), veh/h	85	304	275	204	929	0	182	0	782	454	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	46.0	39.7	39.8	42.0	30.2	0.0	32.7	0.0	10.5	14.6	0.0	0.0
Incr Delay (d2), s/veh	29.3	50.9	59.7	94.4	0.5	0.0	905.1	0.0	0.1	0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	12.3	11.8	10.7	5.4	0.0	50.5	0.0	0.3	0.6	0.0	0.0
LnGrp Delay(d),s/veh	75.3	90.7	99.6	136.4	30.7	0.0	937.8	0.0	10.6	15.0	0.0	0.0
LnGrp LOS	E	F	F	F	C		F		B	B		
Approach Vol, veh/h		630			704			565			47	
Approach Delay, s/veh		93.5			64.6			898.4			15.0	
Approach LOS		F			E			F			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		55.5	18.0	22.5		55.5	9.3	31.2
Change Period (Y+Rc), s		4.0	6.0	6.0		4.0	6.0	6.0
Max Green Setting (Gmax), s		51.5	12.0	16.5		51.5	5.0	23.5
Max Q Clear Time (g_c+I1), s		53.5	14.0	18.5		53.5	4.7	13.1
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0	0.0	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	314.8
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	296	241	208	440	0	479	18	22	3	10	30
Future Volume (veh/h)	42	296	241	208	440	0	479	18	22	3	10	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1716	1863	1716	1750	1863	1750
Adj Flow Rate, veh/h	46	322	262	226	478	0	521	20	24	3	11	33
Adj No. of Lanes	1	2	0	1	2	0	2	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	56	616	491	262	1609	0	983	621	486	56	150	385
Arrive On Green	0.03	0.33	0.33	0.16	0.45	0.00	0.33	0.33	0.33	0.33	0.33	0.33
Sat Flow, veh/h	1634	1875	1493	1634	3632	0	2424	1863	1458	40	450	1154
Grp Volume(v), veh/h	46	303	281	226	478	0	521	20	24	47	0	0
Grp Sat Flow(s),veh/h/ln	1634	1770	1599	1634	1770	0	1212	1863	1458	1644	0	0
Q Serve(g_s), s	2.5	12.5	12.9	12.1	7.7	0.0	14.0	0.7	1.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.5	12.5	12.9	12.1	7.7	0.0	15.7	0.7	1.0	1.8	0.0	0.0
Prop In Lane	1.00		0.93	1.00		0.00	1.00		1.00	0.06		0.70
Lane Grp Cap(c), veh/h	56	581	525	262	1609	0	983	621	486	591	0	0
V/C Ratio(X)	0.82	0.52	0.53	0.86	0.30	0.00	0.53	0.03	0.05	0.08	0.00	0.00
Avail Cap(c_a), veh/h	127	581	525	399	1609	0	983	621	486	591	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.49	0.49	0.49	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	43.2	24.5	24.6	36.8	15.5	0.0	25.1	20.2	20.3	20.6	0.0	0.0
Incr Delay (d2), s/veh	13.3	1.7	1.9	11.6	0.5	0.0	2.0	0.1	0.2	0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	6.3	6.0	6.3	3.8	0.0	5.7	0.3	0.4	0.8	0.0	0.0
LnGrp Delay(d),s/veh	56.4	26.1	26.5	48.4	16.0	0.0	27.1	20.3	20.5	20.8	0.0	0.0
LnGrp LOS	E	C	C	D	B		C	C	C	C		
Approach Vol, veh/h		630			704			565			47	
Approach Delay, s/veh		28.5			26.4			26.6			20.8	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		34.0	20.4	35.6		34.0	9.1	46.9
Change Period (Y+Rc), s		4.0	6.0	6.0		4.0	6.0	6.0
Max Green Setting (Gmax), s		30.0	22.0	22.0		30.0	7.0	37.0
Max Q Clear Time (g_c+I1), s		17.7	14.1	14.9		3.8	4.5	9.7
Green Ext Time (p_c), s		2.4	0.4	3.3		3.0	0.0	6.5

Intersection Summary	
HCM 2010 Ctrl Delay	27.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	119	293	23	93	0	364	14	103	0	5	9
Future Volume (veh/h)	18	119	293	23	93	0	364	14	103	0	5	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1750	1863	1716	1750	1863	1750
Adj Flow Rate, veh/h	20	129	318	25	101	0	396	15	112	0	5	10
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	304	389	348	34	195	0	852	29	834	0	318	636
Arrive On Green	0.19	0.22	0.22	0.02	0.06	0.00	0.57	0.57	0.57	0.00	0.57	0.57
Sat Flow, veh/h	1634	1770	1583	1634	3632	0	1345	51	1458	0	556	1111
Grp Volume(v), veh/h	20	129	318	25	101	0	411	0	112	0	0	15
Grp Sat Flow(s),veh/h/ln	1634	1770	1583	1634	1770	0	1396	0	1458	0	0	1667
Q Serve(g_s), s	0.9	5.3	16.8	1.3	2.4	0.0	15.3	0.0	3.0	0.0	0.0	0.3
Cycle Q Clear(g_c), s	0.9	5.3	16.8	1.3	2.4	0.0	15.6	0.0	3.0	0.0	0.0	0.3
Prop In Lane	1.00		1.00	1.00		0.00	0.96		1.00	0.00		0.67
Lane Grp Cap(c), veh/h	304	389	348	34	195	0	881	0	834	0	0	954
V/C Ratio(X)	0.07	0.33	0.91	0.73	0.52	0.00	0.47	0.00	0.13	0.00	0.00	0.02
Avail Cap(c_a), veh/h	304	393	351	114	827	0	881	0	834	0	0	954
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	28.7	28.1	32.6	41.7	39.3	0.0	11.3	0.0	8.5	0.0	0.0	7.9
Incr Delay (d2), s/veh	0.1	0.5	27.2	25.5	2.1	0.0	1.8	0.0	0.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.6	10.0	0.8	1.2	0.0	6.3	0.0	1.3	0.0	0.0	0.2
LnGrp Delay(d),s/veh	28.8	28.6	59.8	67.2	41.5	0.0	13.0	0.0	8.8	0.0	0.0	7.9
LnGrp LOS	C	C	E	E	D		B		A			A
Approach Vol, veh/h		467			126			523			15	
Approach Delay, s/veh		49.8			46.6			12.1			7.9	
Approach LOS		D			D			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		53.0	7.8	24.8		53.0	21.9	10.7
Change Period (Y+Rc), s		4.0	6.0	6.0		4.0	6.0	6.0
Max Green Setting (Gmax), s		49.0	6.0	19.0		49.0	5.0	20.0
Max Q Clear Time (g_c+I1), s		17.6	3.3	18.8		2.3	2.9	4.4
Green Ext Time (p_c), s		3.5	0.0	0.1		3.6	0.5	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	31.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	189	293	41	101	0	364	14	103	0	5	9
Future Volume (veh/h)	18	189	293	41	101	0	364	14	103	0	5	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1750	1863	1716	1750	1863	1750
Adj Flow Rate, veh/h	20	205	318	45	110	0	396	15	112	0	5	10
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	318	387	346	55	204	0	840	29	822	0	313	626
Arrive On Green	0.19	0.22	0.22	0.03	0.06	0.00	0.56	0.56	0.56	0.00	0.56	0.56
Sat Flow, veh/h	1634	1770	1583	1634	3632	0	1345	51	1458	0	556	1111
Grp Volume(v), veh/h	20	205	318	45	110	0	411	0	112	0	0	15
Grp Sat Flow(s),veh/h/ln	1634	1770	1583	1634	1770	0	1396	0	1458	0	0	1667
Q Serve(g_s), s	0.9	8.9	17.1	2.4	2.6	0.0	15.8	0.0	3.2	0.0	0.0	0.3
Cycle Q Clear(g_c), s	0.9	8.9	17.1	2.4	2.6	0.0	16.1	0.0	3.2	0.0	0.0	0.3
Prop In Lane	1.00		1.00	1.00		0.00	0.96		1.00	0.00		0.67
Lane Grp Cap(c), veh/h	318	387	346	55	204	0	868	0	822	0	0	940
V/C Ratio(X)	0.06	0.53	0.92	0.82	0.54	0.00	0.47	0.00	0.14	0.00	0.00	0.02
Avail Cap(c_a), veh/h	318	387	346	113	814	0	868	0	822	0	0	940
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	28.6	30.0	33.2	41.7	39.8	0.0	11.9	0.0	9.0	0.0	0.0	8.3
Incr Delay (d2), s/veh	0.1	1.4	28.7	25.2	2.2	0.0	1.8	0.0	0.3	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	4.5	10.2	1.5	1.3	0.0	6.5	0.0	1.4	0.0	0.0	0.2
LnGrp Delay(d),s/veh	28.6	31.4	61.9	67.0	42.0	0.0	13.7	0.0	9.3	0.0	0.0	8.4
LnGrp LOS	C	C	E	E	D		B		A			A
Approach Vol, veh/h		543			155			523			15	
Approach Delay, s/veh		49.2			49.3			12.8			8.4	
Approach LOS		D			D			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		53.0	8.9	25.0		53.0	22.9	11.0
Change Period (Y+Rc), s		4.0	6.0	6.0		4.0	6.0	6.0
Max Green Setting (Gmax), s		49.0	6.0	19.0		49.0	5.0	20.0
Max Q Clear Time (g_c+I1), s		18.1	4.4	19.1		2.3	2.9	4.6
Green Ext Time (p_c), s		3.5	0.0	0.0		3.6	0.6	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	33.3
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	182	340	41	125	0	422	19	120	0	5	9
Future Volume (veh/h)	24	182	340	41	125	0	422	19	120	0	5	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1750	1863	1716	1750	1863	1750
Adj Flow Rate, veh/h	26	198	370	45	136	0	459	21	130	0	5	10
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	35	330	295	55	703	0	882	37	875	0	333	667
Arrive On Green	0.02	0.19	0.19	0.03	0.20	0.00	0.60	0.60	0.60	0.00	0.60	0.60
Sat Flow, veh/h	1634	1770	1583	1634	3632	0	1339	61	1458	0	556	1111
Grp Volume(v), veh/h	26	198	370	45	136	0	480	0	130	0	0	15
Grp Sat Flow(s),veh/h/ln	1634	1770	1583	1634	1770	0	1400	0	1458	0	0	1667
Q Serve(g_s), s	1.4	9.1	16.6	2.4	2.8	0.0	18.6	0.0	3.5	0.0	0.0	0.3
Cycle Q Clear(g_c), s	1.4	9.1	16.6	2.4	2.8	0.0	18.9	0.0	3.5	0.0	0.0	0.3
Prop In Lane	1.00		1.00	1.00		0.00	0.96		1.00	0.00		0.67
Lane Grp Cap(c), veh/h	35	330	295	55	703	0	919	0	875	0	0	1000
V/C Ratio(X)	0.75	0.60	1.25	0.82	0.19	0.00	0.52	0.00	0.15	0.00	0.00	0.01
Avail Cap(c_a), veh/h	73	330	295	73	703	0	919	0	875	0	0	1000
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	43.3	33.1	36.2	42.7	29.7	0.0	11.0	0.0	7.8	0.0	0.0	7.2
Incr Delay (d2), s/veh	26.7	3.0	138.5	40.0	0.1	0.0	2.1	0.0	0.4	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	4.7	18.6	1.7	1.4	0.0	7.7	0.0	1.5	0.0	0.0	0.2
LnGrp Delay(d),s/veh	70.0	36.1	174.6	82.8	29.8	0.0	13.1	0.0	8.2	0.0	0.0	7.2
LnGrp LOS	E	D	F	F	C		B		A			A
Approach Vol, veh/h		594			181			610			15	
Approach Delay, s/veh		123.9			43.0			12.1			7.2	
Approach LOS		F			D			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		57.4	9.0	22.6		57.4	7.9	23.7
Change Period (Y+Rc), s		4.0	6.0	6.0		4.0	6.0	6.0
Max Green Setting (Gmax), s		53.4	4.0	16.6		53.4	4.0	16.6
Max Q Clear Time (g_c+I1), s		20.9	4.4	18.6		2.3	3.4	4.8
Green Ext Time (p_c), s		4.2	0.0	0.0		4.4	0.0	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	63.5
HCM 2010 LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	252	340	59	133	0	422	19	120	0	5	9
Future Volume (veh/h)	24	252	340	59	133	0	422	19	120	0	5	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1750	1863	1716	1750	1863	1750
Adj Flow Rate, veh/h	26	274	370	64	145	0	459	21	130	0	5	10
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	35	326	292	73	735	0	872	36	865	0	330	659
Arrive On Green	0.02	0.18	0.18	0.04	0.21	0.00	0.59	0.59	0.59	0.00	0.59	0.59
Sat Flow, veh/h	1634	1770	1583	1634	3632	0	1338	61	1458	0	556	1111
Grp Volume(v), veh/h	26	274	370	64	145	0	480	0	130	0	0	15
Grp Sat Flow(s),veh/h/ln	1634	1770	1583	1634	1770	0	1400	0	1458	0	0	1667
Q Serve(g_s), s	1.4	13.4	16.6	3.5	3.0	0.0	19.1	0.0	3.6	0.0	0.0	0.3
Cycle Q Clear(g_c), s	1.4	13.4	16.6	3.5	3.0	0.0	19.4	0.0	3.6	0.0	0.0	0.3
Prop In Lane	1.00		1.00	1.00		0.00	0.96		1.00	0.00		0.67
Lane Grp Cap(c), veh/h	35	326	292	73	735	0	909	0	865	0	0	989
V/C Ratio(X)	0.75	0.84	1.27	0.88	0.20	0.00	0.53	0.00	0.15	0.00	0.00	0.02
Avail Cap(c_a), veh/h	73	326	292	73	735	0	909	0	865	0	0	989
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	43.8	35.4	36.7	42.8	29.5	0.0	11.5	0.0	8.2	0.0	0.0	7.5
Incr Delay (d2), s/veh	27.0	17.4	144.5	66.6	0.1	0.0	2.2	0.0	0.4	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	8.1	18.9	2.9	1.5	0.0	7.9	0.0	1.5	0.0	0.0	0.2
LnGrp Delay(d),s/veh	70.8	52.8	181.2	109.4	29.6	0.0	13.7	0.0	8.5	0.0	0.0	7.5
LnGrp LOS	E	D	F	F	C		B		A			A
Approach Vol, veh/h		670			209			610			15	
Approach Delay, s/veh		124.4			54.0			12.6			7.5	
Approach LOS		F			D			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		57.4	10.0	22.6		57.4	7.9	24.7
Change Period (Y+Rc), s		4.0	6.0	6.0		4.0	6.0	6.0
Max Green Setting (Gmax), s		53.4	4.0	16.6		53.4	4.0	16.6
Max Q Clear Time (g_c+I1), s		21.4	5.5	18.6		2.3	3.4	5.0
Green Ext Time (p_c), s		4.2	0.0	0.0		4.4	0.0	0.6

Intersection Summary	
HCM 2010 Ctrl Delay	68.1
HCM 2010 LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	252	340	59	133	0	422	19	120	0	5	9
Future Volume (veh/h)	24	252	340	59	133	0	422	19	120	0	5	9
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1716	1863	1716	1750	1863	1750
Adj Flow Rate, veh/h	26	274	370	64	145	0	459	21	130	0	5	10
Adj No. of Lanes	1	2	0	1	2	0	2	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	35	778	696	81	1655	0	974	621	486	0	185	370
Arrive On Green	0.02	0.44	0.44	0.05	0.47	0.00	0.33	0.33	0.33	0.00	0.33	0.33
Sat Flow, veh/h	1634	1770	1583	1634	3632	0	2489	1863	1458	0	556	1111
Grp Volume(v), veh/h	26	274	370	64	145	0	459	21	130	0	0	15
Grp Sat Flow(s),veh/h/ln	1634	1770	1583	1634	1770	0	1244	1863	1458	0	0	1667
Q Serve(g_s), s	1.4	9.2	15.4	3.5	2.0	0.0	13.7	0.7	5.9	0.0	0.0	0.5
Cycle Q Clear(g_c), s	1.4	9.2	15.4	3.5	2.0	0.0	14.2	0.7	5.9	0.0	0.0	0.5
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.67
Lane Grp Cap(c), veh/h	35	778	696	81	1655	0	974	621	486	0	0	556
V/C Ratio(X)	0.75	0.35	0.53	0.79	0.09	0.00	0.47	0.03	0.27	0.00	0.00	0.03
Avail Cap(c_a), veh/h	127	778	696	399	1655	0	974	621	486	0	0	556
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.54	0.54	0.54	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	43.8	16.7	18.5	42.3	13.3	0.0	25.0	20.2	22.0	0.0	0.0	20.2
Incr Delay (d2), s/veh	15.9	0.7	1.6	15.6	0.1	0.0	1.6	0.1	1.3	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	4.6	7.0	1.9	1.0	0.0	4.9	0.4	2.5	0.0	0.0	0.3
LnGrp Delay(d),s/veh	59.7	17.4	20.0	57.9	13.4	0.0	26.6	20.3	23.3	0.0	0.0	20.3
LnGrp LOS	E	B	C	E	B		C	C	C			C
Approach Vol, veh/h		670			209			610			15	
Approach Delay, s/veh		20.5			27.0			25.7			20.3	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		34.0	10.5	45.5		34.0	7.9	48.1
Change Period (Y+Rc), s		4.0	6.0	6.0		4.0	6.0	6.0
Max Green Setting (Gmax), s		30.0	22.0	22.0		30.0	7.0	37.0
Max Q Clear Time (g_c+I1), s		16.2	5.5	17.4		2.5	3.4	4.0
Green Ext Time (p_c), s		2.3	0.1	1.8		2.8	0.0	4.7

Intersection Summary	
HCM 2010 Ctrl Delay	23.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	237	395	52	168	0	490	25	139	0	6	10
Future Volume (veh/h)	33	237	395	52	168	0	490	25	139	0	6	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1750	1863	1716	1750	1863	1750
Adj Flow Rate, veh/h	36	258	429	57	183	0	533	27	151	0	7	11
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	43	327	292	70	713	0	868	40	866	0	389	610
Arrive On Green	0.03	0.18	0.18	0.04	0.20	0.00	0.59	0.59	0.59	0.00	0.59	0.59
Sat Flow, veh/h	1634	1770	1583	1634	3632	0	1329	67	1458	0	654	1028
Grp Volume(v), veh/h	36	258	429	57	183	0	560	0	151	0	0	18
Grp Sat Flow(s),veh/h/ln	1634	1770	1583	1634	1770	0	1396	0	1458	0	0	1681
Q Serve(g_s), s	2.0	12.5	16.6	3.1	3.9	0.0	24.4	0.0	4.2	0.0	0.0	0.4
Cycle Q Clear(g_c), s	2.0	12.5	16.6	3.1	3.9	0.0	24.8	0.0	4.2	0.0	0.0	0.4
Prop In Lane	1.00		1.00	1.00		0.00	0.95		1.00	0.00		0.61
Lane Grp Cap(c), veh/h	43	327	292	70	713	0	908	0	866	0	0	999
V/C Ratio(X)	0.83	0.79	1.47	0.81	0.26	0.00	0.62	0.00	0.17	0.00	0.00	0.02
Avail Cap(c_a), veh/h	73	327	292	73	713	0	908	0	866	0	0	999
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	43.6	35.0	36.6	42.6	30.2	0.0	12.6	0.0	8.3	0.0	0.0	7.5
Incr Delay (d2), s/veh	31.9	12.2	228.0	46.4	0.2	0.0	3.1	0.0	0.4	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	7.2	25.7	2.3	1.9	0.0	10.1	0.0	1.8	0.0	0.0	0.2
LnGrp Delay(d),s/veh	75.5	47.2	264.6	89.0	30.4	0.0	15.7	0.0	8.7	0.0	0.0	7.5
LnGrp LOS	E	D	F	F	C		B		A			A
Approach Vol, veh/h		723			240			711			18	
Approach Delay, s/veh		177.6			44.3			14.2			7.5	
Approach LOS		F			D			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		57.4	9.9	22.6		57.4	8.4	24.1
Change Period (Y+Rc), s		4.0	6.0	6.0		4.0	6.0	6.0
Max Green Setting (Gmax), s		53.4	4.0	16.6		53.4	4.0	16.6
Max Q Clear Time (g_c+I1), s		26.8	5.1	18.6		2.4	4.0	5.9
Green Ext Time (p_c), s		5.0	0.0	0.0		5.4	0.0	0.7

Intersection Summary	
HCM 2010 Ctrl Delay	88.2
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	323	395	75	178	0	490	25	139	0	6	10
Future Volume (veh/h)	33	323	395	75	178	0	490	25	139	0	6	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1750	1863	1716	1750	1863	1750
Adj Flow Rate, veh/h	36	351	429	82	193	0	533	27	151	0	7	11
Adj No. of Lanes	1	2	0	1	2	0	0	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	43	326	292	73	717	0	866	40	865	0	388	610
Arrive On Green	0.03	0.18	0.18	0.04	0.20	0.00	0.59	0.59	0.59	0.00	0.59	0.59
Sat Flow, veh/h	1634	1770	1583	1634	3632	0	1329	67	1458	0	654	1028
Grp Volume(v), veh/h	36	351	429	82	193	0	560	0	151	0	0	18
Grp Sat Flow(s),veh/h/ln	1634	1770	1583	1634	1770	0	1396	0	1458	0	0	1681
Q Serve(g_s), s	2.0	16.6	16.6	4.0	4.1	0.0	24.5	0.0	4.2	0.0	0.0	0.4
Cycle Q Clear(g_c), s	2.0	16.6	16.6	4.0	4.1	0.0	24.9	0.0	4.2	0.0	0.0	0.4
Prop In Lane	1.00		1.00	1.00		0.00	0.95		1.00	0.00		0.61
Lane Grp Cap(c), veh/h	43	326	292	73	717	0	906	0	865	0	0	998
V/C Ratio(X)	0.84	1.08	1.47	1.13	0.27	0.00	0.62	0.00	0.17	0.00	0.00	0.02
Avail Cap(c_a), veh/h	73	326	292	73	717	0	906	0	865	0	0	998
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	43.6	36.7	36.7	43.0	30.3	0.0	12.6	0.0	8.3	0.0	0.0	7.5
Incr Delay (d2), s/veh	32.0	71.3	228.9	145.0	0.2	0.0	3.2	0.0	0.4	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	14.5	25.8	4.7	2.0	0.0	10.1	0.0	1.8	0.0	0.0	0.2
LnGrp Delay(d),s/veh	75.6	108.0	265.6	188.0	30.5	0.0	15.8	0.0	8.7	0.0	0.0	7.6
LnGrp LOS	E	F	F	F	C		B		A			A
Approach Vol, veh/h		816			275			711			18	
Approach Delay, s/veh		189.4			77.5			14.3			7.6	
Approach LOS		F			E			B			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		57.4	10.0	22.6		57.4	8.4	24.2
Change Period (Y+Rc), s		4.0	6.0	6.0		4.0	6.0	6.0
Max Green Setting (Gmax), s		53.4	4.0	16.6		53.4	4.0	16.6
Max Q Clear Time (g_c+I1), s		26.9	6.0	18.6		2.4	4.0	6.1
Green Ext Time (p_c), s		5.0	0.0	0.0		5.4	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	102.3
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	323	395	75	178	0	490	25	139	0	6	10
Future Volume (veh/h)	33	323	395	75	178	0	490	25	139	0	6	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1863	1750	1716	1863	1750	1716	1863	1716	1750	1863	1750
Adj Flow Rate, veh/h	36	351	429	82	193	0	533	27	151	0	7	11
Adj No. of Lanes	1	2	0	1	2	0	2	1	1	0	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	43	752	673	104	1637	0	969	621	486	0	218	343
Arrive On Green	0.03	0.43	0.43	0.06	0.46	0.00	0.33	0.33	0.33	0.00	0.33	0.33
Sat Flow, veh/h	1634	1770	1583	1634	3632	0	2482	1863	1458	0	654	1028
Grp Volume(v), veh/h	36	351	429	82	193	0	533	27	151	0	0	18
Grp Sat Flow(s),veh/h/ln	1634	1770	1583	1634	1770	0	1241	1863	1458	0	0	1681
Q Serve(g_s), s	2.0	12.8	19.2	4.5	2.8	0.0	16.6	0.9	6.9	0.0	0.0	0.6
Cycle Q Clear(g_c), s	2.0	12.8	19.2	4.5	2.8	0.0	17.2	0.9	6.9	0.0	0.0	0.6
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	0.00		0.61
Lane Grp Cap(c), veh/h	43	752	673	104	1637	0	969	621	486	0	0	560
V/C Ratio(X)	0.84	0.47	0.64	0.79	0.12	0.00	0.55	0.04	0.31	0.00	0.00	0.03
Avail Cap(c_a), veh/h	127	752	673	399	1637	0	969	621	486	0	0	560
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.46	0.46	0.46	1.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00
Uniform Delay (d), s/veh	43.6	18.6	20.4	41.5	13.7	0.0	26.0	20.3	22.3	0.0	0.0	20.2
Incr Delay (d2), s/veh	17.2	1.0	2.1	12.3	0.1	0.0	2.2	0.1	1.7	0.0	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	6.4	8.7	2.4	1.4	0.0	6.0	0.5	3.0	0.0	0.0	0.3
LnGrp Delay(d),s/veh	60.8	19.5	22.5	53.8	13.9	0.0	28.3	20.4	24.0	0.0	0.0	20.3
LnGrp LOS	E	B	C	D	B		C	C	C			C
Approach Vol, veh/h		816			275			711			18	
Approach Delay, s/veh		22.9			25.8			27.1			20.3	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		34.0	11.7	44.3		34.0	8.4	47.6
Change Period (Y+Rc), s		4.0	6.0	6.0		4.0	6.0	6.0
Max Green Setting (Gmax), s		30.0	22.0	22.0		30.0	7.0	37.0
Max Q Clear Time (g_c+I1), s		19.2	6.5	21.2		2.6	4.0	4.8
Green Ext Time (p_c), s		2.5	0.1	0.4		3.3	0.0	6.1

Intersection Summary	
HCM 2010 Ctrl Delay	24.9
HCM 2010 LOS	C

Intersection 3
Porterville Hwy (SR 65) & Lerdo Hwy

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	5	229	87	368	403	12
Future Vol, veh/h	5	229	87	368	403	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	30	370	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	249	95	400	438	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1034	445	451	0	-	0
Stage 1	445	-	-	-	-	-
Stage 2	589	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	257	613	1109	-	-	-
Stage 1	646	-	-	-	-	-
Stage 2	554	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	235	613	1109	-	-	-
Mov Cap-2 Maneuver	235	-	-	-	-	-
Stage 1	646	-	-	-	-	-
Stage 2	507	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.9	1.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1109	-	235	613	-	-
HCM Lane V/C Ratio	0.085	-	0.023	0.406	-	-
HCM Control Delay (s)	8.5	-	20.7	14.8	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.1	2	-	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	5	263	162	387	412	12
Future Vol, veh/h	5	263	162	387	412	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	30	370	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	286	176	421	448	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1227	454	461	0	-	0
Stage 1	454	-	-	-	-	-
Stage 2	773	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	197	606	1100	-	-	-
Stage 1	640	-	-	-	-	-
Stage 2	455	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	165	606	1100	-	-	-
Mov Cap-2 Maneuver	165	-	-	-	-	-
Stage 1	640	-	-	-	-	-
Stage 2	382	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.3	2.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1100	-	165	606	-	-
HCM Lane V/C Ratio	0.16	-	0.033	0.472	-	-
HCM Control Delay (s)	8.9	-	27.6	16.1	-	-
HCM Lane LOS	A	-	D	C	-	-
HCM 95th %tile Q(veh)	0.6	-	0.1	2.5	-	-

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	6	285	133	491	470	13
Future Vol, veh/h	6	285	133	491	470	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	30	370	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	310	145	534	511	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1341	518	525	0	-	0
Stage 1	518	-	-	-	-	-
Stage 2	823	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	168	558	1042	-	-	-
Stage 1	598	-	-	-	-	-
Stage 2	431	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	145	558	1042	-	-	-
Mov Cap-2 Maneuver	145	-	-	-	-	-
Stage 1	598	-	-	-	-	-
Stage 2	371	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.4	1.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1042	-	145	558	-	-
HCM Lane V/C Ratio	0.139	-	0.045	0.555	-	-
HCM Control Delay (s)	9	-	31	19.2	-	-
HCM Lane LOS	A	-	D	C	-	-
HCM 95th %tile Q(veh)	0.5	-	0.1	3.4	-	-

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	6	319	208	510	479	13
Future Vol, veh/h	6	319	208	510	479	13
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	30	370	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	347	226	554	521	14

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1535	528	535	0	-	0
Stage 1	528	-	-	-	-	-
Stage 2	1007	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	128	550	1033	-	-	-
Stage 1	592	-	-	-	-	-
Stage 2	353	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	100	550	1033	-	-	-
Mov Cap-2 Maneuver	100	-	-	-	-	-
Stage 1	592	-	-	-	-	-
Stage 2	276	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	22.4	2.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1033	-	100	550	-	-
HCM Lane V/C Ratio	0.219	-	0.065	0.63	-	-
HCM Control Delay (s)	9.5	-	43.5	22	-	-
HCM Lane LOS	A	-	E	C	-	-
HCM 95th %tile Q(veh)	0.8	-	0.2	4.4	-	-



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	319	208	510	479	13
Future Volume (veh/h)	6	319	208	510	479	13
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1716	1716	1863	1863	1716
Adj Flow Rate, veh/h	7	347	226	554	521	14
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	411	367	495	1249	1249	978
Arrive On Green	0.25	0.25	0.67	0.67	0.67	0.67
Sat Flow, veh/h	1634	1458	798	1863	1863	1458
Grp Volume(v), veh/h	7	347	226	554	521	14
Grp Sat Flow(s),veh/h/ln	1634	1458	798	1863	1863	1458
Q Serve(g_s), s	0.4	26.9	20.8	16.0	14.7	0.4
Cycle Q Clear(g_c), s	0.4	26.9	35.5	16.0	14.7	0.4
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	411	367	495	1249	1249	978
V/C Ratio(X)	0.02	0.95	0.46	0.44	0.42	0.01
Avail Cap(c_a), veh/h	413	369	495	1249	1249	978
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.88	0.88	1.00	1.00
Uniform Delay (d), s/veh	32.4	42.3	16.8	8.9	8.7	6.3
Incr Delay (d2), s/veh	0.0	33.1	2.7	1.0	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	14.2	4.9	8.5	7.9	0.2
LnGrp Delay(d),s/veh	32.4	75.4	19.5	9.9	9.7	6.3
LnGrp LOS	C	E	B	A	A	A
Approach Vol, veh/h	354			780	535	
Approach Delay, s/veh	74.6			12.7	9.6	
Approach LOS	E			B	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		81.6		33.4		81.6		
Change Period (Y+Rc), s		4.5		4.5		4.5		
Max Green Setting (Gmax), s		76.9		29.1		76.9		
Max Q Clear Time (g_c+I1), s		37.5		28.9		16.7		
Green Ext Time (p_c), s		9.3		0.0		9.8		

Intersection Summary	
HCM 2010 Ctrl Delay	24.8
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	8	327	158	616	523	15
Future Vol, veh/h	8	327	158	616	523	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	30	370	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	355	172	670	568	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1590	577	585	0	-	0
Stage 1	577	-	-	-	-	-
Stage 2	1013	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	118	516	990	-	-	-
Stage 1	562	-	-	-	-	-
Stage 2	351	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	97	516	990	-	-	-
Mov Cap-2 Maneuver	97	-	-	-	-	-
Stage 1	562	-	-	-	-	-
Stage 2	290	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	26.5	1.9	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	990	-	97	516	-	-
HCM Lane V/C Ratio	0.173	-	0.09	0.689	-	-
HCM Control Delay (s)	9.4	-	45.7	26	-	-
HCM Lane LOS	A	-	E	D	-	-
HCM 95th %tile Q(veh)	0.6	-	0.3	5.3	-	-

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	8	369	252	639	534	15
Future Vol, veh/h	8	369	252	639	534	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	30	370	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	401	274	695	580	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1831	589	597	0	-	0
Stage 1	589	-	-	-	-	-
Stage 2	1242	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	84	508	980	-	-	-
Stage 1	554	-	-	-	-	-
Stage 2	272	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	61	508	980	-	-	-
Mov Cap-2 Maneuver	61	-	-	-	-	-
Stage 1	554	-	-	-	-	-
Stage 2	196	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	34.5	2.9	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	980	-	61	508	-	-
HCM Lane V/C Ratio	0.28	-	0.143	0.79	-	-
HCM Control Delay (s)	10.1	-	73.6	33.7	-	-
HCM Lane LOS	B	-	F	D	-	-
HCM 95th %tile Q(veh)	1.1	-	0.5	7.3	-	-



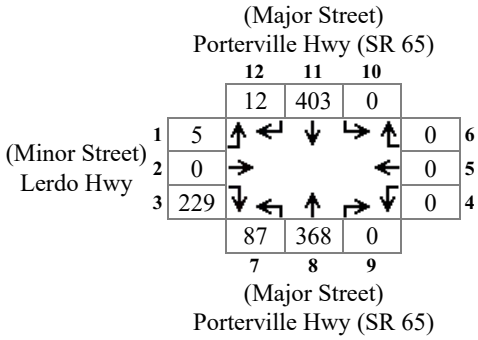
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	369	252	639	534	15
Future Volume (veh/h)	8	369	252	639	534	15
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1716	1716	1863	1863	1716
Adj Flow Rate, veh/h	9	401	274	695	580	16
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	413	369	454	1246	1246	975
Arrive On Green	0.25	0.25	0.67	0.67	0.67	0.67
Sat Flow, veh/h	1634	1458	754	1863	1863	1458
Grp Volume(v), veh/h	9	401	274	695	580	16
Grp Sat Flow(s),veh/h/ln	1634	1458	754	1863	1863	1458
Q Serve(g_s), s	0.5	29.1	31.6	22.7	17.2	0.4
Cycle Q Clear(g_c), s	0.5	29.1	48.8	22.7	17.2	0.4
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	413	369	454	1246	1246	975
V/C Ratio(X)	0.02	1.09	0.60	0.56	0.47	0.02
Avail Cap(c_a), veh/h	413	369	454	1246	1246	975
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.81	0.81	1.00	1.00
Uniform Delay (d), s/veh	32.3	43.0	20.9	10.1	9.2	6.4
Incr Delay (d2), s/veh	0.0	72.1	4.8	1.5	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	19.1	7.1	12.1	9.1	0.2
LnGrp Delay(d),s/veh	32.3	115.0	25.7	11.5	10.4	6.4
LnGrp LOS	C	F	C	B	B	A
Approach Vol, veh/h	410			969	596	
Approach Delay, s/veh	113.2			15.5	10.3	
Approach LOS	F			B	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		81.4		33.6		81.4		
Change Period (Y+Rc), s		4.5		4.5		4.5		
Max Green Setting (Gmax), s		76.9		29.1		76.9		
Max Q Clear Time (g_c+I1), s		50.8		31.1		19.2		
Green Ext Time (p_c), s		11.0		0.0		13.6		

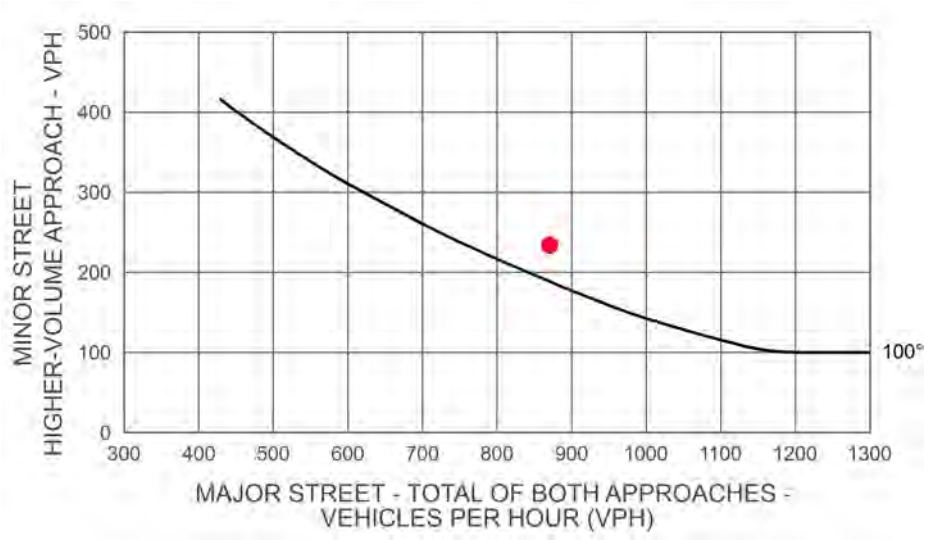
Intersection Summary	
HCM 2010 Ctrl Delay	34.2
HCM 2010 LOS	C

Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Existing
Intersection #: 3

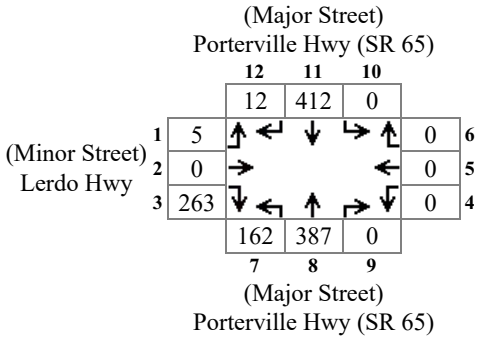


Major Total: 870
Minor High Volume: 234

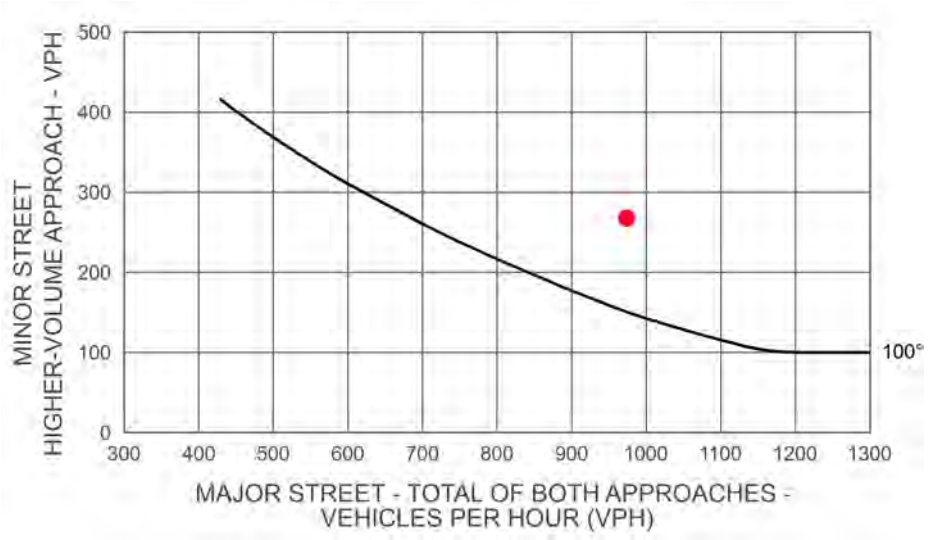


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Existing+Project Phase I
Intersection #: 3

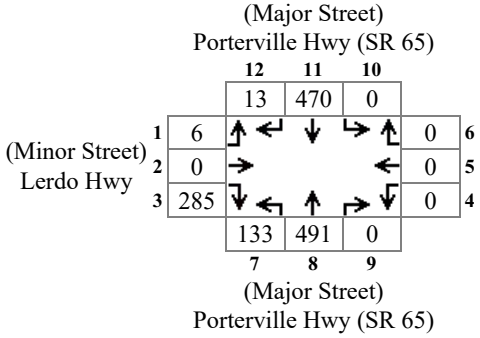


Major Total: 973
Minor High Volume: 268

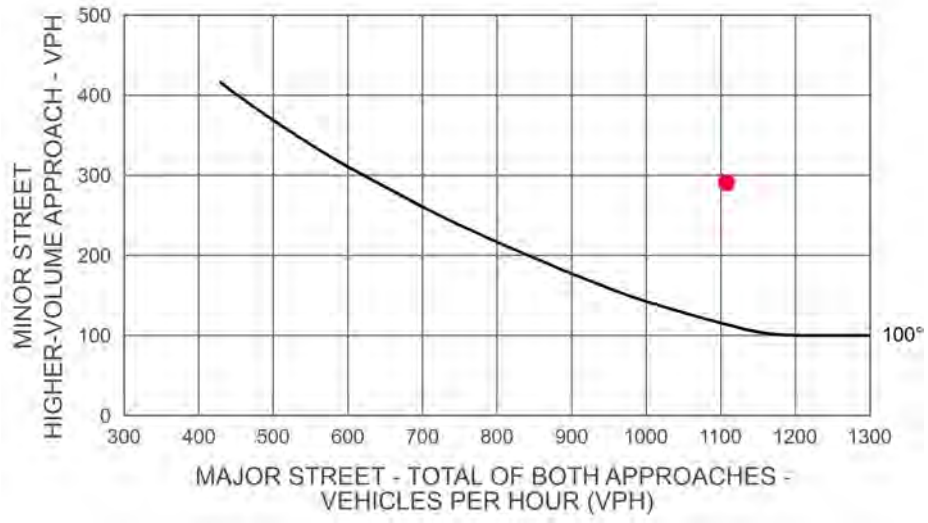


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future
Intersection #: 3

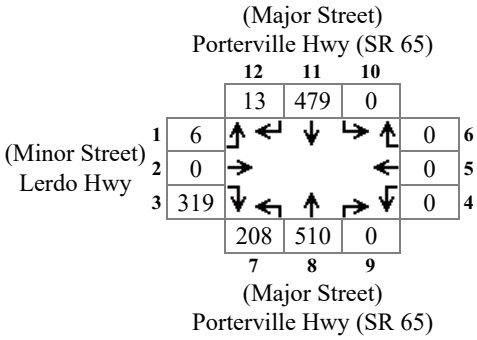


Major Total: 1107
Minor High Volume: 291



Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future+Project
Intersection #: 3

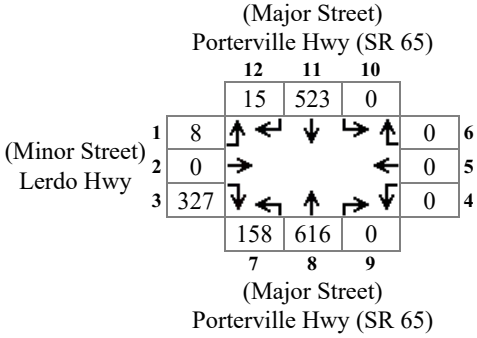


Major Total: 1210
Minor High Volume: 325



Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future
Intersection #: 3

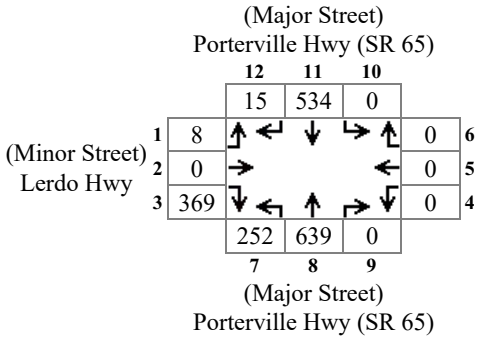


Major Total: 1312
Minor High Volume: 335



Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future+Project Phase I & II
Intersection #: 3



Major Total: 1440
Minor High Volume: 377



Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	8	77	151	256	358	10
Future Vol, veh/h	8	77	151	256	358	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	30	370	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	84	164	278	389	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1002	395	400	0	-	0
Stage 1	395	-	-	-	-	-
Stage 2	607	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	269	654	1159	-	-	-
Stage 1	681	-	-	-	-	-
Stage 2	544	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	231	654	1159	-	-	-
Mov Cap-2 Maneuver	231	-	-	-	-	-
Stage 1	681	-	-	-	-	-
Stage 2	467	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	3.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1159	-	231	654	-	-
HCM Lane V/C Ratio	0.142	-	0.038	0.128	-	-
HCM Control Delay (s)	8.6	-	21.2	11.3	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.5	-	0.1	0.4	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	8	147	177	263	376	10
Future Vol, veh/h	8	147	177	263	376	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	30	370	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	160	192	286	409	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1085	414	420	0	-	0
Stage 1	414	-	-	-	-	-
Stage 2	671	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	240	638	1139	-	-	-
Stage 1	667	-	-	-	-	-
Stage 2	508	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	200	638	1139	-	-	-
Mov Cap-2 Maneuver	200	-	-	-	-	-
Stage 1	667	-	-	-	-	-
Stage 2	422	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	3.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1139	-	200	638	-	-
HCM Lane V/C Ratio	0.169	-	0.043	0.25	-	-
HCM Control Delay (s)	8.8	-	23.8	12.5	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.6	-	0.1	1	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	10	111	197	335	425	11
Future Vol, veh/h	10	111	197	335	425	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	30	370	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	121	214	364	462	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1260	468	474	0	-	0
Stage 1	468	-	-	-	-	-
Stage 2	792	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	188	595	1088	-	-	-
Stage 1	630	-	-	-	-	-
Stage 2	446	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	151	595	1088	-	-	-
Mov Cap-2 Maneuver	151	-	-	-	-	-
Stage 1	630	-	-	-	-	-
Stage 2	358	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.1	3.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1088	-	151	595	-	-
HCM Lane V/C Ratio	0.197	-	0.072	0.203	-	-
HCM Control Delay (s)	9.1	-	30.7	12.6	-	-
HCM Lane LOS	A	-	D	B	-	-
HCM 95th %tile Q(veh)	0.7	-	0.2	0.8	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	10	181	223	342	443	11
Future Vol, veh/h	10	181	223	342	443	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	30	370	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	197	242	372	482	12

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1344	487	493	0	-	0
Stage 1	487	-	-	-	-	-
Stage 2	857	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	167	581	1071	-	-	-
Stage 1	618	-	-	-	-	-
Stage 2	416	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	129	581	1071	-	-	-
Mov Cap-2 Maneuver	129	-	-	-	-	-
Stage 1	618	-	-	-	-	-
Stage 2	322	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.4	3.7	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1071	-	129	581	-	-
HCM Lane V/C Ratio	0.226	-	0.084	0.339	-	-
HCM Control Delay (s)	9.3	-	35.5	14.3	-	-
HCM Lane LOS	A	-	E	B	-	-
HCM 95th %tile Q(veh)	0.9	-	0.3	1.5	-	-



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	181	223	342	443	11
Future Volume (veh/h)	10	181	223	342	443	11
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1716	1716	1863	1863	1716
Adj Flow Rate, veh/h	11	197	242	372	482	12
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	251	224	632	1431	1431	1121
Arrive On Green	0.15	0.15	0.77	0.77	0.77	0.77
Sat Flow, veh/h	1634	1458	828	1863	1863	1458
Grp Volume(v), veh/h	11	197	242	372	482	12
Grp Sat Flow(s),veh/h/ln	1634	1458	828	1863	1863	1458
Q Serve(g_s), s	0.7	15.2	14.8	6.6	9.3	0.2
Cycle Q Clear(g_c), s	0.7	15.2	24.1	6.6	9.3	0.2
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	251	224	632	1431	1431	1121
V/C Ratio(X)	0.04	0.88	0.38	0.26	0.34	0.01
Avail Cap(c_a), veh/h	413	369	632	1431	1431	1121
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.94	0.94	1.00	1.00
Uniform Delay (d), s/veh	41.5	47.7	7.9	3.9	4.2	3.1
Incr Delay (d2), s/veh	0.1	12.9	1.7	0.4	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	6.9	3.7	3.6	4.9	0.1
LnGrp Delay(d),s/veh	41.6	60.5	9.6	4.3	4.8	3.1
LnGrp LOS	D	E	A	A	A	A
Approach Vol, veh/h	208			614	494	
Approach Delay, s/veh	59.5			6.4	4.8	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		92.9		22.1		92.9		
Change Period (Y+Rc), s		4.5		4.5		4.5		
Max Green Setting (Gmax), s		76.9		29.1		76.9		
Max Q Clear Time (g_c+I1), s		26.1		17.2		11.3		
Green Ext Time (p_c), s		7.4		0.5		7.4		

Intersection Summary	
HCM 2010 Ctrl Delay	14.2
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	13	126	241	421	471	12
Future Vol, veh/h	13	126	241	421	471	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	30	370	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	137	262	458	512	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1500	518	525	0	-	0
Stage 1	518	-	-	-	-	-
Stage 2	982	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	134	558	1042	-	-	-
Stage 1	598	-	-	-	-	-
Stage 2	363	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	100	558	1042	-	-	-
Mov Cap-2 Maneuver	100	-	-	-	-	-
Stage 1	598	-	-	-	-	-
Stage 2	272	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16.6	3.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1042	-	100	558	-	-
HCM Lane V/C Ratio	0.251	-	0.141	0.245	-	-
HCM Control Delay (s)	9.6	-	46.8	13.5	-	-
HCM Lane LOS	A	-	E	B	-	-
HCM 95th %tile Q(veh)	1	-	0.5	1	-	-

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	13	212	274	429	493	12
Future Vol, veh/h	13	212	274	429	493	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	30	370	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	230	298	466	536	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1604	542	549	0	-	0
Stage 1	542	-	-	-	-	-
Stage 2	1062	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	116	540	1021	-	-	-
Stage 1	583	-	-	-	-	-
Stage 2	332	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	82	540	1021	-	-	-
Mov Cap-2 Maneuver	82	-	-	-	-	-
Stage 1	583	-	-	-	-	-
Stage 2	235	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.9	3.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1021	-	82	540	-	-
HCM Lane V/C Ratio	0.292	-	0.172	0.427	-	-
HCM Control Delay (s)	10	-	57.8	16.5	-	-
HCM Lane LOS	A	-	F	C	-	-
HCM 95th %tile Q(veh)	1.2	-	0.6	2.1	-	-



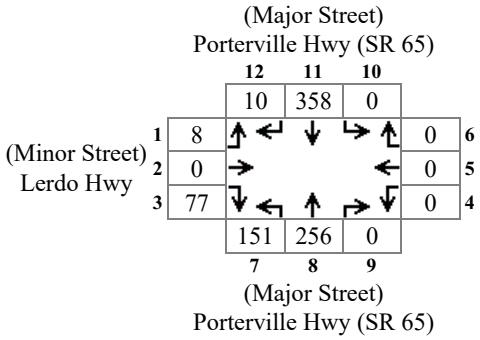
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	212	274	429	493	12
Future Volume (veh/h)	13	212	274	429	493	12
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1716	1716	1863	1863	1716
Adj Flow Rate, veh/h	14	230	298	466	536	13
Adj No. of Lanes	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	287	257	569	1389	1389	1088
Arrive On Green	0.18	0.18	0.75	0.75	0.75	0.75
Sat Flow, veh/h	1634	1458	787	1863	1863	1458
Grp Volume(v), veh/h	14	230	298	466	536	13
Grp Sat Flow(s),veh/h/ln	1634	1458	787	1863	1863	1458
Q Serve(g_s), s	0.8	17.7	25.0	9.8	11.8	0.3
Cycle Q Clear(g_c), s	0.8	17.7	36.8	9.8	11.8	0.3
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	287	257	569	1389	1389	1088
V/C Ratio(X)	0.05	0.90	0.52	0.34	0.39	0.01
Avail Cap(c_a), veh/h	413	369	569	1389	1389	1088
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.91	0.91	1.00	1.00
Uniform Delay (d), s/veh	39.4	46.4	11.8	5.0	5.2	3.7
Incr Delay (d2), s/veh	0.1	18.0	3.1	0.6	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	8.4	5.9	5.1	6.3	0.1
LnGrp Delay(d),s/veh	39.5	64.3	14.9	5.5	6.0	3.8
LnGrp LOS	D	E	B	A	A	A
Approach Vol, veh/h	244			764	549	
Approach Delay, s/veh	62.9			9.2	6.0	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		90.3		24.7		90.3		
Change Period (Y+Rc), s		4.5		4.5		4.5		
Max Green Setting (Gmax), s		76.9		29.1		76.9		
Max Q Clear Time (g_c+I1), s		38.8		19.7		13.8		
Green Ext Time (p_c), s		9.4		0.5		9.9		

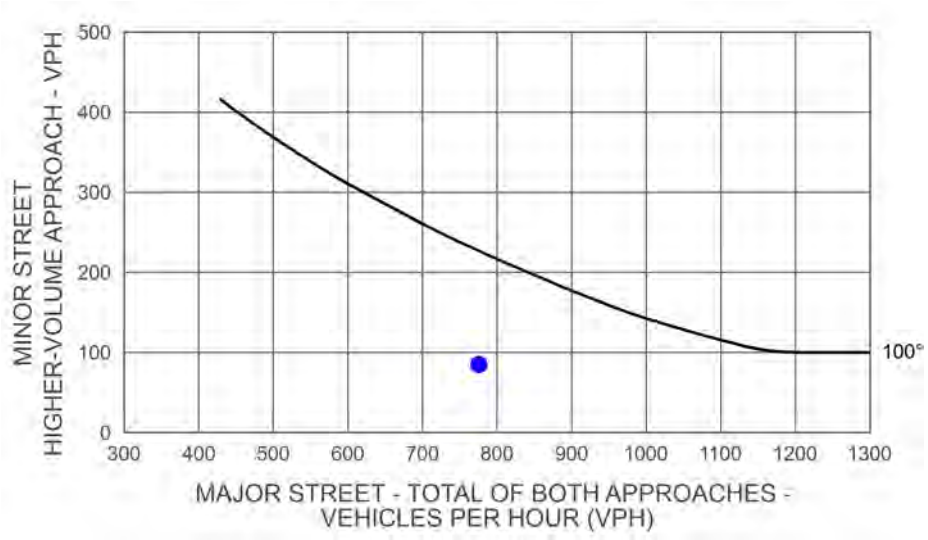
Intersection Summary	
HCM 2010 Ctrl Delay	16.5
HCM 2010 LOS	B

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 3

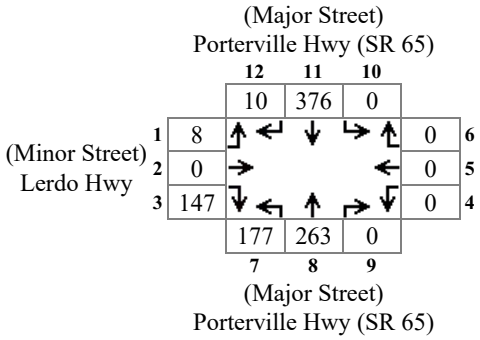


Major Total: 775
Minor High Volume: 85

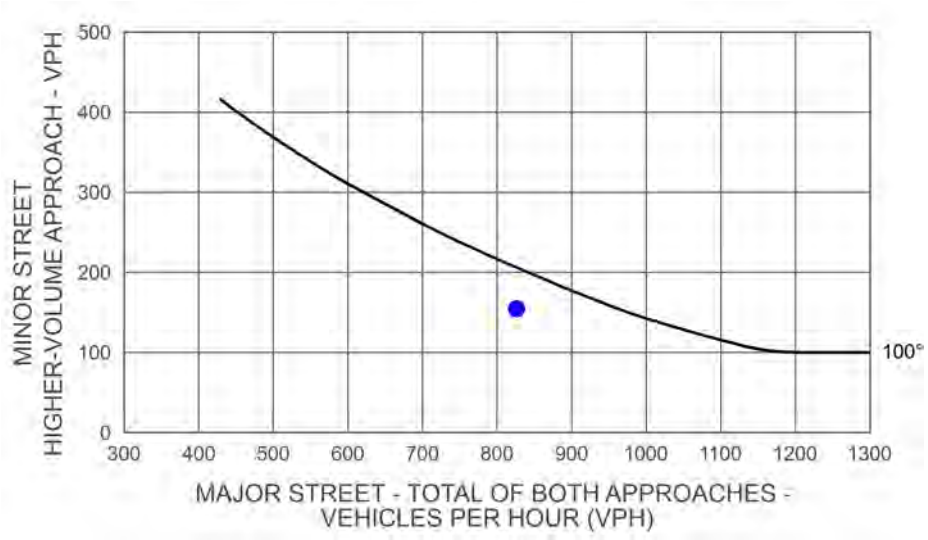


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project Phase I
Intersection #: 3

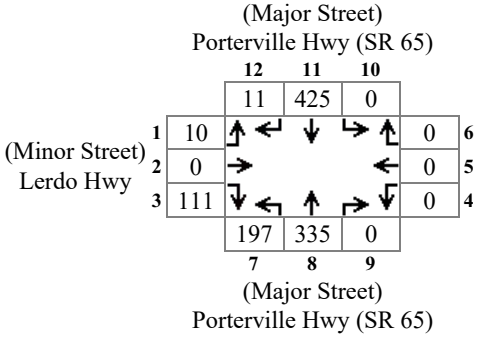


Major Total: 826
Minor High Volume: 155

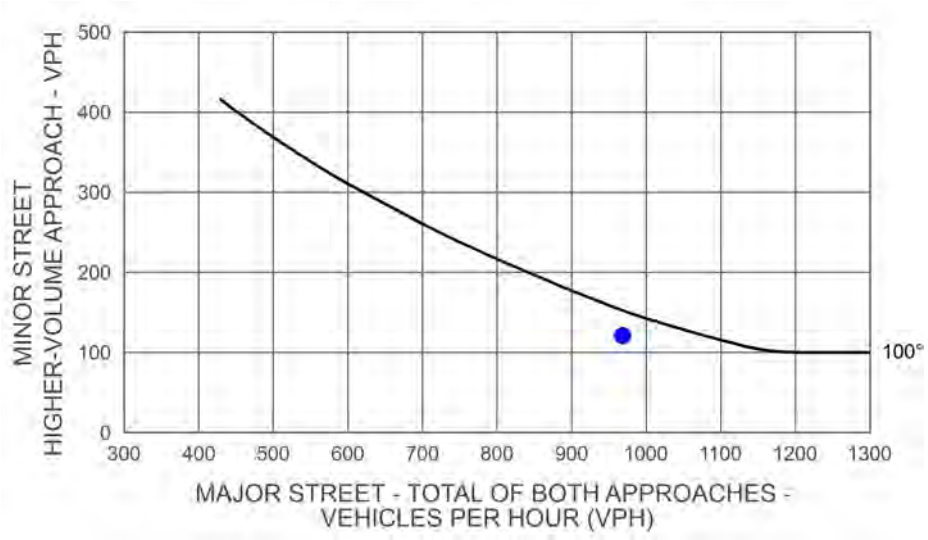


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 3

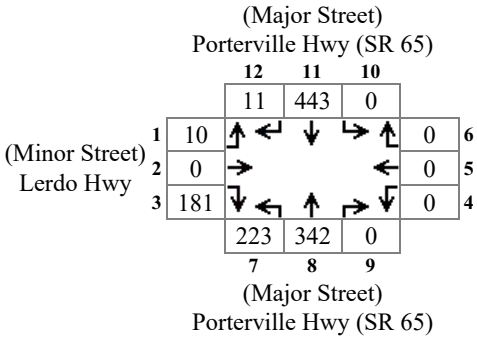


Major Total: 968
Minor High Volume: 121

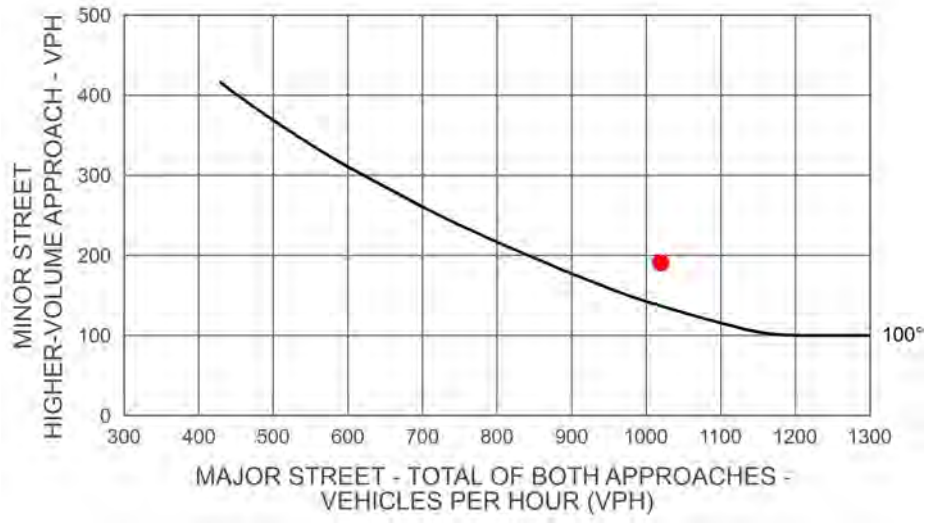


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future+Project
Intersection #: 3

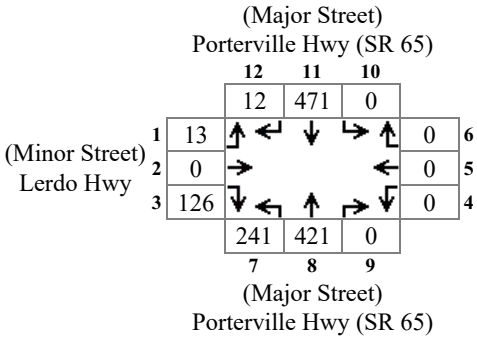


Major Total: 1019
Minor High Volume: 191



Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future
Intersection #: 3

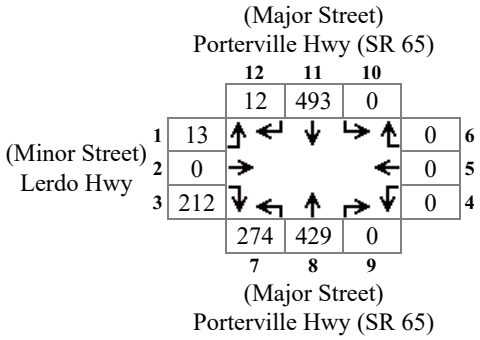


Major Total: 1145
Minor High Volume: 139



Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future+Project Phase I & II
Intersection #: 3



Major Total: 1208
Minor High Volume: 225



Intersection 4
Porterville Hwy (SR 65) & James Rd

Intersection	
Int Delay, s/veh	7.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	3	7	44	1	87	9	365	29	242	382	2
Future Vol, veh/h	0	3	7	44	1	87	9	365	29	242	382	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	330	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	8	48	1	95	10	397	32	263	415	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1422	1390	416	1380	1375	412	417	0	0	428	0	0
Stage 1	942	942	-	432	432	-	-	-	-	-	-	-
Stage 2	480	448	-	948	943	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	114	142	637	122	145	640	1142	-	-	1131	-	-
Stage 1	316	342	-	602	582	-	-	-	-	-	-	-
Stage 2	567	573	-	313	341	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	78	108	637	96	110	640	1142	-	-	1131	-	-
Mov Cap-2 Maneuver	78	108	-	96	110	-	-	-	-	-	-	-
Stage 1	312	262	-	595	575	-	-	-	-	-	-	-
Stage 2	477	566	-	234	262	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.6	48.1	0.2	3.5
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1142	-	-	258	219	1131	-	-
HCM Lane V/C Ratio	0.009	-	-	0.042	0.655	0.233	-	-
HCM Control Delay (s)	8.2	0	-	19.6	48.1	9.1	-	-
HCM Lane LOS	A	A	-	C	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	4	0.9	-	-

Intersection	
Int Delay, s/veh	10.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	3	7	44	1	87	9	459	29	242	425	2
Future Vol, veh/h	0	3	7	44	1	87	9	459	29	242	425	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	330	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	8	48	1	95	10	499	32	263	462	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1571	1539	463	1529	1524	515	464	0	0	530	0	0
Stage 1	989	989	-	534	534	-	-	-	-	-	-	-
Stage 2	582	550	-	995	990	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	90	116	599	96	118	560	1097	-	-	1037	-	-
Stage 1	297	325	-	530	524	-	-	-	-	-	-	-
Stage 2	499	516	-	295	324	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	59	85	599	73	87	560	1097	-	-	1037	-	-
Mov Cap-2 Maneuver	59	85	-	73	87	-	-	-	-	-	-	-
Stage 1	293	243	-	523	517	-	-	-	-	-	-	-
Stage 2	408	509	-	214	242	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.8	84.8	0.2	3.5
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1097	-	-	213	172	1037	-	-
HCM Lane V/C Ratio	0.009	-	-	0.051	0.834	0.254	-	-
HCM Control Delay (s)	8.3	0	-	22.8	84.8	9.6	-	-
HCM Lane LOS	A	A	-	C	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	5.8	1	-	-

Intersection	
Int Delay, s/veh	34.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	3	8	51	1	101	11	478	34	299	511	2
Future Vol, veh/h	0	3	8	51	1	101	11	478	34	299	511	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	330	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	9	55	1	110	12	520	37	325	555	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1824	1787	557	1775	1770	538	558	0	0	557	0	0
Stage 1	1207	1207	-	562	562	-	-	-	-	-	-	-
Stage 2	617	580	-	1213	1208	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	59	81	530	64	83	543	1013	-	-	1014	-	-
Stage 1	224	256	-	512	510	-	-	-	-	-	-	-
Stage 2	477	500	-	222	256	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	34	54	530	~ 45	55	543	1013	-	-	1014	-	-
Mov Cap-2 Maneuver	34	54	-	~ 45	55	-	-	-	-	-	-	-
Stage 1	220	174	-	503	501	-	-	-	-	-	-	-
Stage 2	373	492	-	146	174	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	30	$ 317	0.2	3.8
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1013	-	-	156	114	1014	-	-
HCM Lane V/C Ratio	0.012	-	-	0.077	1.459	0.321	-	-
HCM Control Delay (s)	8.6	0	-	30	$ 317	10.2	-	-
HCM Lane LOS	A	A	-	D	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	11.8	1.4	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	50.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	3	8	51	1	101	11	572	34	299	554	2
Future Vol, veh/h	0	3	8	51	1	101	11	572	34	299	554	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	330	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	3	9	55	1	110	12	622	37	325	602	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1973	1936	603	1923	1918	640	604	0	0	659	0	0
Stage 1	1253	1253	-	664	664	-	-	-	-	-	-	-
Stage 2	720	683	-	1259	1254	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	47	66	499	~ 51	67	475	974	-	-	929	-	-
Stage 1	211	244	-	450	458	-	-	-	-	-	-	-
Stage 2	419	449	-	209	243	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	25	42	499	~ 34	43	475	974	-	-	929	-	-
Mov Cap-2 Maneuver	25	42	-	~ 34	43	-	-	-	-	-	-	-
Stage 1	207	159	-	441	449	-	-	-	-	-	-	-
Stage 2	315	440	-	131	158	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	36.5	$ 519.8	0.2	3.8
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	974	-	-	126	88	929	-	-
HCM Lane V/C Ratio	0.012	-	-	0.095	1.89	0.35	-	-
HCM Control Delay (s)	8.7	0	-	36.5	$ 519.8	10.9	-	-
HCM Lane LOS	A	A	-	E	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.3	14.2	1.6	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	3	8	51	1	101	11	572	34	299	554	2
Future Volume (veh/h)	0	3	8	51	1	101	11	572	34	299	554	2
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	0	3	9	55	1	110	12	622	37	325	602	2
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	53	160	107	14	133	50	1323	78	650	1430	5
Arrive On Green	0.00	0.13	0.13	0.13	0.13	0.13	0.77	0.77	0.77	0.77	0.77	0.77
Sat Flow, veh/h	0	411	1234	413	108	1023	12	1717	101	772	1855	6
Grp Volume(v), veh/h	0	0	12	166	0	0	671	0	0	325	0	604
Grp Sat Flow(s),veh/h/ln	0	0	1645	1544	0	0	1830	0	0	772	0	1862
Q Serve(g_s), s	0.0	0.0	0.6	7.3	0.0	0.0	0.0	0.0	0.0	8.3	0.0	9.9
Cycle Q Clear(g_c), s	0.0	0.0	0.6	9.4	0.0	0.0	11.8	0.0	0.0	20.1	0.0	9.9
Prop In Lane	0.00		0.75	0.33		0.66	0.02		0.06	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	213	253	0	0	1451	0	0	650	0	1434
V/C Ratio(X)	0.00	0.00	0.06	0.66	0.00	0.00	0.46	0.00	0.00	0.50	0.00	0.42
Avail Cap(c_a), veh/h	0	0	329	360	0	0	1451	0	0	650	0	1434
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	0.92	0.00	0.00	0.84	0.00	0.84
Uniform Delay (d), s/veh	0.0	0.0	34.3	38.1	0.0	0.0	3.7	0.0	0.0	5.0	0.0	3.5
Incr Delay (d2), s/veh	0.0	0.0	0.1	2.9	0.0	0.0	1.0	0.0	0.0	2.3	0.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.3	4.2	0.0	0.0	6.2	0.0	0.0	4.0	0.0	5.3
LnGrp Delay(d),s/veh	0.0	0.0	34.5	41.0	0.0	0.0	4.7	0.0	0.0	7.3	0.0	4.3
LnGrp LOS			C	D			A			A		A
Approach Vol, veh/h		12			166			671			929	
Approach Delay, s/veh		34.5			41.0			4.7			5.3	
Approach LOS		C			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		73.8		16.2		73.8		16.2
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		63.0		18.0		63.0		18.0
Max Q Clear Time (g_c+I1), s		13.8		2.6		22.1		11.4
Green Ext Time (p_c), s		14.0		0.7		13.4		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	8.6
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	129.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	4	9	59	1	117	12	552	40	370	622	3
Future Vol, veh/h	0	4	9	59	1	117	12	552	40	370	622	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	330	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	4	10	64	1	127	13	600	43	402	676	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2194	2152	678	2137	2132	622	679	0	0	643	0	0
Stage 1	1482	1482	-	648	648	-	-	-	-	-	-	-
Stage 2	712	670	-	1489	1484	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	32	48	452	~ 36	49	487	913	-	-	942	-	-
Stage 1	156	189	-	459	466	-	-	-	-	-	-	-
Stage 2	423	455	-	155	188	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	15	27	452	~ 20	27	487	913	-	-	942	-	-
Mov Cap-2 Maneuver	15	27	-	~ 20	27	-	-	-	-	-	-	-
Stage 1	153	108	-	449	456	-	-	-	-	-	-	-
Stage 2	305	445	-	83	108	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	62	$ 1279.8	0.2	4.3
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	913	-	-	77	55	942	-	-
HCM Lane V/C Ratio	0.014	-	-	0.184	3.498	0.427	-	-
HCM Control Delay (s)	9	0	-	62	$ 1279.8	11.6	-	-
HCM Lane LOS	A	A	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.6	20.7	2.2	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	199.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	4	9	59	1	117	12	669	40	370	675	3
Future Vol, veh/h	0	4	9	59	1	117	12	669	40	370	675	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	330	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	4	10	64	1	127	13	727	43	402	734	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2379	2337	735	2322	2316	749	737	0	0	771	0	0
Stage 1	1540	1540	-	775	775	-	-	-	-	-	-	-
Stage 2	839	797	-	1547	1541	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	24	37	420	~ 26	38	412	869	-	-	844	-	-
Stage 1	144	177	-	391	408	-	-	-	-	-	-	-
Stage 2	360	399	-	143	177	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	10	19	420	~ 13	19	412	869	-	-	844	-	-
Mov Cap-2 Maneuver	10	19	-	~ 13	19	-	-	-	-	-	-	-
Stage 1	140	93	-	381	397	-	-	-	-	-	-	-
Stage 2	242	389	-	70	93	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	89.7	$ 2176	0.2	4.6
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	869	-	-	56	36	844	-	-
HCM Lane V/C Ratio	0.015	-	-	0.252	5.344	0.477	-	-
HCM Control Delay (s)	9.2	0	-	89.7	$ 2176	13.1	-	-
HCM Lane LOS	A	A	-	F	F	B	-	-
HCM 95th %tile Q(veh)	0	-	-	0.9	22.7	2.6	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



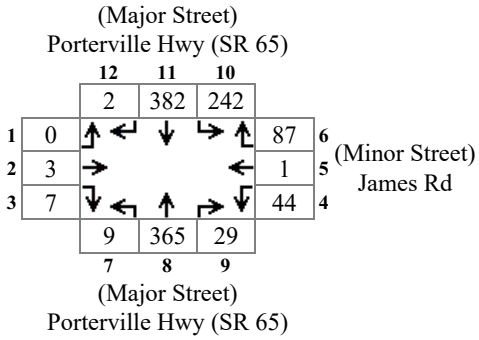
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	4	9	59	1	117	12	669	40	370	675	3
Future Volume (veh/h)	0	4	9	59	1	117	12	669	40	370	675	3
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	0	4	10	64	1	127	13	727	43	402	734	3
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	0	69	174	115	15	150	49	1292	76	554	1396	6
Arrive On Green	0.00	0.15	0.15	0.15	0.15	0.15	0.75	0.75	0.75	0.75	0.75	0.75
Sat Flow, veh/h	0	473	1182	423	99	1019	11	1716	100	696	1854	8
Grp Volume(v), veh/h	0	0	14	192	0	0	783	0	0	402	0	737
Grp Sat Flow(s),veh/h/ln	0	0	1654	1541	0	0	1827	0	0	696	0	1861
Q Serve(g_s), s	0.0	0.0	0.7	8.7	0.0	0.0	0.0	0.0	0.0	29.3	0.0	14.6
Cycle Q Clear(g_c), s	0.0	0.0	0.7	10.9	0.0	0.0	16.4	0.0	0.0	45.7	0.0	14.6
Prop In Lane	0.00		0.71	0.33		0.66	0.02		0.05	1.00		0.00
Lane Grp Cap(c), veh/h	0	0	243	280	0	0	1417	0	0	554	0	1402
V/C Ratio(X)	0.00	0.00	0.06	0.69	0.00	0.00	0.55	0.00	0.00	0.73	0.00	0.53
Avail Cap(c_a), veh/h	0	0	331	360	0	0	1417	0	0	554	0	1402
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	1.00	1.00	0.00	0.00	0.86	0.00	0.00	0.80	0.00	0.80
Uniform Delay (d), s/veh	0.0	0.0	33.0	37.3	0.0	0.0	4.8	0.0	0.0	10.2	0.0	4.5
Incr Delay (d2), s/veh	0.0	0.0	0.1	3.7	0.0	0.0	1.3	0.0	0.0	6.5	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.3	4.9	0.0	0.0	8.8	0.0	0.0	8.4	0.0	7.8
LnGrp Delay(d),s/veh	0.0	0.0	33.1	41.0	0.0	0.0	6.1	0.0	0.0	16.7	0.0	5.7
LnGrp LOS			C	D			A			B		A
Approach Vol, veh/h		14			192			783			1139	
Approach Delay, s/veh		33.1			41.0			6.1			9.6	
Approach LOS		C			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		72.3		17.7		72.3		17.7
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		63.0		18.0		63.0		18.0
Max Q Clear Time (g_c+I1), s		18.4		2.7		47.7		12.9
Green Ext Time (p_c), s		19.9		0.8		10.6		0.4

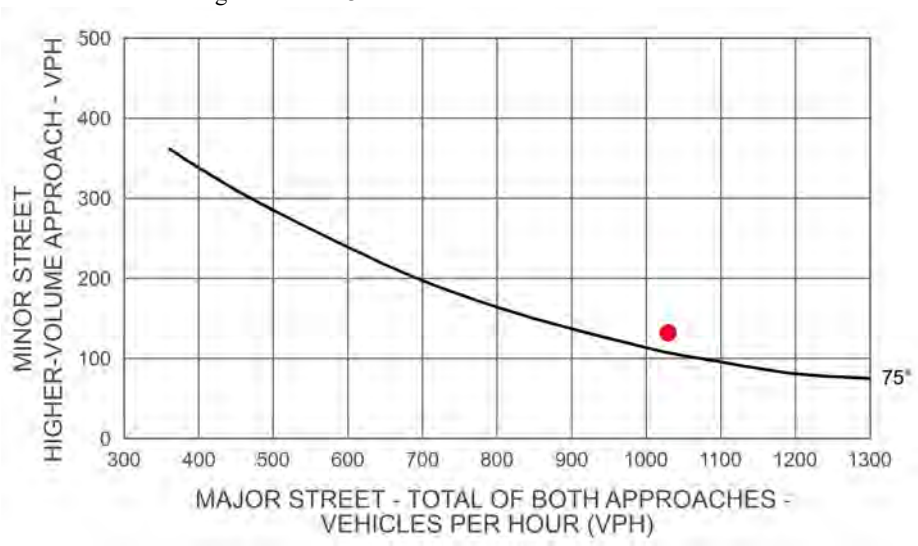
Intersection Summary	
HCM 2010 Ctrl Delay	11.3
HCM 2010 LOS	B

Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Existing
Intersection #: 4

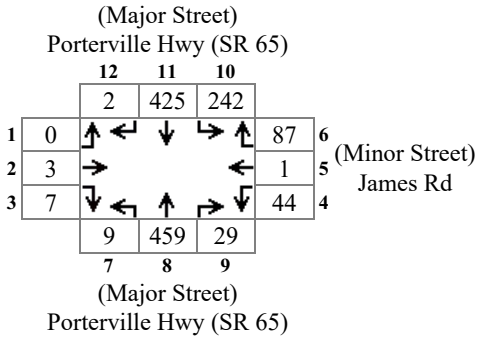


Major Total: 1029
Minor High Volume: 132

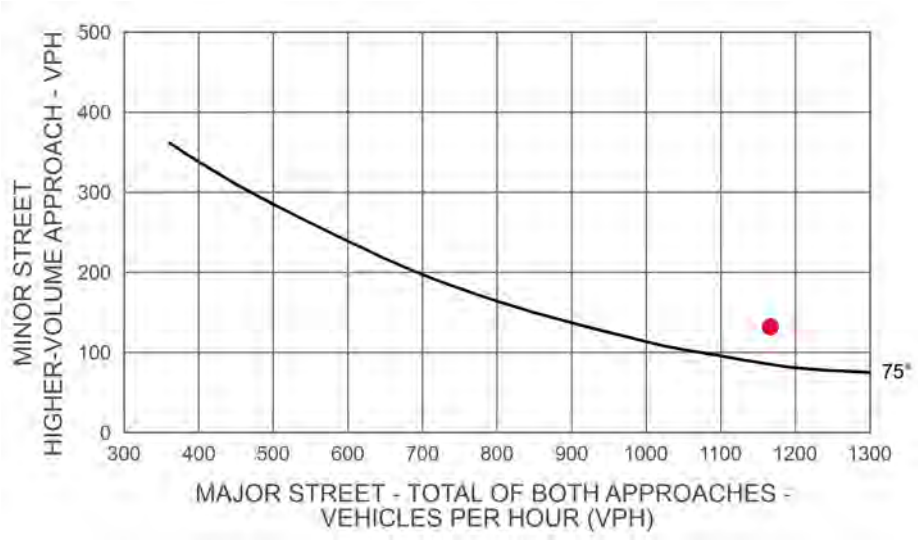


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Existing+Project Phase I
Intersection #: 4

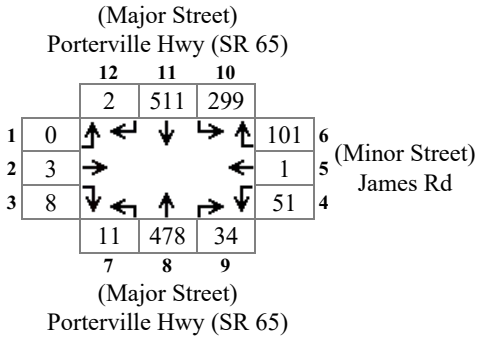


Major Total: 1166
Minor High Volume: 132

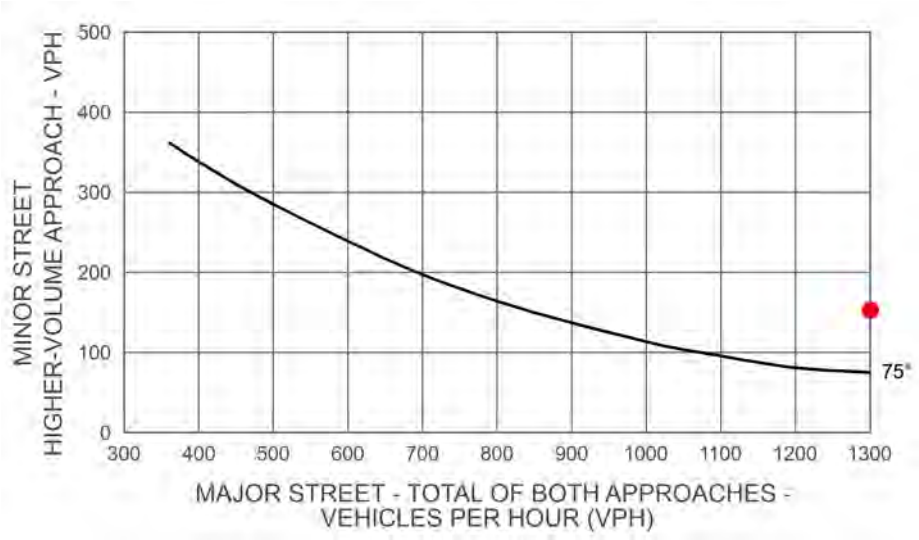


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future
Intersection #: 4

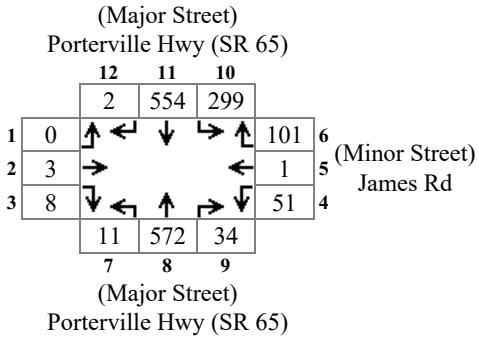


Major Total: 1335
Minor High Volume: 153

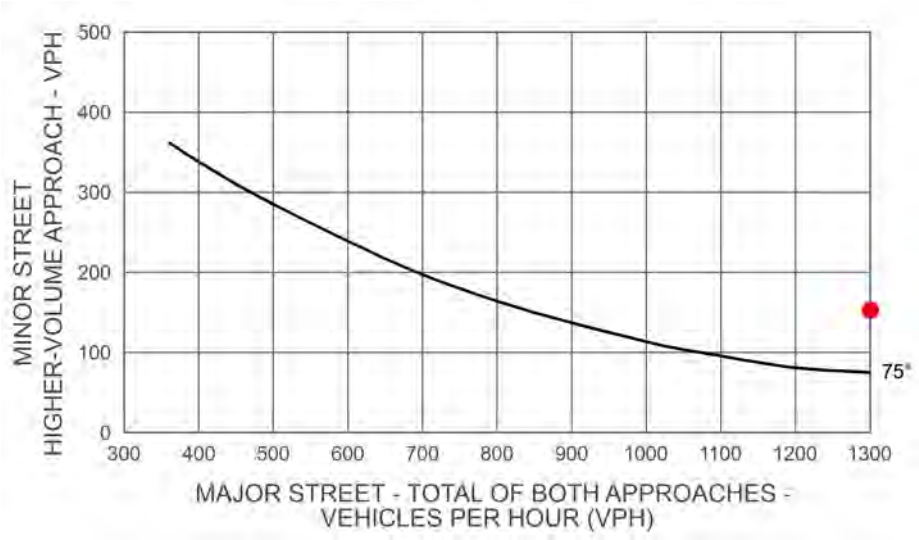


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future+Project
Intersection #: 4

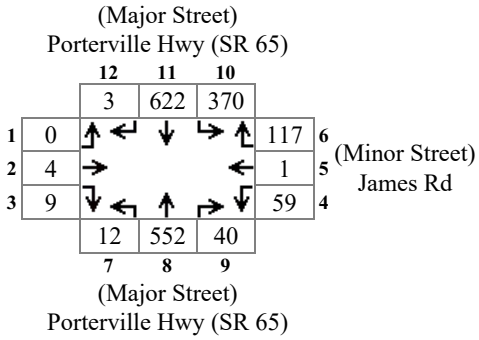


Major Total: 1472
Minor High Volume: 153

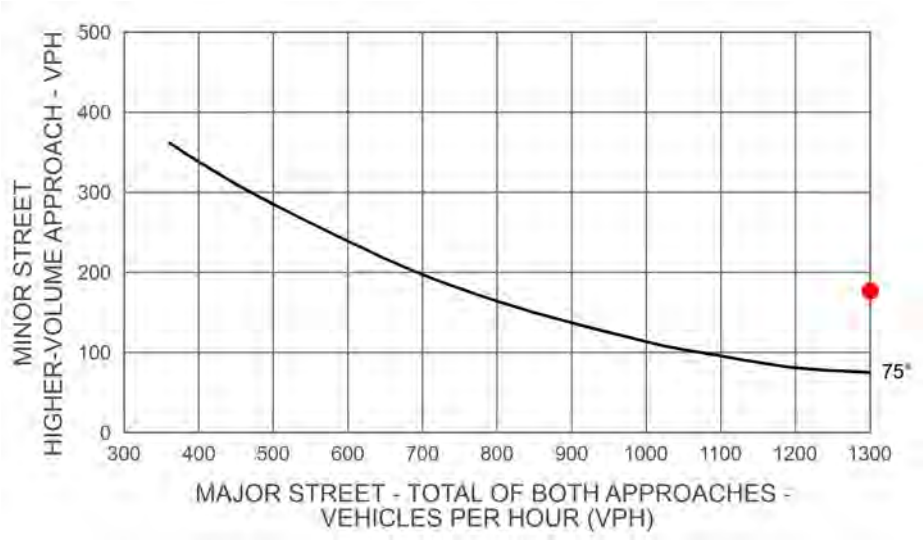


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future
Intersection #: 4

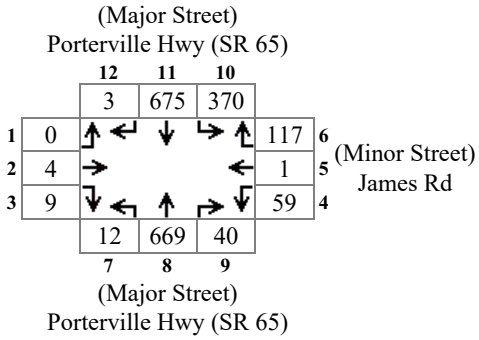


Major Total: 1599
Minor High Volume: 177

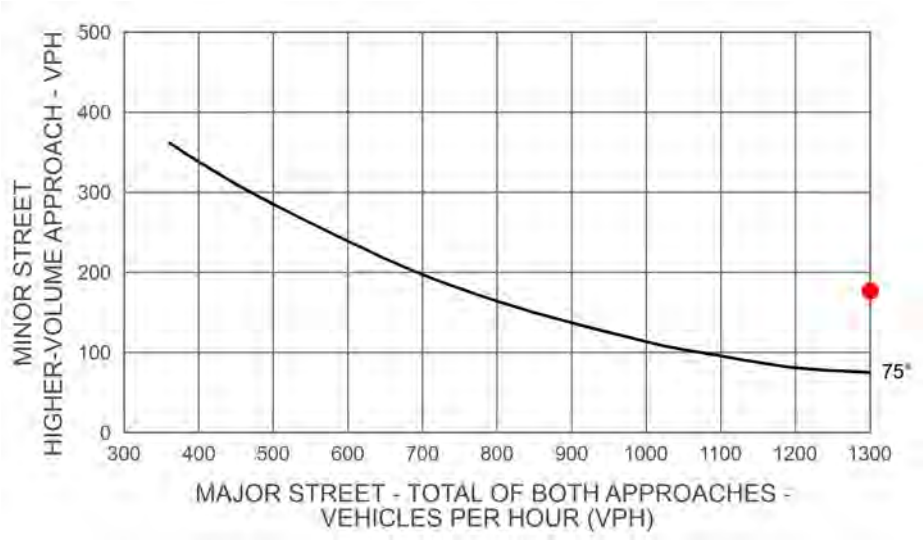


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future+Project Phase I & II
Intersection #: 4



Major Total: 1769
Minor High Volume: 177



Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	1	0	11	19	2	121	4	270	90	92	356	0
Future Vol, veh/h	1	0	11	19	2	121	4	270	90	92	356	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	330	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	12	21	2	132	4	293	98	100	387	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1005	987	387	944	938	342	387	0	0	391	0	0
Stage 1	587	587	-	351	351	-	-	-	-	-	-	-
Stage 2	418	400	-	593	587	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	220	247	661	242	264	701	1171	-	-	1168	-	-
Stage 1	496	497	-	666	632	-	-	-	-	-	-	-
Stage 2	612	602	-	492	497	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	165	225	661	221	240	701	1171	-	-	1168	-	-
Mov Cap-2 Maneuver	165	225	-	221	240	-	-	-	-	-	-	-
Stage 1	494	454	-	663	629	-	-	-	-	-	-	-
Stage 2	493	600	-	442	454	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12	14.5	0.1	1.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1171	-	-	529	532	1168	-	-
HCM Lane V/C Ratio	0.004	-	-	0.025	0.29	0.086	-	-
HCM Control Delay (s)	8.1	0	-	12	14.5	8.4	-	-
HCM Lane LOS	A	A	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	1.2	0.3	-	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	1	0	11	19	2	121	4	303	90	92	444	0
Future Vol, veh/h	1	0	11	19	2	121	4	303	90	92	444	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	330	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	12	21	2	132	4	329	98	100	483	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1137	1119	483	1076	1070	378	483	0	0	427	0	0
Stage 1	683	683	-	387	387	-	-	-	-	-	-	-
Stage 2	454	436	-	689	683	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	179	207	584	197	221	669	1080	-	-	1132	-	-
Stage 1	439	449	-	637	610	-	-	-	-	-	-	-
Stage 2	586	580	-	436	449	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	132	188	584	179	200	669	1080	-	-	1132	-	-
Mov Cap-2 Maneuver	132	188	-	179	200	-	-	-	-	-	-	-
Stage 1	437	409	-	634	607	-	-	-	-	-	-	-
Stage 2	467	577	-	389	409	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.2	16.1	0.1	1.5
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1080	-	-	454	478	1132	-	-
HCM Lane V/C Ratio	0.004	-	-	0.029	0.323	0.088	-	-
HCM Control Delay (s)	8.3	0	-	13.2	16.1	8.5	-	-
HCM Lane LOS	A	A	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	1.4	0.3	-	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	1	0	13	22	2	140	5	337	106	114	487	0
Future Vol, veh/h	1	0	13	22	2	140	5	337	106	114	487	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	330	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	14	24	2	152	5	366	115	124	529	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1289	1269	529	1219	1212	424	529	0	0	482	0	0
Stage 1	777	777	-	435	435	-	-	-	-	-	-	-
Stage 2	512	492	-	784	777	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	141	168	550	157	182	630	1038	-	-	1081	-	-
Stage 1	390	407	-	600	580	-	-	-	-	-	-	-
Stage 2	545	548	-	386	407	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	96	148	550	139	160	630	1038	-	-	1081	-	-
Mov Cap-2 Maneuver	96	148	-	139	160	-	-	-	-	-	-	-
Stage 1	387	360	-	596	576	-	-	-	-	-	-	-
Stage 2	409	544	-	333	360	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.1	19.9	0.1	1.7
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1038	-	-	411	417	1081	-	-
HCM Lane V/C Ratio	0.005	-	-	0.037	0.427	0.115	-	-
HCM Control Delay (s)	8.5	0	-	14.1	19.9	8.8	-	-
HCM Lane LOS	A	A	-	B	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	2.1	0.4	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	1	0	13	22	2	140	5	370	106	114	575	0
Future Vol, veh/h	1	0	13	22	2	140	5	370	106	114	575	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	330	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	14	24	2	152	5	402	115	124	625	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1421	1401	625	1351	1344	460	625	0	0	517	0	0
Stage 1	873	873	-	471	471	-	-	-	-	-	-	-
Stage 2	548	528	-	880	873	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	114	140	485	127	152	601	956	-	-	1049	-	-
Stage 1	345	368	-	573	560	-	-	-	-	-	-	-
Stage 2	521	528	-	342	368	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	76	123	485	112	133	601	956	-	-	1049	-	-
Mov Cap-2 Maneuver	76	123	-	112	133	-	-	-	-	-	-	-
Stage 1	343	324	-	569	556	-	-	-	-	-	-	-
Stage 2	385	524	-	293	324	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.8	23.5	0.1	1.5
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	956	-	-	350	369	1049	-	-
HCM Lane V/C Ratio	0.006	-	-	0.043	0.483	0.118	-	-
HCM Control Delay (s)	8.8	0	-	15.8	23.5	8.9	-	-
HCM Lane LOS	A	A	-	C	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	2.5	0.4	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	0	13	22	2	140	5	370	106	114	575	0
Future Volume (veh/h)	1	0	13	22	2	140	5	370	106	114	575	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	1	0	14	24	2	152	5	402	115	124	625	0
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	46	11	203	63	13	183	43	1063	301	743	1424	0
Arrive On Green	0.14	0.00	0.14	0.14	0.14	0.14	0.76	0.76	0.76	0.76	0.76	0.00
Sat Flow, veh/h	26	80	1497	132	99	1349	4	1390	394	881	1863	0
Grp Volume(v), veh/h	15	0	0	178	0	0	522	0	0	124	625	0
Grp Sat Flow(s),veh/h/ln	1604	0	0	1580	0	0	1788	0	0	881	1863	0
Q Serve(g_s), s	0.0	0.0	0.0	5.3	0.0	0.0	0.0	0.0	0.0	0.0	10.7	0.0
Cycle Q Clear(g_c), s	0.7	0.0	0.0	9.8	0.0	0.0	8.7	0.0	0.0	4.0	10.7	0.0
Prop In Lane	0.07		0.93	0.13		0.85	0.01		0.22	1.00		0.00
Lane Grp Cap(c), veh/h	260	0	0	259	0	0	1407	0	0	743	1424	0
V/C Ratio(X)	0.06	0.00	0.00	0.69	0.00	0.00	0.37	0.00	0.00	0.17	0.44	0.00
Avail Cap(c_a), veh/h	360	0	0	360	0	0	1407	0	0	743	1424	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.94	0.00	0.00	0.91	0.91	0.00
Uniform Delay (d), s/veh	34.0	0.0	0.0	37.9	0.0	0.0	3.5	0.0	0.0	3.0	3.8	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	3.2	0.0	0.0	0.7	0.0	0.0	0.4	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.0	4.5	0.0	0.0	4.5	0.0	0.0	1.0	5.7	0.0
LnGrp Delay(d),s/veh	34.1	0.0	0.0	41.1	0.0	0.0	4.2	0.0	0.0	3.4	4.7	0.0
LnGrp LOS	C			D			A			A	A	
Approach Vol, veh/h		15			178			522			749	
Approach Delay, s/veh		34.1			41.1			4.2			4.4	
Approach LOS		C			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		73.3		16.7		73.3		16.7
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		63.0		18.0		63.0		18.0
Max Q Clear Time (g_c+I1), s		10.7		2.7		12.7		11.8
Green Ext Time (p_c), s		9.2		0.8		9.2		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	9.1
HCM 2010 LOS	A

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	1	0	15	26	3	163	6	392	124	141	591	0
Future Vol, veh/h	1	0	15	26	3	163	6	392	124	141	591	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	330	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	16	28	3	177	7	426	135	153	642	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1546	1523	642	1464	1456	493	642	0	0	561	0	0
Stage 1	949	949	-	507	507	-	-	-	-	-	-	-
Stage 2	597	574	-	957	949	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	93	118	474	106	130	576	943	-	-	1010	-	-
Stage 1	313	339	-	548	539	-	-	-	-	-	-	-
Stage 2	490	503	-	310	339	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	55	99	474	90	109	576	943	-	-	1010	-	-
Mov Cap-2 Maneuver	55	99	-	90	109	-	-	-	-	-	-	-
Stage 1	310	288	-	542	533	-	-	-	-	-	-	-
Stage 2	333	497	-	254	288	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.9	35.1	0.1	1.8
HCM LOS	C	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	943	-	-	321	320	1010	-	-
HCM Lane V/C Ratio	0.007	-	-	0.054	0.652	0.152	-	-
HCM Control Delay (s)	8.8	0	-	16.9	35.1	9.2	-	-
HCM Lane LOS	A	A	-	C	E	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	4.3	0.5	-	-

Intersection	
Int Delay, s/veh	7.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	1	0	15	26	3	163	6	433	124	141	699	0
Future Vol, veh/h	1	0	15	26	3	163	6	433	124	141	699	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	330	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	16	28	3	177	7	471	135	153	760	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1707	1684	760	1625	1617	538	760	0	0	605	0	0
Stage 1	1066	1066	-	551	551	-	-	-	-	-	-	-
Stage 2	641	618	-	1074	1066	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	72	94	406	82	103	543	852	-	-	973	-	-
Stage 1	269	299	-	519	515	-	-	-	-	-	-	-
Stage 2	463	481	-	266	299	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	41	78	406	69	86	543	852	-	-	973	-	-
Mov Cap-2 Maneuver	41	78	-	69	86	-	-	-	-	-	-	-
Stage 1	266	252	-	512	508	-	-	-	-	-	-	-
Stage 2	306	475	-	215	252	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	19.8	52.4	0.1	1.6
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	852	-	-	261	270	973	-	-
HCM Lane V/C Ratio	0.008	-	-	0.067	0.773	0.158	-	-
HCM Control Delay (s)	9.3	0	-	19.8	52.4	9.4	-	-
HCM Lane LOS	A	A	-	C	F	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.2	5.8	0.6	-	-



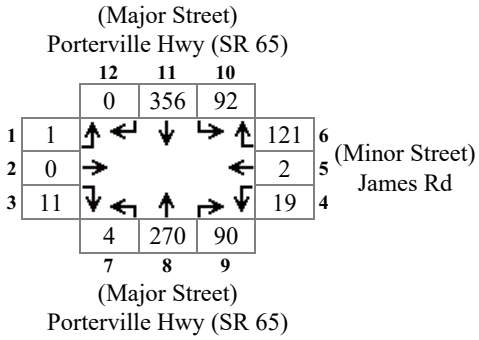
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	0	15	26	3	163	6	433	124	141	699	0
Future Volume (veh/h)	1	0	15	26	3	163	6	433	124	141	699	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1900	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	1	0	16	28	3	177	7	471	135	153	760	0
Adj No. of Lanes	0	1	0	0	1	0	0	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	46	11	233	66	16	207	45	1033	293	653	1389	0
Arrive On Green	0.15	0.00	0.15	0.15	0.15	0.15	0.75	0.75	0.75	0.75	0.75	0.00
Sat Flow, veh/h	22	73	1510	134	101	1344	6	1386	393	811	1863	0
Grp Volume(v), veh/h	17	0	0	208	0	0	613	0	0	153	760	0
Grp Sat Flow(s),veh/h/ln	1604	0	0	1580	0	0	1784	0	0	811	1863	0
Q Serve(g_s), s	0.0	0.0	0.0	6.5	0.0	0.0	0.0	0.0	0.0	0.0	15.8	0.0
Cycle Q Clear(g_c), s	0.8	0.0	0.0	11.5	0.0	0.0	11.9	0.0	0.0	8.4	15.8	0.0
Prop In Lane	0.06		0.94	0.13		0.85	0.01		0.22	1.00		0.00
Lane Grp Cap(c), veh/h	290	0	0	289	0	0	1371	0	0	653	1389	0
V/C Ratio(X)	0.06	0.00	0.00	0.72	0.00	0.00	0.45	0.00	0.00	0.23	0.55	0.00
Avail Cap(c_a), veh/h	361	0	0	360	0	0	1371	0	0	653	1389	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	0.90	0.00	0.00	0.89	0.89	0.00
Uniform Delay (d), s/veh	32.5	0.0	0.0	37.0	0.0	0.0	4.4	0.0	0.0	4.0	4.9	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	5.2	0.0	0.0	0.9	0.0	0.0	0.7	1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.0	5.4	0.0	0.0	6.2	0.0	0.0	1.4	8.3	0.0
LnGrp Delay(d),s/veh	32.6	0.0	0.0	42.2	0.0	0.0	5.4	0.0	0.0	4.7	6.3	0.0
LnGrp LOS	C			D			A			A	A	
Approach Vol, veh/h		17			208			613			913	
Approach Delay, s/veh		32.6			42.2			5.4			6.0	
Approach LOS		C			D			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		71.6		18.4		71.6		18.4
Change Period (Y+Rc), s		4.5		4.5		4.5		4.5
Max Green Setting (Gmax), s		63.0		18.0		63.0		18.0
Max Q Clear Time (g_c+I1), s		13.9		2.8		17.8		13.5
Green Ext Time (p_c), s		12.9		1.0		12.7		0.4

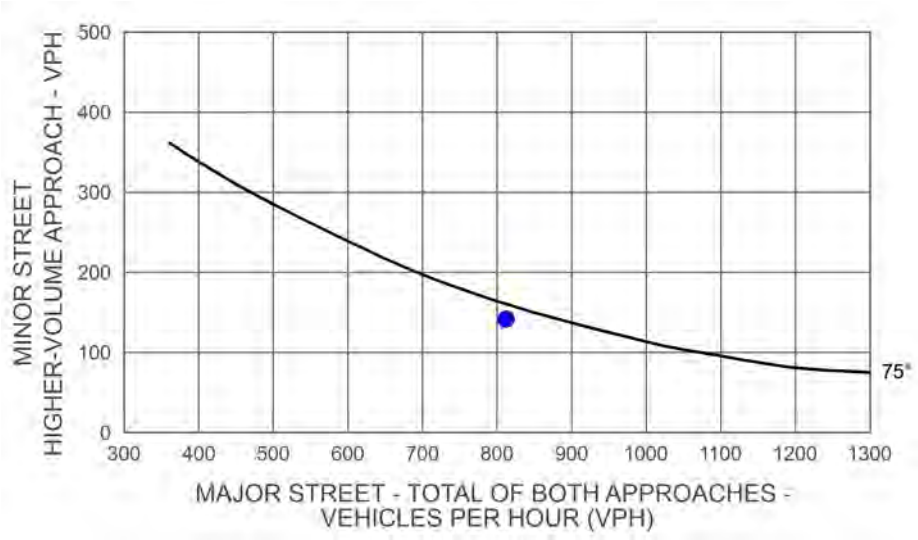
Intersection Summary	
HCM 2010 Ctrl Delay	10.4
HCM 2010 LOS	B

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 4

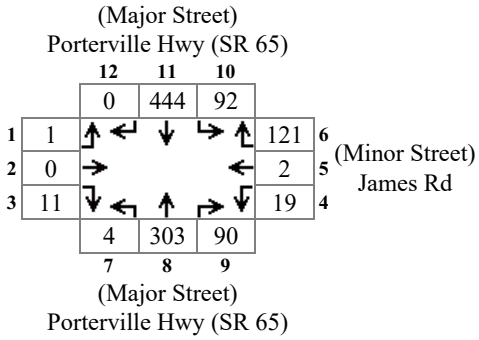


Major Total: 812
Minor High Volume: 142

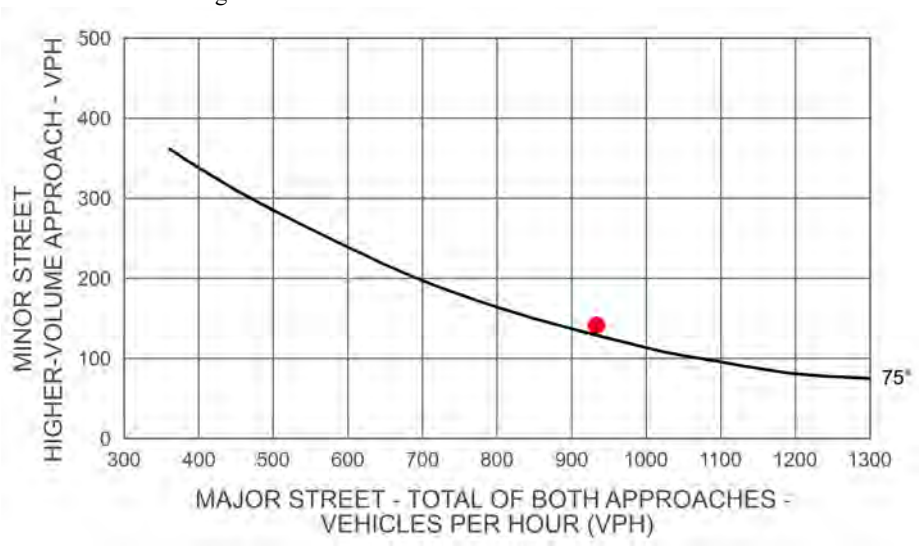


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Existing+Project Phase I
Intersection #: 4

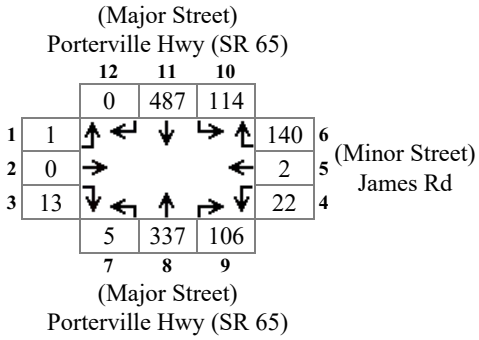


Major Total: 933
Minor High Volume: 142

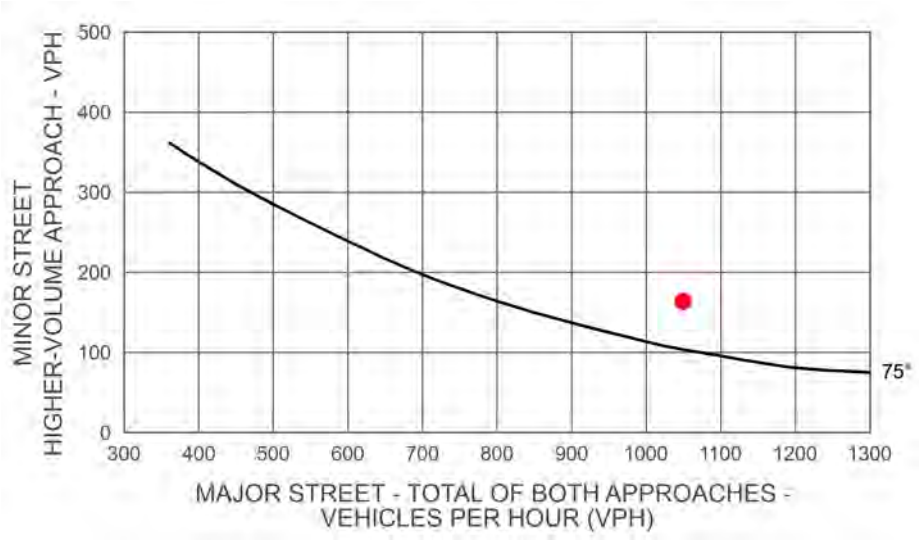


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future
Intersection #: 4

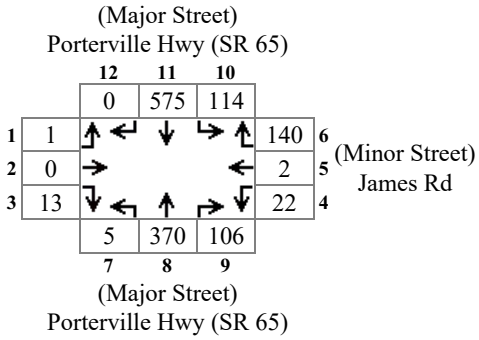


Major Total: 1049
Minor High Volume: 164



Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future+Project
Intersection #: 4

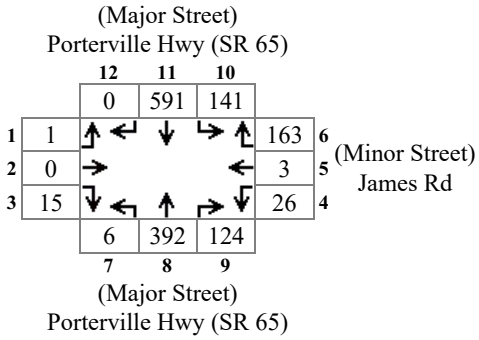


Major Total: 1170
Minor High Volume: 164



Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future
Intersection #: 4

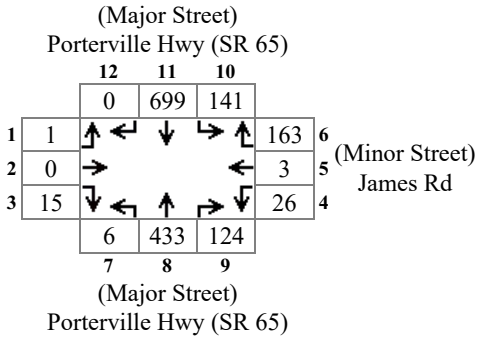


Major Total: 1254
Minor High Volume: 192

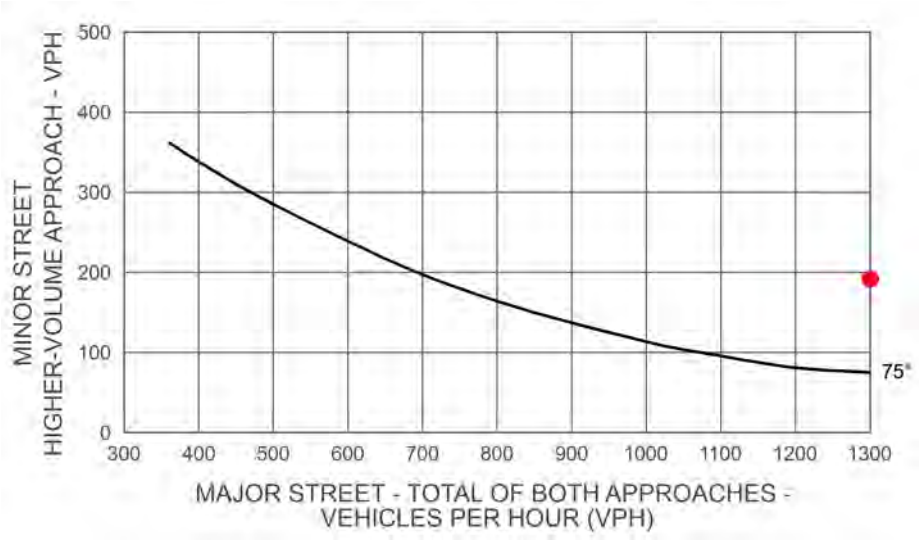


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future+Project Phase I & II
Intersection #: 4



Major Total: 1403
Minor High Volume: 192



Intersection 5
Quinn Rd & Imperial St

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	4	0	0	41
Future Vol, veh/h	0	0	4	0	0	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	4	0	0	45

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	9	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	9	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	1011	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	1014	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	1011	-
Mov Cap-2 Maneuver	-	-	-	-	1011	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	1014	-

Approach	EB	WB	NB
HCM Control Delay, s	0		
HCM LOS			-

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	-	-	-
HCM Lane LOS	-	-	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	564	49	4	255	22	41
Future Vol, veh/h	564	49	4	255	22	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	613	53	4	277	24	45

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	666	0	926	640
Stage 1	-	-	-	-	640	-
Stage 2	-	-	-	-	286	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	923	-	298	475
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	763	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	923	-	297	475
Mov Cap-2 Maneuver	-	-	-	-	297	-
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	759	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	393	-	-	923	-
HCM Lane V/C Ratio	0.174	-	-	0.005	-
HCM Control Delay (s)	16.1	-	-	8.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	4	0	0	43
Future Vol, veh/h	0	0	4	0	0	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	4	0	0	47

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	9	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	9	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	1011	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	1014	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	1011	-
Mov Cap-2 Maneuver	-	-	-	-	1011	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	1014	-

Approach	EB	WB	NB
HCM Control Delay, s	0		
HCM LOS			-

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	-	-	-
HCM Lane LOS	-	-	-	-	-
HCM 95th %tile Q(veh)	-	-	-	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	564	49	4	255	22	43
Future Vol, veh/h	564	49	4	255	22	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	613	53	4	277	24	47

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	666	0	926	640
Stage 1	-	-	-	-	640	-
Stage 2	-	-	-	-	286	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	923	-	298	475
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	763	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	923	-	297	475
Mov Cap-2 Maneuver	-	-	-	-	297	-
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	759	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	395	-	-	923	-
HCM Lane V/C Ratio	0.179	-	-	0.005	-
HCM Control Delay (s)	16.1	-	-	8.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	564	49	4	255	22	43
Future Vol, veh/h	564	49	4	255	22	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	613	53	4	277	24	47

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	666	0	926	640
Stage 1	-	-	-	-	640	-
Stage 2	-	-	-	-	286	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	923	-	298	475
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	763	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	923	-	297	475
Mov Cap-2 Maneuver	-	-	-	-	297	-
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	759	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	395	-	-	923	-
HCM Lane V/C Ratio	0.179	-	-	0.005	-
HCM Control Delay (s)	16.1	-	-	8.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.6	-	-	0	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	4	0	0	45
Future Vol, veh/h	0	0	4	0	0	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	4	0	0	49

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	9	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	9	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	1011	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	1014	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	1011	-
Mov Cap-2 Maneuver	-	-	-	-	1011	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	1014	-

Approach	EB	WB	NB
HCM Control Delay, s	0		
HCM LOS			-

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	-	-	-
HCM Lane LOS	-	-	-	-	-
HCM 95th %tile Q(veh)					

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	697	60	4	314	27	45
Future Vol, veh/h	697	60	4	314	27	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	758	65	4	341	29	49

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	823	0	1140	790
Stage 1	-	-	-	-	790	-
Stage 2	-	-	-	-	350	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	807	-	222	390
Stage 1	-	-	-	-	447	-
Stage 2	-	-	-	-	713	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	807	-	221	390
Mov Cap-2 Maneuver	-	-	-	-	221	-
Stage 1	-	-	-	-	447	-
Stage 2	-	-	-	-	709	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	21
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	303	-	-	807	-
HCM Lane V/C Ratio	0.258	-	-	0.005	-
HCM Control Delay (s)	21	-	-	9.5	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1	-	-	0	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	697	60	4	314	27	45
Future Vol, veh/h	697	60	4	314	27	45
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	758	65	4	341	29	49

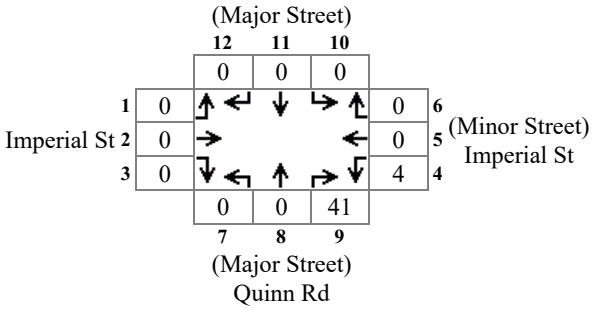
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	823	0	1140	790
Stage 1	-	-	-	-	790	-
Stage 2	-	-	-	-	350	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	807	-	222	390
Stage 1	-	-	-	-	447	-
Stage 2	-	-	-	-	713	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	807	-	221	390
Mov Cap-2 Maneuver	-	-	-	-	221	-
Stage 1	-	-	-	-	447	-
Stage 2	-	-	-	-	709	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	21
HCM LOS			C

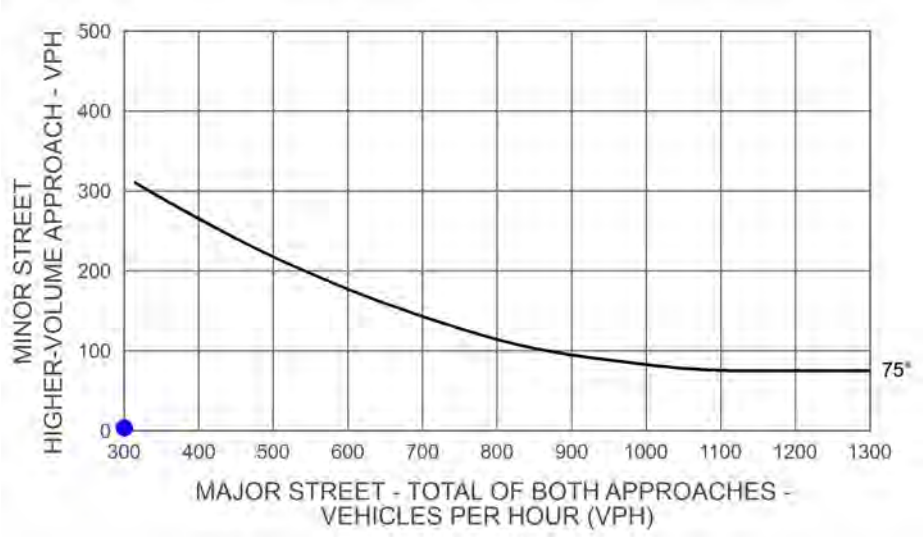
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	303	-	-	807	-
HCM Lane V/C Ratio	0.258	-	-	0.005	-
HCM Control Delay (s)	21	-	-	9.5	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1	-	-	0	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 5

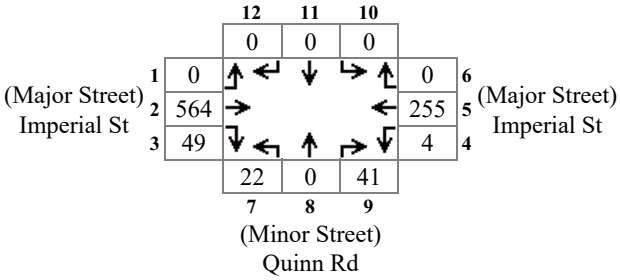


Major Total: 41
Minor High Volume: 4

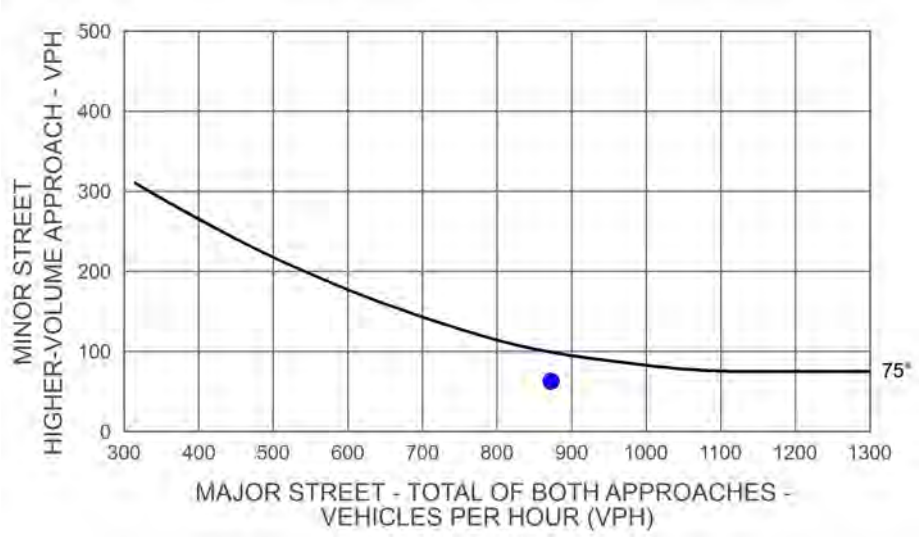


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing+Project Phase I
Intersection #: 5

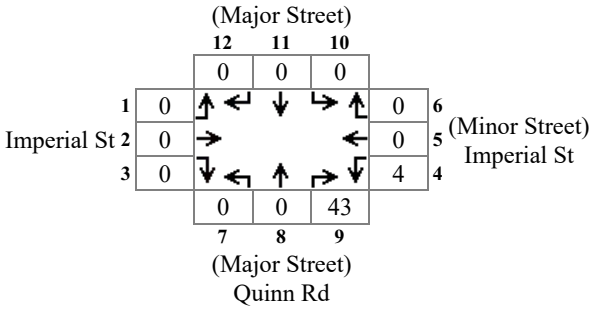


Major Total: 872
Minor High Volume: 63

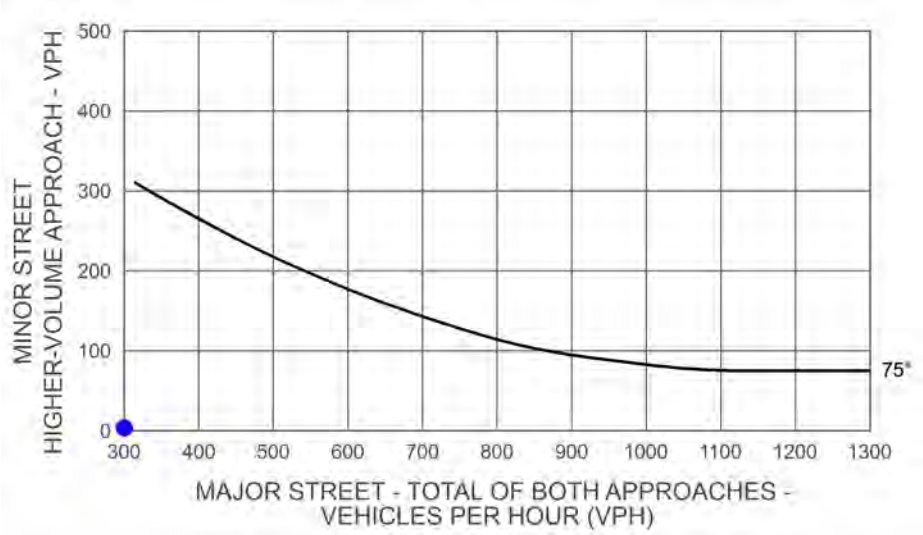


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 5

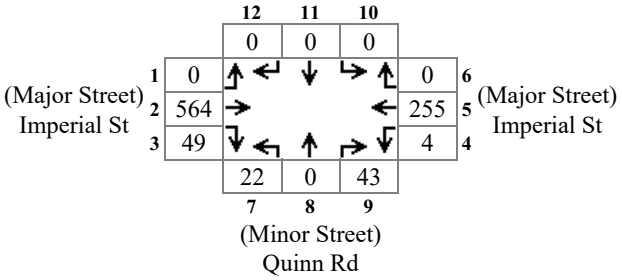


Major Total: 43
Minor High Volume: 4

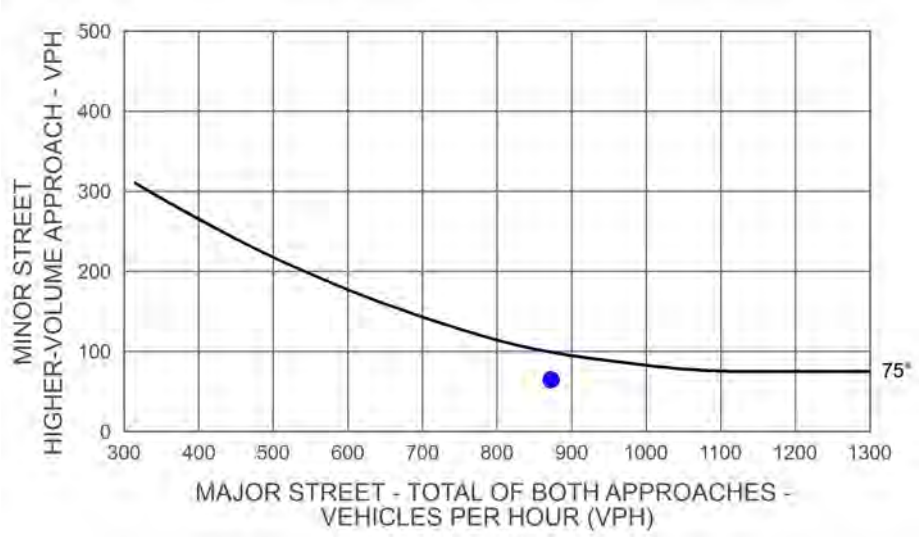


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 5

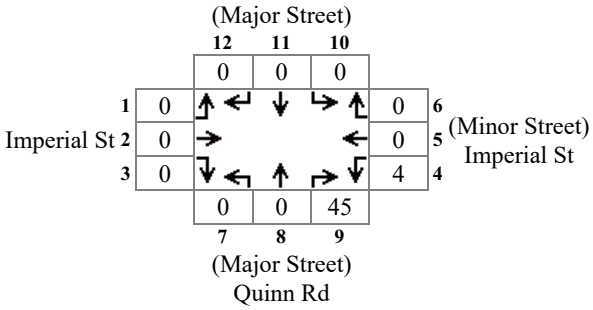


Major Total: 872
Minor High Volume: 65

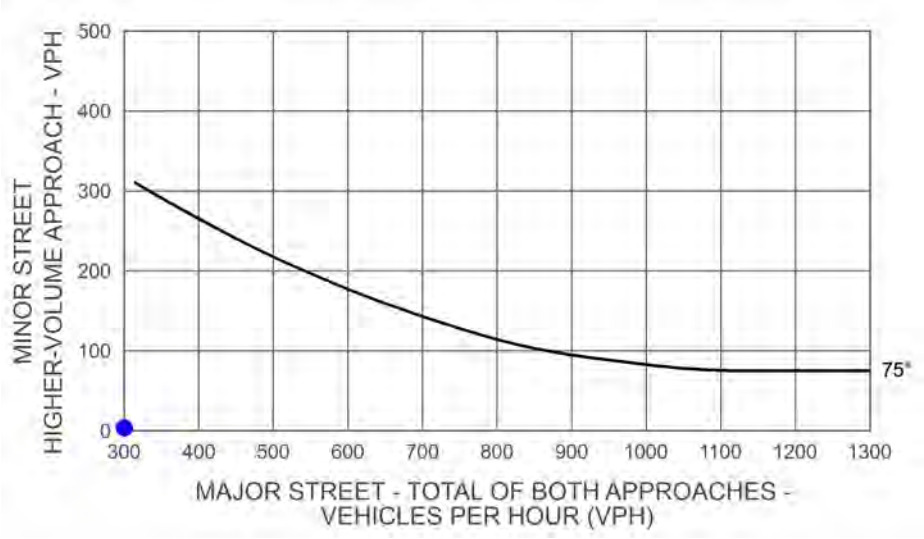


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 5



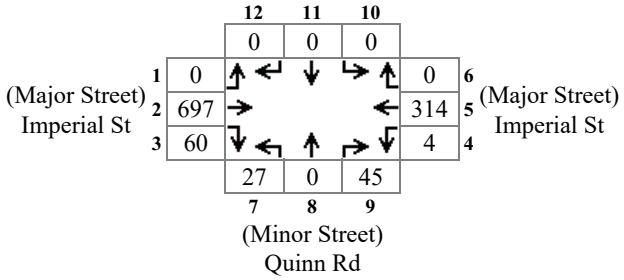
Major Total: 45
Minor High Volume: 4



Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

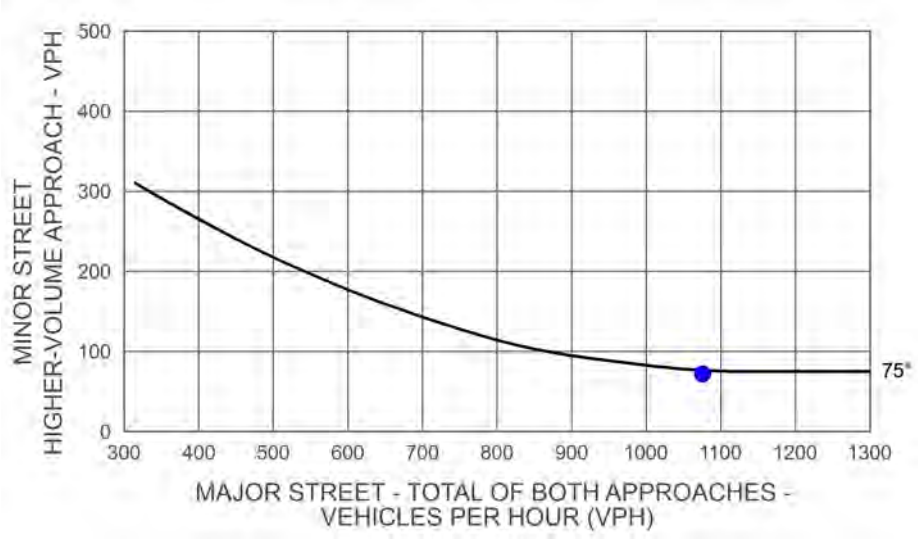
Scenario: PM Future+Project Phase I & II

Intersection #: 5



Major Total: 1075

Minor High Volume: 72



Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	20	0	0	52
Future Vol, veh/h	0	0	20	0	0	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	22	0	0	57

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	43	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	43	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	968	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	979	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	968	-
Mov Cap-2 Maneuver	-	-	-	-	968	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	979	-

Approach	EB	WB	NB
HCM Control Delay, s	0		
HCM LOS			-

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	-	-	-
HCM Lane LOS	-	-	-	-	-
HCM 95th %tile Q(veh)					

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	197	17	20	524	46	52
Future Vol, veh/h	197	17	20	524	46	52
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	214	18	22	570	50	57

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	233	0	836	223
Stage 1	-	-	-	-	223	-
Stage 2	-	-	-	-	613	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1335	-	337	817
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	541	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1335	-	329	817
Mov Cap-2 Maneuver	-	-	-	-	329	-
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	528	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	482	-	-	1335	-
HCM Lane V/C Ratio	0.221	-	-	0.016	-
HCM Control Delay (s)	14.6	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.8	-	-	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	21	0	0	55
Future Vol, veh/h	0	0	21	0	0	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	23	0	0	60

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	46	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	46	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	964	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	976	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	964	-
Mov Cap-2 Maneuver	-	-	-	-	964	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	976	-

Approach	EB	WB	NB
HCM Control Delay, s	0		
HCM LOS			-

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	-	-	-
HCM Lane LOS	-	-	-	-	-
HCM 95th %tile Q(veh)					

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	197	17	21	524	46	55
Future Vol, veh/h	197	17	21	524	46	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	214	18	23	570	50	60

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	233	0	838	223
Stage 1	-	-	-	-	223	-
Stage 2	-	-	-	-	615	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1335	-	336	817
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	539	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1335	-	328	817
Mov Cap-2 Maneuver	-	-	-	-	328	-
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	526	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	14.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	487	-	-	1335	-
HCM Lane V/C Ratio	0.225	-	-	0.017	-
HCM Control Delay (s)	14.5	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	197	17	21	524	46	55
Future Vol, veh/h	197	17	21	524	46	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	214	18	23	570	50	60

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	233	0	838	223
Stage 1	-	-	-	-	223	-
Stage 2	-	-	-	-	615	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1335	-	336	817
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	539	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1335	-	328	817
Mov Cap-2 Maneuver	-	-	-	-	328	-
Stage 1	-	-	-	-	814	-
Stage 2	-	-	-	-	526	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	14.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	487	-	-	1335	-
HCM Lane V/C Ratio	0.225	-	-	0.017	-
HCM Control Delay (s)	14.5	-	-	7.7	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.9	-	-	0.1	-

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	0	0	22	0	0	57
Future Vol, veh/h	0	0	22	0	0	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	0	24	0	0	62

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	0	0	48	0
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	48	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	-	-	962	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	974	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	962	-
Mov Cap-2 Maneuver	-	-	-	-	962	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	974	-

Approach	EB	WB	NB
HCM Control Delay, s	0		
HCM LOS			-

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	-	-	-	-	-
HCM Lane LOS	-	-	-	-	-
HCM 95th %tile Q(veh)					

Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	246	22	22	641	55	57
Future Vol, veh/h	246	22	22	641	55	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	267	24	24	697	60	62

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	291	0	1024	279
Stage 1	-	-	-	-	279	-
Stage 2	-	-	-	-	745	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1271	-	261	760
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	469	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1271	-	253	760
Mov Cap-2 Maneuver	-	-	-	-	253	-
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	454	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	18.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	383	-	-	1271	-
HCM Lane V/C Ratio	0.318	-	-	0.019	-
HCM Control Delay (s)	18.7	-	-	7.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Traffic Vol, veh/h	246	22	22	641	55	57
Future Vol, veh/h	246	22	22	641	55	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	267	24	24	697	60	62

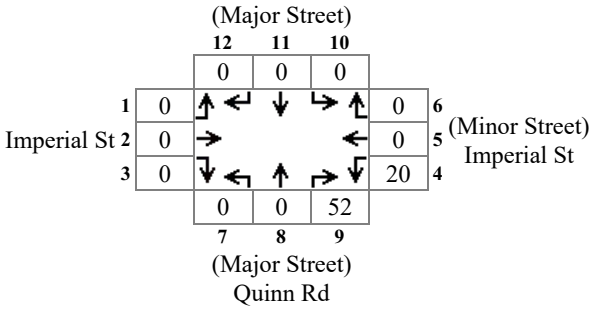
Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	291	0	1024	279
Stage 1	-	-	-	-	279	-
Stage 2	-	-	-	-	745	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1271	-	261	760
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	469	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1271	-	253	760
Mov Cap-2 Maneuver	-	-	-	-	253	-
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	454	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	18.7
HCM LOS			C

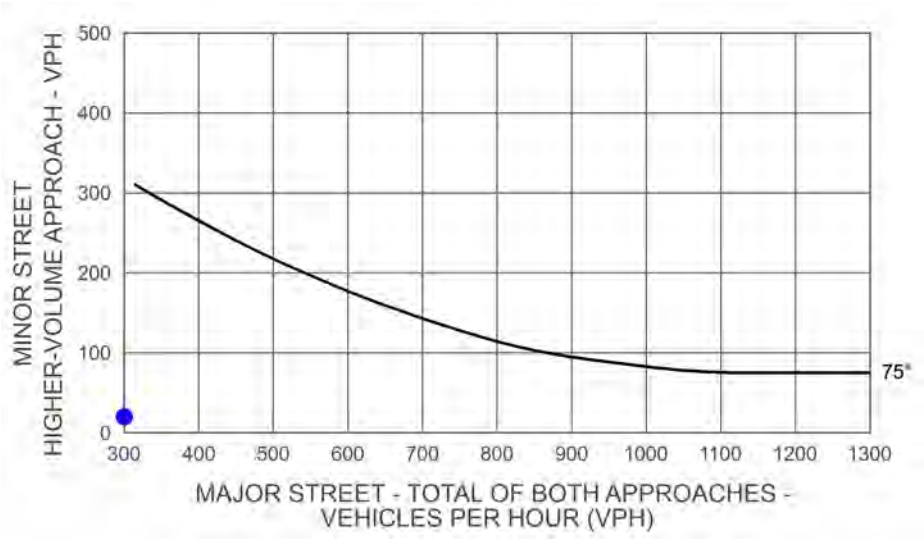
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	383	-	-	1271	-
HCM Lane V/C Ratio	0.318	-	-	0.019	-
HCM Control Delay (s)	18.7	-	-	7.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.3	-	-	0.1	-

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 5

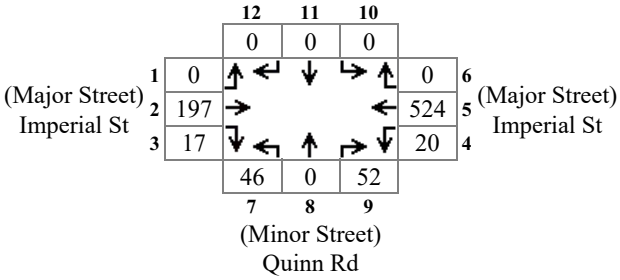


Major Total: 52
Minor High Volume: 20

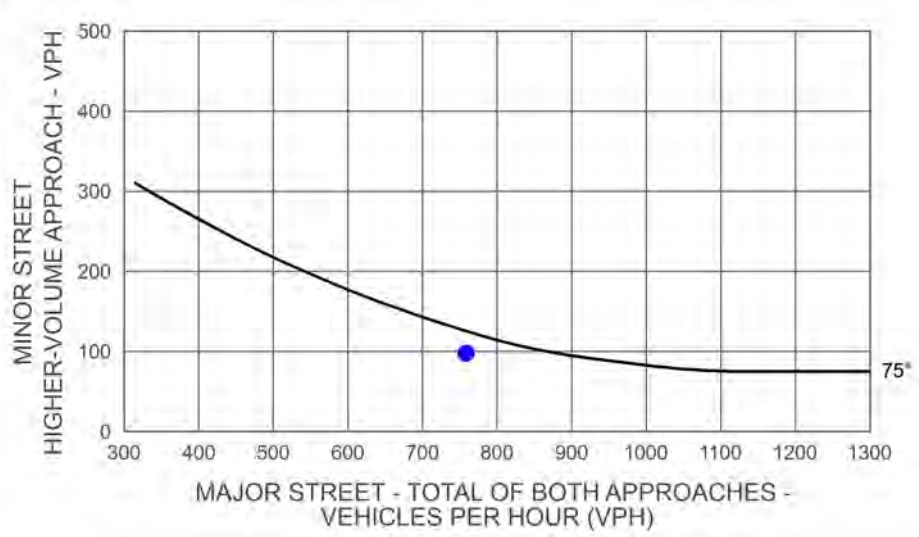


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project Phase I
Intersection #: 5

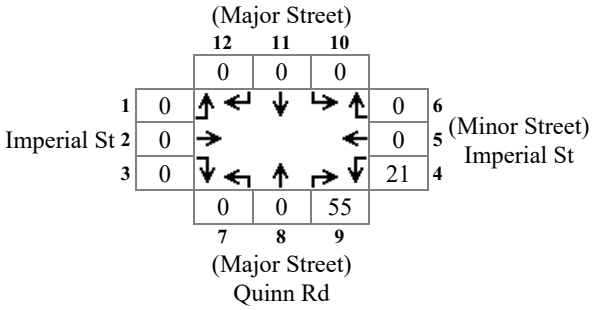


Major Total: 758
Minor High Volume: 98

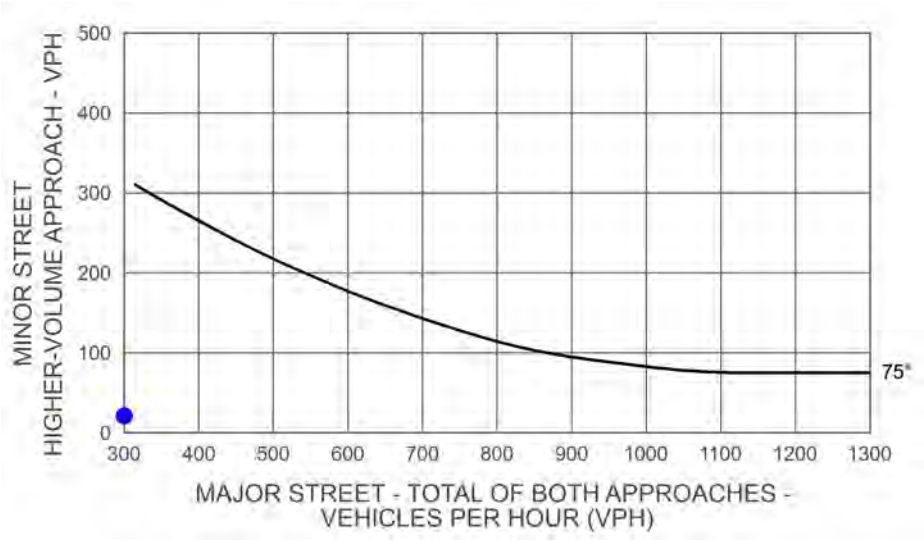


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 5

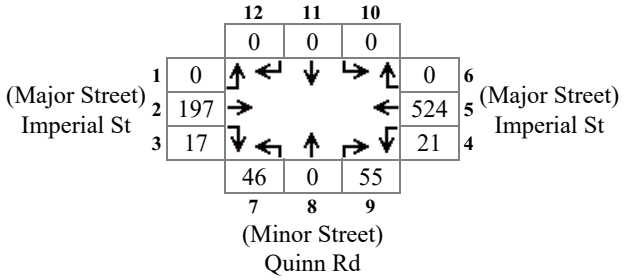


Major Total: 55
Minor High Volume: 21

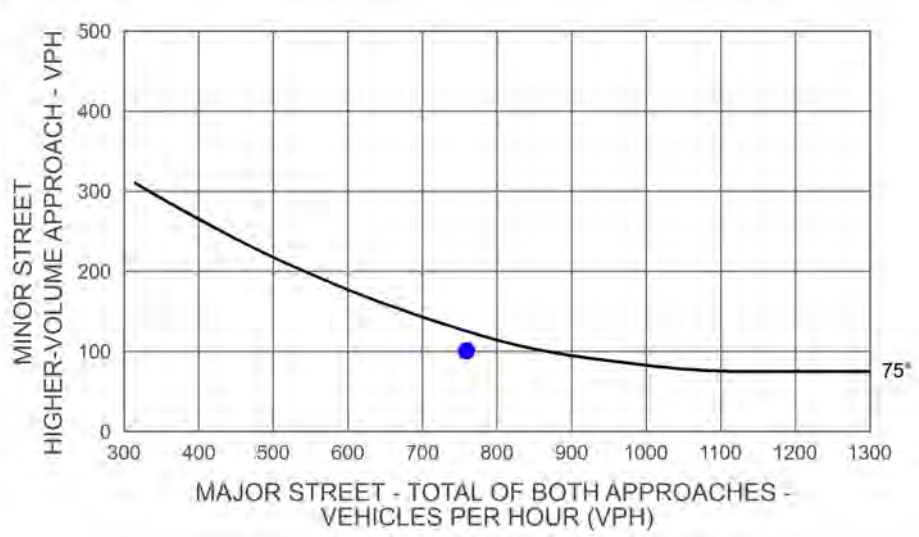


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 5

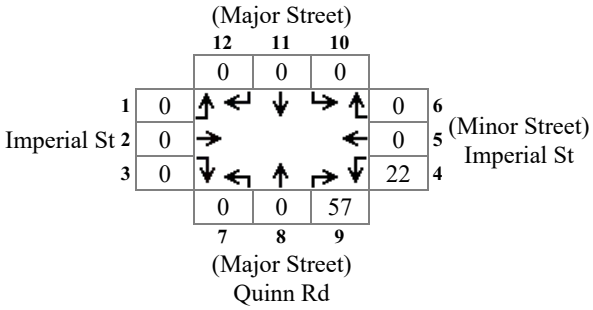


Major Total: 759
Minor High Volume: 101

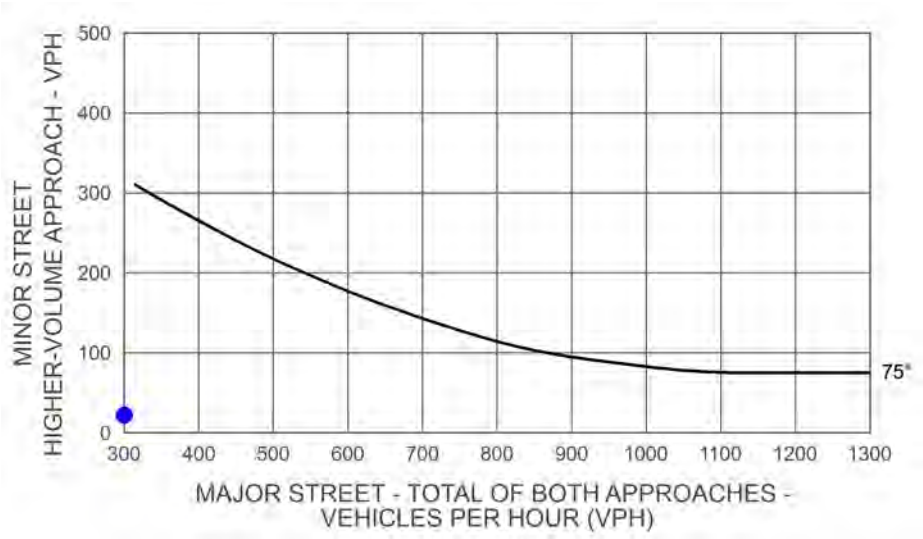


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 5



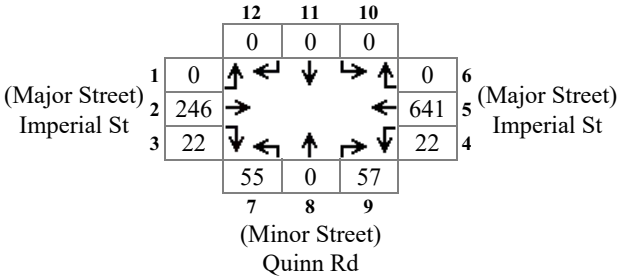
Major Total: 57
Minor High Volume: 22



Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

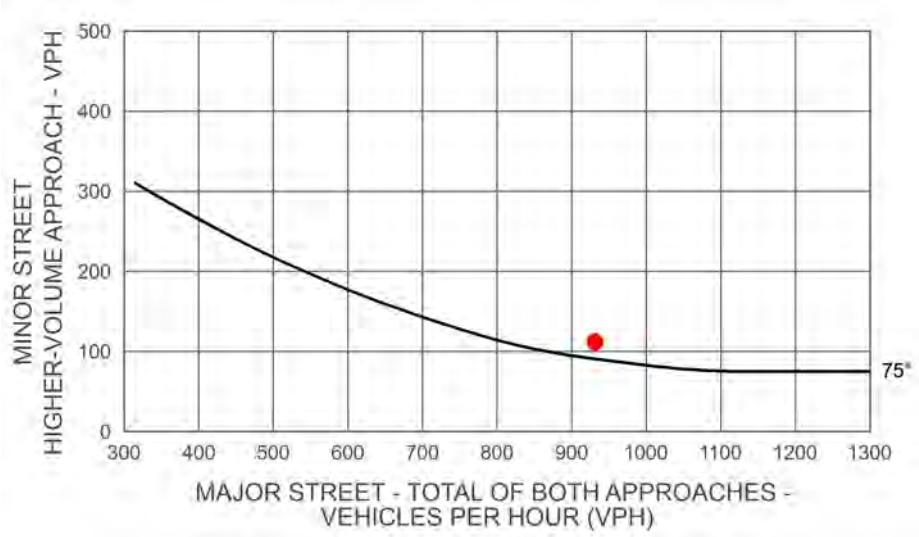
Scenario: AM Future+Project Phase I & II

Intersection #: 5



Major Total: 931

Minor High Volume: 112



Intersection 6
Porterville Hwy (SR 65) & Imperial St

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	1	8	3	394	406	1
Future Vol, veh/h	1	8	3	394	406	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	550	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	9	3	428	441	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	877	442	442	0	-	0
Stage 1	442	-	-	-	-	-
Stage 2	435	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	319	615	1118	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	653	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	318	615	1118	-	-	-
Mov Cap-2 Maneuver	318	-	-	-	-	-
Stage 1	648	-	-	-	-	-
Stage 2	651	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.6	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1118	-	557	-	-
HCM Lane V/C Ratio	0.003	-	0.018	-	-
HCM Control Delay (s)	8.2	-	11.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	122.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	95	478	215	394	406	44
Future Vol, veh/h	95	478	215	394	406	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	550	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	103	520	234	428	441	48

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1361	465	489	0	-	0
Stage 1	465	-	-	-	-	-
Stage 2	896	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	163	597	1074	-	-	-
Stage 1	632	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	127	597	1074	-	-	-
Mov Cap-2 Maneuver	127	-	-	-	-	-
Stage 1	632	-	-	-	-	-
Stage 2	312	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 344.6	3.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1074	-	370	-	-
HCM Lane V/C Ratio	0.218	-	1.683	-	-
HCM Control Delay (s)	9.3	-	$ 344.6	-	-
HCM Lane LOS	A	-	F	-	-
HCM 95th %tile Q(veh)	0.8	-	37.8	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	1	10	4	538	542	1
Future Vol, veh/h	1	10	4	538	542	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	550	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	11	4	585	589	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1183	590	590	0	-	0
Stage 1	590	-	-	-	-	-
Stage 2	593	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	209	508	985	-	-	-
Stage 1	554	-	-	-	-	-
Stage 2	552	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	208	508	985	-	-	-
Mov Cap-2 Maneuver	208	-	-	-	-	-
Stage 1	554	-	-	-	-	-
Stage 2	550	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.2	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	985	-	449	-	-
HCM Lane V/C Ratio	0.004	-	0.027	-	-
HCM Control Delay (s)	8.7	-	13.2	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	195.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	95	480	216	538	542	44
Future Vol, veh/h	95	480	216	538	542	44
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	550	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	103	522	235	585	589	48

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1667	613	637	0	-	0
Stage 1	613	-	-	-	-	-
Stage 2	1054	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	106	~ 492	947	-	-	-
Stage 1	541	-	-	-	-	-
Stage 2	335	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 80	~ 492	947	-	-	-
Mov Cap-2 Maneuver	~ 80	-	-	-	-	-
Stage 1	541	-	-	-	-	-
Stage 2	252	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 648.6	2.9	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	947	-	266	-	-
HCM Lane V/C Ratio	0.248	-	2.35	-	-
HCM Control Delay (s)	10.1	-	$ 648.6	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	1	-	49.6	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	95	480	216	538	542	44
Future Volume (veh/h)	95	480	216	538	542	44
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1716	1716	1863	1863	1716
Adj Flow Rate, veh/h	103	522	235	585	589	48
Adj No. of Lanes	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	390	612	288	1301	921	721
Arrive On Green	0.24	0.24	0.18	0.70	0.49	0.49
Sat Flow, veh/h	1634	2567	1634	1863	1863	1458
Grp Volume(v), veh/h	103	522	235	585	589	48
Grp Sat Flow(s),veh/h/ln	1634	1283	1634	1863	1863	1458
Q Serve(g_s), s	4.6	17.5	12.5	12.4	21.0	0.5
Cycle Q Clear(g_c), s	4.6	17.5	12.5	12.4	21.0	0.5
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	390	612	288	1301	921	721
V/C Ratio(X)	0.26	0.85	0.82	0.45	0.64	0.07
Avail Cap(c_a), veh/h	414	650	288	1301	921	721
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.92	0.92
Uniform Delay (d), s/veh	27.9	32.8	35.7	6.0	16.8	1.5
Incr Delay (d2), s/veh	0.4	10.2	16.6	1.1	3.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	12.3	6.9	6.7	11.6	1.4
LnGrp Delay(d),s/veh	28.2	43.0	52.3	7.1	19.9	1.7
LnGrp LOS	C	D	D	A	B	A
Approach Vol, veh/h	625			820	637	
Approach Delay, s/veh	40.5			20.0	18.6	
Approach LOS	D			C	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		65.3		24.7	18.3	47.0		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		59.5		21.5	12.5	42.5		
Max Q Clear Time (g_c+I1), s		14.4		19.5	14.5	23.0		
Green Ext Time (p_c), s		3.3		0.7	0.0	2.4		

Intersection Summary	
HCM 2010 Ctrl Delay	25.7
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	1	12	5	654	662	2
Future Vol, veh/h	1	12	5	654	662	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	550	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	13	5	711	720	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1443	721	722	0	-	0
Stage 1	721	-	-	-	-	-
Stage 2	722	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	146	427	880	-	-	-
Stage 1	482	-	-	-	-	-
Stage 2	481	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	145	427	880	-	-	-
Mov Cap-2 Maneuver	145	-	-	-	-	-
Stage 1	482	-	-	-	-	-
Stage 2	478	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.1	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	880	-	371	-	-
HCM Lane V/C Ratio	0.006	-	0.038	-	-
HCM Control Delay (s)	9.1	-	15.1	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	518.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	118	592	266	654	662	55
Future Vol, veh/h	118	592	266	654	662	55
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	550	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	128	643	289	711	720	60

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2038	749	779	0	-	0
Stage 1	749	-	-	-	-	-
Stage 2	1289	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 62	~ 412	838	-	-	-
Stage 1	467	-	-	-	-	-
Stage 2	258	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 41	~ 412	838	-	-	-
Mov Cap-2 Maneuver	~ 41	-	-	-	-	-
Stage 1	467	-	-	-	-	-
Stage 2	169	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 1708.9	3.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	838	-	165	-	-
HCM Lane V/C Ratio	0.345	-	4.677	-	-
HCM Control Delay (s)	11.5	-	$ 1708.9	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	1.5	-	79.5	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



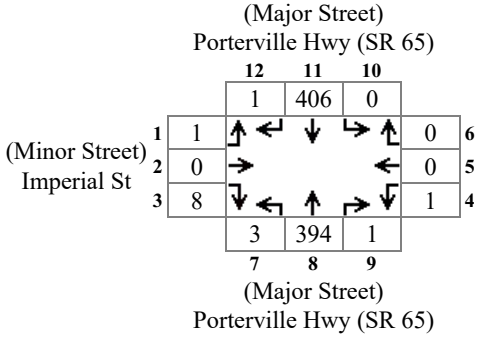
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	118	592	266	654	662	55
Future Volume (veh/h)	118	592	266	654	662	55
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1716	1716	1863	1863	1716
Adj Flow Rate, veh/h	128	643	289	711	720	60
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	414	650	427	1273	970	760
Arrive On Green	0.25	0.25	0.13	0.68	0.52	0.52
Sat Flow, veh/h	1634	2567	3170	1863	1863	1458
Grp Volume(v), veh/h	128	643	289	711	720	60
Grp Sat Flow(s),veh/h/ln	1634	1283	1585	1863	1863	1458
Q Serve(g_s), s	5.7	22.5	7.8	17.6	27.2	1.8
Cycle Q Clear(g_c), s	5.7	22.5	7.8	17.6	27.2	1.8
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	414	650	427	1273	970	760
V/C Ratio(X)	0.31	0.99	0.68	0.56	0.74	0.08
Avail Cap(c_a), veh/h	414	650	511	1273	970	760
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.85	0.85
Uniform Delay (d), s/veh	27.2	33.5	37.1	7.3	16.8	10.8
Incr Delay (d2), s/veh	0.4	32.4	2.8	1.8	4.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	16.9	3.6	9.5	15.0	2.2
LnGrp Delay(d),s/veh	27.6	65.9	39.9	9.1	21.2	10.9
LnGrp LOS	C	E	D	A	C	B
Approach Vol, veh/h	771			1000	780	
Approach Delay, s/veh	59.5			18.0	20.4	
Approach LOS	E			B	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		64.0		26.0	14.6	49.4		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		59.5		21.5	12.5	42.5		
Max Q Clear Time (g_c+I1), s		19.6		24.5	9.8	29.2		
Green Ext Time (p_c), s		7.4		0.0	0.3	5.4		

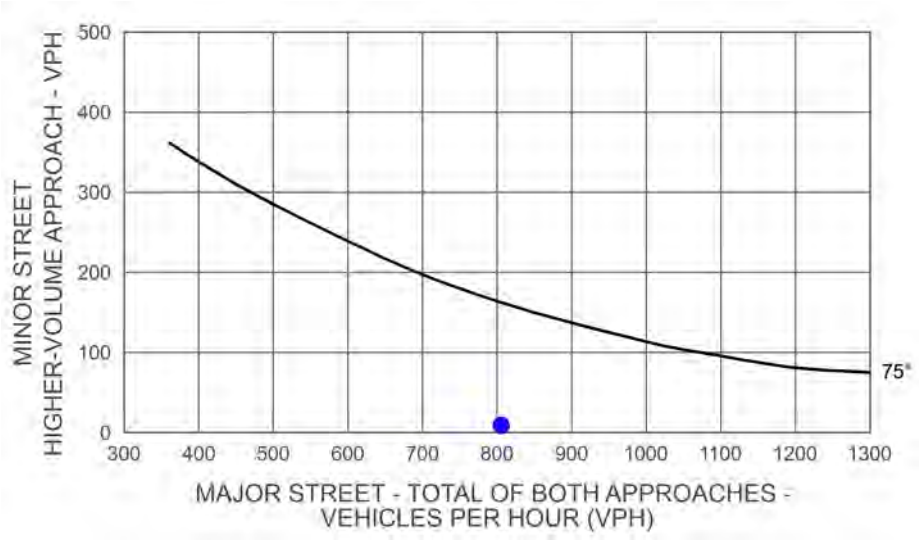
Intersection Summary	
HCM 2010 Ctrl Delay	31.3
HCM 2010 LOS	C

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 6

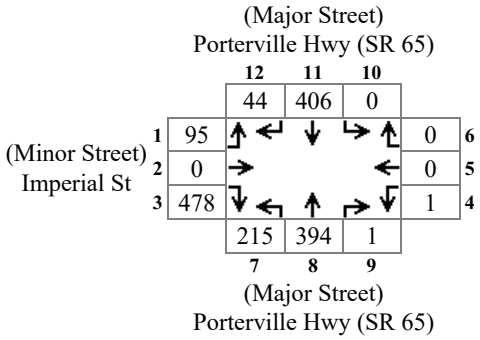


Major Total: 805
Minor High Volume: 9

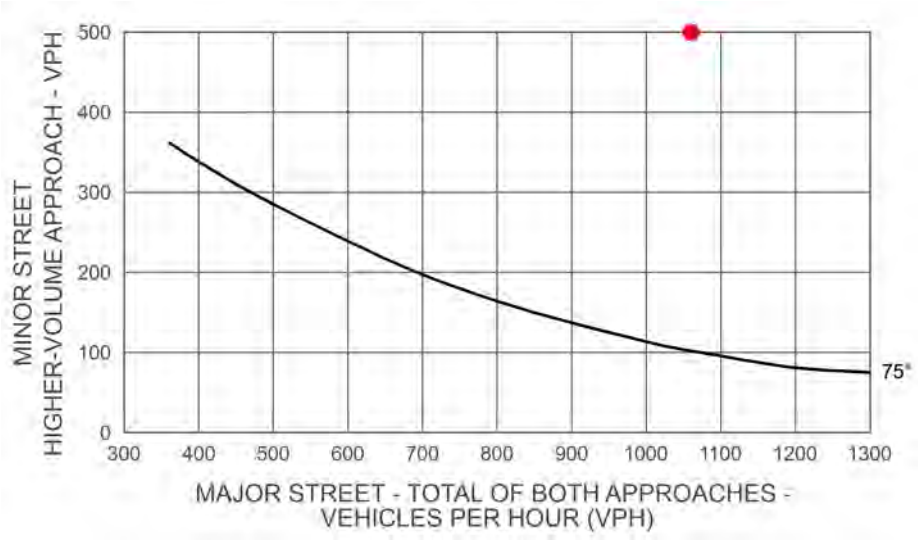


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Existing+Project Phase I
Intersection #: 6

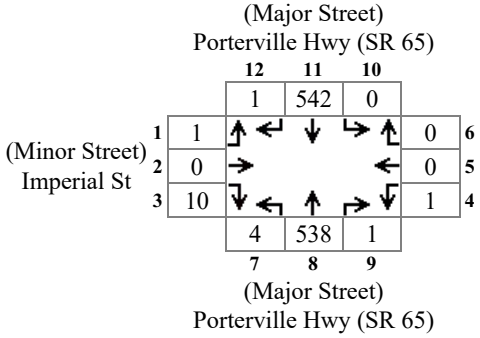


Major Total: 1060
Minor High Volume: 573

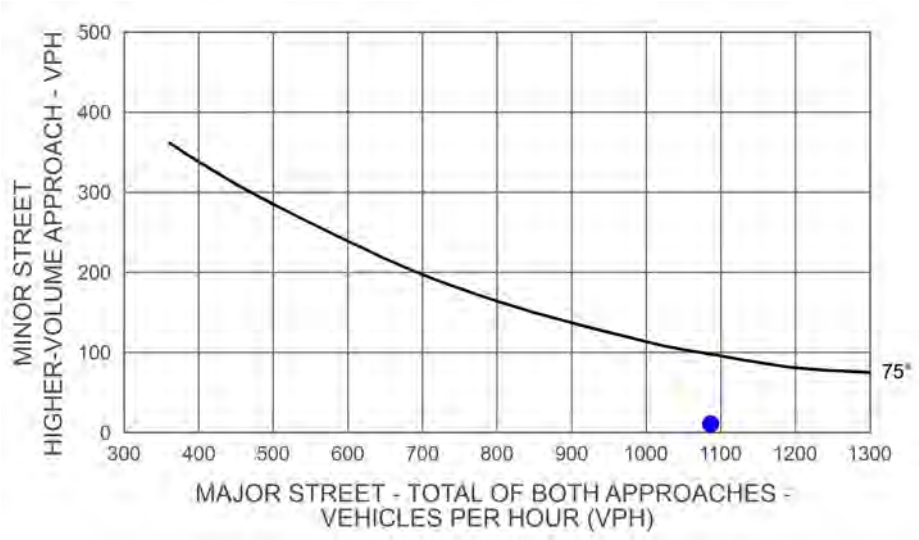


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 6

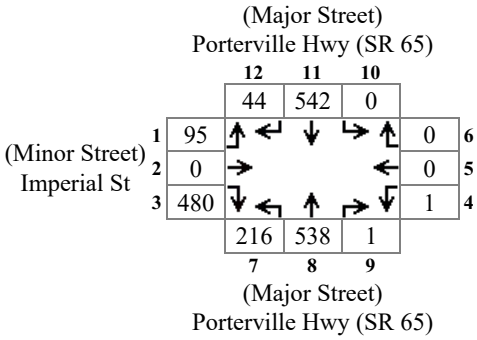


Major Total: 1086
Minor High Volume: 11



Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future+Project
Intersection #: 6

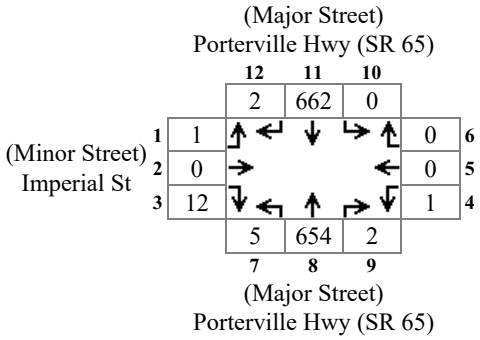


Major Total: 1341
Minor High Volume: 575

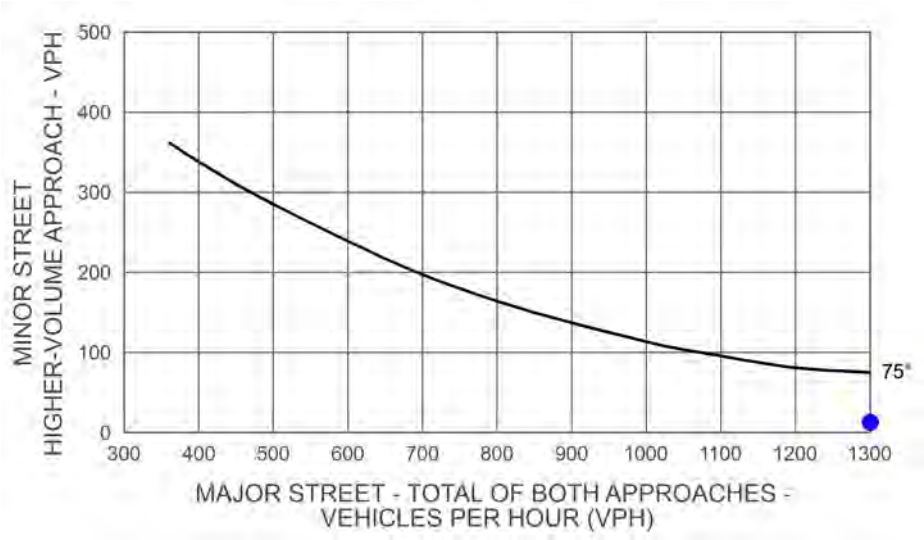


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 6

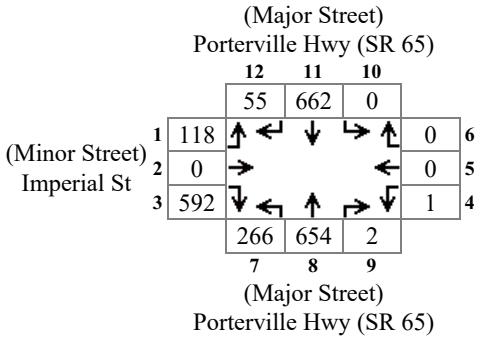


Major Total: 1325
Minor High Volume: 13



Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: PM Future+Project Phase I & II
Intersection #: 6



Major Total: 1639
Minor High Volume: 710



Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	6	5	12	411	588	8
Future Vol, veh/h	6	5	12	411	588	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	550	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	5	13	447	639	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1116	643	648	0	-	0
Stage 1	643	-	-	-	-	-
Stage 2	473	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	230	473	938	-	-	-
Stage 1	523	-	-	-	-	-
Stage 2	627	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	227	473	938	-	-	-
Mov Cap-2 Maneuver	227	-	-	-	-	-
Stage 1	523	-	-	-	-	-
Stage 2	618	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.6	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	938	-	297	-	-
HCM Lane V/C Ratio	0.014	-	0.04	-	-
HCM Control Delay (s)	8.9	-	17.6	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	78

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	39	169	448	411	588	96
Future Vol, veh/h	39	169	448	411	588	96
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	550	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	184	487	447	639	104

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2112	691	743	0	-	0
Stage 1	691	-	-	-	-	-
Stage 2	1421	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	56	445	864	-	-	-
Stage 1	497	-	-	-	-	-
Stage 2	223	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 24	445	864	-	-	-
Mov Cap-2 Maneuver	~ 24	-	-	-	-	-
Stage 1	497	-	-	-	-	-
Stage 2	97	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 625.7	7.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	864	-	104	-	-
HCM Lane V/C Ratio	0.564	-	2.174	-	-
HCM Control Delay (s)	14.4	-	$ 625.7	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	3.6	-	19.6	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	7	6	15	529	775	10
Future Vol, veh/h	7	6	15	529	775	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	550	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	7	16	575	842	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1456	848	853	0	-	0
Stage 1	848	-	-	-	-	-
Stage 2	608	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	143	361	786	-	-	-
Stage 1	420	-	-	-	-	-
Stage 2	543	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	140	361	786	-	-	-
Mov Cap-2 Maneuver	140	-	-	-	-	-
Stage 1	420	-	-	-	-	-
Stage 2	532	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.9	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	786	-	195	-	-
HCM Lane V/C Ratio	0.021	-	0.072	-	-
HCM Control Delay (s)	9.7	-	24.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Int Delay, s/veh	180

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	40	170	451	529	775	98
Future Vol, veh/h	40	170	451	529	775	98
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	550	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	43	185	490	575	842	107

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2451	896	949	0	-	0
Stage 1	896	-	-	-	-	-
Stage 2	1555	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 34	339	724	-	-	-
Stage 1	399	-	-	-	-	-
Stage 2	192	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 11	339	724	-	-	-
Mov Cap-2 Maneuver	~ 11	-	-	-	-	-
Stage 1	399	-	-	-	-	-
Stage 2	62	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	$ 1725.8	9.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	724	-	51	-	-
HCM Lane V/C Ratio	0.677	-	4.476	-	-
HCM Control Delay (s)	19.7	-	$ 1725.8	-	-
HCM Lane LOS	C	-	F	-	-
HCM 95th %tile Q(veh)	5.3	-	25.5	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	170	451	529	775	98
Future Volume (veh/h)	40	170	451	529	775	98
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1716	1716	1863	1863	1716
Adj Flow Rate, veh/h	43	185	490	575	842	107
Adj No. of Lanes	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	186	292	491	1533	921	721
Arrive On Green	0.11	0.11	0.30	0.82	0.49	0.49
Sat Flow, veh/h	1634	2567	1634	1863	1863	1458
Grp Volume(v), veh/h	43	185	490	575	842	107
Grp Sat Flow(s),veh/h/ln	1634	1283	1634	1863	1863	1458
Q Serve(g_s), s	2.2	6.2	27.0	7.1	37.5	2.0
Cycle Q Clear(g_c), s	2.2	6.2	27.0	7.1	37.5	2.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	186	292	491	1533	921	721
V/C Ratio(X)	0.23	0.63	1.00	0.38	0.91	0.15
Avail Cap(c_a), veh/h	414	650	491	1533	921	721
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.91	0.91
Uniform Delay (d), s/veh	36.3	38.1	31.4	2.0	21.0	4.5
Incr Delay (d2), s/veh	0.6	2.3	39.8	0.7	14.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	4.4	17.5	3.8	22.8	3.5
LnGrp Delay(d),s/veh	36.9	40.4	71.2	2.7	35.0	4.9
LnGrp LOS	D	D	E	A	C	A
Approach Vol, veh/h	228			1065	949	
Approach Delay, s/veh	39.7			34.2	31.6	
Approach LOS	D			C	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		76.6		13.4	29.6	47.0		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		59.5		21.5	12.5	42.5		
Max Q Clear Time (g_c+I1), s		9.1		8.2	29.0	39.5		
Green Ext Time (p_c), s		4.6		0.8	0.0	1.3		

Intersection Summary	
HCM 2010 Ctrl Delay	33.7
HCM 2010 LOS	C

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	9	7	18	650	949	12
Future Vol, veh/h	9	7	18	650	949	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	550	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	8	20	707	1032	13

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1784	1038	1045	0	-	0
Stage 1	1038	-	-	-	-	-
Stage 2	746	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	90	280	666	-	-	-
Stage 1	341	-	-	-	-	-
Stage 2	469	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	87	280	666	-	-	-
Mov Cap-2 Maneuver	87	-	-	-	-	-
Stage 1	341	-	-	-	-	-
Stage 2	455	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	38.4	0.3	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	666	-	125	-	-
HCM Lane V/C Ratio	0.029	-	0.139	-	-
HCM Control Delay (s)	10.6	-	38.4	-	-
HCM Lane LOS	B	-	E	-	-
HCM 95th %tile Q(veh)	0.1	-	0.5	-	-

Intersection	
Int Delay, s/veh	26.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Traffic Vol, veh/h	50	212	551	650	949	120
Future Vol, veh/h	50	212	551	650	949	120
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	550	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	230	599	707	1032	130

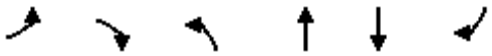
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	3001	1097	1162	0	-	0
Stage 1	1097	-	-	-	-	-
Stage 2	1904	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 15	259	601	-	-	-
Stage 1	320	-	-	-	-	-
Stage 2	128	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	0	259	601	-	-	-
Mov Cap-2 Maneuver	0	-	-	-	-	-
Stage 1	320	-	-	-	-	-
Stage 2	0	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	127.2	28.5	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	601	-	259	-	-
HCM Lane V/C Ratio	0.997	-	1.1	-	-
HCM Control Delay (s)	62	-	127.2	-	-
HCM Lane LOS	F	-	F	-	-
HCM 95th %tile Q(veh)	14.9	-	12.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	212	551	650	949	120
Future Volume (veh/h)	50	212	551	650	949	120
Number	7	14	5	2	6	16
Initial Q, veh	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00	1.00	1.00			1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Lanes Open During Work Zone						
Adj Sat Flow, veh/h/ln	1723	1723	2166	1870	1870	1723
Adj Flow Rate, veh/h	54	230	599	707	1032	130
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Opposing Right Turn Influence	Yes		Yes			
Cap, veh/h	117	184	737	1624	1230	960
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.07	0.07	0.18	0.87	0.66	0.66
Unsig. Movement Delay						
Ln Grp Delay, s/veh	45.1	193.7	44.1	2.2	18.4	2.1
Ln Grp LOS	D	F	D	A	B	A
Approach Vol, veh/h	284			1306	1162	
Approach Delay, s/veh	165.4			21.4	16.6	
Approach LOS	F			C	B	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs		2		4	6	5		
Case No		4.0		9.0	7.0	2.0		
Phs Duration (G+Y+Rc), s		85.0		10.0	65.0	20.0		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green (Gmax), s		80.5		5.5	60.5	15.5		
Max Allow Headway (MAH), s		4.0		4.4	4.0	4.1		
Max Q Clear (g_c+I1), s		9.6		8.8	42.0	15.6		
Green Ext Time (g_e), s		3.1		0.0	5.6	0.0		
Prob of Phs Call (p_c)		1.00		1.00	1.00	1.00		
Prob of Max Out (p_x)		0.00		1.00	0.00	1.00		

Left-Turn Movement Data								
Assigned Mvmt				7	1	5		
Mvmt Sat Flow, veh/h				1641	0	4001		

Through Movement Data								
Assigned Mvmt		2		4	6			
Mvmt Sat Flow, veh/h		1870		0	1870			

Right-Turn Movement Data								
Assigned Mvmt		12		14	16			
Mvmt Sat Flow, veh/h		0		2569	1460			

Left Lane Group Data								
Assigned Mvmt	0	0	0	7	1	5	0	0
Lane Assignment				L	L (Prot)			

Lanes in Grp	0	0	0	1	0	2	0	0
Grp Vol (v), veh/h	0	0	0	54	0	599	0	0
Grp Sat Flow (s), veh/h/ln	0	0	0	1641	0	2001	0	0
Q Serve Time (g_s), s	0.0	0.0	0.0	3.0	0.0	13.6	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	3.0	0.0	13.6	0.0	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	0	1641	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	62.5	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	0	0	117	0	737	0	0
V/C Ratio (X)	0.00	0.00	0.00	0.46	0.00	0.81	0.00	0.00
Avail Cap (c_a), veh/h	0	0	0	117	0	737	0	0
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	42.3	0.0	37.2	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	2.8	0.0	6.9	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	45.1	0.0	44.1	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	1.2	0.0	6.2	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.1	0.0	0.7	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	0.00	0.00	1.00	1.00	1.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	1.3	0.0	6.9	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.02	0.00	0.32	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	0	2	0	4	6	0	0	0
Lane Assignment		T			T			
Lanes in Grp	0	1	0	0	1	0	0	0
Grp Vol (v), veh/h	0	707	0	0	1032	0	0	0
Grp Sat Flow (s), veh/h/ln	0	1870	0	0	1870	0	0	0
Q Serve Time (g_s), s	0.0	7.6	0.0	0.0	40.0	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	7.6	0.0	0.0	40.0	0.0	0.0	0.0
Lane Grp Cap (c), veh/h	0	1624	0	0	1231	0	0	0
V/C Ratio (X)	0.00	0.44	0.00	0.00	0.84	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	1624	0	0	1231	0	0	0
Upstream Filter (I)	0.00	1.00	0.00	0.00	0.85	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	1.3	0.0	0.0	12.4	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.9	0.0	0.0	6.0	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	2.2	0.0	0.0	18.4	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	0.0	11.6	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.4	0.0	0.0	2.0	0.0	0.0	0.0

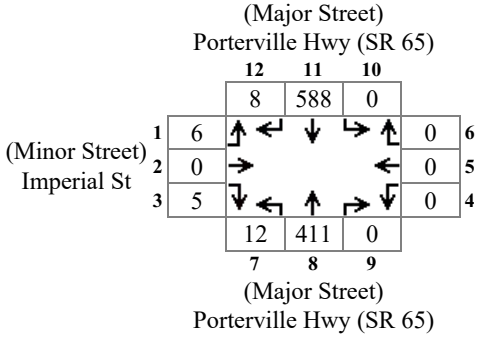
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	0.4	0.0	0.0	13.6	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	0	12	0	14	16	0	0	0
Lane Assignment				R	R			
Lanes in Grp	0	0	0	2	1	0	0	0
Grp Vol (v), veh/h	0	0	0	230	130	0	0	0
Grp Sat Flow (s), veh/h/ln	0	0	0	1285	1460	0	0	0
Q Serve Time (g_s), s	0.0	0.0	0.0	6.8	1.6	0.0	0.0	0.0
Cycle Q Clear Time (g_c), s	0.0	0.0	0.0	6.8	1.6	0.0	0.0	0.0
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00
Lane Grp Cap (c), veh/h	0	0	0	184	960	0	0	0
V/C Ratio (X)	0.00	0.00	0.00	1.25	0.14	0.00	0.00	0.00
Avail Cap (c_a), veh/h	0	0	0	184	960	0	0	0
Upstream Filter (I)	0.00	0.00	0.00	1.00	0.85	0.00	0.00	0.00
Uniform Delay (d1), s/veh	0.0	0.0	0.0	44.1	1.8	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	149.6	0.2	0.0	0.0	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	0.0	0.0	193.7	2.1	0.0	0.0	0.0
1st-Term Q (Q1), veh/ln	0.0	0.0	0.0	4.7	4.0	0.0	0.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	3.8	0.1	0.0	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	0.00	1.00	1.00	0.00	0.00	0.00
%ile Back of Q (50%), veh/ln	0.0	0.0	0.0	8.5	4.1	0.0	0.0	0.0
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.11	0.02	0.00	0.00	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	11.5	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0

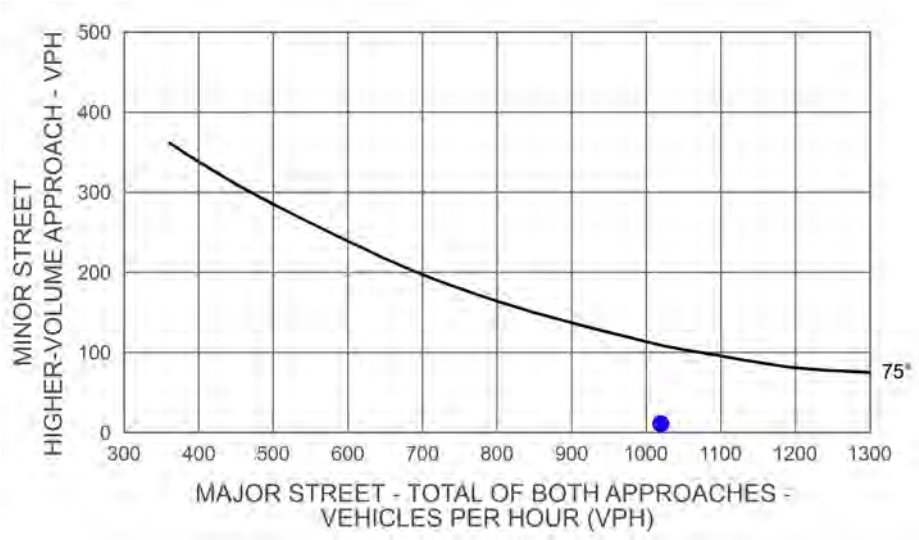
Intersection Summary	
HCM 6th Ctrl Delay	34.2
HCM 6th LOS	C

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 6

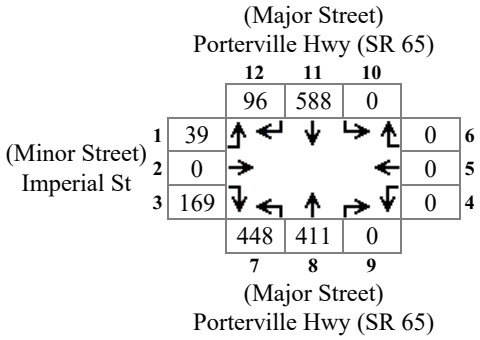


Major Total: 1019
Minor High Volume: 11

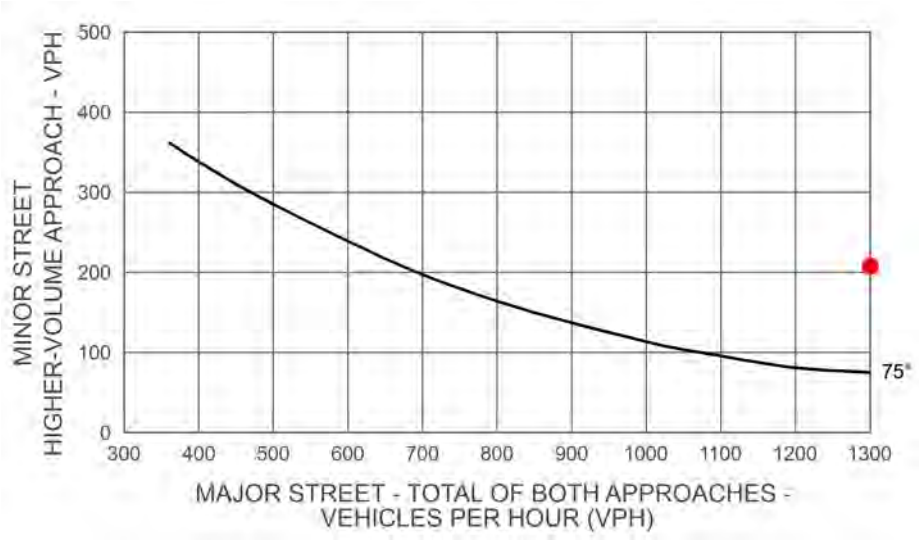


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Existing+Project Phase I
Intersection #: 6

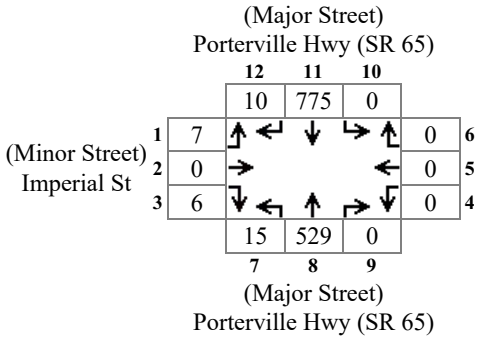


Major Total: 1543
Minor High Volume: 208

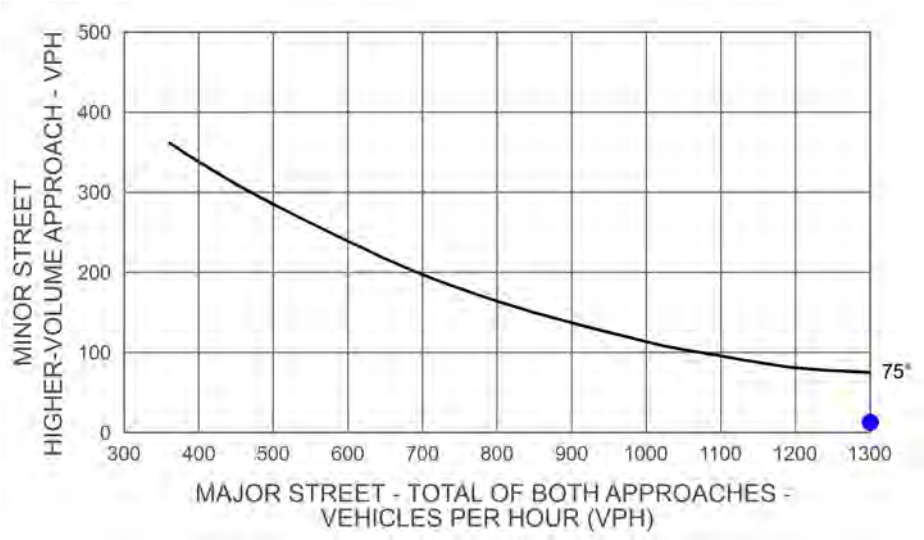


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 6

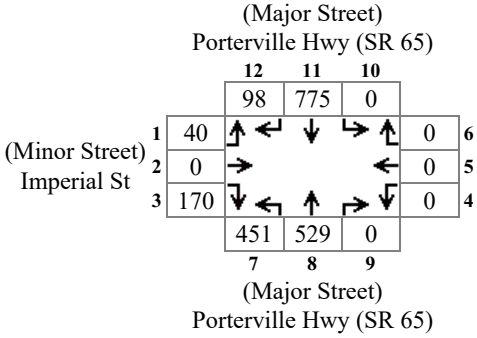


Major Total: 1329
Minor High Volume: 13

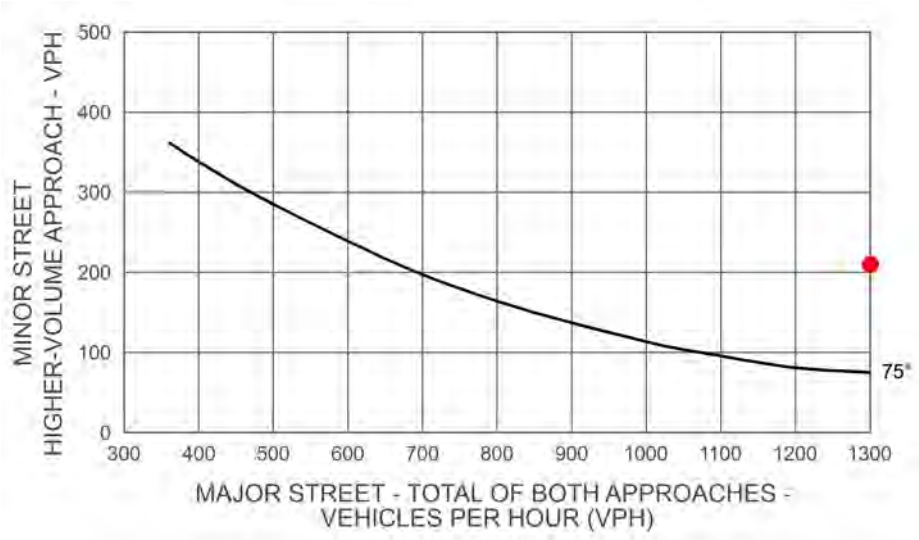


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future+Project
Intersection #: 6

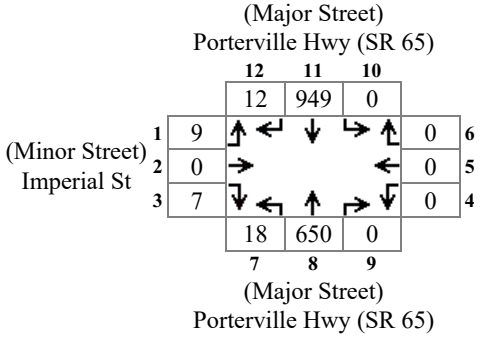


Major Total: 1853
Minor High Volume: 210

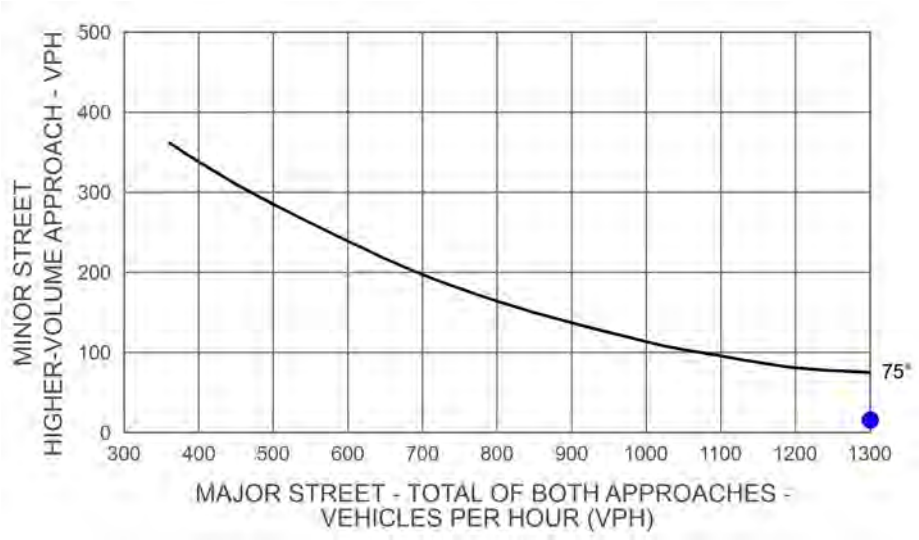


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 6

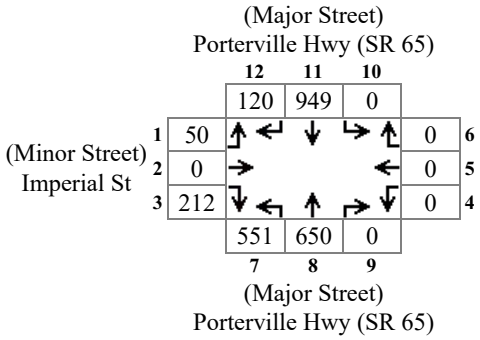


Major Total: 1629
Minor High Volume: 16

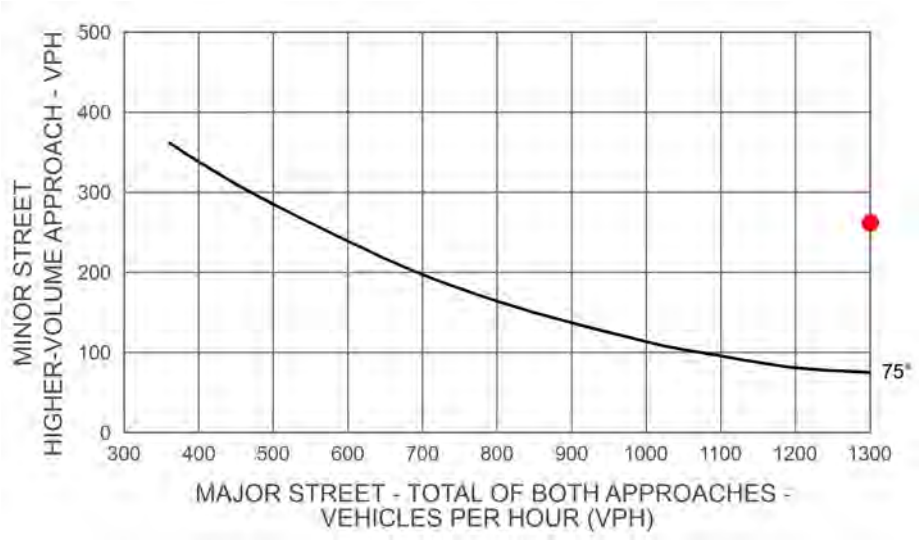


Rural Peak Hour Signal Warrant
Intersection Meets Signal Warrant

Scenario: AM Future+Project Phase I & II
Intersection #: 6



Major Total: 2270
Minor High Volume: 262



Intersection 7
Quinn Rd & Saco Rd/Mc Murtrey Ave

Intersection	
Intersection Delay, s/veh	9.3
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	17	4	126	0	16	3	8	0	50	68	6	0	7	173	23
Future Vol, veh/h	0	17	4	126	0	16	3	8	0	50	68	6	0	7	173	23
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	18	4	137	0	17	3	9	0	54	74	7	0	8	188	25
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	8.8	8.9	9.1	9.9
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	3%	0%	27%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	97%	0%	73%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	50	68	6	17	130	16	11	7	173	23
LT Vol	50	0	0	17	0	16	0	7	0	0
Through Vol	0	68	0	0	4	0	3	0	173	0
RT Vol	0	0	6	0	126	0	8	0	0	23
Lane Flow Rate	54	74	7	18	141	17	12	8	188	25
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.091	0.113	0.009	0.031	0.192	0.03	0.018	0.012	0.28	0.032
Departure Headway (Hd)	6.017	5.514	4.81	6.061	4.883	6.308	5.298	5.857	5.354	4.651
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	592	646	738	589	731	564	670	608	668	765
Service Time	3.785	3.282	2.578	3.82	2.643	4.087	3.077	3.619	3.116	2.412
HCM Lane V/C Ratio	0.091	0.115	0.009	0.031	0.193	0.03	0.018	0.013	0.281	0.033
HCM Control Delay	9.4	9	7.6	9	8.8	9.3	8.2	8.7	10.2	7.6
HCM Lane LOS	A	A	A	A	A	A	A	A	B	A
HCM 95th-tile Q	0.3	0.4	0	0.1	0.7	0.1	0.1	0	1.1	0.1

Intersection	
Intersection Delay, s/veh	10.5
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	17	4	173	0	16	3	8	0	70	90	6	0	7	222	23
Future Vol, veh/h	0	17	4	173	0	16	3	8	0	70	90	6	0	7	222	23
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	18	4	188	0	17	3	9	0	76	98	7	0	8	241	25
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	10	9.4	9.9	11.5
HCM LOS	A	A	A	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	2%	0%	27%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	98%	0%	73%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	70	90	6	17	177	16	11	7	222	23
LT Vol	70	0	0	17	0	16	0	7	0	0
Through Vol	0	90	0	0	4	0	3	0	222	0
RT Vol	0	0	6	0	173	0	8	0	0	23
Lane Flow Rate	76	98	7	18	192	17	12	8	241	25
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.136	0.161	0.009	0.033	0.282	0.033	0.019	0.013	0.384	0.035
Departure Headway (Hd)	6.421	5.916	5.211	6.454	5.271	6.853	5.842	6.229	5.725	5.02
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	559	608	688	556	683	523	613	576	630	714
Service Time	4.147	3.643	2.937	4.18	2.996	4.587	3.575	3.952	3.448	2.743
HCM Lane V/C Ratio	0.136	0.161	0.01	0.032	0.281	0.033	0.02	0.014	0.383	0.035
HCM Control Delay	10.2	9.8	8	9.4	10.1	9.8	8.7	9	12	7.9
HCM Lane LOS	B	A	A	A	B	A	A	A	B	A
HCM 95th-tile Q	0.5	0.6	0	0.1	1.2	0.1	0.1	0	1.8	0.1

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	18	4	132	0	17	3	8	0	53	71	6	0	7	182	24
Future Vol, veh/h	0	18	4	132	0	17	3	8	0	53	71	6	0	7	182	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	20	4	143	0	18	3	9	0	58	77	7	0	8	198	26
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	9	9	9.2	10.1
HCM LOS	A	A	A	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	3%	0%	27%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	97%	0%	73%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	53	71	6	18	136	17	11	7	182	24
LT Vol	53	0	0	18	0	17	0	7	0	0
Through Vol	0	71	0	0	4	0	3	0	182	0
RT Vol	0	0	6	0	132	0	8	0	0	24
Lane Flow Rate	58	77	7	20	148	18	12	8	198	26
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.097	0.119	0.009	0.033	0.203	0.033	0.018	0.012	0.297	0.034
Departure Headway (Hd)	6.068	5.566	4.862	6.114	4.936	6.375	5.365	5.899	5.397	4.693
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	586	639	729	583	721	557	660	603	661	756
Service Time	3.846	3.343	2.639	3.88	2.702	4.163	3.152	3.669	3.166	2.462
HCM Lane V/C Ratio	0.099	0.121	0.01	0.034	0.205	0.032	0.018	0.013	0.3	0.034
HCM Control Delay	9.5	9.1	7.7	9.1	9	9.4	8.3	8.7	10.5	7.6
HCM Lane LOS	A	A	A	A	A	A	A	A	B	A
HCM 95th-tile Q	0.3	0.4	0	0.1	0.8	0.1	0.1	0	1.2	0.1

Intersection	
Intersection Delay, s/veh	10.8
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	18	4	179	0	17	3	8	0	73	93	6	0	7	231	24
Future Vol, veh/h	0	18	4	179	0	17	3	8	0	73	93	6	0	7	231	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	20	4	195	0	18	3	9	0	79	101	7	0	8	251	26
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	10.2	9.5	10	11.9
HCM LOS	B	A	A	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	2%	0%	27%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	98%	0%	73%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	73	93	6	18	183	17	11	7	231	24
LT Vol	73	0	0	18	0	17	0	7	0	0
Through Vol	0	93	0	0	4	0	3	0	231	0
RT Vol	0	0	6	0	179	0	8	0	0	24
Lane Flow Rate	79	101	7	20	199	18	12	8	251	26
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.143	0.168	0.01	0.035	0.295	0.036	0.02	0.013	0.403	0.037
Departure Headway (Hd)	6.487	5.983	5.276	6.515	5.331	6.934	5.922	6.284	5.78	5.075
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	554	600	679	550	674	516	604	570	623	706
Service Time	4.217	3.712	3.006	4.247	3.063	4.673	3.661	4.012	3.508	2.802
HCM Lane V/C Ratio	0.143	0.168	0.01	0.036	0.295	0.035	0.02	0.014	0.403	0.037
HCM Control Delay	10.3	9.9	8.1	9.5	10.3	9.9	8.8	9.1	12.4	8
HCM Lane LOS	B	A	A	A	B	A	A	A	B	A
HCM 95th-tile Q	0.5	0.6	0	0.1	1.2	0.1	0.1	0	1.9	0.1

Intersection	
Intersection Delay, s/veh	10.8
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	18	4	179	0	17	3	8	0	73	93	6	0	7	231	24
Future Vol, veh/h	0	18	4	179	0	17	3	8	0	73	93	6	0	7	231	24
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	20	4	195	0	18	3	9	0	79	101	7	0	8	251	26
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	10.2	9.5	10	11.9
HCM LOS	B	A	A	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	2%	0%	27%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	98%	0%	73%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	73	93	6	18	183	17	11	7	231	24
LT Vol	73	0	0	18	0	17	0	7	0	0
Through Vol	0	93	0	0	4	0	3	0	231	0
RT Vol	0	0	6	0	179	0	8	0	0	24
Lane Flow Rate	79	101	7	20	199	18	12	8	251	26
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.143	0.168	0.01	0.035	0.295	0.036	0.02	0.013	0.403	0.037
Departure Headway (Hd)	6.487	5.983	5.276	6.515	5.331	6.934	5.922	6.284	5.78	5.075
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	554	600	679	550	674	516	604	570	623	706
Service Time	4.217	3.712	3.006	4.247	3.063	4.673	3.661	4.012	3.508	2.802
HCM Lane V/C Ratio	0.143	0.168	0.01	0.036	0.295	0.035	0.02	0.014	0.403	0.037
HCM Control Delay	10.3	9.9	8.1	9.5	10.3	9.9	8.8	9.1	12.4	8
HCM Lane LOS	B	A	A	A	B	A	A	A	B	A
HCM 95th-tile Q	0.5	0.6	0	0.1	1.2	0.1	0.1	0	1.9	0.1

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	19	4	139	0	18	3	9	0	55	75	7	0	8	191	25
Future Vol, veh/h	0	19	4	139	0	18	3	9	0	55	75	7	0	8	191	25
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	21	4	151	0	20	3	10	0	60	82	8	0	9	208	27
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	9.2	9	9.3	10.3
HCM LOS	A	A	A	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	3%	0%	25%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	97%	0%	75%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	55	75	7	19	143	18	12	8	191	25
LT Vol	55	0	0	19	0	18	0	8	0	0
Through Vol	0	75	0	0	4	0	3	0	191	0
RT Vol	0	0	7	0	139	0	9	0	0	25
Lane Flow Rate	60	82	8	21	155	20	13	9	208	27
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.102	0.127	0.01	0.035	0.216	0.035	0.02	0.014	0.314	0.036
Departure Headway (Hd)	6.13	5.627	4.922	6.175	4.995	6.449	5.423	5.953	5.45	4.746
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	580	632	719	577	713	550	652	597	654	747
Service Time	3.916	3.412	2.708	3.947	2.768	4.247	3.221	3.728	3.225	2.521
HCM Lane V/C Ratio	0.103	0.13	0.011	0.036	0.217	0.036	0.02	0.015	0.318	0.036
HCM Control Delay	9.6	9.2	7.8	9.2	9.2	9.5	8.3	8.8	10.7	7.7
HCM Lane LOS	A	A	A	A	A	A	A	A	B	A
HCM 95th-tile Q	0.3	0.4	0	0.1	0.8	0.1	0.1	0	1.3	0.1

Intersection	
Intersection Delay, s/veh	11.4
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	19	4	196	0	18	3	9	0	81	102	7	0	8	251	25
Future Vol, veh/h	0	19	4	196	0	18	3	9	0	81	102	7	0	8	251	25
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	21	4	213	0	20	3	10	0	88	111	8	0	9	273	27
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	10.8	9.7	10.4	12.8
HCM LOS	B	A	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	2%	0%	25%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	98%	0%	75%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	81	102	7	19	200	18	12	8	251	25
LT Vol	81	0	0	19	0	18	0	8	0	0
Through Vol	0	102	0	0	4	0	3	0	251	0
RT Vol	0	0	7	0	196	0	9	0	0	25
Lane Flow Rate	88	111	8	21	217	20	13	9	273	27
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.163	0.189	0.011	0.038	0.331	0.039	0.022	0.016	0.449	0.039
Departure Headway (Hd)	6.648	6.143	5.436	6.675	5.489	7.147	6.118	6.432	5.927	5.221
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	540	584	658	537	654	501	584	557	608	686
Service Time	4.382	3.877	3.17	4.411	3.226	4.894	3.865	4.161	3.656	2.95
HCM Lane V/C Ratio	0.163	0.19	0.012	0.039	0.332	0.04	0.022	0.016	0.449	0.039
HCM Control Delay	10.7	10.3	8.2	9.7	10.9	10.2	9	9.3	13.4	8.2
HCM Lane LOS	B	B	A	A	B	B	A	A	B	A
HCM 95th-tile Q	0.6	0.7	0	0.1	1.4	0.1	0.1	0	2.3	0.1

Intersection	
Intersection Delay, s/veh	11.4
Intersection LOS	B

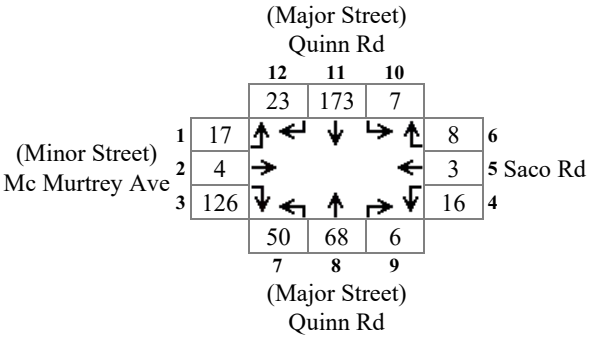
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	19	4	196	0	18	3	9	0	81	102	7	0	8	251	25
Future Vol, veh/h	0	19	4	196	0	18	3	9	0	81	102	7	0	8	251	25
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	21	4	213	0	20	3	10	0	88	111	8	0	9	273	27
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	10.8	9.7	10.4	12.8
HCM LOS	B	A	B	B

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	2%	0%	25%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	98%	0%	75%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	81	102	7	19	200	18	12	8	251	25
LT Vol	81	0	0	19	0	18	0	8	0	0
Through Vol	0	102	0	0	4	0	3	0	251	0
RT Vol	0	0	7	0	196	0	9	0	0	25
Lane Flow Rate	88	111	8	21	217	20	13	9	273	27
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.163	0.189	0.011	0.038	0.331	0.039	0.022	0.016	0.449	0.039
Departure Headway (Hd)	6.648	6.143	5.436	6.675	5.489	7.147	6.118	6.432	5.927	5.221
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	540	584	658	537	654	501	584	557	608	686
Service Time	4.382	3.877	3.17	4.411	3.226	4.894	3.865	4.161	3.656	2.95
HCM Lane V/C Ratio	0.163	0.19	0.012	0.039	0.332	0.04	0.022	0.016	0.449	0.039
HCM Control Delay	10.7	10.3	8.2	9.7	10.9	10.2	9	9.3	13.4	8.2
HCM Lane LOS	B	B	A	A	B	B	A	A	B	A
HCM 95th-tile Q	0.6	0.7	0	0.1	1.4	0.1	0.1	0	2.3	0.1

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing
Intersection #: 7

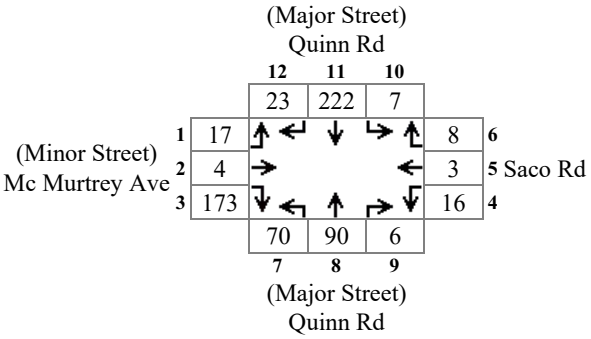


Major Total: 327
Minor High Volume: 147

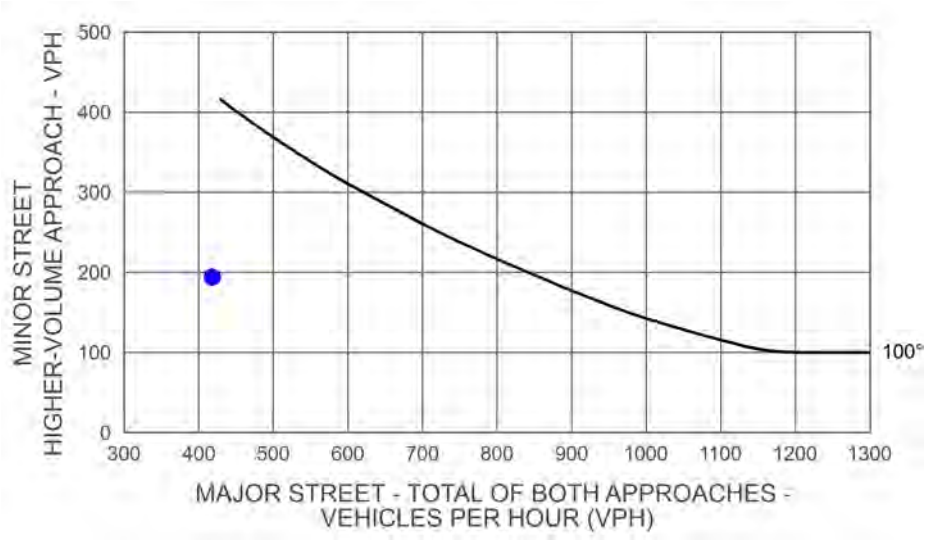


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Existing+Project Phase I
Intersection #: 7

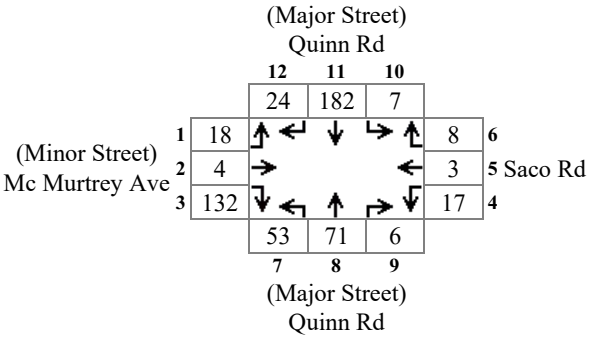


Major Total: 418
Minor High Volume: 194



Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 7

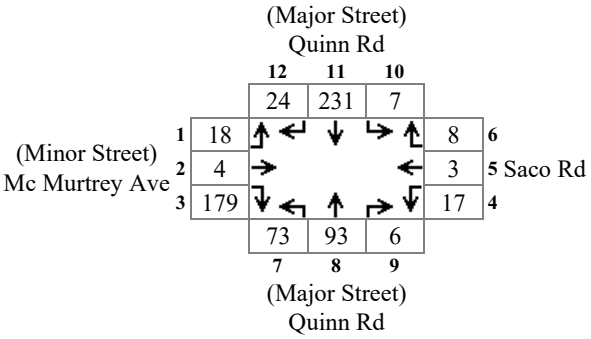


Major Total: 343
Minor High Volume: 154



Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project
Intersection #: 7

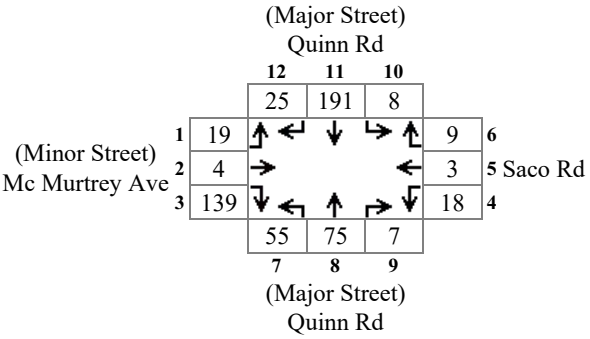


Major Total: 434
Minor High Volume: 201



Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future
Intersection #: 7

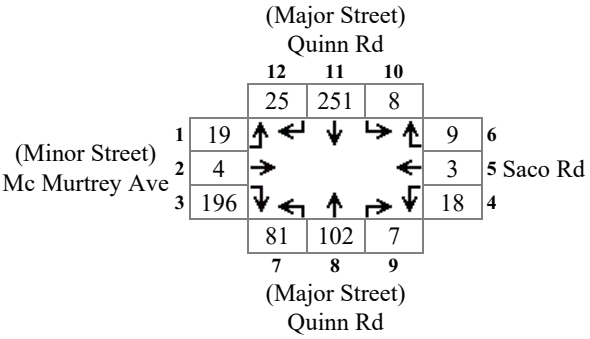


Major Total: 361
Minor High Volume: 162

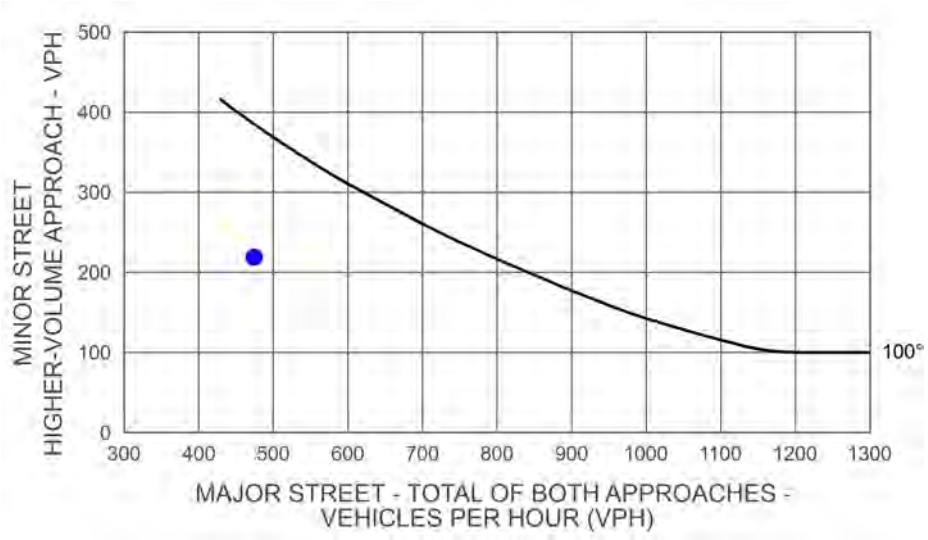


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: PM Future+Project Phase I & II
Intersection #: 7



Major Total: 474
Minor High Volume: 219



Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	11	2	51	0	6	1	2	0	115	158	14	0	4	70	18
Future Vol, veh/h	0	11	2	51	0	6	1	2	0	115	158	14	0	4	70	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	12	2	55	0	7	1	2	0	125	172	15	0	4	76	20
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	8.3	8.7	9.2	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	4%	0%	33%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	96%	0%	67%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	115	158	14	11	53	6	3	4	70	18
LT Vol	115	0	0	11	0	6	0	4	0	0
Through Vol	0	158	0	0	2	0	1	0	70	0
RT Vol	0	0	14	0	51	0	2	0	0	18
Lane Flow Rate	125	172	15	12	58	7	3	4	76	20
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.19	0.237	0.018	0.02	0.079	0.011	0.005	0.007	0.114	0.025
Departure Headway (Hd)	5.467	4.966	4.264	6.104	4.933	6.222	5.256	5.872	5.371	4.669
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	658	723	839	586	725	574	679	610	667	766
Service Time	3.196	2.694	1.993	3.842	2.67	3.969	3.003	3.606	3.105	2.403
HCM Lane V/C Ratio	0.19	0.238	0.018	0.02	0.08	0.012	0.004	0.007	0.114	0.026
HCM Control Delay	9.5	9.2	7.1	9	8.1	9	8	8.6	8.8	7.5
HCM Lane LOS	A	A	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0.7	0.9	0.1	0.1	0.3	0	0	0	0.4	0.1

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	11	2	67	0	6	1	2	0	156	204	14	0	4	87	18
Future Vol, veh/h	0	11	2	67	0	6	1	2	0	156	204	14	0	4	87	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	12	2	73	0	7	1	2	0	170	222	15	0	4	95	20
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	8.7	9.1	10.1	9
HCM LOS	A	A	B	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	3%	0%	33%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	97%	0%	67%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	156	204	14	11	69	6	3	4	87	18
LT Vol	156	0	0	11	0	6	0	4	0	0
Through Vol	0	204	0	0	2	0	1	0	87	0
RT Vol	0	0	14	0	67	0	2	0	0	18
Lane Flow Rate	170	222	15	12	75	7	3	4	95	20
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.263	0.312	0.018	0.021	0.109	0.012	0.005	0.007	0.147	0.027
Departure Headway (Hd)	5.574	5.072	4.371	6.386	5.208	6.545	5.579	6.114	5.612	4.91
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	644	707	816	559	686	544	637	584	636	726
Service Time	3.315	2.814	2.112	4.141	2.963	4.315	3.349	3.868	3.366	2.663
HCM Lane V/C Ratio	0.264	0.314	0.018	0.021	0.109	0.013	0.005	0.007	0.149	0.028
HCM Control Delay	10.3	10.1	7.2	9.3	8.6	9.4	8.4	8.9	9.3	7.8
HCM Lane LOS	B	B	A	A	A	A	A	A	A	A
HCM 95th-tile Q	1.1	1.3	0.1	0.1	0.4	0	0	0	0.5	0.1

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	12	2	54	0	6	1	2	0	121	166	15	0	4	74	19
Future Vol, veh/h	0	12	2	54	0	6	1	2	0	121	166	15	0	4	74	19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	13	2	59	0	7	1	2	0	132	180	16	0	4	80	21
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	8.3	8.8	9.4	8.6
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	4%	0%	33%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	96%	0%	67%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	121	166	15	12	56	6	3	4	74	19
LT Vol	121	0	0	12	0	6	0	4	0	0
Through Vol	0	166	0	0	2	0	1	0	74	0
RT Vol	0	0	15	0	54	0	2	0	0	19
Lane Flow Rate	132	180	16	13	61	7	3	4	80	21
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.201	0.25	0.019	0.022	0.084	0.011	0.005	0.007	0.121	0.027
Departure Headway (Hd)	5.493	4.992	4.291	6.158	4.985	6.287	5.32	5.919	5.417	4.715
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	654	720	833	581	717	568	670	605	661	758
Service Time	3.223	2.722	2.021	3.898	2.725	4.036	3.07	3.654	3.153	2.451
HCM Lane V/C Ratio	0.202	0.25	0.019	0.022	0.085	0.012	0.004	0.007	0.121	0.028
HCM Control Delay	9.6	9.4	7.1	9	8.2	9.1	8.1	8.7	8.9	7.6
HCM Lane LOS	A	A	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0.7	1	0.1	0.1	0.3	0	0	0	0.4	0.1

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	12	2	70	0	6	1	2	0	162	212	15	0	4	91	19
Future Vol, veh/h	0	12	2	70	0	6	1	2	0	162	212	15	0	4	91	19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	13	2	76	0	7	1	2	0	176	230	16	0	4	99	21
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	8.8	9.1	10.3	9.2
HCM LOS	A	A	B	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	3%	0%	33%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	97%	0%	67%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	162	212	15	12	72	6	3	4	91	19
LT Vol	162	0	0	12	0	6	0	4	0	0
Through Vol	0	212	0	0	2	0	1	0	91	0
RT Vol	0	0	15	0	70	0	2	0	0	19
Lane Flow Rate	176	230	16	13	78	7	3	4	99	21
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.274	0.326	0.02	0.023	0.114	0.012	0.005	0.007	0.155	0.028
Departure Headway (Hd)	5.6	5.099	4.397	6.438	5.26	6.608	5.642	6.161	5.659	4.956
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	641	703	811	554	678	539	630	579	631	718
Service Time	3.343	2.842	2.139	4.197	3.018	4.383	3.416	3.917	3.415	2.712
HCM Lane V/C Ratio	0.275	0.327	0.02	0.023	0.115	0.013	0.005	0.007	0.157	0.029
HCM Control Delay	10.5	10.3	7.2	9.3	8.7	9.5	8.4	9	9.5	7.9
HCM Lane LOS	B	B	A	A	A	A	A	A	A	A
HCM 95th-tile Q	1.1	1.4	0.1	0.1	0.4	0	0	0	0.5	0.1

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	12	2	70	0	6	1	2	0	162	212	15	0	4	91	19
Future Vol, veh/h	0	12	2	70	0	6	1	2	0	162	212	15	0	4	91	19
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	13	2	76	0	7	1	2	0	176	230	16	0	4	99	21
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	8.8	9.1	10.3	9.2
HCM LOS	A	A	B	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	3%	0%	33%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	97%	0%	67%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	162	212	15	12	72	6	3	4	91	19
LT Vol	162	0	0	12	0	6	0	4	0	0
Through Vol	0	212	0	0	2	0	1	0	91	0
RT Vol	0	0	15	0	70	0	2	0	0	19
Lane Flow Rate	176	230	16	13	78	7	3	4	99	21
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.274	0.326	0.02	0.023	0.114	0.012	0.005	0.007	0.155	0.028
Departure Headway (Hd)	5.6	5.099	4.397	6.438	5.26	6.608	5.642	6.161	5.659	4.956
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	641	703	811	554	678	539	630	579	631	718
Service Time	3.343	2.842	2.139	4.197	3.018	4.383	3.416	3.917	3.415	2.712
HCM Lane V/C Ratio	0.275	0.327	0.02	0.023	0.115	0.013	0.005	0.007	0.157	0.029
HCM Control Delay	10.5	10.3	7.2	9.3	8.7	9.5	8.4	9	9.5	7.9
HCM Lane LOS	B	B	A	A	A	A	A	A	A	A
HCM 95th-tile Q	1.1	1.4	0.1	0.1	0.4	0	0	0	0.5	0.1

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	12	2	56	0	7	1	2	0	127	175	15	0	4	77	20
Future Vol, veh/h	0	12	2	56	0	7	1	2	0	127	175	15	0	4	77	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	13	2	61	0	8	1	2	0	138	190	16	0	4	84	22
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	8.4	8.9	9.5	8.7
HCM LOS	A	A	A	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	3%	0%	33%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	97%	0%	67%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	127	175	15	12	58	7	3	4	77	20
LT Vol	127	0	0	12	0	7	0	4	0	0
Through Vol	0	175	0	0	2	0	1	0	77	0
RT Vol	0	0	15	0	56	0	2	0	0	20
Lane Flow Rate	138	190	16	13	63	8	3	4	84	22
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.211	0.265	0.02	0.023	0.088	0.013	0.005	0.007	0.127	0.029
Departure Headway (Hd)	5.512	5.011	4.309	6.211	5.037	6.343	5.377	5.959	5.457	4.756
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	650	715	828	576	709	563	663	600	655	750
Service Time	3.25	2.749	2.047	3.957	2.783	4.1	3.134	3.703	3.202	2.5
HCM Lane V/C Ratio	0.212	0.266	0.019	0.023	0.089	0.014	0.005	0.007	0.128	0.029
HCM Control Delay	9.7	9.6	7.1	9.1	8.3	9.2	8.2	8.7	9	7.6
HCM Lane LOS	A	A	A	A	A	A	A	A	A	A
HCM 95th-tile Q	0.8	1.1	0.1	0.1	0.3	0	0	0	0.4	0.1

Intersection	
Intersection Delay, s/veh	10.2
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	12	2	76	0	7	1	2	0	180	230	15	0	4	99	20
Future Vol, veh/h	0	12	2	76	0	7	1	2	0	180	230	15	0	4	99	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	13	2	83	0	8	1	2	0	196	250	16	0	4	108	22
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	9	9.3	10.7	9.4
HCM LOS	A	A	B	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	3%	0%	33%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	97%	0%	67%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	180	230	15	12	78	7	3	4	99	20
LT Vol	180	0	0	12	0	7	0	4	0	0
Through Vol	0	230	0	0	2	0	1	0	99	0
RT Vol	0	0	15	0	76	0	2	0	0	20
Lane Flow Rate	196	250	16	13	85	8	3	4	108	22
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.307	0.358	0.02	0.024	0.127	0.014	0.005	0.008	0.172	0.031
Departure Headway (Hd)	5.649	5.148	4.445	6.56	5.38	6.743	5.777	6.262	5.76	5.057
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	634	695	800	543	661	527	613	569	619	702
Service Time	3.408	2.906	2.204	4.333	3.153	4.539	3.572	4.032	3.53	2.827
HCM Lane V/C Ratio	0.309	0.36	0.02	0.024	0.129	0.015	0.005	0.007	0.174	0.031
HCM Control Delay	10.9	10.8	7.3	9.5	8.9	9.6	8.6	9.1	9.7	8
HCM Lane LOS	B	B	A	A	A	A	A	A	A	A
HCM 95th-tile Q	1.3	1.6	0.1	0.1	0.4	0	0	0	0.6	0.1

Intersection	
Intersection Delay, s/veh	10.2
Intersection LOS	B

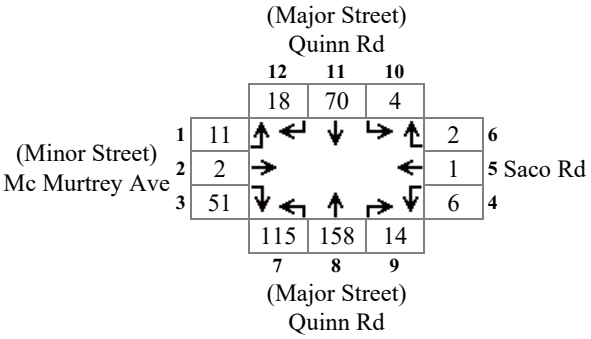
Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL	SBT	SBR
Traffic Vol, veh/h	0	12	2	76	0	7	1	2	0	180	230	15	0	4	99	20
Future Vol, veh/h	0	12	2	76	0	7	1	2	0	180	230	15	0	4	99	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	13	2	83	0	8	1	2	0	196	250	16	0	4	108	22
Number of Lanes	0	1	1	0	0	1	1	0	0	1	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	3
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	3	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	3	3	2	2
HCM Control Delay	9	9.3	10.7	9.4
HCM LOS	A	A	B	A

Lane	NBLn1	NBLn2	NBLn3	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	100%	0%	0%	3%	0%	33%	0%	100%	0%
Vol Right, %	0%	0%	100%	0%	97%	0%	67%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	180	230	15	12	78	7	3	4	99	20
LT Vol	180	0	0	12	0	7	0	4	0	0
Through Vol	0	230	0	0	2	0	1	0	99	0
RT Vol	0	0	15	0	76	0	2	0	0	20
Lane Flow Rate	196	250	16	13	85	8	3	4	108	22
Geometry Grp	8	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.307	0.358	0.02	0.024	0.127	0.014	0.005	0.008	0.172	0.031
Departure Headway (Hd)	5.649	5.148	4.445	6.56	5.38	6.743	5.777	6.262	5.76	5.057
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	634	695	800	543	661	527	613	569	619	702
Service Time	3.408	2.906	2.204	4.333	3.153	4.539	3.572	4.032	3.53	2.827
HCM Lane V/C Ratio	0.309	0.36	0.02	0.024	0.129	0.015	0.005	0.007	0.174	0.031
HCM Control Delay	10.9	10.8	7.3	9.5	8.9	9.6	8.6	9.1	9.7	8
HCM Lane LOS	B	B	A	A	A	A	A	A	A	A
HCM 95th-tile Q	1.3	1.6	0.1	0.1	0.4	0	0	0	0.6	0.1

Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing
Intersection #: 7

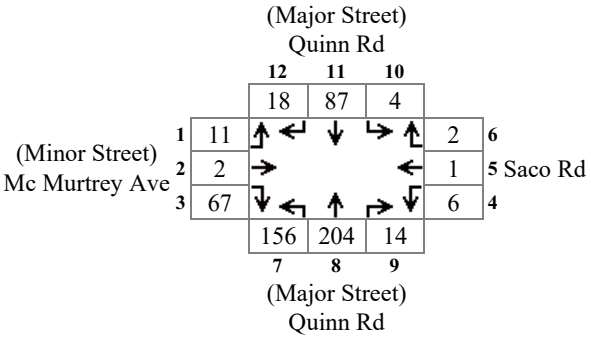


Major Total: 379
Minor High Volume: 64

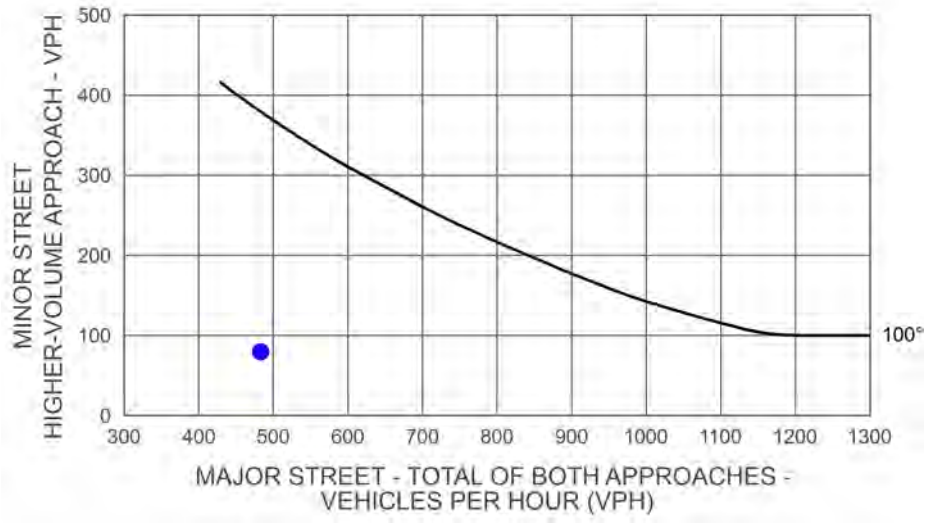


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Existing+Project Phase I
Intersection #: 7

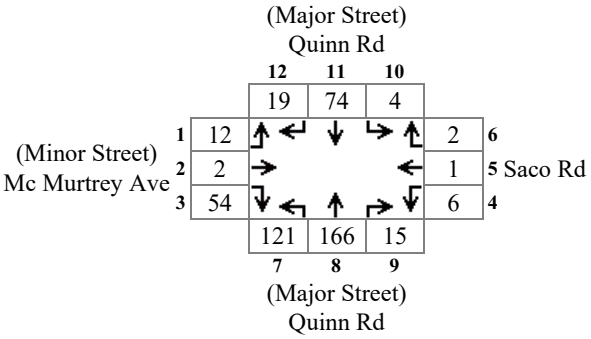


Major Total: 483
Minor High Volume: 80

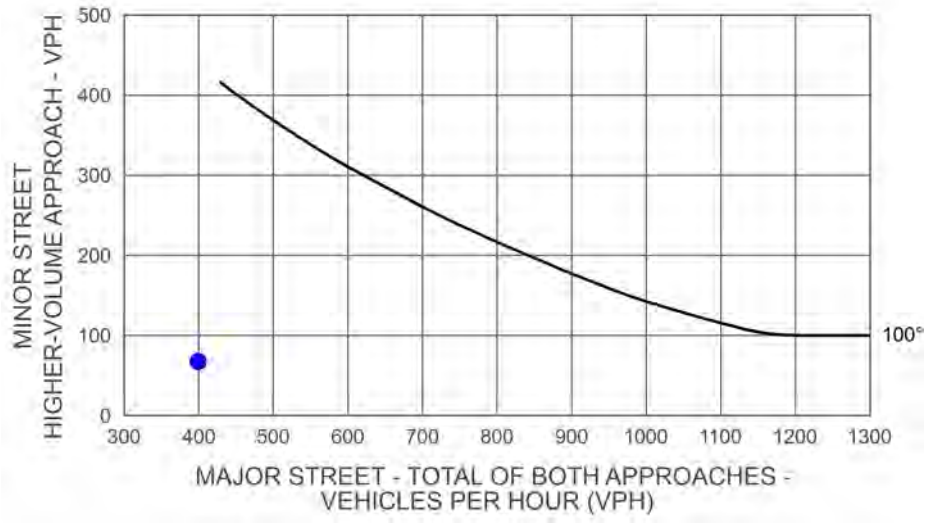


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 7

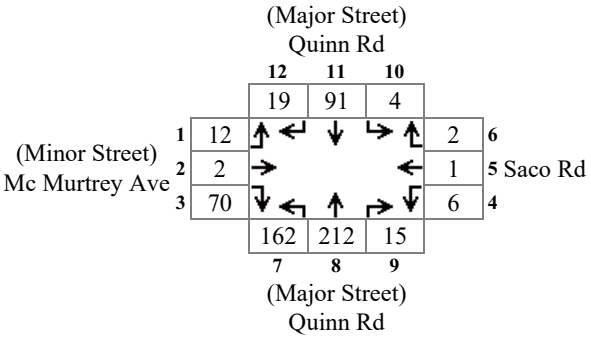


Major Total: 399
Minor High Volume: 68

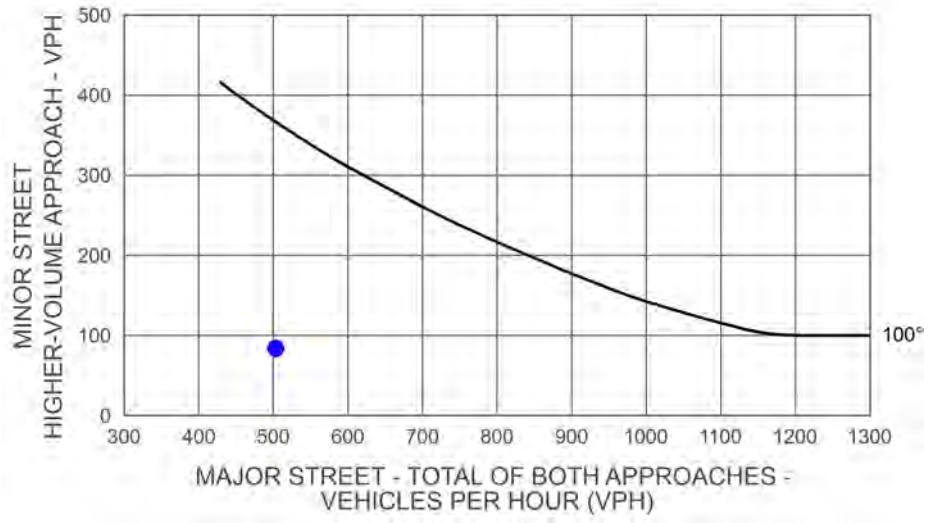


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project
Intersection #: 7

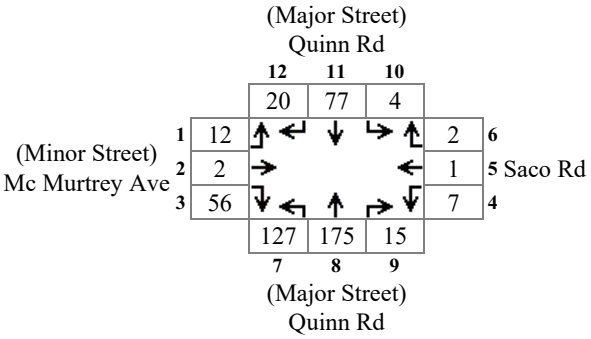


Major Total: 503
Minor High Volume: 84

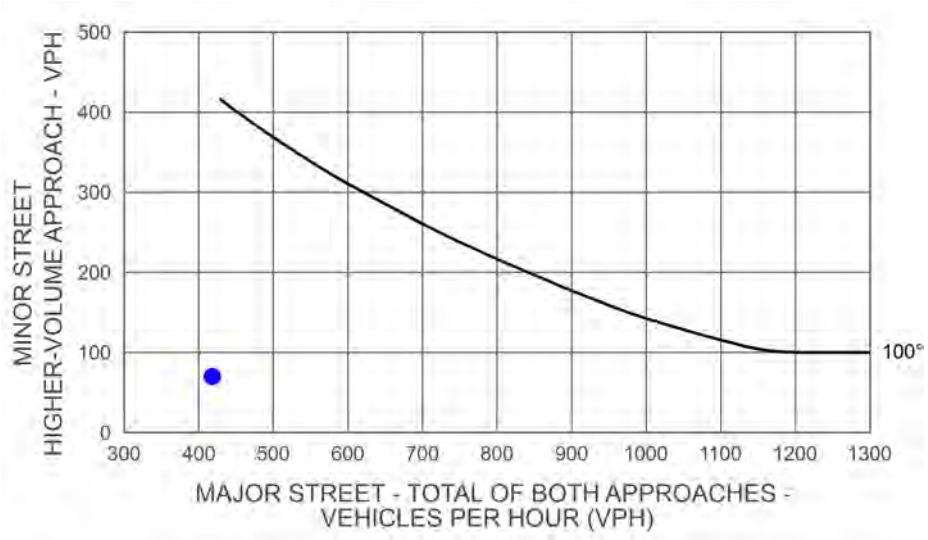


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future
Intersection #: 7

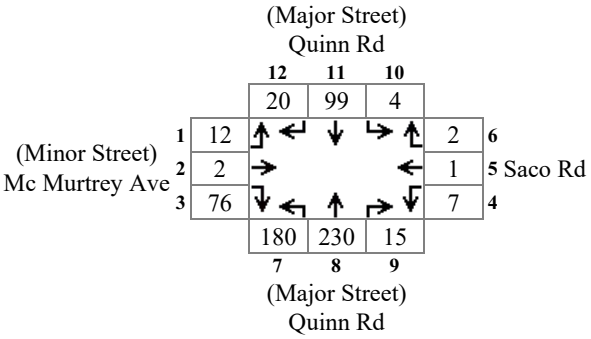


Major Total: 418
Minor High Volume: 70

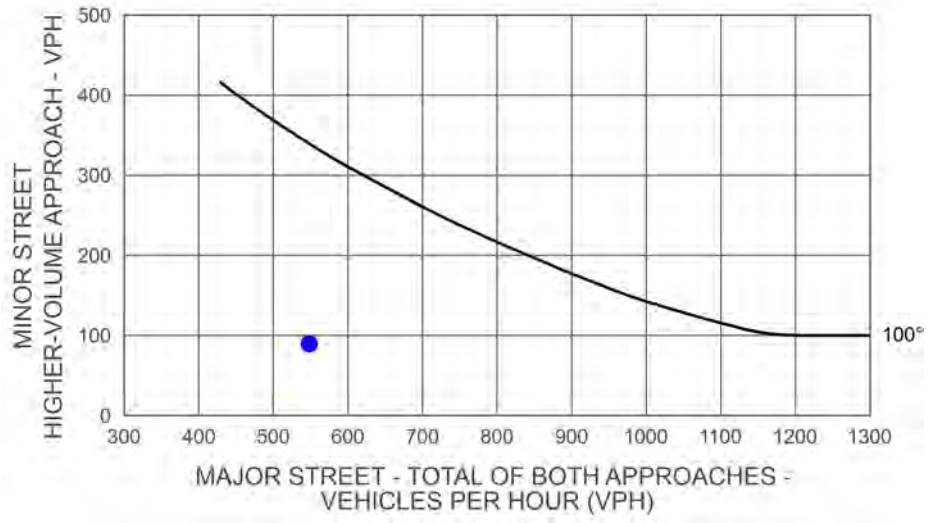


Rural Peak Hour Signal Warrant
Intersection Does Not Meet Signal Warrant

Scenario: AM Future+Project Phase I & II
Intersection #: 7



Major Total: 548
Minor High Volume: 90



Intersection 8
Calloway Dr & 7th Standard Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	956	126	518	522	139	61	118	216	97	122	15
Future Volume (veh/h)	15	956	126	518	522	139	61	118	216	97	122	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1863	1667
Adj Flow Rate, veh/h	16	1039	137	563	567	151	66	128	235	105	133	16
Adj No. of Lanes	2	2	1	2	3	1	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	97	1003	423	1018	2876	847	154	377	287	155	377	285
Arrive On Green	0.03	0.29	0.29	0.32	0.58	0.58	0.05	0.20	0.20	0.05	0.20	0.20
Sat Flow, veh/h	3170	3438	1451	3170	4940	1455	3079	1863	1417	3079	1863	1406
Grp Volume(v), veh/h	16	1039	137	563	567	151	66	128	235	105	133	16
Grp Sat Flow(s),veh/h/ln	1585	1719	1451	1585	1647	1455	1540	1863	1417	1540	1863	1406
Q Serve(g_s), s	0.6	34.7	6.9	17.4	6.4	3.7	2.5	7.0	18.9	4.0	7.3	1.1
Cycle Q Clear(g_c), s	0.6	34.7	6.9	17.4	6.4	3.7	2.5	7.0	18.9	4.0	7.3	1.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	97	1003	423	1018	2876	847	154	377	287	155	377	285
V/C Ratio(X)	0.16	1.04	0.32	0.55	0.20	0.18	0.43	0.34	0.82	0.68	0.35	0.06
Avail Cap(c_a), veh/h	160	1003	423	1018	2876	847	155	584	444	155	584	441
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.86	0.86	0.86	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.2	42.2	20.4	33.3	11.7	4.7	54.9	40.6	45.4	55.5	40.7	38.3
Incr Delay (d2), s/veh	0.8	38.3	2.0	0.6	0.1	0.4	1.9	0.5	6.9	11.1	0.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	21.8	3.0	7.7	3.0	1.5	1.1	3.6	7.9	1.9	3.8	0.4
LnGrp Delay(d),s/veh	57.0	80.4	22.4	33.9	11.9	5.1	56.7	41.2	52.3	66.6	41.3	38.3
LnGrp LOS	E	F	C	C	B	A	E	D	D	E	D	D
Approach Vol, veh/h		1192			1281			429			254	
Approach Delay, s/veh		73.4			20.8			49.6			51.6	
Approach LOS		E			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	28.1	42.2	38.7	10.0	28.1	7.6	73.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	35.3	23.0	32.7	4.0	35.3	4.0	51.7
Max Q Clear Time (g_c+I1), s	6.0	20.9	19.4	36.7	4.5	9.3	2.6	8.4
Green Ext Time (p_c), s	0.0	1.2	1.5	0.0	0.0	0.9	0.0	6.5

Intersection Summary	
HCM 2010 Ctrl Delay	47.1
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	973	126	552	560	141	61	118	231	98	122	15
Future Volume (veh/h)	15	973	126	552	560	141	61	118	231	98	122	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1863	1667
Adj Flow Rate, veh/h	16	1058	137	600	609	153	66	128	251	107	133	16
Adj No. of Lanes	2	2	1	2	3	1	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	102	1053	445	878	2722	801	160	404	307	168	409	309
Arrive On Green	0.03	0.31	0.31	0.28	0.55	0.55	0.05	0.22	0.22	0.05	0.22	0.22
Sat Flow, veh/h	3170	3438	1451	3170	4940	1454	3079	1863	1417	3079	1863	1407
Grp Volume(v), veh/h	16	1058	137	600	609	153	66	128	251	107	133	16
Grp Sat Flow(s),veh/h/ln	1585	1719	1451	1585	1647	1454	1540	1863	1417	1540	1863	1407
Q Serve(g_s), s	0.5	33.7	6.1	18.6	6.9	3.7	2.3	6.4	18.6	3.7	6.6	1.0
Cycle Q Clear(g_c), s	0.5	33.7	6.1	18.6	6.9	3.7	2.3	6.4	18.6	3.7	6.6	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	102	1053	445	878	2722	801	160	404	307	168	409	309
V/C Ratio(X)	0.16	1.00	0.31	0.68	0.22	0.19	0.41	0.32	0.82	0.64	0.33	0.05
Avail Cap(c_a), veh/h	173	1053	445	878	2722	801	168	632	480	168	632	477
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	38.2	17.2	35.5	12.6	5.0	50.5	36.2	41.0	50.9	36.1	33.9
Incr Delay (d2), s/veh	0.7	28.8	1.8	1.9	0.2	0.4	1.7	0.4	6.1	7.7	0.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	20.2	2.7	8.3	3.2	1.6	1.0	3.3	7.8	1.8	3.5	0.4
LnGrp Delay(d),s/veh	52.5	67.0	19.0	37.3	12.8	5.5	52.2	36.7	47.2	58.7	36.6	34.0
LnGrp LOS	D	F	B	D	B	A	D	D	D	E	D	C
Approach Vol, veh/h		1211			1362			445			256	
Approach Delay, s/veh		61.4			22.8			44.9			45.6	
Approach LOS		E			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	27.8	34.5	37.7	9.7	28.1	7.5	64.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	35.3	15.0	31.7	4.0	35.3	4.0	42.7
Max Q Clear Time (g_c+I1), s	5.7	20.6	20.6	35.7	4.3	8.6	2.5	8.9
Green Ext Time (p_c), s	0.0	1.3	0.0	0.0	0.0	0.9	0.0	6.9

Intersection Summary	
HCM 2010 Ctrl Delay	41.8
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	1307	169	709	727	194	63	122	335	106	126	16
Future Volume (veh/h)	20	1307	169	709	727	194	63	122	335	106	126	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1863	1667
Adj Flow Rate, veh/h	22	1421	184	771	790	211	68	133	364	115	137	17
Adj No. of Lanes	2	2	1	2	3	1	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	111	1218	514	524	2393	704	666	539	410	161	233	175
Arrive On Green	0.03	0.35	0.35	0.17	0.48	0.48	0.22	0.29	0.29	0.05	0.13	0.13
Sat Flow, veh/h	3170	3438	1452	3170	4940	1454	3079	1863	1417	3079	1863	1400
Grp Volume(v), veh/h	22	1421	184	771	790	211	68	133	364	115	137	17
Grp Sat Flow(s),veh/h/ln	1585	1719	1452	1585	1647	1454	1540	1863	1417	1540	1863	1400
Q Serve(g_s), s	0.8	40.7	5.4	19.0	11.3	10.1	2.0	6.3	28.3	4.2	8.0	1.0
Cycle Q Clear(g_c), s	0.8	40.7	5.4	19.0	11.3	10.1	2.0	6.3	28.3	4.2	8.0	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	111	1218	514	524	2393	704	666	539	410	161	233	175
V/C Ratio(X)	0.20	1.17	0.36	1.47	0.33	0.30	0.10	0.25	0.89	0.72	0.59	0.10
Avail Cap(c_a), veh/h	165	1218	514	524	2393	704	666	604	459	161	604	454
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.48	0.48	0.48	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.9	37.1	7.0	48.0	18.2	17.9	36.1	31.3	39.1	53.7	47.5	31.5
Incr Delay (d2), s/veh	0.9	84.4	1.9	217.5	0.2	0.5	0.1	0.2	17.4	14.1	2.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	33.6	2.4	24.1	5.2	4.1	0.9	3.3	13.0	2.1	4.3	0.4
LnGrp Delay(d),s/veh	54.8	121.5	8.9	265.5	18.4	18.4	36.2	31.5	56.5	67.8	49.8	31.7
LnGrp LOS	D	F	A	F	B	B	D	C	E	E	D	C
Approach Vol, veh/h		1627			1772			565			269	
Approach Delay, s/veh		107.9			125.9			48.2			56.3	
Approach LOS		F			F			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.0	37.3	23.0	44.7	28.9	18.4	8.0	59.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	4.0	35.3	17.0	34.7	4.0	35.3	4.0	47.7
Max Q Clear Time (g_c+I1), s	6.2	30.3	21.0	42.7	4.0	10.0	2.8	13.3
Green Ext Time (p_c), s	0.0	1.0	0.0	0.0	0.0	0.5	0.0	17.6

Intersection Summary	
HCM 2010 Ctrl Delay	104.2
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	1324	169	743	765	196	63	122	350	107	126	16
Future Volume (veh/h)	20	1324	169	743	765	196	63	122	350	107	126	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1863	1667
Adj Flow Rate, veh/h	22	1439	184	808	832	213	68	133	380	116	137	17
Adj No. of Lanes	2	2	1	2	3	1	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	108	1136	480	581	2370	697	706	549	417	180	230	173
Arrive On Green	0.03	0.33	0.33	0.18	0.48	0.48	0.23	0.29	0.29	0.06	0.12	0.12
Sat Flow, veh/h	3170	3438	1452	3170	4940	1454	3079	1863	1417	3079	1863	1399
Grp Volume(v), veh/h	22	1439	184	808	832	213	68	133	380	116	137	17
Grp Sat Flow(s),veh/h/ln	1585	1719	1452	1585	1647	1454	1540	1863	1417	1540	1863	1399
Q Serve(g_s), s	0.8	39.6	5.9	22.0	12.6	10.7	2.1	6.5	31.0	4.4	8.3	1.1
Cycle Q Clear(g_c), s	0.8	39.6	5.9	22.0	12.6	10.7	2.1	6.5	31.0	4.4	8.3	1.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	108	1136	480	581	2370	697	706	549	417	180	230	173
V/C Ratio(X)	0.20	1.27	0.38	1.39	0.35	0.31	0.10	0.24	0.91	0.65	0.60	0.10
Avail Cap(c_a), veh/h	158	1136	480	581	2370	697	706	563	429	180	579	435
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.48	0.48	0.48	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.4	40.2	8.0	49.0	19.5	19.0	36.4	32.1	40.8	55.3	49.7	33.5
Incr Delay (d2), s/veh	0.9	127.2	2.3	180.8	0.2	0.5	0.1	0.2	23.0	7.7	2.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	38.8	2.7	24.2	5.7	4.4	0.9	3.4	14.8	2.1	4.5	0.4
LnGrp Delay(d),s/veh	57.3	167.4	10.3	229.8	19.7	19.6	36.5	32.4	63.7	63.0	52.2	33.7
LnGrp LOS	E	F	B	F	B	B	D	C	E	E	D	C
Approach Vol, veh/h		1645			1853			581			270	
Approach Delay, s/veh		148.4			111.3			53.4			55.7	
Approach LOS		F			F			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	39.4	26.0	43.6	31.5	18.8	8.1	61.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	34.3	20.0	36.7	4.0	35.3	4.0	52.7
Max Q Clear Time (g_c+I1), s	6.4	33.0	24.0	41.6	4.1	10.3	2.8	14.6
Green Ext Time (p_c), s	0.0	0.3	0.0	0.0	0.0	0.5	0.0	19.1

Intersection Summary	
HCM 2010 Ctrl Delay	114.1
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	1324	169	743	765	196	63	122	350	107	126	16
Future Volume (veh/h)	20	1324	169	743	765	196	63	122	350	107	126	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1863	1667
Adj Flow Rate, veh/h	22	1439	184	808	832	213	68	133	380	116	137	17
Adj No. of Lanes	2	3	2	2	3	2	1	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	108	1573	811	922	2843	1471	79	370	496	93	386	291
Arrive On Green	0.03	0.32	0.32	0.29	0.58	0.58	0.05	0.20	0.20	0.06	0.21	0.21
Sat Flow, veh/h	3170	4940	2547	3170	4940	2556	1587	1863	2493	1587	1863	1406
Grp Volume(v), veh/h	22	1439	184	808	832	213	68	133	380	116	137	17
Grp Sat Flow(s),veh/h/ln	1585	1647	1273	1585	1647	1278	1587	1863	1247	1587	1863	1406
Q Serve(g_s), s	0.8	33.6	6.4	29.1	10.3	4.6	5.1	7.4	17.3	7.0	7.6	1.2
Cycle Q Clear(g_c), s	0.8	33.6	6.4	29.1	10.3	4.6	5.1	7.4	17.3	7.0	7.6	1.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	108	1573	811	922	2843	1471	79	370	496	93	386	291
V/C Ratio(X)	0.20	0.91	0.23	0.88	0.29	0.14	0.86	0.36	0.77	1.25	0.35	0.06
Avail Cap(c_a), veh/h	158	1593	821	922	2843	1471	79	563	754	93	579	437
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.85	0.85	0.85	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.4	39.3	30.0	40.5	13.0	11.8	56.6	41.5	45.4	56.5	40.7	38.2
Incr Delay (d2), s/veh	0.9	8.5	0.1	8.2	0.2	0.2	56.2	0.6	2.6	176.0	0.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	16.6	2.3	13.7	4.8	1.7	3.5	3.9	6.1	7.6	3.9	0.5
LnGrp Delay(d),s/veh	57.3	47.8	30.2	48.7	13.2	12.0	112.8	42.1	48.0	232.5	41.3	38.3
LnGrp LOS	E	D	C	D	B	B	F	D	D	F	D	D
Approach Vol, veh/h		1645			1853			581			270	
Approach Delay, s/veh		46.0			28.5			54.2			123.2	
Approach LOS		D			C			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	27.9	38.9	42.2	10.0	28.9	8.1	73.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	34.3	20.0	36.7	4.0	35.3	4.0	52.7
Max Q Clear Time (g_c+I1), s	9.0	19.3	31.1	35.6	7.1	9.6	2.8	12.3
Green Ext Time (p_c), s	0.0	2.6	0.0	0.6	0.0	2.9	0.0	19.6

Intersection Summary	
HCM 2010 Ctrl Delay	44.4
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	1749	228	786	968	258	65	127	343	110	131	16
Future Volume (veh/h)	27	1749	228	786	968	258	65	127	343	110	131	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1863	1667
Adj Flow Rate, veh/h	29	1901	248	854	1052	280	71	138	373	120	142	17
Adj No. of Lanes	2	2	1	2	3	1	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	196	1321	558	423	2252	663	687	542	412	180	235	176
Arrive On Green	0.06	0.38	0.38	0.13	0.46	0.46	0.22	0.29	0.29	0.06	0.13	0.13
Sat Flow, veh/h	3170	3438	1453	3170	4940	1454	3079	1863	1417	3079	1863	1400
Grp Volume(v), veh/h	29	1901	248	854	1052	280	71	138	373	120	142	17
Grp Sat Flow(s),veh/h/ln	1585	1719	1453	1585	1647	1454	1540	1863	1417	1540	1863	1400
Q Serve(g_s), s	1.0	46.1	7.2	16.0	17.7	11.0	2.2	6.8	30.4	4.6	8.7	1.3
Cycle Q Clear(g_c), s	1.0	46.1	7.2	16.0	17.7	11.0	2.2	6.8	30.4	4.6	8.7	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	196	1321	558	423	2252	663	687	542	412	180	235	176
V/C Ratio(X)	0.15	1.44	0.44	2.02	0.47	0.42	0.10	0.25	0.91	0.67	0.60	0.10
Avail Cap(c_a), veh/h	196	1321	558	423	2252	663	687	563	429	180	579	435
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.3	36.9	6.2	52.0	22.6	11.1	37.1	32.6	41.0	55.4	49.6	46.4
Incr Delay (d2), s/veh	0.3	201.9	2.6	460.0	0.1	0.2	0.1	0.2	22.0	9.1	2.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	58.9	3.3	34.0	8.0	4.4	0.9	3.5	14.4	2.2	4.6	0.5
LnGrp Delay(d),s/veh	53.6	238.8	8.8	512.0	22.6	11.2	37.1	32.8	63.0	64.5	52.1	46.6
LnGrp LOS	D	F	A	F	C	B	D	C	E	E	D	D
Approach Vol, veh/h		2178			2186			582			279	
Approach Delay, s/veh		210.1			212.4			52.7			57.1	
Approach LOS		F			F			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	38.9	20.0	50.1	30.8	19.1	11.4	58.7
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	34.3	14.0	42.7	4.0	35.3	4.0	52.7
Max Q Clear Time (g_c+I1), s	6.6	32.4	18.0	48.1	4.2	10.7	3.0	19.7
Green Ext Time (p_c), s	0.0	0.5	0.0	0.0	0.0	0.5	0.8	6.8

Intersection Summary	
HCM 2010 Ctrl Delay	185.4
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	1770	228	827	1015	261	65	127	361	111	131	16
Future Volume (veh/h)	27	1770	228	827	1015	261	65	127	361	111	131	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1863	1667
Adj Flow Rate, veh/h	29	1924	248	899	1103	284	71	138	392	121	142	17
Adj No. of Lanes	2	2	1	2	3	1	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	118	1257	531	449	2321	683	719	561	427	180	235	176
Arrive On Green	0.04	0.37	0.37	0.14	0.47	0.47	0.23	0.30	0.30	0.06	0.13	0.13
Sat Flow, veh/h	3170	3438	1452	3170	4940	1454	3079	1863	1417	3079	1863	1400
Grp Volume(v), veh/h	29	1924	248	899	1103	284	71	138	392	121	142	17
Grp Sat Flow(s),veh/h/ln	1585	1719	1452	1585	1647	1454	1540	1863	1417	1540	1863	1400
Q Serve(g_s), s	1.1	43.9	7.4	17.0	18.3	15.4	2.2	6.7	32.1	4.6	8.7	1.1
Cycle Q Clear(g_c), s	1.1	43.9	7.4	17.0	18.3	15.4	2.2	6.7	32.1	4.6	8.7	1.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	118	1257	531	449	2321	683	719	561	427	180	235	176
V/C Ratio(X)	0.25	1.53	0.47	2.00	0.48	0.42	0.10	0.25	0.92	0.67	0.60	0.10
Avail Cap(c_a), veh/h	158	1257	531	449	2321	683	719	563	429	180	579	435
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.1	38.1	6.6	51.5	21.7	21.0	36.1	31.6	40.5	55.4	49.6	33.0
Incr Delay (d2), s/veh	1.1	243.1	2.9	451.6	0.1	0.2	0.1	0.2	24.7	9.5	2.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	63.2	3.4	35.6	8.3	6.2	0.9	3.5	15.4	2.2	4.6	0.4
LnGrp Delay(d),s/veh	57.2	281.2	9.5	503.1	21.8	21.1	36.1	31.9	65.2	64.9	52.1	33.2
LnGrp LOS	E	F	A	F	C	C	D	C	E	E	D	C
Approach Vol, veh/h		2201			2286			601			280	
Approach Delay, s/veh		247.6			211.0			54.1			56.5	
Approach LOS		F			F			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	40.1	21.0	47.9	32.0	19.1	8.5	60.4
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	34.3	15.0	41.7	4.0	35.3	4.0	52.7
Max Q Clear Time (g_c+I1), s	6.6	34.1	19.0	45.9	4.2	10.7	3.1	20.3
Green Ext Time (p_c), s	0.0	0.1	0.0	0.0	0.0	0.5	0.0	25.0

Intersection Summary	
HCM 2010 Ctrl Delay	200.4
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	1770	228	827	1015	261	65	127	361	111	131	16
Future Volume (veh/h)	27	1770	228	827	1015	261	65	127	361	111	131	16
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1863	1667
Adj Flow Rate, veh/h	29	1924	248	899	1103	284	71	138	392	121	142	17
Adj No. of Lanes	2	3	2	2	3	2	1	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	118	1593	821	894	2802	1449	79	380	508	93	395	298
Arrive On Green	0.04	0.32	0.32	0.28	0.57	0.57	0.05	0.20	0.20	0.06	0.21	0.21
Sat Flow, veh/h	3170	4940	2547	3170	4940	2555	1587	1863	2493	1587	1863	1407
Grp Volume(v), veh/h	29	1924	248	899	1103	284	71	138	392	121	142	17
Grp Sat Flow(s),veh/h/ln	1585	1647	1273	1585	1647	1278	1587	1863	1247	1587	1863	1407
Q Serve(g_s), s	1.1	38.7	8.8	33.8	14.9	6.5	5.3	7.6	17.8	7.0	7.8	1.2
Cycle Q Clear(g_c), s	1.1	38.7	8.8	33.8	14.9	6.5	5.3	7.6	17.8	7.0	7.8	1.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	118	1593	821	894	2802	1449	79	380	508	93	395	298
V/C Ratio(X)	0.25	1.21	0.30	1.01	0.39	0.20	0.89	0.36	0.77	1.31	0.36	0.06
Avail Cap(c_a), veh/h	158	1593	821	894	2802	1449	79	563	754	93	579	437
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.63	0.63	0.63	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.1	40.6	30.5	43.1	14.5	12.6	56.7	41.1	45.1	56.5	40.3	37.7
Incr Delay (d2), s/veh	1.1	99.6	0.2	25.2	0.3	0.2	66.7	0.6	2.9	196.3	0.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	32.2	3.1	17.9	6.8	2.3	3.8	4.0	6.3	8.1	4.1	0.5
LnGrp Delay(d),s/veh	57.2	140.3	30.7	68.2	14.7	12.8	123.4	41.7	48.0	252.8	40.9	37.8
LnGrp LOS	E	F	C	F	B	B	F	D	D	F	D	D
Approach Vol, veh/h		2201			2286			601			280	
Approach Delay, s/veh		126.8			35.5			55.5			132.3	
Approach LOS		F			D			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	28.5	37.8	42.7	10.0	29.5	8.5	72.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	34.3	20.0	36.7	4.0	35.3	4.0	52.7
Max Q Clear Time (g_c+I1), s	9.0	19.8	35.8	40.7	7.3	9.8	3.1	16.9
Green Ext Time (p_c), s	0.0	2.6	0.0	0.0	0.0	3.0	0.0	26.6

Intersection Summary	
HCM 2010 Ctrl Delay	80.2
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	405	29	170	694	60	89	66	469	202	131	22
Future Volume (veh/h)	7	405	29	170	694	60	89	66	469	202	131	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1863	1667
Adj Flow Rate, veh/h	8	440	32	185	754	65	97	72	510	220	142	24
Adj No. of Lanes	2	2	1	2	3	1	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	101	717	302	347	1414	415	219	740	563	292	784	594
Arrive On Green	0.03	0.21	0.21	0.11	0.29	0.29	0.07	0.40	0.40	0.09	0.42	0.42
Sat Flow, veh/h	3170	3438	1448	3170	4940	1451	3079	1863	1417	3079	1863	1412
Grp Volume(v), veh/h	8	440	32	185	754	65	97	72	510	220	142	24
Grp Sat Flow(s),veh/h/ln	1585	1719	1448	1585	1647	1451	1540	1863	1417	1540	1863	1412
Q Serve(g_s), s	0.2	9.8	1.1	4.7	10.8	1.9	2.5	2.0	28.6	5.9	4.0	0.8
Cycle Q Clear(g_c), s	0.2	9.8	1.1	4.7	10.8	1.9	2.5	2.0	28.6	5.9	4.0	0.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	101	717	302	347	1414	415	219	740	563	292	784	594
V/C Ratio(X)	0.08	0.61	0.11	0.53	0.53	0.16	0.44	0.10	0.91	0.75	0.18	0.04
Avail Cap(c_a), veh/h	225	1427	601	376	2284	671	219	795	605	292	839	636
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.6	30.3	14.4	35.5	25.4	10.0	37.6	15.9	23.9	37.2	15.3	14.4
Incr Delay (d2), s/veh	0.3	0.9	0.2	1.3	0.3	0.2	1.4	0.1	16.7	10.5	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.7	0.6	2.1	4.9	1.1	1.1	1.1	13.8	2.9	2.1	0.3
LnGrp Delay(d),s/veh	40.0	31.2	14.6	36.8	25.7	10.2	39.0	16.0	40.6	47.8	15.4	14.4
LnGrp LOS	D	C	B	D	C	B	D	B	D	D	B	B
Approach Vol, veh/h		480			1004			679			386	
Approach Delay, s/veh		30.2			26.7			37.8			33.8	
Approach LOS		C			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	37.5	13.2	21.6	10.0	39.5	6.7	28.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	34.0	8.0	33.0	4.0	36.0	4.0	37.0
Max Q Clear Time (g_c+I1), s	7.9	30.6	6.7	11.8	4.5	6.0	2.2	12.8
Green Ext Time (p_c), s	0.0	0.9	0.7	1.8	0.0	1.5	0.0	4.5

Intersection Summary	
HCM 2010 Ctrl Delay	31.4
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	440	29	182	707	61	89	66	500	204	131	22
Future Volume (veh/h)	7	440	29	182	707	61	89	66	500	204	131	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1863	1667
Adj Flow Rate, veh/h	8	478	32	198	768	66	97	72	543	222	142	24
Adj No. of Lanes	2	2	1	2	3	1	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	97	740	312	343	1447	425	208	756	575	278	798	605
Arrive On Green	0.03	0.22	0.22	0.11	0.29	0.29	0.07	0.41	0.41	0.09	0.43	0.43
Sat Flow, veh/h	3170	3438	1448	3170	4940	1451	3079	1863	1417	3079	1863	1412
Grp Volume(v), veh/h	8	478	32	198	768	66	97	72	543	222	142	24
Grp Sat Flow(s),veh/h/ln	1585	1719	1448	1585	1647	1451	1540	1863	1417	1540	1863	1412
Q Serve(g_s), s	0.2	11.2	1.2	5.3	11.5	2.0	2.7	2.1	32.7	6.3	4.2	0.9
Cycle Q Clear(g_c), s	0.2	11.2	1.2	5.3	11.5	2.0	2.7	2.1	32.7	6.3	4.2	0.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	97	740	312	343	1447	425	208	756	575	278	798	605
V/C Ratio(X)	0.08	0.65	0.10	0.58	0.53	0.16	0.47	0.10	0.94	0.80	0.18	0.04
Avail Cap(c_a), veh/h	214	1357	572	357	2172	638	208	756	575	278	798	605
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.8	31.7	15.4	37.6	26.3	10.8	39.8	16.3	25.4	39.6	15.7	14.7
Incr Delay (d2), s/veh	0.4	1.0	0.1	2.1	0.3	0.2	1.6	0.1	24.5	15.1	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	5.4	0.6	2.4	5.3	1.2	1.2	1.1	16.7	3.2	2.2	0.3
LnGrp Delay(d),s/veh	42.1	32.7	15.5	39.7	26.6	10.9	41.4	16.3	49.9	54.7	15.8	14.8
LnGrp LOS	D	C	B	D	C	B	D	B	D	D	B	B
Approach Vol, veh/h		518			1032			712			388	
Approach Delay, s/veh		31.8			28.1			45.3			38.0	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	40.0	13.6	23.1	10.0	42.0	6.7	30.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	34.0	8.0	33.0	4.0	36.0	4.0	37.0
Max Q Clear Time (g_c+I1), s	8.3	34.7	7.3	13.2	4.7	6.2	2.2	13.5
Green Ext Time (p_c), s	0.0	0.0	0.4	2.0	0.0	1.6	0.0	4.6

Intersection Summary	
HCM 2010 Ctrl Delay	34.9
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	575	39	200	947	85	92	68	605	218	136	23
Future Volume (veh/h)	9	575	39	200	947	85	92	68	605	218	136	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1863	1667
Adj Flow Rate, veh/h	10	625	42	217	1029	92	100	74	658	237	148	25
Adj No. of Lanes	2	2	1	2	3	1	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	84	1049	443	242	1753	515	196	774	588	209	781	592
Arrive On Green	0.03	0.31	0.31	0.08	0.35	0.35	0.06	0.42	0.42	0.07	0.42	0.42
Sat Flow, veh/h	3170	3438	1451	3170	4940	1452	3079	1863	1417	3079	1863	1412
Grp Volume(v), veh/h	10	625	42	217	1029	92	100	74	658	237	148	25
Grp Sat Flow(s),veh/h/ln	1585	1719	1451	1585	1647	1452	1540	1863	1417	1540	1863	1412
Q Serve(g_s), s	0.4	18.2	1.9	8.0	20.0	3.8	3.7	2.9	49.0	8.0	5.9	1.2
Cycle Q Clear(g_c), s	0.4	18.2	1.9	8.0	20.0	3.8	3.7	2.9	49.0	8.0	5.9	1.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	84	1049	443	242	1753	515	196	774	588	209	781	592
V/C Ratio(X)	0.12	0.60	0.09	0.90	0.59	0.18	0.51	0.10	1.12	1.14	0.19	0.04
Avail Cap(c_a), veh/h	161	1049	443	242	1753	515	209	774	588	209	781	592
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.1	34.8	17.0	54.0	31.0	14.2	53.5	21.0	34.5	55.0	21.6	20.2
Incr Delay (d2), s/veh	0.6	2.5	0.4	26.3	1.1	0.6	2.1	0.1	74.1	103.4	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	9.0	0.8	4.4	9.2	1.6	1.6	1.5	31.2	6.4	3.1	0.5
LnGrp Delay(d),s/veh	56.7	37.3	17.5	80.3	32.1	14.8	55.5	21.1	108.6	158.4	21.7	20.3
LnGrp LOS	E	D	B	F	C	B	E	C	F	F	C	C
Approach Vol, veh/h		677			1338			832			410	
Approach Delay, s/veh		36.4			38.7			94.4			100.7	
Approach LOS		D			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	53.0	13.0	40.0	11.5	53.5	7.1	45.9
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	47.0	7.0	34.0	6.0	47.0	4.0	37.0
Max Q Clear Time (g_c+I1), s	10.0	51.0	10.0	20.2	5.7	7.9	2.4	22.0
Green Ext Time (p_c), s	0.0	0.0	0.0	2.4	0.0	1.7	0.0	5.4

Intersection Summary	
HCM 2010 Ctrl Delay	60.3
HCM 2010 LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	610	39	212	960	86	92	68	636	220	136	23
Future Volume (veh/h)	9	610	39	212	960	86	92	68	636	220	136	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1810	1667	1863	1667
Adj Flow Rate, veh/h	10	663	42	230	1043	93	100	74	691	239	148	25
Adj No. of Lanes	2	2	1	2	3	1	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	165	1016	429	303	1675	492	1042	761	629	187	245	184
Arrive On Green	0.05	0.30	0.30	0.10	0.34	0.34	0.34	0.41	0.41	0.06	0.13	0.13
Sat Flow, veh/h	3170	3438	1451	3170	4940	1452	3079	1863	1538	3079	1863	1400
Grp Volume(v), veh/h	10	663	42	230	1043	93	100	74	691	239	148	25
Grp Sat Flow(s),veh/h/ln	1585	1719	1451	1585	1647	1452	1540	1863	1538	1540	1863	1400
Q Serve(g_s), s	0.3	19.4	2.4	8.1	20.3	5.2	2.6	2.8	47.0	7.0	8.6	1.8
Cycle Q Clear(g_c), s	0.3	19.4	2.4	8.1	20.3	5.2	2.6	2.8	47.0	7.0	8.6	1.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	165	1016	429	303	1675	492	1042	761	629	187	245	184
V/C Ratio(X)	0.06	0.65	0.10	0.76	0.62	0.19	0.10	0.10	1.10	1.28	0.60	0.14
Avail Cap(c_a), veh/h	165	1016	429	303	1675	492	1042	761	629	187	761	572
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.73	0.73	0.73	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.8	35.3	29.4	50.7	31.8	26.8	26.0	20.9	34.0	54.0	47.1	44.2
Incr Delay (d2), s/veh	0.2	3.3	0.5	7.9	1.3	0.6	0.0	0.1	66.1	158.5	2.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	9.7	1.0	3.9	9.5	2.2	1.1	1.5	31.4	7.1	4.6	0.7
LnGrp Delay(d),s/veh	52.0	38.6	29.8	58.6	33.1	27.5	26.1	21.0	100.1	212.5	49.5	44.5
LnGrp LOS	D	D	C	E	C	C	C	C	F	F	D	D
Approach Vol, veh/h		715			1366			865			412	
Approach Delay, s/veh		38.3			37.0			84.8			143.8	
Approach LOS		D			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	51.0	15.0	38.0	42.9	19.1	10.0	43.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	45.0	9.0	32.0	5.0	45.0	4.0	37.0
Max Q Clear Time (g_c+I1), s	9.0	49.0	10.1	21.4	4.6	10.6	2.3	22.3
Green Ext Time (p_c), s	0.0	0.0	0.0	2.3	0.1	0.6	0.2	4.6

Intersection Summary	
HCM 2010 Ctrl Delay	62.7
HCM 2010 LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	610	39	212	960	86	92	68	636	220	136	23
Future Volume (veh/h)	9	610	39	212	960	86	92	68	636	220	136	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1863	1667
Adj Flow Rate, veh/h	10	663	42	230	1043	93	100	74	691	239	148	25
Adj No. of Lanes	2	3	2	2	3	2	1	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	85	1318	679	402	1812	935	148	535	715	286	697	528
Arrive On Green	0.03	0.27	0.27	0.13	0.37	0.37	0.09	0.29	0.29	0.18	0.37	0.37
Sat Flow, veh/h	3170	4940	2543	3170	4940	2549	1587	1863	2493	1587	1863	1411
Grp Volume(v), veh/h	10	663	42	230	1043	93	100	74	691	239	148	25
Grp Sat Flow(s),veh/h/ln	1585	1647	1271	1585	1647	1275	1587	1863	1247	1587	1863	1411
Q Serve(g_s), s	0.4	13.1	1.4	7.9	19.5	2.8	7.0	3.4	31.4	16.7	6.2	1.3
Cycle Q Clear(g_c), s	0.4	13.1	1.4	7.9	19.5	2.8	7.0	3.4	31.4	16.7	6.2	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	85	1318	679	402	1812	935	148	535	715	286	697	528
V/C Ratio(X)	0.12	0.50	0.06	0.57	0.58	0.10	0.68	0.14	0.97	0.84	0.21	0.05
Avail Cap(c_a), veh/h	165	1443	743	402	1812	935	193	535	715	290	697	528
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.6	35.7	31.4	47.3	29.2	23.9	50.5	30.4	40.4	45.5	24.5	22.9
Incr Delay (d2), s/veh	0.6	0.3	0.0	1.9	1.3	0.2	6.0	0.1	25.4	18.5	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	6.0	0.5	3.6	9.1	1.0	3.3	1.8	13.4	8.8	3.2	0.5
LnGrp Delay(d),s/veh	55.2	36.0	31.5	49.1	30.5	24.1	56.4	30.6	65.8	64.0	24.6	23.0
LnGrp LOS	E	D	C	D	C	C	E	C	E	E	C	C
Approach Vol, veh/h		715			1366			865			412	
Approach Delay, s/veh		36.0			33.2			61.7			47.4	
Approach LOS		D			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.7	37.0	18.6	34.7	14.7	47.0	7.1	46.2
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	19.0	31.0	9.4	31.6	12.0	38.0	4.0	37.0
Max Q Clear Time (g_c+I1), s	18.7	33.4	9.9	15.1	9.0	8.2	2.4	21.5
Green Ext Time (p_c), s	0.0	0.0	0.0	8.0	0.1	4.8	0.0	7.7

Intersection Summary	
HCM 2010 Ctrl Delay	42.9
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	762	52	226	1267	112	95	71	622	226	140	24
Future Volume (veh/h)	13	762	52	226	1267	112	95	71	622	226	140	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1863	1667
Adj Flow Rate, veh/h	14	828	57	246	1377	122	103	77	676	246	152	26
Adj No. of Lanes	2	2	1	2	3	1	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	93	1049	443	242	1739	511	199	774	588	209	779	591
Arrive On Green	0.03	0.31	0.31	0.08	0.35	0.35	0.06	0.42	0.42	0.07	0.42	0.42
Sat Flow, veh/h	3170	3438	1451	3170	4940	1452	3079	1863	1417	3079	1863	1412
Grp Volume(v), veh/h	14	828	57	246	1377	122	103	77	676	246	152	26
Grp Sat Flow(s),veh/h/ln	1585	1719	1451	1585	1647	1452	1540	1863	1417	1540	1863	1412
Q Serve(g_s), s	0.5	26.0	2.6	9.0	29.6	5.2	3.8	3.0	49.0	8.0	6.1	1.3
Cycle Q Clear(g_c), s	0.5	26.0	2.6	9.0	29.6	5.2	3.8	3.0	49.0	8.0	6.1	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	93	1049	443	242	1739	511	199	774	588	209	779	591
V/C Ratio(X)	0.15	0.79	0.13	1.02	0.79	0.24	0.52	0.10	1.15	1.18	0.20	0.04
Avail Cap(c_a), veh/h	161	1049	443	242	1739	511	209	774	588	209	779	591
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.47	0.47	0.47	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.8	37.5	17.2	54.5	34.4	14.8	53.4	21.0	34.5	55.0	21.7	20.3
Incr Delay (d2), s/veh	0.7	6.0	0.6	44.0	1.8	0.5	2.1	0.1	85.6	118.7	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	13.2	1.1	5.4	13.7	2.2	1.7	1.5	33.1	6.8	3.2	0.5
LnGrp Delay(d),s/veh	56.6	43.6	17.8	98.6	36.2	15.3	55.5	21.1	120.1	173.7	21.8	20.4
LnGrp LOS	E	D	B	F	D	B	E	C	F	F	C	C
Approach Vol, veh/h		899			1745			856			424	
Approach Delay, s/veh		42.1			43.5			103.4			109.9	
Approach LOS		D			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	53.0	13.0	40.0	11.6	53.4	7.5	45.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	47.0	7.0	34.0	6.0	47.0	4.0	37.0
Max Q Clear Time (g_c+I1), s	10.0	51.0	11.0	28.0	5.8	8.1	2.5	31.6
Green Ext Time (p_c), s	0.0	0.0	0.0	2.1	0.0	1.8	0.0	3.6

Intersection Summary	
HCM 2010 Ctrl Delay	63.4
HCM 2010 LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	805	52	240	1284	113	95	71	659	228	140	24
Future Volume (veh/h)	13	805	52	240	1284	113	95	71	659	228	140	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1863	1667
Adj Flow Rate, veh/h	14	875	57	261	1396	123	103	77	716	248	152	26
Adj No. of Lanes	2	2	1	2	3	1	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	93	1049	443	242	1739	511	199	774	588	209	779	591
Arrive On Green	0.03	0.31	0.31	0.08	0.35	0.35	0.06	0.42	0.42	0.07	0.42	0.42
Sat Flow, veh/h	3170	3438	1451	3170	4940	1452	3079	1863	1417	3079	1863	1412
Grp Volume(v), veh/h	14	875	57	261	1396	123	103	77	716	248	152	26
Grp Sat Flow(s),veh/h/ln	1585	1719	1451	1585	1647	1452	1540	1863	1417	1540	1863	1412
Q Serve(g_s), s	0.5	28.0	2.6	9.0	30.1	5.2	3.8	3.0	49.0	8.0	6.1	1.3
Cycle Q Clear(g_c), s	0.5	28.0	2.6	9.0	30.1	5.2	3.8	3.0	49.0	8.0	6.1	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	93	1049	443	242	1739	511	199	774	588	209	779	591
V/C Ratio(X)	0.15	0.83	0.13	1.08	0.80	0.24	0.52	0.10	1.22	1.19	0.20	0.04
Avail Cap(c_a), veh/h	161	1049	443	242	1739	511	209	774	588	209	779	591
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.37	0.37	0.37	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.8	38.2	17.2	54.5	34.5	14.8	53.4	21.0	34.5	55.0	21.7	20.3
Incr Delay (d2), s/veh	0.7	7.8	0.6	58.7	1.5	0.4	2.1	0.1	112.6	122.3	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	14.4	1.1	5.9	14.0	2.2	1.7	1.5	37.5	6.9	3.2	0.5
LnGrp Delay(d),s/veh	56.6	46.0	17.8	113.2	36.1	15.2	55.5	21.1	147.1	177.3	21.8	20.4
LnGrp LOS	E	D	B	F	D	B	E	C	F	F	C	C
Approach Vol, veh/h		946			1780			896			426	
Approach Delay, s/veh		44.5			46.0			125.7			112.2	
Approach LOS		D			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	53.0	13.0	40.0	11.6	53.4	7.5	45.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	6.0	47.0	7.0	34.0	6.0	47.0	4.0	37.0
Max Q Clear Time (g_c+I1), s	10.0	51.0	11.0	30.0	5.8	8.1	2.5	32.1
Green Ext Time (p_c), s	0.0	0.0	0.0	1.6	0.0	1.8	0.0	3.3

Intersection Summary	
HCM 2010 Ctrl Delay	70.2
HCM 2010 LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	805	52	240	1284	113	95	71	659	228	140	24
Future Volume (veh/h)	13	805	52	240	1284	113	95	71	659	228	140	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1863	1667
Adj Flow Rate, veh/h	14	875	57	261	1396	123	103	77	716	248	152	26
Adj No. of Lanes	2	3	2	2	3	2	1	1	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	99	1389	715	421	1890	976	147	466	623	298	643	487
Arrive On Green	0.03	0.28	0.28	0.13	0.38	0.38	0.09	0.25	0.25	0.19	0.35	0.35
Sat Flow, veh/h	3170	4940	2544	3170	4940	2550	1587	1863	2493	1587	1863	1411
Grp Volume(v), veh/h	14	875	57	261	1396	123	103	77	716	248	152	26
Grp Sat Flow(s),veh/h/ln	1585	1647	1272	1585	1647	1275	1587	1863	1247	1587	1863	1411
Q Serve(g_s), s	0.5	16.7	1.8	8.4	26.3	3.4	6.8	3.5	27.0	16.2	6.3	1.3
Cycle Q Clear(g_c), s	0.5	16.7	1.8	8.4	26.3	3.4	6.8	3.5	27.0	16.2	6.3	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	99	1389	715	421	1890	976	147	466	623	298	643	487
V/C Ratio(X)	0.14	0.63	0.08	0.62	0.74	0.13	0.70	0.17	1.15	0.83	0.24	0.05
Avail Cap(c_a), veh/h	176	1509	777	421	1890	976	147	466	623	309	655	496
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.89	0.89	0.89	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.9	33.9	28.5	44.3	28.7	21.6	47.5	31.7	40.5	42.2	25.2	23.6
Incr Delay (d2), s/veh	0.6	0.7	0.0	2.5	2.4	0.2	13.8	0.2	84.6	16.8	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	7.7	0.6	3.8	12.3	1.2	3.5	1.8	16.6	8.5	3.2	0.5
LnGrp Delay(d),s/veh	51.6	34.7	28.6	46.8	31.0	21.9	61.4	31.9	125.1	59.0	25.4	23.6
LnGrp LOS	D	C	C	D	C	C	E	C	F	E	C	C
Approach Vol, veh/h		946			1780			896			426	
Approach Delay, s/veh		34.5			32.7			109.7			44.9	
Approach LOS		C			C			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.3	31.0	18.3	34.4	14.0	41.3	7.4	45.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	19.0	25.0	9.0	31.0	8.0	36.0	4.0	36.0
Max Q Clear Time (g_c+I1), s	18.2	29.0	10.4	18.7	8.8	8.3	2.5	28.3
Green Ext Time (p_c), s	0.1	0.0	0.0	8.6	0.0	5.0	0.0	6.0

Intersection Summary	
HCM 2010 Ctrl Delay	51.5
HCM 2010 LOS	D

Intersection 9
Coffee Rd & 7th Standard Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	1163	118	408	995	21	114	5	299	34	20	19
Future Volume (veh/h)	11	1163	118	408	995	21	114	5	299	34	20	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1814	1750	1716	1810	1716	1667	1810	1750	1667	1836	1750
Adj Flow Rate, veh/h	12	1264	128	443	1082	23	124	5	325	37	22	21
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	2
Cap, veh/h	45	1185	120	521	1893	799	374	6	377	62	46	44
Arrive On Green	0.03	0.26	0.26	0.64	1.00	1.00	0.24	0.25	0.24	0.04	0.05	0.04
Sat Flow, veh/h	1634	4572	463	1634	3438	1452	1587	23	1509	1587	865	826
Grp Volume(v), veh/h	12	913	479	443	1082	23	124	0	330	37	0	43
Grp Sat Flow(s),veh/h/ln	1634	1651	1733	1634	1719	1452	1587	0	1533	1587	0	1691
Q Serve(g_s), s	0.9	31.1	31.1	25.7	0.0	0.0	7.8	0.0	24.8	2.8	0.0	3.0
Cycle Q Clear(g_c), s	0.9	31.1	31.1	25.7	0.0	0.0	7.8	0.0	24.8	2.8	0.0	3.0
Prop In Lane	1.00		0.27	1.00		1.00	1.00		0.98	1.00		0.49
Lane Grp Cap(c), veh/h	45	856	449	521	1893	799	374	0	383	62	0	90
V/C Ratio(X)	0.27	1.07	1.07	0.85	0.57	0.03	0.33	0.00	0.86	0.60	0.00	0.48
Avail Cap(c_a), veh/h	82	856	449	521	1893	799	374	0	503	73	0	386
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.68	0.68	0.68	0.72	0.72	0.72	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.1	44.5	44.5	19.4	0.0	0.0	38.0	0.0	43.7	56.7	0.0	55.5
Incr Delay (d2), s/veh	2.1	45.2	54.2	9.5	0.9	0.0	0.5	0.0	11.5	9.5	0.0	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	19.5	21.6	12.7	0.2	0.0	3.5	0.0	11.7	1.4	0.0	1.5
LnGrp Delay(d),s/veh	59.2	89.7	98.7	29.0	0.9	0.0	38.6	0.0	55.2	66.2	0.0	59.5
LnGrp LOS	E	F	F	C	A	A	D		E	E		E
Approach Vol, veh/h		1404			1548			454			80	
Approach Delay, s/veh		92.5			8.9			50.6			62.6	
Approach LOS		F			A			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	34.0	42.3	35.1	32.3	10.4	7.3	70.1
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.2	38.1	26.0	29.1	16.2	26.1	4.0	51.1
Max Q Clear Time (g_c+I1), s	4.8	26.8	27.7	33.1	9.8	5.0	2.9	2.0
Green Ext Time (p_c), s	0.0	1.1	0.0	0.0	1.1	0.1	0.0	8.5

Intersection Summary	
HCM 2010 Ctrl Delay	49.2
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	1196	118	445	1069	24	114	5	316	36	20	19
Future Volume (veh/h)	11	1196	118	445	1069	24	114	5	316	36	20	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1814	1750	1716	1810	1716	1667	1810	1750	1667	1836	1750
Adj Flow Rate, veh/h	12	1300	128	484	1162	26	124	5	343	39	22	21
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	2
Cap, veh/h	45	1509	149	384	1845	779	393	6	394	64	46	44
Arrive On Green	0.03	0.33	0.33	0.47	1.00	1.00	0.25	0.26	0.25	0.04	0.05	0.04
Sat Flow, veh/h	1634	4585	451	1634	3438	1452	1587	22	1511	1587	865	826
Grp Volume(v), veh/h	12	936	492	484	1162	26	124	0	348	39	0	43
Grp Sat Flow(s),veh/h/ln	1634	1651	1735	1634	1719	1452	1587	0	1533	1587	0	1691
Q Serve(g_s), s	0.9	31.6	31.6	28.0	0.0	0.0	7.6	0.0	25.9	2.9	0.0	2.9
Cycle Q Clear(g_c), s	0.9	31.6	31.6	28.0	0.0	0.0	7.6	0.0	25.9	2.9	0.0	2.9
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.99	1.00		0.49
Lane Grp Cap(c), veh/h	45	1087	571	384	1845	779	393	0	399	64	0	90
V/C Ratio(X)	0.26	0.86	0.86	1.26	0.63	0.03	0.32	0.00	0.87	0.61	0.00	0.48
Avail Cap(c_a), veh/h	82	1087	571	384	1845	779	393	0	508	73	0	389
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.71	0.71	0.71	0.68	0.68	0.68	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.7	37.4	37.4	31.5	0.0	0.0	36.5	0.0	42.7	56.1	0.0	55.0
Incr Delay (d2), s/veh	2.2	6.7	11.8	130.3	1.1	0.1	0.5	0.0	12.7	10.7	0.0	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	15.4	17.0	26.4	0.3	0.0	3.4	0.0	12.4	1.5	0.0	1.5
LnGrp Delay(d),s/veh	58.8	44.0	49.2	161.8	1.1	0.1	37.0	0.0	55.4	66.9	0.0	58.9
LnGrp LOS	E	D	D	F	A	A	D		E	E		E
Approach Vol, veh/h		1440			1672			472			82	
Approach Delay, s/veh		45.9			47.6			50.6			62.7	
Approach LOS		D			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.8	35.0	32.0	43.2	33.5	10.3	7.3	67.9
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.2	38.1	26.0	28.1	16.2	26.1	4.0	50.1
Max Q Clear Time (g_c+I1), s	4.9	27.9	30.0	33.6	9.6	4.9	2.9	2.0
Green Ext Time (p_c), s	0.0	1.1	0.0	0.0	1.1	0.1	0.0	19.4

Intersection Summary	
HCM 2010 Ctrl Delay	47.7
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	1701	159	642	1486	28	153	7	567	37	22	21
Future Volume (veh/h)	15	1701	159	642	1486	28	153	7	567	37	22	21
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1814	1750	1716	1810	1716	1667	1810	1750	1667	1836	1750
Adj Flow Rate, veh/h	16	1849	173	698	1615	30	166	8	616	40	24	23
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	2
Cap, veh/h	50	1408	131	313	1604	677	499	6	497	66	48	46
Arrive On Green	0.03	0.31	0.31	0.38	0.93	0.93	0.31	0.33	0.32	0.04	0.06	0.04
Sat Flow, veh/h	1634	4610	429	1634	3438	1451	1587	20	1515	1587	863	827
Grp Volume(v), veh/h	16	1322	700	698	1615	30	166	0	624	40	0	47
Grp Sat Flow(s),veh/h/ln	1634	1651	1738	1634	1719	1451	1587	0	1534	1587	0	1690
Q Serve(g_s), s	1.2	36.6	36.6	23.0	56.0	0.2	9.6	0.0	39.4	3.0	0.0	3.3
Cycle Q Clear(g_c), s	1.2	36.6	36.6	23.0	56.0	0.2	9.6	0.0	39.4	3.0	0.0	3.3
Prop In Lane	1.00		0.25	1.00		1.00	1.00		0.99	1.00		0.49
Lane Grp Cap(c), veh/h	50	1008	531	313	1604	677	499	0	504	66	0	93
V/C Ratio(X)	0.32	1.31	1.32	2.23	1.01	0.04	0.33	0.00	1.24	0.61	0.00	0.50
Avail Cap(c_a), veh/h	82	1008	531	313	1604	677	499	0	504	73	0	294
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.24	0.24	0.24	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.0	41.7	41.7	37.0	4.0	2.1	31.5	0.0	40.9	56.6	0.0	55.4
Incr Delay (d2), s/veh	0.3	140.8	145.0	555.5	12.8	0.0	0.4	0.0	123.5	11.8	0.0	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	36.4	38.9	58.6	23.3	0.1	4.2	0.0	33.9	1.5	0.0	1.6
LnGrp Delay(d),s/veh	57.3	182.5	186.7	592.5	16.8	2.2	31.9	0.0	164.4	68.4	0.0	59.5
LnGrp LOS	E	F	F	F	F	A	C		F	E		E
Approach Vol, veh/h		2038			2343			790			87	
Approach Delay, s/veh		182.9			188.1			136.6			63.6	
Approach LOS		F			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.0	43.4	27.0	40.6	41.7	10.6	7.7	60.0
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.2	38.1	21.0	34.1	22.7	19.6	4.0	51.1
Max Q Clear Time (g_c+I1), s	5.0	41.4	25.0	38.6	11.6	5.3	3.2	58.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	2.9	0.1	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	176.3
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	1734	159	679	1560	31	153	7	584	39	22	21
Future Volume (veh/h)	15	1734	159	679	1560	31	153	7	584	39	22	21
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1814	1750	1716	1810	1716	1667	1810	1750	1667	1836	1750
Adj Flow Rate, veh/h	16	1885	173	738	1696	34	166	8	635	42	24	23
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	2
Cap, veh/h	50	1390	127	318	1598	674	502	6	497	68	48	46
Arrive On Green	0.03	0.30	0.30	0.39	0.93	0.93	0.32	0.33	0.32	0.04	0.06	0.04
Sat Flow, veh/h	1634	4619	422	1634	3438	1450	1587	19	1515	1587	863	827
Grp Volume(v), veh/h	16	1345	713	738	1696	34	166	0	643	42	0	47
Grp Sat Flow(s),veh/h/ln	1634	1651	1739	1634	1719	1450	1587	0	1534	1587	0	1690
Q Serve(g_s), s	1.2	36.1	36.1	23.3	55.8	0.2	9.6	0.0	39.4	3.1	0.0	3.3
Cycle Q Clear(g_c), s	1.2	36.1	36.1	23.3	55.8	0.2	9.6	0.0	39.4	3.1	0.0	3.3
Prop In Lane	1.00		0.24	1.00		1.00	1.00		0.99	1.00		0.49
Lane Grp Cap(c), veh/h	50	993	523	318	1598	674	502	0	504	68	0	93
V/C Ratio(X)	0.32	1.35	1.36	2.32	1.06	0.05	0.33	0.00	1.28	0.62	0.00	0.50
Avail Cap(c_a), veh/h	82	993	523	318	1598	674	502	0	504	73	0	294
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.14	0.14	0.14	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.0	42.0	42.0	36.7	4.2	2.3	31.3	0.0	40.9	56.4	0.0	55.4
Incr Delay (d2), s/veh	0.3	159.9	164.6	596.3	30.0	0.0	0.4	0.0	139.1	13.2	0.0	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	38.5	41.2	63.1	27.0	0.1	4.2	0.0	36.1	1.6	0.0	1.6
LnGrp Delay(d),s/veh	57.3	201.8	206.6	632.9	34.2	2.3	31.7	0.0	180.1	69.7	0.0	59.5
LnGrp LOS	E	F	F	F	F	A	C		F	E		E
Approach Vol, veh/h		2074			2468			809			89	
Approach Delay, s/veh		202.4			212.8			149.6			64.3	
Approach LOS		F			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	43.4	27.3	40.1	41.9	10.6	7.7	59.8
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.2	38.1	21.0	34.1	22.7	19.6	4.0	51.1
Max Q Clear Time (g_c+I1), s	5.1	41.4	25.3	38.1	11.6	5.3	3.2	57.8
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	3.0	0.1	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	197.0
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	1734	159	679	1560	31	153	7	584	39	22	21
Future Volume (veh/h)	15	1734	159	679	1560	31	153	7	584	39	22	21
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1836	1750
Adj Flow Rate, veh/h	16	1885	173	738	1696	34	166	8	635	42	24	23
Adj No. of Lanes	1	3	1	3	3	1	2	1	2	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	2
Cap, veh/h	50	1707	504	855	2473	727	863	545	699	68	48	46
Arrive On Green	0.03	0.35	0.35	0.37	1.00	1.00	0.28	0.29	0.28	0.04	0.06	0.04
Sat Flow, veh/h	1634	4940	1458	4608	4940	1451	3079	1863	2480	1587	863	827
Grp Volume(v), veh/h	16	1885	173	738	1696	34	166	8	635	42	0	47
Grp Sat Flow(s),veh/h/ln	1634	1647	1458	1536	1647	1451	1540	1863	1240	1587	0	1690
Q Serve(g_s), s	1.2	41.5	4.4	17.8	0.0	0.0	4.9	0.4	29.7	3.1	0.0	3.3
Cycle Q Clear(g_c), s	1.2	41.5	4.4	17.8	0.0	0.0	4.9	0.4	29.7	3.1	0.0	3.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.49
Lane Grp Cap(c), veh/h	50	1707	504	855	2473	727	863	545	699	68	0	93
V/C Ratio(X)	0.32	1.10	0.34	0.86	0.69	0.05	0.19	0.01	0.91	0.62	0.00	0.50
Avail Cap(c_a), veh/h	82	1707	504	883	2473	727	863	612	787	73	0	294
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.41	0.41	0.41	0.69	0.69	0.69	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.0	39.3	5.1	36.3	0.0	0.0	32.9	30.2	41.6	56.4	0.0	55.4
Incr Delay (d2), s/veh	1.5	51.0	0.8	6.2	1.1	0.1	0.1	0.0	13.5	13.2	0.0	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	26.9	1.9	8.0	0.2	0.0	2.1	0.2	11.5	1.6	0.0	1.6
LnGrp Delay(d),s/veh	58.5	90.3	5.9	42.5	1.1	0.1	33.0	30.2	55.1	69.7	0.0	59.5
LnGrp LOS	E	F	A	D	A	A	C	C	E	E		E
Approach Vol, veh/h		2074			2468			809			89	
Approach Delay, s/veh		83.0			13.5			50.3			64.3	
Approach LOS		F			B			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	39.1	26.3	45.5	37.6	10.6	7.7	64.1
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.2	38.1	21.0	34.1	22.7	19.6	4.0	51.1
Max Q Clear Time (g_c+I1), s	5.1	31.7	19.8	43.5	6.9	5.3	3.2	2.0
Green Ext Time (p_c), s	0.0	1.8	0.5	0.0	3.7	0.1	0.0	35.8

Intersection Summary	
HCM 2010 Ctrl Delay	46.3
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	2239	213	703	1946	38	206	9	705	40	24	23
Future Volume (veh/h)	20	2239	213	703	1946	38	206	9	705	40	24	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1814	1750	1716	1810	1716	1667	1810	1750	1667	1836	1750
Adj Flow Rate, veh/h	22	2434	232	764	2115	41	224	10	766	43	26	25
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	2
Cap, veh/h	56	1396	130	313	1583	668	499	6	497	70	50	48
Arrive On Green	0.03	0.30	0.30	0.25	0.61	0.61	0.31	0.33	0.32	0.04	0.06	0.05
Sat Flow, veh/h	1634	4609	430	1634	3438	1450	1587	20	1515	1587	862	828
Grp Volume(v), veh/h	22	1729	937	764	2115	41	224	0	776	43	0	51
Grp Sat Flow(s),veh/h/ln	1634	1651	1738	1634	1719	1450	1587	0	1534	1587	0	1690
Q Serve(g_s), s	1.6	36.3	36.3	23.0	55.3	1.4	13.5	0.0	39.4	3.2	0.0	3.5
Cycle Q Clear(g_c), s	1.6	36.3	36.3	23.0	55.3	1.4	13.5	0.0	39.4	3.2	0.0	3.5
Prop In Lane	1.00		0.25	1.00		1.00	1.00		0.99	1.00		0.49
Lane Grp Cap(c), veh/h	56	1000	526	313	1583	668	499	0	504	70	0	97
V/C Ratio(X)	0.40	1.73	1.78	2.44	1.34	0.06	0.45	0.00	1.54	0.62	0.00	0.52
Avail Cap(c_a), veh/h	82	1000	526	313	1583	668	499	0	504	73	0	294
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.09	0.09	0.09	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.8	41.8	41.8	44.7	23.2	12.8	32.8	0.0	40.9	56.4	0.0	55.3
Incr Delay (d2), s/veh	0.4	328.5	351.7	648.6	151.5	0.0	0.6	0.0	252.9	13.9	0.0	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	62.1	68.8	66.8	59.1	0.5	6.0	0.0	52.1	1.7	0.0	1.8
LnGrp Delay(d),s/veh	57.2	370.3	393.5	693.3	174.7	12.8	33.5	0.0	293.9	70.3	0.0	59.6
LnGrp LOS	E	F	F	F	F	B	C		F	E		E
Approach Vol, veh/h		2688			2920			1000			94	
Approach Delay, s/veh		375.8			308.2			235.5			64.5	
Approach LOS		F			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	43.4	27.0	40.3	41.7	10.9	8.1	59.3
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.2	38.1	21.0	34.1	22.7	19.6	4.0	51.1
Max Q Clear Time (g_c+I1), s	5.2	41.4	25.0	38.3	15.5	5.5	3.6	57.3
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	3.0	0.1	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	321.0
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	2279	213	749	2037	42	206	9	726	42	24	23
Future Volume (veh/h)	20	2279	213	749	2037	42	206	9	726	42	24	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1814	1750	1716	1810	1716	1667	1810	1750	1667	1836	1750
Adj Flow Rate, veh/h	22	2477	232	814	2214	46	224	10	789	46	26	25
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	2
Cap, veh/h	56	1389	127	313	1576	665	502	6	497	73	50	48
Arrive On Green	0.03	0.30	0.30	0.38	0.92	0.92	0.32	0.33	0.32	0.05	0.06	0.05
Sat Flow, veh/h	1634	4618	423	1634	3438	1450	1587	19	1515	1587	862	828
Grp Volume(v), veh/h	22	1755	954	814	2214	46	224	0	799	46	0	51
Grp Sat Flow(s),veh/h/ln	1634	1651	1739	1634	1719	1450	1587	0	1534	1587	0	1690
Q Serve(g_s), s	1.6	36.1	36.1	23.0	55.0	0.3	13.5	0.0	39.4	3.4	0.0	3.5
Cycle Q Clear(g_c), s	1.6	36.1	36.1	23.0	55.0	0.3	13.5	0.0	39.4	3.4	0.0	3.5
Prop In Lane	1.00		0.24	1.00		1.00	1.00		0.99	1.00		0.49
Lane Grp Cap(c), veh/h	56	993	523	313	1576	665	502	0	504	73	0	97
V/C Ratio(X)	0.40	1.77	1.82	2.60	1.40	0.07	0.45	0.00	1.59	0.63	0.00	0.52
Avail Cap(c_a), veh/h	82	993	523	313	1576	665	502	0	504	73	0	294
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.09	0.09	0.09	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.8	42.0	42.0	37.0	5.0	2.7	32.6	0.0	40.9	56.3	0.0	55.3
Incr Delay (d2), s/veh	0.4	345.7	370.8	720.5	182.4	0.0	0.6	0.0	273.1	16.4	0.0	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	64.1	71.2	72.9	60.9	0.1	6.0	0.0	54.9	1.8	0.0	1.8
LnGrp Delay(d),s/veh	57.2	387.7	412.7	757.5	187.3	2.7	33.3	0.0	314.0	72.6	0.0	59.6
LnGrp LOS	E	F	F	F	F	A	C		F	E		E
Approach Vol, veh/h		2731			3074			1023			97	
Approach Delay, s/veh		393.8			335.5			252.5			65.8	
Approach LOS		F			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	43.4	27.0	40.1	42.0	10.9	8.1	59.0
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.2	38.1	21.0	34.1	22.7	19.6	4.0	51.1
Max Q Clear Time (g_c+I1), s	5.4	41.4	25.0	38.1	15.5	5.5	3.6	57.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	3.1	0.1	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	342.5
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	2279	213	749	2037	42	206	9	726	42	24	23
Future Volume (veh/h)	20	2279	213	749	2037	42	206	9	726	42	24	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1836	1750
Adj Flow Rate, veh/h	22	2477	232	814	2214	46	224	10	789	46	26	25
Adj No. of Lanes	1	3	1	3	3	1	2	1	2	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	2
Cap, veh/h	56	1486	439	883	2265	665	975	612	788	73	50	48
Arrive On Green	0.03	0.30	0.30	0.38	0.92	0.92	0.32	0.33	0.32	0.05	0.06	0.05
Sat Flow, veh/h	1634	4940	1458	4608	4940	1450	3079	1863	2482	1587	862	828
Grp Volume(v), veh/h	22	2477	232	814	2214	46	224	10	789	46	0	51
Grp Sat Flow(s),veh/h/ln	1634	1647	1458	1536	1647	1450	1540	1863	1241	1587	0	1690
Q Serve(g_s), s	1.6	36.1	6.4	20.2	43.1	0.3	6.4	0.4	38.1	3.4	0.0	3.5
Cycle Q Clear(g_c), s	1.6	36.1	6.4	20.2	43.1	0.3	6.4	0.4	38.1	3.4	0.0	3.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.49
Lane Grp Cap(c), veh/h	56	1486	439	883	2265	665	975	612	788	73	0	97
V/C Ratio(X)	0.40	1.67	0.53	0.92	0.98	0.07	0.23	0.02	1.00	0.63	0.00	0.52
Avail Cap(c_a), veh/h	82	1486	439	883	2265	665	975	612	788	73	0	294
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.35	0.35	0.35	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.8	42.0	5.7	36.1	4.5	2.7	30.2	27.2	40.9	56.3	0.0	55.3
Incr Delay (d2), s/veh	0.4	300.3	0.4	6.3	7.1	0.1	0.1	0.0	32.4	16.4	0.0	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	57.7	2.6	9.0	17.5	0.1	2.8	0.2	16.6	1.8	0.0	1.8
LnGrp Delay(d),s/veh	57.2	342.3	6.1	42.4	11.6	2.8	30.3	27.2	73.4	72.6	0.0	59.6
LnGrp LOS	E	F	A	D	B	A	C	C	F	E		E
Approach Vol, veh/h		2731			3074			1023			97	
Approach Delay, s/veh		311.4			19.6			63.5			65.8	
Approach LOS		F			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	43.4	27.0	40.1	42.0	10.9	8.1	59.0
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.2	38.1	21.0	34.1	22.7	19.6	4.0	51.1
Max Q Clear Time (g_c+I1), s	5.4	40.1	22.2	38.1	8.4	5.5	3.6	45.1
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	4.6	0.1	0.0	6.0

Intersection Summary	
HCM 2010 Ctrl Delay	141.8
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	1012	72	231	671	41	96	17	468	14	4	12
Future Volume (veh/h)	20	1012	72	231	671	41	96	17	468	14	4	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1813	1750	1716	1810	1716	1667	1811	1750	1667	1822	1750
Adj Flow Rate, veh/h	22	1100	78	251	729	45	104	18	509	15	4	13
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	2
Cap, veh/h	59	1420	101	278	1496	631	532	19	533	40	18	59
Arrive On Green	0.04	0.30	0.30	0.34	0.87	0.87	0.34	0.36	0.35	0.03	0.05	0.04
Sat Flow, veh/h	1634	4719	334	1634	3438	1450	1587	53	1488	1587	378	1227
Grp Volume(v), veh/h	22	769	409	251	729	45	104	0	527	15	0	17
Grp Sat Flow(s),veh/h/ln	1634	1650	1754	1634	1719	1450	1587	0	1541	1587	0	1605
Q Serve(g_s), s	1.4	23.4	23.4	16.1	5.2	0.5	5.1	0.0	36.7	1.0	0.0	1.1
Cycle Q Clear(g_c), s	1.4	23.4	23.4	16.1	5.2	0.5	5.1	0.0	36.7	1.0	0.0	1.1
Prop In Lane	1.00		0.19	1.00		1.00	1.00		0.97	1.00		0.76
Lane Grp Cap(c), veh/h	59	993	528	278	1496	631	532	0	552	40	0	77
V/C Ratio(X)	0.37	0.77	0.78	0.90	0.49	0.07	0.20	0.00	0.95	0.38	0.00	0.22
Avail Cap(c_a), veh/h	89	993	528	278	1496	631	532	0	552	79	0	400
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.69	0.69	0.69	0.94	0.94	0.94	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.8	35.0	35.1	35.4	4.4	4.1	26.0	0.0	35.1	52.8	0.0	50.8
Incr Delay (d2), s/veh	2.7	4.1	7.6	28.8	1.1	0.2	0.2	0.0	27.3	5.7	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	11.1	12.4	9.3	2.4	0.2	2.3	0.0	19.7	0.5	0.0	0.5
LnGrp Delay(d),s/veh	54.5	39.2	42.6	64.2	5.4	4.3	26.2	0.0	62.4	58.5	0.0	52.3
LnGrp LOS	D	D	D	E	A	A	C		E	E		D
Approach Vol, veh/h		1200			1025			631			32	
Approach Delay, s/veh		40.6			19.8			56.4			55.2	
Approach LOS		D			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	43.4	22.7	37.1	40.9	9.3	8.0	51.9
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.2	38.1	14.0	31.1	16.2	26.1	4.0	41.1
Max Q Clear Time (g_c+I1), s	3.0	38.7	18.1	25.4	7.1	3.1	3.4	7.2
Green Ext Time (p_c), s	0.0	0.0	0.0	2.6	2.0	0.0	0.0	4.6

Intersection Summary	
HCM 2010 Ctrl Delay	36.8
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	1080	72	244	697	42	96	17	503	18	4	12
Future Volume (veh/h)	20	1080	72	244	697	42	96	17	503	18	4	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1813	1750	1716	1810	1716	1667	1811	1750	1667	1822	1750
Adj Flow Rate, veh/h	22	1174	78	265	758	46	104	18	547	20	4	13
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	2
Cap, veh/h	59	1427	95	273	1485	626	537	18	534	45	18	59
Arrive On Green	0.04	0.30	0.30	0.33	0.86	0.86	0.34	0.36	0.35	0.03	0.05	0.04
Sat Flow, veh/h	1634	4742	315	1634	3438	1450	1587	49	1491	1587	378	1227
Grp Volume(v), veh/h	22	817	435	265	758	46	104	0	565	20	0	17
Grp Sat Flow(s),veh/h/ln	1634	1650	1757	1634	1719	1450	1587	0	1540	1587	0	1605
Q Serve(g_s), s	1.4	25.3	25.3	17.6	5.9	0.5	5.1	0.0	39.4	1.4	0.0	1.1
Cycle Q Clear(g_c), s	1.4	25.3	25.3	17.6	5.9	0.5	5.1	0.0	39.4	1.4	0.0	1.1
Prop In Lane	1.00		0.18	1.00		1.00	1.00		0.97	1.00		0.76
Lane Grp Cap(c), veh/h	59	993	529	273	1485	626	537	0	552	45	0	77
V/C Ratio(X)	0.37	0.82	0.82	0.97	0.51	0.07	0.19	0.00	1.02	0.44	0.00	0.22
Avail Cap(c_a), veh/h	89	993	529	273	1485	626	537	0	552	79	0	400
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.65	0.65	0.65	0.93	0.93	0.93	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.8	35.7	35.7	36.4	4.7	4.3	25.8	0.0	35.9	52.6	0.0	50.8
Incr Delay (d2), s/veh	2.5	5.1	9.2	44.6	1.2	0.2	0.2	0.0	44.6	6.7	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	12.2	13.6	11.2	2.8	0.2	2.3	0.0	23.5	0.7	0.0	0.5
LnGrp Delay(d),s/veh	54.3	40.8	44.9	81.0	5.8	4.5	25.9	0.0	80.5	59.2	0.0	52.3
LnGrp LOS	D	D	D	F	A	A	C		F	E		D
Approach Vol, veh/h		1274			1069			669			37	
Approach Delay, s/veh		42.5			24.4			72.0			56.0	
Approach LOS		D			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.1	43.4	22.4	37.1	41.2	9.3	8.0	51.5
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.2	38.1	14.0	31.1	16.2	26.1	4.0	41.1
Max Q Clear Time (g_c+I1), s	3.4	41.4	19.6	27.3	7.1	3.1	3.4	7.9
Green Ext Time (p_c), s	0.0	0.0	0.0	2.0	2.2	0.0	0.0	4.8

Intersection Summary	
HCM 2010 Ctrl Delay	42.8
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	1520	97	277	929	55	129	23	807	15	4	13
Future Volume (veh/h)	27	1520	97	277	929	55	129	23	807	15	4	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1813	1750	1716	1810	1716	1667	1811	1750	1667	1821	1750
Adj Flow Rate, veh/h	29	1652	105	301	1010	60	140	25	877	16	4	14
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	2
Cap, veh/h	119	1512	96	188	1238	522	613	17	609	39	16	56
Arrive On Green	0.07	0.32	0.32	0.23	0.72	0.72	0.39	0.41	0.40	0.02	0.04	0.03
Sat Flow, veh/h	1634	4756	302	1634	3438	1448	1587	43	1497	1587	356	1245
Grp Volume(v), veh/h	29	1145	612	301	1010	60	140	0	902	16	0	18
Grp Sat Flow(s),veh/h/ln	1634	1649	1759	1634	1719	1448	1587	0	1540	1587	0	1601
Q Serve(g_s), s	2.0	37.5	37.5	13.6	23.5	1.5	7.0	0.0	48.0	1.2	0.0	1.3
Cycle Q Clear(g_c), s	2.0	37.5	37.5	13.6	23.5	1.5	7.0	0.0	48.0	1.2	0.0	1.3
Prop In Lane	1.00		0.17	1.00		1.00	1.00		0.97	1.00		0.78
Lane Grp Cap(c), veh/h	119	1048	559	188	1238	522	613	0	626	39	0	72
V/C Ratio(X)	0.24	1.09	1.09	1.60	0.82	0.12	0.23	0.00	1.44	0.41	0.00	0.25
Avail Cap(c_a), veh/h	119	1048	559	188	1238	522	613	0	626	74	0	377
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.53	0.53	0.53	0.89	0.89	0.89	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.6	40.3	40.3	45.4	13.8	10.8	24.4	0.0	35.6	56.7	0.0	54.9
Incr Delay (d2), s/veh	0.6	50.5	56.9	289.9	5.4	0.4	0.2	0.0	206.9	6.8	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	24.4	27.0	21.2	11.6	0.6	3.1	0.0	56.4	0.6	0.0	0.6
LnGrp Delay(d),s/veh	52.2	90.7	97.2	335.2	19.2	11.2	24.6	0.0	242.6	63.5	0.0	56.7
LnGrp LOS	D	F	F	F	B	B	C		F	E		E
Approach Vol, veh/h		1786			1371			1042			34	
Approach Delay, s/veh		92.3			88.3			213.3			59.9	
Approach LOS		F			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	52.0	17.6	41.5	49.6	9.3	12.6	46.5
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.2	46.7	9.0	35.5	24.4	26.5	4.0	40.5
Max Q Clear Time (g_c+I1), s	3.2	50.0	15.6	39.5	9.0	3.3	4.0	25.5
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.4	0.0	0.0	4.3

Intersection Summary	
HCM 2010 Ctrl Delay	120.5
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	1588	97	290	955	56	129	23	842	19	4	13
Future Volume (veh/h)	27	1588	97	290	955	56	129	23	842	19	4	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1812	1750	1716	1810	1716	1667	1811	1750	1667	1821	1750
Adj Flow Rate, veh/h	29	1726	105	315	1038	61	140	25	915	21	4	14
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	2
Cap, veh/h	114	1516	92	183	1238	522	618	17	610	44	16	56
Arrive On Green	0.07	0.32	0.32	0.22	0.72	0.72	0.39	0.41	0.40	0.03	0.04	0.03
Sat Flow, veh/h	1634	4770	290	1634	3438	1448	1587	41	1499	1587	356	1245
Grp Volume(v), veh/h	29	1193	638	315	1038	61	140	0	940	21	0	18
Grp Sat Flow(s),veh/h/ln	1634	1649	1761	1634	1719	1448	1587	0	1540	1587	0	1601
Q Serve(g_s), s	2.0	37.5	37.5	13.2	25.1	1.5	7.0	0.0	48.0	1.5	0.0	1.3
Cycle Q Clear(g_c), s	2.0	37.5	37.5	13.2	25.1	1.5	7.0	0.0	48.0	1.5	0.0	1.3
Prop In Lane	1.00		0.16	1.00		1.00	1.00		0.97	1.00		0.78
Lane Grp Cap(c), veh/h	114	1048	560	183	1238	522	618	0	626	44	0	72
V/C Ratio(X)	0.25	1.14	1.14	1.72	0.84	0.12	0.23	0.00	1.50	0.48	0.00	0.25
Avail Cap(c_a), veh/h	114	1048	560	183	1238	522	618	0	626	74	0	377
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.37	0.37	0.37	0.88	0.88	0.88	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.0	40.3	40.3	45.8	14.1	10.8	24.1	0.0	35.6	56.5	0.0	54.9
Incr Delay (d2), s/veh	0.4	66.9	71.5	342.8	6.1	0.4	0.2	0.0	233.7	7.9	0.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	26.8	29.3	23.4	12.6	0.7	3.1	0.0	61.0	0.8	0.0	0.6
LnGrp Delay(d),s/veh	52.4	107.1	111.7	388.6	20.2	11.2	24.3	0.0	269.3	64.4	0.0	56.7
LnGrp LOS	D	F	F	F	C	B	C		F	E		E
Approach Vol, veh/h		1860			1414			1080			39	
Approach Delay, s/veh		107.8			101.9			237.6			60.9	
Approach LOS		F			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.3	52.0	17.2	41.5	50.0	9.3	12.2	46.5
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.2	46.7	9.0	35.5	24.4	26.5	4.0	40.5
Max Q Clear Time (g_c+I1), s	3.5	50.0	15.2	39.5	9.0	3.3	4.0	27.1
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.4	0.0	0.0	4.3

Intersection Summary	
HCM 2010 Ctrl Delay	137.4
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	1588	97	290	955	56	129	23	842	19	4	13
Future Volume (veh/h)	27	1588	97	290	955	56	129	23	842	19	4	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1821	1750
Adj Flow Rate, veh/h	29	1726	105	315	1038	61	140	25	915	21	4	14
Adj No. of Lanes	1	3	1	3	3	1	2	1	2	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	2
Cap, veh/h	62	2007	593	481	2336	686	960	612	788	44	16	55
Arrive On Green	0.04	0.41	0.41	0.21	0.95	0.95	0.31	0.33	0.32	0.03	0.04	0.03
Sat Flow, veh/h	1634	4940	1458	4608	4940	1451	3079	1863	2482	1587	356	1245
Grp Volume(v), veh/h	29	1726	105	315	1038	61	140	25	915	21	0	18
Grp Sat Flow(s),veh/h/ln	1634	1647	1458	1536	1647	1451	1540	1863	1241	1587	0	1601
Q Serve(g_s), s	2.1	38.3	1.7	7.5	2.4	0.3	3.9	1.1	38.1	1.6	0.0	1.3
Cycle Q Clear(g_c), s	2.1	38.3	1.7	7.5	2.4	0.3	3.9	1.1	38.1	1.6	0.0	1.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.78
Lane Grp Cap(c), veh/h	62	2007	593	481	2336	686	960	612	788	44	0	71
V/C Ratio(X)	0.47	0.86	0.18	0.65	0.44	0.09	0.15	0.04	1.16	0.48	0.00	0.25
Avail Cap(c_a), veh/h	82	2007	593	883	2336	686	960	612	788	73	0	279
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.67	0.67	0.67	0.93	0.93	0.93	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.6	32.5	2.1	45.5	1.8	1.7	29.8	27.4	40.9	57.5	0.0	55.9
Incr Delay (d2), s/veh	3.7	3.5	0.4	1.4	0.6	0.2	0.1	0.0	86.4	7.9	0.0	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	18.1	0.7	3.2	0.9	0.2	1.7	0.6	22.5	0.8	0.0	0.6
LnGrp Delay(d),s/veh	60.2	36.0	2.6	46.9	2.3	2.0	29.8	27.5	127.4	65.4	0.0	57.8
LnGrp LOS	E	D	A	D	A	A	C	C	F	E		E
Approach Vol, veh/h		1860			1414			1080			39	
Approach Delay, s/veh		34.5			12.3			112.4			61.9	
Approach LOS		C			B			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.3	43.4	16.5	52.8	41.4	9.3	8.5	60.8
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.2	38.1	21.0	34.1	22.7	19.6	4.0	51.1
Max Q Clear Time (g_c+I1), s	3.6	40.1	9.5	40.3	5.9	3.3	4.1	4.4
Green Ext Time (p_c), s	0.0	0.0	1.0	0.0	5.3	0.0	0.0	24.3

Intersection Summary	
HCM 2010 Ctrl Delay	46.7
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	1988	130	311	1239	74	173	31	1023	17	5	14
Future Volume (veh/h)	36	1988	130	311	1239	74	173	31	1023	17	5	14
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1813	1750	1716	1810	1716	1667	1811	1750	1667	1823	1750
Adj Flow Rate, veh/h	39	2161	141	338	1347	80	188	34	1112	18	5	15
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	2
Cap, veh/h	117	1509	98	187	1238	522	615	19	608	41	18	54
Arrive On Green	0.07	0.32	0.32	0.23	0.72	0.72	0.39	0.41	0.40	0.03	0.04	0.03
Sat Flow, veh/h	1634	4750	308	1634	3438	1448	1587	46	1495	1587	402	1207
Grp Volume(v), veh/h	39	1496	806	338	1347	80	188	0	1146	18	0	20
Grp Sat Flow(s),veh/h/ln	1634	1650	1758	1634	1719	1448	1587	0	1541	1587	0	1610
Q Serve(g_s), s	2.7	37.5	37.5	13.5	42.5	2.0	9.7	0.0	48.0	1.3	0.0	1.4
Cycle Q Clear(g_c), s	2.7	37.5	37.5	13.5	42.5	2.0	9.7	0.0	48.0	1.3	0.0	1.4
Prop In Lane	1.00		0.18	1.00		1.00	1.00		0.97	1.00		0.75
Lane Grp Cap(c), veh/h	117	1048	559	187	1238	522	615	0	627	41	0	72
V/C Ratio(X)	0.33	1.43	1.44	1.81	1.09	0.15	0.31	0.00	1.83	0.44	0.00	0.28
Avail Cap(c_a), veh/h	117	1048	559	187	1238	522	615	0	627	74	0	379
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.33	0.33	0.33	0.78	0.78	0.78	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.1	40.2	40.3	45.5	16.5	10.8	25.1	0.0	35.6	56.7	0.0	55.0
Incr Delay (d2), s/veh	0.5	194.1	202.1	381.2	50.4	0.5	0.3	0.0	379.2	7.4	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	45.3	49.5	25.8	27.9	0.8	4.3	0.0	86.4	0.7	0.0	0.7
LnGrp Delay(d),s/veh	52.6	234.4	242.4	426.7	66.9	11.3	25.4	0.0	414.8	64.0	0.0	57.0
LnGrp LOS	D	F	F	F	F	B	C		F	E		E
Approach Vol, veh/h		2341			1765			1334			38	
Approach Delay, s/veh		234.1			133.3			359.9			60.3	
Approach LOS		F			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.0	52.0	17.5	41.5	49.7	9.3	12.5	46.5
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.2	46.7	9.0	35.5	24.4	26.5	4.0	40.5
Max Q Clear Time (g_c+I1), s	3.3	50.0	15.5	39.5	11.7	3.4	4.7	44.5
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	231.1
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	2070	130	328	1271	75	173	31	1066	21	5	14
Future Volume (veh/h)	36	2070	130	328	1271	75	173	31	1066	21	5	14
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1813	1750	1716	1810	1716	1667	1811	1750	1667	1823	1750
Adj Flow Rate, veh/h	39	2250	141	357	1382	82	188	34	1159	23	5	15
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	2
Cap, veh/h	112	1514	94	182	1238	522	620	18	609	46	18	54
Arrive On Green	0.07	0.32	0.32	0.22	0.72	0.72	0.39	0.41	0.40	0.03	0.04	0.03
Sat Flow, veh/h	1634	4763	296	1634	3438	1448	1587	44	1496	1587	402	1207
Grp Volume(v), veh/h	39	1553	838	357	1382	82	188	0	1193	23	0	20
Grp Sat Flow(s),veh/h/ln	1634	1649	1760	1634	1719	1448	1587	0	1540	1587	0	1610
Q Serve(g_s), s	2.7	37.5	37.5	13.1	42.5	2.1	9.7	0.0	48.0	1.7	0.0	1.4
Cycle Q Clear(g_c), s	2.7	37.5	37.5	13.1	42.5	2.1	9.7	0.0	48.0	1.7	0.0	1.4
Prop In Lane	1.00		0.17	1.00		1.00	1.00		0.97	1.00		0.75
Lane Grp Cap(c), veh/h	112	1048	559	182	1238	522	620	0	627	46	0	72
V/C Ratio(X)	0.35	1.48	1.50	1.97	1.12	0.16	0.30	0.00	1.90	0.51	0.00	0.28
Avail Cap(c_a), veh/h	112	1048	559	182	1238	522	620	0	627	74	0	379
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.20	0.20	0.20	0.75	0.75	0.75	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.4	40.2	40.3	45.9	16.5	10.9	24.9	0.0	35.6	56.5	0.0	55.0
Incr Delay (d2), s/veh	0.4	217.5	226.3	449.2	61.2	0.5	0.3	0.0	412.8	8.4	0.0	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	48.7	53.3	28.5	29.8	0.9	4.3	0.0	92.2	0.8	0.0	0.7
LnGrp Delay(d),s/veh	52.8	257.8	266.5	495.1	77.7	11.3	25.1	0.0	448.4	64.9	0.0	57.0
LnGrp LOS	D	F	F	F	F	B	C		F	E		E
Approach Vol, veh/h		2430			1821			1381			43	
Approach Delay, s/veh		257.5			156.5			390.8			61.2	
Approach LOS		F			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	52.0	17.1	41.5	50.1	9.3	12.1	46.5
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.2	46.7	9.0	35.5	24.4	26.5	4.0	40.5
Max Q Clear Time (g_c+I1), s	3.7	50.0	15.1	39.5	11.7	3.4	4.7	44.5
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	256.1
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	2070	130	328	1271	75	173	31	1066	21	5	14
Future Volume (veh/h)	36	2070	130	328	1271	75	173	31	1066	21	5	14
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1823	1750
Adj Flow Rate, veh/h	39	2250	141	357	1382	82	188	34	1159	23	5	15
Adj No. of Lanes	1	3	1	3	3	1	2	1	3	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	2
Cap, veh/h	75	2229	658	310	2334	685	932	594	1149	45	18	54
Arrive On Green	0.05	0.45	0.45	0.07	0.47	0.47	0.30	0.32	0.31	0.03	0.04	0.03
Sat Flow, veh/h	1634	4940	1458	4608	4940	1451	3079	1863	3204	1587	402	1207
Grp Volume(v), veh/h	39	2250	141	357	1382	82	188	34	1159	23	0	20
Grp Sat Flow(s),veh/h/ln	1634	1647	1458	1536	1647	1451	1540	1863	1068	1587	0	1610
Q Serve(g_s), s	2.8	53.7	1.9	8.0	24.4	2.8	5.4	1.5	32.2	1.7	0.0	1.4
Cycle Q Clear(g_c), s	2.8	53.7	1.9	8.0	24.4	2.8	5.4	1.5	32.2	1.7	0.0	1.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.75
Lane Grp Cap(c), veh/h	75	2229	658	310	2334	685	932	594	1149	45	0	72
V/C Ratio(X)	0.52	1.01	0.21	1.15	0.59	0.12	0.20	0.06	1.01	0.51	0.00	0.28
Avail Cap(c_a), veh/h	96	2229	658	310	2334	685	932	617	1189	73	0	371
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.60	0.60	0.60	0.87	0.87	0.87	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	55.5	32.7	1.4	55.5	23.0	10.0	30.8	28.1	22.2	57.0	0.0	55.5
Incr Delay (d2), s/veh	3.3	17.1	0.4	95.8	1.0	0.3	0.1	0.0	28.2	8.6	0.0	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	27.9	0.8	6.1	11.2	1.2	2.3	0.8	12.4	0.9	0.0	0.7
LnGrp Delay(d),s/veh	58.8	49.8	1.8	151.3	24.0	10.3	30.9	28.2	50.4	65.5	0.0	57.6
LnGrp LOS	E	F	A	F	C	B	C	C	F	E		E
Approach Vol, veh/h		2430			1821			1381			43	
Approach Delay, s/veh		47.2			48.3			47.2			61.8	
Approach LOS		D			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	41.9	12.0	57.7	40.0	9.3	9.5	60.2
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.2	38.1	6.0	48.1	16.2	26.1	5.0	49.1
Max Q Clear Time (g_c+I1), s	3.7	34.2	10.0	55.7	7.4	3.4	4.8	26.4
Green Ext Time (p_c), s	0.0	2.2	0.0	0.0	0.5	0.0	0.0	19.7

Intersection Summary	
HCM 2010 Ctrl Delay	47.6
HCM 2010 LOS	D

Intersection 10
Golden State Hwy & 7th Standard Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1387	107	150	1077	2	48	0	149	211	148	397
Future Volume (veh/h)	0	1387	107	150	1077	2	48	0	149	211	148	397
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1813	1750	1716	1810	1716	1667	1810	1750	1667	1863	1667
Adj Flow Rate, veh/h	0	1508	116	163	1171	2	52	0	162	229	161	432
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	5
Cap, veh/h	1	1932	149	212	1977	839	79	0	210	296	512	390
Arrive On Green	0.00	0.82	0.82	0.13	0.57	0.57	0.05	0.00	0.12	0.19	0.28	0.28
Sat Flow, veh/h	1634	4687	360	1634	3438	1458	1587	0	1519	1587	1863	1417
Grp Volume(v), veh/h	0	1062	562	163	1171	2	52	0	162	229	161	432
Grp Sat Flow(s),veh/h/ln	1634	1650	1747	1634	1719	1458	1587	0	1519	1587	1863	1417
Q Serve(g_s), s	0.0	19.0	19.0	11.6	26.3	0.0	3.9	0.0	12.4	16.5	8.2	33.0
Cycle Q Clear(g_c), s	0.0	19.0	19.0	11.6	26.3	0.0	3.9	0.0	12.4	16.5	8.2	33.0
Prop In Lane	1.00		0.21	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1	1360	720	212	1977	839	79	0	210	296	512	390
V/C Ratio(X)	0.00	0.78	0.78	0.77	0.59	0.00	0.66	0.00	0.77	0.77	0.31	1.11
Avail Cap(c_a), veh/h	82	1360	720	218	1977	839	79	0	266	296	512	390
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.66	0.66	0.83	0.83	0.83	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	7.9	7.9	50.5	16.4	1.4	56.0	0.0	50.8	46.4	34.5	43.5
Incr Delay (d2), s/veh	0.0	3.0	5.6	12.8	1.1	0.0	17.8	0.0	10.1	12.0	0.3	78.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.5	9.5	6.0	12.7	0.0	2.1	0.0	5.8	8.2	4.3	21.4
LnGrp Delay(d),s/veh	0.0	10.9	13.5	63.3	17.5	1.4	73.7	0.0	61.0	58.4	34.9	121.9
LnGrp LOS		B	B	E	B	A	E		E	E	C	F
Approach Vol, veh/h		1624			1336			214			822	
Approach Delay, s/veh		11.8			23.1			64.1			87.2	
Approach LOS		B			C			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.4	20.6	19.5	53.5	10.0	37.0	0.0	73.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	16.0	19.0	14.0	47.0	4.0	31.0	4.0	57.0
Max Q Clear Time (g_c+I1), s	18.5	14.4	13.6	21.0	5.9	35.0	0.0	28.3
Green Ext Time (p_c), s	0.0	0.2	0.0	16.0	0.0	0.0	0.0	17.0

Intersection Summary	
HCM 2010 Ctrl Delay	33.9
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	1439	107	150	1191	2	48	0	149	242	148	397
Future Volume (veh/h)	0	1439	107	150	1191	2	48	0	149	242	148	397
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1813	1750	1716	1810	1716	1667	1810	1750	1667	1863	1667
Adj Flow Rate, veh/h	0	1564	116	163	1295	2	52	0	162	263	161	432
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	5
Cap, veh/h	1	1955	145	206	1979	839	80	0	209	295	509	387
Arrive On Green	0.00	0.83	0.83	0.25	1.00	1.00	0.05	0.00	0.12	0.19	0.27	0.27
Sat Flow, veh/h	1634	4701	348	1634	3438	1458	1587	0	1519	1587	1863	1417
Grp Volume(v), veh/h	0	1098	582	163	1295	2	52	0	162	263	161	432
Grp Sat Flow(s),veh/h/ln	1634	1650	1749	1634	1719	1458	1587	0	1519	1587	1863	1417
Q Serve(g_s), s	0.0	19.9	19.9	11.1	0.0	0.0	3.8	0.0	12.3	19.2	8.2	32.5
Cycle Q Clear(g_c), s	0.0	19.9	19.9	11.1	0.0	0.0	3.8	0.0	12.3	19.2	8.2	32.5
Prop In Lane	1.00		0.20	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1	1373	728	206	1979	839	80	0	209	295	509	387
V/C Ratio(X)	0.00	0.80	0.80	0.79	0.65	0.00	0.65	0.00	0.78	0.89	0.32	1.12
Avail Cap(c_a), veh/h	82	1373	728	206	1979	839	80	0	223	295	509	387
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.78	0.78	0.78	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	7.5	7.5	43.0	0.0	0.0	55.5	0.0	50.5	47.3	34.4	43.3
Incr Delay (d2), s/veh	0.0	0.5	0.9	14.9	1.3	0.0	17.0	0.0	14.7	26.8	0.4	81.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.5	9.1	5.8	0.4	0.0	2.1	0.0	6.0	10.6	4.3	21.5
LnGrp Delay(d),s/veh	0.0	8.0	8.4	58.0	1.3	0.0	72.4	0.0	65.3	74.0	34.8	124.5
LnGrp LOS		A	A	E	A	A	E		E	E	C	F
Approach Vol, veh/h		1680			1460			214			856	
Approach Delay, s/veh		8.1			7.6			67.0			92.1	
Approach LOS		A			A			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.1	20.4	19.0	53.5	10.0	36.5	0.0	72.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	19.0	15.5	13.0	47.5	4.0	30.5	4.0	56.5
Max Q Clear Time (g_c+I1), s	21.2	14.3	13.1	21.9	5.8	34.5	0.0	2.0
Green Ext Time (p_c), s	0.0	0.1	0.0	8.5	0.0	0.0	0.0	8.4

Intersection Summary	
HCM 2010 Ctrl Delay	28.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2082	144	236	1783	3	65	0	200	386	163	437
Future Volume (veh/h)	0	2082	144	236	1783	3	65	0	200	386	163	437
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1813	1750	1716	1810	1716	1667	1810	1750	1667	1863	1667
Adj Flow Rate, veh/h	0	2263	157	257	1938	3	71	0	217	420	177	475
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	5
Cap, veh/h	1	2187	150	191	2106	893	93	0	235	212	427	325
Arrive On Green	0.00	0.93	0.93	0.23	1.00	1.00	0.06	0.00	0.14	0.13	0.23	0.23
Sat Flow, veh/h	1634	4728	325	1634	3438	1458	1587	0	1521	1587	1863	1417
Grp Volume(v), veh/h	0	1572	848	257	1938	3	71	0	217	420	177	475
Grp Sat Flow(s),veh/h/ln	1634	1650	1753	1634	1719	1458	1587	0	1521	1587	1863	1417
Q Serve(g_s), s	0.0	55.5	55.5	14.0	0.0	0.0	5.3	0.0	16.9	16.0	9.7	27.5
Cycle Q Clear(g_c), s	0.0	55.5	55.5	14.0	0.0	0.0	5.3	0.0	16.9	16.0	9.7	27.5
Prop In Lane	1.00		0.19	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1	1526	811	191	2106	893	93	0	235	212	427	325
V/C Ratio(X)	0.00	1.03	1.05	1.35	0.92	0.00	0.77	0.00	0.93	1.98	0.41	1.46
Avail Cap(c_a), veh/h	95	1526	811	191	2106	893	93	0	235	212	427	325
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.41	0.41	0.41	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	4.5	4.5	46.0	0.0	0.0	55.7	0.0	51.1	52.0	39.4	46.3
Incr Delay (d2), s/veh	0.0	16.6	24.2	170.4	3.7	0.0	31.2	0.0	38.9	459.6	0.6	224.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	23.4	26.6	15.3	1.1	0.0	3.1	0.0	9.7	34.0	5.1	31.0
LnGrp Delay(d),s/veh	0.0	21.1	28.7	216.4	3.7	0.0	86.9	0.0	90.0	511.6	40.0	270.9
LnGrp LOS		F	F	F	A	A	F		F	F	D	F
Approach Vol, veh/h		2420			2198			288			1072	
Approach Delay, s/veh		23.8			28.5			89.2			327.1	
Approach LOS		C			C			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	22.5	18.0	59.5	11.0	31.5	0.0	77.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	14.0	16.5	12.0	53.5	5.0	25.5	5.0	60.5
Max Q Clear Time (g_c+I1), s	18.0	18.9	16.0	57.5	7.3	29.5	0.0	2.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.6

Intersection Summary	
HCM 2010 Ctrl Delay	83.1
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2134	144	236	1897	3	65	0	200	417	163	437
Future Volume (veh/h)	0	2134	144	236	1897	3	65	0	200	417	163	437
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1813	1750	1716	1810	1716	1667	1810	1750	1667	1863	1667
Adj Flow Rate, veh/h	0	2320	157	257	2062	3	71	0	217	453	177	475
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	5
Cap, veh/h	1	2191	147	191	2106	893	93	0	235	212	427	325
Arrive On Green	0.00	0.93	0.93	0.23	1.00	1.00	0.06	0.00	0.14	0.13	0.23	0.23
Sat Flow, veh/h	1634	4737	317	1634	3438	1458	1587	0	1521	1587	1863	1417
Grp Volume(v), veh/h	0	1608	869	257	2062	3	71	0	217	453	177	475
Grp Sat Flow(s),veh/h/ln	1634	1650	1755	1634	1719	1458	1587	0	1521	1587	1863	1417
Q Serve(g_s), s	0.0	55.5	55.5	14.0	0.0	0.0	5.3	0.0	16.9	16.0	9.7	27.5
Cycle Q Clear(g_c), s	0.0	55.5	55.5	14.0	0.0	0.0	5.3	0.0	16.9	16.0	9.7	27.5
Prop In Lane	1.00		0.18	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1	1526	812	191	2106	893	93	0	235	212	427	325
V/C Ratio(X)	0.00	1.05	1.07	1.35	0.98	0.00	0.77	0.00	0.93	2.14	0.41	1.46
Avail Cap(c_a), veh/h	95	1526	812	191	2106	893	93	0	235	212	427	325
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.23	0.23	0.23	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	4.5	4.5	46.0	0.0	0.0	55.7	0.0	51.1	52.0	39.4	46.3
Incr Delay (d2), s/veh	0.0	26.2	34.5	164.7	5.7	0.0	31.2	0.0	38.9	528.7	0.6	224.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	25.5	29.0	15.0	1.7	0.0	3.1	0.0	9.7	38.1	5.1	31.0
LnGrp Delay(d),s/veh	0.0	30.7	39.0	210.7	5.7	0.0	86.9	0.0	90.0	580.7	40.0	270.9
LnGrp LOS		F	F	F	A	A	F		F	F	D	F
Approach Vol, veh/h		2477			2322			288			1105	
Approach Delay, s/veh		33.6			28.4			89.2			360.9	
Approach LOS		C			C			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	22.5	18.0	59.5	11.0	31.5	0.0	77.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	14.0	16.5	12.0	53.5	5.0	25.5	5.0	60.5
Max Q Clear Time (g_c+I1), s	18.0	18.9	16.0	57.5	7.3	29.5	0.0	2.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.1

Intersection Summary	
HCM 2010 Ctrl Delay	92.7
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2134	144	236	1897	3	65	0	200	417	163	437
Future Volume (veh/h)	0	2134	144	236	1897	3	65	0	200	417	163	437
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1863	1667
Adj Flow Rate, veh/h	0	2320	157	257	2062	3	71	0	217	453	177	475
Adj No. of Lanes	1	3	1	1	3	1	1	1	1	2	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	1	2278	669	191	3019	891	141	201	127	558	373	499
Arrive On Green	0.00	0.61	0.61	0.08	0.41	0.41	0.09	0.00	0.09	0.18	0.20	0.20
Sat Flow, veh/h	1634	4940	1450	1634	4940	1458	1587	1863	1393	3079	1863	2493
Grp Volume(v), veh/h	0	2320	157	257	2062	3	71	0	217	453	177	475
Grp Sat Flow(s),veh/h/ln	1634	1647	1450	1634	1647	1458	1587	1863	1393	1540	1863	1247
Q Serve(g_s), s	0.0	55.3	3.8	14.0	41.1	0.0	5.1	0.0	8.5	16.9	10.1	20.7
Cycle Q Clear(g_c), s	0.0	55.3	3.8	14.0	41.1	0.0	5.1	0.0	8.5	16.9	10.1	20.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1	2278	669	191	3019	891	141	201	127	558	373	499
V/C Ratio(X)	0.00	1.02	0.23	1.35	0.68	0.00	0.50	0.00	1.71	0.81	0.48	0.95
Avail Cap(c_a), veh/h	95	2278	669	191	3019	891	245	287	192	616	373	499
HCM Platoon Ratio	1.33	1.33	1.33	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.48	0.48	0.23	0.23	0.23	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	23.2	5.8	55.3	25.9	1.4	52.1	0.0	33.2	47.2	42.4	39.9
Incr Delay (d2), s/veh	0.0	18.0	0.4	164.7	0.3	0.0	2.8	0.0	350.9	7.5	0.9	28.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	28.5	1.6	15.0	18.8	0.0	2.4	0.0	15.6	7.8	5.3	9.1
LnGrp Delay(d),s/veh	0.0	41.2	6.1	220.0	26.2	1.4	54.9	0.0	384.1	54.6	43.4	68.5
LnGrp LOS		F	A	F	C	A	D		F	D	D	E
Approach Vol, veh/h		2477			2322			288			1105	
Approach Delay, s/veh		39.0			47.6			302.9			58.8	
Approach LOS		D			D			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.8	16.9	18.0	59.3	14.7	28.0	0.0	77.3
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	22.0	16.5	12.0	45.5	16.5	22.0	5.0	52.5
Max Q Clear Time (g_c+I1), s	18.9	10.5	16.0	57.3	7.1	22.7	0.0	43.1
Green Ext Time (p_c), s	0.7	0.4	0.0	0.0	1.6	0.0	0.0	9.1

Intersection Summary	
HCM 2010 Ctrl Delay	58.0
HCM 2010 LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2723	193	305	2281	4	87	0	269	410	180	482
Future Volume (veh/h)	0	2723	193	305	2281	4	87	0	269	410	180	482
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1813	1750	1716	1810	1716	1667	1810	1750	1667	1863	1667
Adj Flow Rate, veh/h	0	2960	210	332	2479	4	95	0	292	446	196	524
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	5
Cap, veh/h	1	2185	151	191	2106	893	93	0	235	212	427	325
Arrive On Green	0.00	0.93	0.93	0.23	1.00	1.00	0.06	0.00	0.14	0.13	0.23	0.23
Sat Flow, veh/h	1634	4725	327	1634	3438	1458	1587	0	1521	1587	1863	1417
Grp Volume(v), veh/h	0	2046	1124	332	2479	4	95	0	292	446	196	524
Grp Sat Flow(s),veh/h/ln	1634	1650	1753	1634	1719	1458	1587	0	1521	1587	1863	1417
Q Serve(g_s), s	0.0	55.5	55.5	14.0	0.0	0.0	7.0	0.0	18.5	16.0	10.9	27.5
Cycle Q Clear(g_c), s	0.0	55.5	55.5	14.0	0.0	0.0	7.0	0.0	18.5	16.0	10.9	27.5
Prop In Lane	1.00		0.19	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1	1526	811	191	2106	893	93	0	235	212	427	325
V/C Ratio(X)	0.00	1.34	1.39	1.74	1.18	0.00	1.03	0.00	1.25	2.11	0.46	1.61
Avail Cap(c_a), veh/h	95	1526	811	191	2106	893	93	0	235	212	427	325
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.09	0.09	0.09	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	4.5	4.5	46.0	0.0	0.0	56.5	0.0	51.8	52.0	39.8	46.3
Incr Delay (d2), s/veh	0.0	153.7	174.6	335.7	80.3	0.0	100.8	0.0	140.8	514.0	0.8	290.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	52.5	60.5	24.0	23.5	0.0	5.7	0.0	16.9	37.2	5.7	36.9
LnGrp Delay(d),s/veh	0.0	158.2	179.1	381.7	80.3	0.0	157.6	0.0	192.5	566.0	40.6	336.4
LnGrp LOS		F	F	F	F	A	F		F	F	D	F
Approach Vol, veh/h		3170			2815			387			1166	
Approach Delay, s/veh		165.6			115.7			184.0			374.5	
Approach LOS		F			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	22.5	18.0	59.5	11.0	31.5	0.0	77.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	14.0	16.5	12.0	53.5	5.0	25.5	5.0	60.5
Max Q Clear Time (g_c+I1), s	18.0	20.5	16.0	57.5	9.0	29.5	0.0	2.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.0

Intersection Summary	
HCM 2010 Ctrl Delay	180.2
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2786	193	305	2422	4	87	0	269	449	180	482
Future Volume (veh/h)	0	2786	193	305	2422	4	87	0	269	449	180	482
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1813	1750	1716	1810	1716	1667	1810	1750	1667	1863	1667
Adj Flow Rate, veh/h	0	3028	210	332	2633	4	95	0	292	488	196	524
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	5
Cap, veh/h	1	2189	148	191	2106	893	93	0	235	212	427	325
Arrive On Green	0.00	0.62	0.62	0.23	1.00	1.00	0.06	0.00	0.14	0.13	0.23	0.23
Sat Flow, veh/h	1634	4733	321	1634	3438	1458	1587	0	1521	1587	1863	1417
Grp Volume(v), veh/h	0	2090	1148	332	2633	4	95	0	292	488	196	524
Grp Sat Flow(s),veh/h/ln	1634	1650	1754	1634	1719	1458	1587	0	1521	1587	1863	1417
Q Serve(g_s), s	0.0	55.5	55.5	14.0	0.0	0.0	7.0	0.0	18.5	16.0	10.9	27.5
Cycle Q Clear(g_c), s	0.0	55.5	55.5	14.0	0.0	0.0	7.0	0.0	18.5	16.0	10.9	27.5
Prop In Lane	1.00		0.18	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1	1526	811	191	2106	893	93	0	235	212	427	325
V/C Ratio(X)	0.00	1.37	1.42	1.74	1.25	0.00	1.03	0.00	1.25	2.31	0.46	1.61
Avail Cap(c_a), veh/h	95	1526	811	191	2106	893	93	0	235	212	427	325
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.09	0.09	0.09	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	23.1	23.1	46.0	0.0	0.0	56.5	0.0	51.8	52.0	39.8	46.3
Incr Delay (d2), s/veh	0.0	166.6	187.5	335.7	113.0	0.0	100.8	0.0	140.8	602.3	0.8	290.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	60.2	68.7	24.0	33.1	0.0	5.7	0.0	16.9	42.4	5.7	36.9
LnGrp Delay(d),s/veh	0.0	189.7	210.6	381.7	113.0	0.0	157.6	0.0	192.5	654.3	40.6	336.4
LnGrp LOS		F	F	F	F	A	F		F	F	D	F
Approach Vol, veh/h		3238			2969			387			1208	
Approach Delay, s/veh		197.1			142.9			184.0			416.8	
Approach LOS		F			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	22.5	18.0	59.5	11.0	31.5	0.0	77.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	14.0	16.5	12.0	53.5	5.0	25.5	5.0	60.5
Max Q Clear Time (g_c+I1), s	18.0	20.5	16.0	57.5	9.0	29.5	0.0	2.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.9

Intersection Summary	
HCM 2010 Ctrl Delay	209.9
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	2786	193	305	2422	4	87	0	269	449	180	482
Future Volume (veh/h)	0	2786	193	305	2422	4	87	0	269	449	180	482
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1863	1667
Adj Flow Rate, veh/h	0	3028	210	332	2633	4	95	0	292	488	196	524
Adj No. of Lanes	1	3	1	1	3	1	1	1	1	2	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	1	2206	648	191	2947	870	164	211	135	586	373	499
Arrive On Green	0.00	0.59	0.59	0.04	0.20	0.20	0.10	0.00	0.10	0.19	0.20	0.20
Sat Flow, veh/h	1634	4940	1450	1634	4940	1458	1587	1863	1395	3079	1863	2493
Grp Volume(v), veh/h	0	3028	210	332	2633	4	95	0	292	488	196	524
Grp Sat Flow(s),veh/h/ln	1634	1647	1450	1634	1647	1458	1587	1863	1395	1540	1863	1247
Q Serve(g_s), s	0.0	53.6	5.5	14.0	62.3	0.1	6.8	0.0	9.0	18.3	11.3	22.0
Cycle Q Clear(g_c), s	0.0	53.6	5.5	14.0	62.3	0.1	6.8	0.0	9.0	18.3	11.3	22.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1	2206	648	191	2947	870	164	211	135	586	373	499
V/C Ratio(X)	0.00	1.37	0.32	1.74	0.89	0.00	0.58	0.00	2.17	0.83	0.53	1.05
Avail Cap(c_a), veh/h	95	2206	648	191	2947	870	245	287	192	616	373	499
HCM Platoon Ratio	1.33	1.33	1.33	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.09	0.09	0.09	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	24.4	6.1	57.7	44.5	2.0	51.3	0.0	32.9	46.7	42.9	40.3
Incr Delay (d2), s/veh	0.0	167.9	0.1	335.7	0.5	0.0	3.2	0.0	550.7	9.2	1.4	54.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	58.3	2.2	24.1	28.6	0.0	3.2	0.0	24.0	8.5	6.0	11.3
LnGrp Delay(d),s/veh	0.0	192.2	6.2	393.4	44.9	2.0	54.5	0.0	583.5	56.0	44.3	94.6
LnGrp LOS		F	A	F	D	A	D		F	E	D	F
Approach Vol, veh/h		3238			2969			387			1208	
Approach Delay, s/veh		180.2			83.8			453.7			70.8	
Approach LOS		F			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.8	17.6	18.0	57.6	16.4	28.0	0.0	75.6
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	22.0	16.5	12.0	45.5	16.5	22.0	5.0	52.5
Max Q Clear Time (g_c+I1), s	20.3	11.0	16.0	55.6	8.8	24.0	0.0	64.3
Green Ext Time (p_c), s	0.5	0.6	0.0	0.0	1.6	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	140.1
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	909	35	65	652	0	21	0	131	168	69	185
Future Volume (veh/h)	2	909	35	65	652	0	21	0	131	168	69	185
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1811	1750	1716	1810	1716	1667	1810	1750	1667	1863	1667
Adj Flow Rate, veh/h	2	988	38	71	709	0	23	0	142	183	75	201
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	5
Cap, veh/h	140	2465	95	140	1735	736	139	0	195	216	330	251
Arrive On Green	0.17	1.00	1.00	0.17	1.00	0.00	0.09	0.00	0.11	0.14	0.18	0.18
Sat Flow, veh/h	1634	4886	188	1634	3438	1458	1587	0	1517	1587	1863	1417
Grp Volume(v), veh/h	2	666	360	71	709	0	23	0	142	183	75	201
Grp Sat Flow(s),veh/h/ln	1634	1648	1777	1634	1719	1458	1587	0	1517	1587	1863	1417
Q Serve(g_s), s	0.1	0.0	0.0	4.3	0.0	0.0	1.5	0.0	10.0	12.4	3.8	15.0
Cycle Q Clear(g_c), s	0.1	0.0	0.0	4.3	0.0	0.0	1.5	0.0	10.0	12.4	3.8	15.0
Prop In Lane	1.00		0.11	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	140	1663	897	140	1735	736	139	0	195	216	330	251
V/C Ratio(X)	0.01	0.40	0.40	0.51	0.41	0.00	0.17	0.00	0.73	0.85	0.23	0.80
Avail Cap(c_a), veh/h	140	1663	897	140	1735	736	139	0	241	216	432	328
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.86	0.86	0.86	0.88	0.88	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.8	0.0	0.0	43.5	0.0	0.0	46.5	0.0	47.1	46.4	38.8	43.4
Incr Delay (d2), s/veh	0.0	0.6	1.1	2.7	0.6	0.0	0.6	0.0	8.3	25.3	0.3	10.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.3	2.0	0.2	0.0	0.7	0.0	4.6	7.0	2.0	6.5
LnGrp Delay(d),s/veh	41.8	0.6	1.1	46.2	0.6	0.0	47.1	0.0	55.4	71.6	39.1	53.5
LnGrp LOS	D	A	A	D	A		D		E	E	D	D
Approach Vol, veh/h		1028			780			165			459	
Approach Delay, s/veh		0.9			4.8			54.2			58.4	
Approach LOS		A			A			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	18.1	13.4	59.5	13.6	23.5	13.4	59.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	13.0	15.5	4.0	53.5	5.0	23.5	4.0	53.5
Max Q Clear Time (g_c+I1), s	14.4	12.0	6.3	2.0	3.5	17.0	2.1	2.0
Green Ext Time (p_c), s	0.0	0.1	0.0	4.6	0.1	0.5	0.0	3.2

Intersection Summary	
HCM 2010 Ctrl Delay	16.6
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	1016	35	65	692	0	21	0	131	232	69	185
Future Volume (veh/h)	2	1016	35	65	692	0	21	0	131	232	69	185
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1811	1750	1716	1810	1716	1667	1810	1750	1667	1863	1667
Adj Flow Rate, veh/h	2	1104	38	71	752	0	23	0	142	252	75	201
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	5
Cap, veh/h	140	2476	85	140	1735	736	139	0	195	216	330	251
Arrive On Green	0.17	1.00	1.00	0.17	1.00	0.00	0.09	0.00	0.11	0.14	0.18	0.18
Sat Flow, veh/h	1634	4908	169	1634	3438	1458	1587	0	1517	1587	1863	1417
Grp Volume(v), veh/h	2	741	401	71	752	0	23	0	142	252	75	201
Grp Sat Flow(s),veh/h/ln	1634	1648	1780	1634	1719	1458	1587	0	1517	1587	1863	1417
Q Serve(g_s), s	0.1	0.0	0.0	4.3	0.0	0.0	1.5	0.0	10.0	15.0	3.8	15.0
Cycle Q Clear(g_c), s	0.1	0.0	0.0	4.3	0.0	0.0	1.5	0.0	10.0	15.0	3.8	15.0
Prop In Lane	1.00		0.09	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	140	1663	898	140	1735	736	139	0	195	216	330	251
V/C Ratio(X)	0.01	0.45	0.45	0.51	0.43	0.00	0.17	0.00	0.73	1.16	0.23	0.80
Avail Cap(c_a), veh/h	140	1663	898	140	1735	736	139	0	241	216	432	328
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.82	0.82	0.86	0.86	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.8	0.0	0.0	43.5	0.0	0.0	46.5	0.0	47.1	47.5	38.8	43.4
Incr Delay (d2), s/veh	0.0	0.7	1.3	2.6	0.7	0.0	0.6	0.0	8.3	112.6	0.3	10.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.2	0.3	2.0	0.2	0.0	0.7	0.0	4.6	13.3	2.0	6.5
LnGrp Delay(d),s/veh	41.8	0.7	1.3	46.1	0.7	0.0	47.1	0.0	55.4	160.1	39.1	53.5
LnGrp LOS	D	A	A	D	A		D		E	F	D	D
Approach Vol, veh/h		1144			823			165			528	
Approach Delay, s/veh		1.0			4.6			54.2			102.3	
Approach LOS		A			A			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	18.1	13.4	59.5	13.6	23.5	13.4	59.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	13.0	15.5	4.0	53.5	5.0	23.5	4.0	53.5
Max Q Clear Time (g_c+I1), s	17.0	12.0	6.3	2.0	3.5	17.0	2.1	2.0
Green Ext Time (p_c), s	0.0	0.1	0.0	5.3	0.2	0.5	0.0	3.5

Intersection Summary	
HCM 2010 Ctrl Delay	25.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	1560	47	91	914	0	28	0	176	399	76	204
Future Volume (veh/h)	3	1560	47	91	914	0	28	0	176	399	76	204
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1811	1750	1716	1810	1716	1667	1810	1750	1667	1863	1667
Adj Flow Rate, veh/h	3	1696	51	99	993	0	30	0	191	434	83	222
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	5
Cap, veh/h	33	2382	72	146	1899	805	195	0	238	215	316	240
Arrive On Green	0.04	0.97	0.97	0.18	1.00	0.00	0.12	0.00	0.14	0.14	0.17	0.17
Sat Flow, veh/h	1634	4932	148	1634	3438	1458	1587	0	1522	1587	1863	1417
Grp Volume(v), veh/h	3	1133	614	99	993	0	30	0	191	434	83	222
Grp Sat Flow(s),veh/h/ln	1634	1648	1784	1634	1719	1458	1587	0	1522	1587	1863	1417
Q Serve(g_s), s	0.2	4.4	4.4	6.7	0.0	0.0	2.0	0.0	14.4	16.0	4.6	15.5
Cycle Q Clear(g_c), s	0.2	4.4	4.4	6.7	0.0	0.0	2.0	0.0	14.4	16.0	4.6	15.5
Prop In Lane	1.00		0.08	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	33	1592	862	146	1899	805	195	0	238	215	316	240
V/C Ratio(X)	0.09	0.71	0.71	0.68	0.52	0.00	0.15	0.00	0.80	2.02	0.26	0.92
Avail Cap(c_a), veh/h	125	1592	862	146	1899	805	195	0	258	215	379	288
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.16	0.16	0.16	0.68	0.68	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.6	1.1	1.1	46.9	0.0	0.0	46.3	0.0	49.0	51.0	42.6	35.1
Incr Delay (d2), s/veh	0.2	0.5	0.8	8.4	0.7	0.0	0.4	0.0	15.5	473.4	0.4	30.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.4	1.6	3.4	0.2	0.0	0.9	0.0	7.0	35.3	2.4	8.1
LnGrp Delay(d),s/veh	55.8	1.6	1.9	55.2	0.7	0.0	46.7	0.0	64.5	524.4	43.0	65.9
LnGrp LOS	E	A	A	E	A		D		E	F	D	E
Approach Vol, veh/h		1750			1092			221			739	
Approach Delay, s/veh		1.8			5.7			62.1			332.6	
Approach LOS		A			A			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	22.5	14.5	61.0	18.5	24.0	6.4	69.2
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	14.0	18.0	7.0	55.0	10.0	22.0	7.0	55.0
Max Q Clear Time (g_c+I1), s	18.0	16.4	8.7	6.4	4.0	17.5	2.2	2.0
Green Ext Time (p_c), s	0.0	0.1	0.0	10.2	0.4	0.5	0.0	5.4

Intersection Summary	
HCM 2010 Ctrl Delay	70.7
HCM 2010 LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	1667	47	91	954	0	28	0	176	463	76	204
Future Volume (veh/h)	3	1667	47	91	954	0	28	0	176	463	76	204
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1811	1750	1716	1810	1716	1667	1810	1750	1667	1863	1667
Adj Flow Rate, veh/h	3	1812	51	99	1037	0	30	0	191	503	83	222
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	5
Cap, veh/h	33	2387	67	146	1899	805	195	0	238	215	316	240
Arrive On Green	0.04	0.97	0.97	0.18	1.00	0.00	0.12	0.00	0.14	0.14	0.17	0.17
Sat Flow, veh/h	1634	4942	139	1634	3438	1458	1587	0	1522	1587	1863	1417
Grp Volume(v), veh/h	3	1208	655	99	1037	0	30	0	191	503	83	222
Grp Sat Flow(s),veh/h/ln	1634	1648	1786	1634	1719	1458	1587	0	1522	1587	1863	1417
Q Serve(g_s), s	0.2	5.5	5.5	6.7	0.0	0.0	2.0	0.0	14.4	16.0	4.6	15.5
Cycle Q Clear(g_c), s	0.2	5.5	5.5	6.7	0.0	0.0	2.0	0.0	14.4	16.0	4.6	15.5
Prop In Lane	1.00		0.08	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	33	1592	863	146	1899	805	195	0	238	215	316	240
V/C Ratio(X)	0.09	0.76	0.76	0.68	0.55	0.00	0.15	0.00	0.80	2.34	0.26	0.92
Avail Cap(c_a), veh/h	125	1592	863	146	1899	805	195	0	258	215	379	288
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.66	0.66	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.6	1.1	1.1	46.9	0.0	0.0	46.3	0.0	49.0	51.0	42.6	35.1
Incr Delay (d2), s/veh	0.1	0.3	0.6	8.1	0.8	0.0	0.4	0.0	15.5	616.0	0.4	30.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	1.4	1.6	3.4	0.2	0.0	0.9	0.0	7.0	43.8	2.4	8.1
LnGrp Delay(d),s/veh	55.7	1.4	1.7	55.0	0.8	0.0	46.7	0.0	64.5	667.0	43.0	65.9
LnGrp LOS	E	A	A	D	A		D		E	F	D	E
Approach Vol, veh/h		1866			1136			221			808	
Approach Delay, s/veh		1.6			5.5			62.1			437.7	
Approach LOS		A			A			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	22.5	14.5	61.0	18.5	24.0	6.4	69.2
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	14.0	18.0	7.0	55.0	10.0	22.0	7.0	55.0
Max Q Clear Time (g_c+I1), s	18.0	16.4	8.7	7.5	4.0	17.5	2.2	2.0
Green Ext Time (p_c), s	0.0	0.1	0.0	11.4	0.4	0.5	0.0	5.8

Intersection Summary	
HCM 2010 Ctrl Delay	93.4
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	1667	47	91	954	0	28	0	176	463	76	204
Future Volume (veh/h)	3	1667	47	91	954	0	28	0	176	463	76	204
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1863	1667
Adj Flow Rate, veh/h	3	1812	51	99	1037	0	30	0	191	503	83	222
Adj No. of Lanes	1	3	1	1	3	1	1	1	1	2	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	32	2310	678	147	2656	784	307	216	139	595	216	289
Arrive On Green	0.04	0.94	0.94	0.09	0.54	0.00	0.19	0.00	0.10	0.19	0.12	0.12
Sat Flow, veh/h	1634	4940	1451	1634	4940	1458	1587	1863	1395	3079	1863	2493
Grp Volume(v), veh/h	3	1812	51	99	1037	0	30	0	191	503	83	222
Grp Sat Flow(s),veh/h/ln	1634	1647	1451	1634	1647	1458	1587	1863	1395	1540	1863	1247
Q Serve(g_s), s	0.2	10.7	0.1	7.0	14.7	0.0	1.9	0.0	9.6	18.9	4.9	9.0
Cycle Q Clear(g_c), s	0.2	10.7	0.1	7.0	14.7	0.0	1.9	0.0	9.6	18.9	4.9	9.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	32	2310	678	147	2656	784	307	216	139	595	216	289
V/C Ratio(X)	0.09	0.78	0.08	0.68	0.39	0.00	0.10	0.00	1.38	0.85	0.38	0.77
Avail Cap(c_a), veh/h	95	2310	678	191	2656	784	307	287	192	616	373	499
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.57	0.57	0.57	0.81	0.81	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.6	2.4	0.4	52.9	16.2	0.0	39.8	0.0	35.3	46.7	49.1	38.5
Incr Delay (d2), s/veh	0.7	1.6	0.1	4.9	0.4	0.0	0.1	0.0	208.3	10.3	1.1	4.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	4.0	0.1	3.4	6.7	0.0	0.8	0.0	11.7	8.9	2.6	3.2
LnGrp Delay(d),s/veh	57.3	4.0	0.5	57.9	16.6	0.0	39.9	0.0	243.6	57.0	50.2	42.8
LnGrp LOS	E	A	A	E	B		D		F	E	D	D
Approach Vol, veh/h		1866			1136			221			808	
Approach Delay, s/veh		4.0			20.2			215.9			52.4	
Approach LOS		A			C			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.2	17.9	14.8	60.1	27.2	17.9	6.4	68.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	22.0	16.5	12.0	45.5	16.5	22.0	5.0	52.5
Max Q Clear Time (g_c+I1), s	20.9	11.6	9.0	12.7	3.9	11.0	2.2	16.7
Green Ext Time (p_c), s	0.3	0.3	0.1	20.1	1.9	0.9	0.0	21.1

Intersection Summary	
HCM 2010 Ctrl Delay	29.9
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	1980	63	121	1216	0	38	0	237	418	84	224
Future Volume (veh/h)	4	1980	63	121	1216	0	38	0	237	418	84	224
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1811	1750	1716	1810	1716	1667	1810	1750	1667	1863	1667
Adj Flow Rate, veh/h	4	2152	68	132	1322	0	41	0	258	454	91	243
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	5
Cap, veh/h	35	2378	75	125	1850	785	197	0	258	215	338	257
Arrive On Green	0.04	0.97	0.97	0.15	1.00	0.00	0.12	0.00	0.15	0.14	0.18	0.18
Sat Flow, veh/h	1634	4924	155	1634	3438	1458	1587	0	1523	1587	1863	1417
Grp Volume(v), veh/h	4	1439	781	132	1322	0	41	0	258	454	91	243
Grp Sat Flow(s),veh/h/ln	1634	1648	1783	1634	1719	1458	1587	0	1523	1587	1863	1417
Q Serve(g_s), s	0.3	13.7	14.2	9.0	0.0	0.0	2.7	0.0	20.0	16.0	5.0	17.0
Cycle Q Clear(g_c), s	0.3	13.7	14.2	9.0	0.0	0.0	2.7	0.0	20.0	16.0	5.0	17.0
Prop In Lane	1.00		0.09	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	35	1592	861	125	1850	785	197	0	258	215	338	257
V/C Ratio(X)	0.12	0.90	0.91	1.06	0.71	0.00	0.21	0.00	1.00	2.11	0.27	0.95
Avail Cap(c_a), veh/h	125	1592	861	125	1850	785	197	0	258	215	379	288
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.39	0.39	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.4	1.3	1.3	50.0	0.0	0.0	46.5	0.0	50.0	51.0	41.6	34.5
Incr Delay (d2), s/veh	0.1	0.9	1.8	67.0	0.9	0.0	0.5	0.0	55.9	514.7	0.4	36.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	3.4	4.3	6.3	0.2	0.0	1.2	0.0	12.4	37.8	2.6	9.3
LnGrp Delay(d),s/veh	55.6	2.2	3.0	117.1	0.9	0.0	47.0	0.0	105.9	565.7	42.0	71.4
LnGrp LOS	E	A	A	F	A		D		F	F	D	E
Approach Vol, veh/h		2224			1454			299			788	
Approach Delay, s/veh		2.6			11.5			97.8			352.8	
Approach LOS		A			B			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	24.0	13.0	61.0	18.6	25.4	6.5	67.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	14.0	18.0	7.0	55.0	10.0	22.0	7.0	55.0
Max Q Clear Time (g_c+I1), s	18.0	22.0	11.0	16.2	4.7	19.0	2.3	2.0
Green Ext Time (p_c), s	0.0	0.0	0.0	15.1	0.5	0.4	0.0	8.4

Intersection Summary	
HCM 2010 Ctrl Delay	69.2
HCM 2010 LOS	E



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	2108	63	121	1266	0	38	0	237	498	84	224
Future Volume (veh/h)	4	2108	63	121	1266	0	38	0	237	498	84	224
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1811	1750	1716	1810	1716	1667	1810	1750	1667	1863	1667
Adj Flow Rate, veh/h	4	2291	68	132	1376	0	41	0	258	541	91	243
Adj No. of Lanes	1	3	0	1	2	1	1	1	0	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	5	2	5	2	5	2	2	5	2	5
Cap, veh/h	35	2384	70	125	1850	785	197	0	258	215	338	257
Arrive On Green	0.04	0.97	0.97	0.15	1.00	0.00	0.12	0.00	0.15	0.14	0.18	0.18
Sat Flow, veh/h	1634	4935	146	1634	3438	1458	1587	0	1523	1587	1863	1417
Grp Volume(v), veh/h	4	1527	832	132	1376	0	41	0	258	541	91	243
Grp Sat Flow(s),veh/h/ln	1634	1648	1784	1634	1719	1458	1587	0	1523	1587	1863	1417
Q Serve(g_s), s	0.3	25.3	27.4	9.0	0.0	0.0	2.7	0.0	20.0	16.0	5.0	17.0
Cycle Q Clear(g_c), s	0.3	25.3	27.4	9.0	0.0	0.0	2.7	0.0	20.0	16.0	5.0	17.0
Prop In Lane	1.00		0.08	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	35	1592	862	125	1850	785	197	0	258	215	338	257
V/C Ratio(X)	0.12	0.96	0.96	1.06	0.74	0.00	0.21	0.00	1.00	2.51	0.27	0.95
Avail Cap(c_a), veh/h	125	1592	862	125	1850	785	197	0	258	215	379	288
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.36	0.36	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.4	1.5	1.5	50.0	0.0	0.0	46.5	0.0	50.0	51.0	41.6	34.5
Incr Delay (d2), s/veh	0.1	2.1	4.1	64.9	1.0	0.0	0.5	0.0	55.9	694.7	0.4	36.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	6.4	7.9	6.3	0.3	0.0	1.2	0.0	12.4	48.5	2.6	9.3
LnGrp Delay(d),s/veh	55.6	3.6	5.6	115.1	1.0	0.0	47.0	0.0	105.9	745.7	42.0	71.4
LnGrp LOS	E	A	A	F	A		D		F	F	D	E
Approach Vol, veh/h		2363			1508			299			875	
Approach Delay, s/veh		4.4			11.0			97.8			485.3	
Approach LOS		A			B			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.0	24.0	13.0	61.0	18.6	25.4	6.5	67.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	14.0	18.0	7.0	55.0	10.0	22.0	7.0	55.0
Max Q Clear Time (g_c+I1), s	18.0	22.0	11.0	29.4	4.7	19.0	2.3	2.0
Green Ext Time (p_c), s	0.0	0.0	0.0	13.9	0.5	0.4	0.0	9.0

Intersection Summary	
HCM 2010 Ctrl Delay	95.3
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	2108	63	121	1266	0	38	0	237	498	84	224
Future Volume (veh/h)	4	2108	63	121	1266	0	38	0	237	498	84	224
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1716	1716	1810	1716	1667	1863	1667	1667	1863	1667
Adj Flow Rate, veh/h	4	2291	68	132	1376	0	41	0	258	541	91	243
Adj No. of Lanes	1	3	1	1	3	1	1	1	1	2	1	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	2	2	5	2	5	2	5	5	2	5
Cap, veh/h	34	2185	641	183	2636	778	300	209	133	616	229	307
Arrive On Green	0.02	0.44	0.44	0.04	0.18	0.00	0.19	0.00	0.10	0.20	0.12	0.12
Sat Flow, veh/h	1634	4940	1450	1634	4940	1458	1587	1863	1394	3079	1863	2493
Grp Volume(v), veh/h	4	2291	68	132	1376	0	41	0	258	541	91	243
Grp Sat Flow(s),veh/h/ln	1634	1647	1450	1634	1647	1458	1587	1863	1394	1540	1863	1247
Q Serve(g_s), s	0.3	53.1	1.6	9.6	30.3	0.0	2.6	0.0	9.0	20.5	5.4	9.8
Cycle Q Clear(g_c), s	0.3	53.1	1.6	9.6	30.3	0.0	2.6	0.0	9.0	20.5	5.4	9.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	34	2185	641	183	2636	778	300	209	133	616	229	307
V/C Ratio(X)	0.12	1.05	0.11	0.72	0.52	0.00	0.14	0.00	1.94	0.88	0.40	0.79
Avail Cap(c_a), veh/h	95	2185	641	191	2636	778	300	287	192	616	373	499
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.67	0.67	0.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.7	33.5	4.5	55.9	35.5	0.0	40.5	0.0	33.3	46.6	48.5	38.0
Incr Delay (d2), s/veh	0.1	23.4	0.0	8.3	0.5	0.0	0.2	0.0	447.7	13.7	1.1	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	28.8	0.6	4.8	14.0	0.0	1.1	0.0	20.0	9.9	2.9	3.6
LnGrp Delay(d),s/veh	57.8	56.8	4.6	64.2	36.0	0.0	40.7	0.0	481.0	60.3	49.6	42.6
LnGrp LOS	E	F	A	E	D		D		F	E	D	D
Approach Vol, veh/h		2363			1508			299			875	
Approach Delay, s/veh		55.3			38.5			420.7			54.2	
Approach LOS		E			D			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.0	17.5	17.5	57.1	26.7	18.8	6.5	68.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	22.0	16.5	12.0	45.5	16.5	22.0	5.0	52.5
Max Q Clear Time (g_c+I1), s	22.5	11.0	11.6	55.1	4.6	11.8	2.3	32.3
Green Ext Time (p_c), s	0.0	0.5	0.0	0.0	2.0	1.0	0.0	17.5

Intersection Summary	
HCM 2010 Ctrl Delay	71.8
HCM 2010 LOS	E

Intersection 11
Quinn Rd/SR 99 NB Ramp & Merle Haggard Dr/7th Standard Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	117	851	208	0	790	30	392	56	74	120	0	231
Future Volume (veh/h)	117	851	208	0	790	30	392	56	74	120	0	231
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1471	0	1827	1716	1667	1597	1683	1683	0	1667
Adj Flow Rate, veh/h	127	925	226	0	859	33	426	61	80	130	0	251
Adj No. of Lanes	1	2	1	0	3	1	2	2	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	19	0	4	2	5	19	4	4	0	5
Cap, veh/h	656	2382	863	0	1239	362	645	316	147	230	0	0
Arrive On Green	0.40	0.69	0.69	0.00	0.50	0.50	0.21	0.10	0.10	0.07	0.00	0.01
Sat Flow, veh/h	1634	3438	1245	0	5152	1458	3079	3034	1410	3109	130	
Grp Volume(v), veh/h	127	925	226	0	859	33	426	61	80	130	44.0	
Grp Sat Flow(s),veh/h/ln	1634	1719	1245	0	1663	1458	1540	1517	1410	1554	D	
Q Serve(g_s), s	4.7	10.5	6.3	0.0	12.3	1.1	11.8	1.7	5.0	3.8		
Cycle Q Clear(g_c), s	4.7	10.5	6.3	0.0	12.3	1.1	11.8	1.7	5.0	3.8		
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	656	2382	863	0	1239	362	645	316	147	230		
V/C Ratio(X)	0.19	0.39	0.26	0.00	0.69	0.09	0.66	0.19	0.55	0.56		
Avail Cap(c_a), veh/h	656	2382	863	0	1239	362	645	1249	581	254		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.59	0.59	0.59	0.00	0.95	0.95	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	18.1	6.0	5.4	0.0	20.7	17.9	33.7	38.1	39.6	41.6		
Incr Delay (d2), s/veh	0.1	0.3	0.4	0.0	3.0	0.5	2.5	0.3	3.1	2.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.1	5.0	7.7	0.0	5.8	1.3	5.3	0.7	2.1	1.7		
LnGrp Delay(d),s/veh	18.1	6.3	5.8	0.0	23.7	18.3	36.2	38.4	42.7	44.0		
LnGrp LOS	B	A	A		C	B	D	D	D	D		
Approach Vol, veh/h		1278			892			567				
Approach Delay, s/veh		7.4			23.5			37.4				
Approach LOS		A			C			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5		7	8
Phs Duration (G+Y+Rc), s	10.9	13.7		68.4	24.6		41.3	27.1
Change Period (Y+Rc), s	* 5.3	4.2		6.0	5.3		6.0	6.0
Max Green Setting (Gmax), s	* 6.3	38.1		33.1	15.8		6.0	21.1
Max Q Clear Time (g_c+I1), s	5.8	7.0		12.5	13.8		6.7	14.3
Green Ext Time (p_c), s	0.0	0.5		5.7	0.5		0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	20.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	134	917	208	0	936	35	392	76	74	177	0	270
Future Volume (veh/h)	134	917	208	0	936	35	392	76	74	177	0	270
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1471	0	1827	1716	1667	1597	1683	1683	0	1667
Adj Flow Rate, veh/h	146	997	226	0	1017	38	426	83	80	192	0	293
Adj No. of Lanes	1	2	1	0	3	1	2	2	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	19	0	4	2	5	19	4	4	0	5
Cap, veh/h	577	2448	887	0	1622	474	651	296	137	278	0	0
Arrive On Green	0.71	1.00	1.00	0.00	0.65	0.65	0.21	0.10	0.10	0.09	0.00	0.01
Sat Flow, veh/h	1634	3438	1246	0	5152	1458	3079	3034	1408	3109	192	
Grp Volume(v), veh/h	146	997	226	0	1017	38	426	83	80	192	57.0	
Grp Sat Flow(s),veh/h/ln	1634	1719	1246	0	1663	1458	1540	1517	1408	1554	E	
Q Serve(g_s), s	3.8	0.0	0.0	0.0	14.3	1.1	15.1	3.0	6.5	7.1		
Cycle Q Clear(g_c), s	3.8	0.0	0.0	0.0	14.3	1.1	15.1	3.0	6.5	7.1		
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	577	2448	887	0	1622	474	651	296	137	278		
V/C Ratio(X)	0.25	0.41	0.25	0.00	0.63	0.08	0.65	0.28	0.58	0.69		
Avail Cap(c_a), veh/h	577	2448	887	0	1622	474	651	976	453	340		
HCM Platoon Ratio	2.00	2.00	2.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.55	0.55	0.55	0.00	0.95	0.95	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	11.8	0.0	0.0	0.0	16.5	14.2	42.9	49.8	51.4	52.6		
Incr Delay (d2), s/veh	0.1	0.3	0.4	0.0	1.7	0.3	2.4	0.5	3.9	4.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.7	0.1	7.6	0.0	6.6	1.7	6.6	1.3	2.7	3.2		
LnGrp Delay(d),s/veh	12.0	0.3	0.4	0.0	18.3	14.5	45.3	50.3	55.2	57.0		
LnGrp LOS	B	A	A		B	B	D	D	E	E		
Approach Vol, veh/h		1369			1055			589				
Approach Delay, s/veh		1.5			18.2			47.4				
Approach LOS		A			B			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5		7	8
Phs Duration (G+Y+Rc), s	14.6	15.6		88.7	30.3		46.0	42.7
Change Period (Y+Rc), s	* 5.3	4.2		6.0	5.3		6.0	6.0
Max Green Setting (Gmax), s	* 12	38.1		53.7	20.8		11.0	36.7
Max Q Clear Time (g_c+I1), s	9.1	8.5		2.0	17.1		5.8	16.3
Green Ext Time (p_c), s	0.2	0.6		7.2	1.0		2.8	4.7

Intersection Summary	
HCM 2010 Ctrl Delay	18.8
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	157	1604	280	0	1560	41	527	75	123	164	0	310
Future Volume (veh/h)	157	1604	280	0	1560	41	527	75	123	164	0	310
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1471	0	1827	1716	1667	1597	1683	1683	0	1667
Adj Flow Rate, veh/h	171	1743	304	0	1696	45	573	82	134	178	0	337
Adj No. of Lanes	1	2	1	0	3	1	2	2	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	19	0	4	2	5	19	4	4	0	5
Cap, veh/h	428	2410	873	0	2024	592	687	402	187	207	0	0
Arrive On Green	0.52	1.00	1.00	0.00	0.81	0.81	0.22	0.13	0.13	0.07	0.00	0.01
Sat Flow, veh/h	1634	3438	1246	0	5152	1458	3079	3034	1414	3109	178	
Grp Volume(v), veh/h	171	1743	304	0	1696	45	573	82	134	178	83.9	
Grp Sat Flow(s),veh/h/ln	1634	1719	1246	0	1663	1458	1540	1517	1414	1554	F	
Q Serve(g_s), s	7.6	0.0	0.0	0.0	24.0	0.7	21.3	2.9	10.9	6.8		
Cycle Q Clear(g_c), s	7.6	0.0	0.0	0.0	24.0	0.7	21.3	2.9	10.9	6.8		
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	428	2410	873	0	2024	592	687	402	187	207		
V/C Ratio(X)	0.40	0.72	0.35	0.00	0.84	0.08	0.83	0.20	0.72	0.86		
Avail Cap(c_a), veh/h	428	2410	873	0	2024	592	687	968	451	207		
HCM Platoon Ratio	2.00	2.00	2.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.09	0.09	0.09	0.00	0.79	0.79	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	22.9	0.0	0.0	0.0	9.0	6.8	44.5	46.4	49.9	55.4		
Incr Delay (d2), s/veh	0.1	0.2	0.1	0.0	3.5	0.2	8.7	0.2	5.0	28.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	3.3	0.1	10.2	0.0	11.0	1.8	9.9	1.2	4.5	3.7		
LnGrp Delay(d),s/veh	23.0	0.2	0.1	0.0	12.4	7.0	53.2	46.7	54.9	83.9		
LnGrp LOS	C	A	A		B	A	D	D	D	F		
Approach Vol, veh/h		2218			1741			789				
Approach Delay, s/veh		1.9			12.3			52.8				
Approach LOS		A			B			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5		7	8
Phs Duration (G+Y+Rc), s	12.0	19.9		88.1	31.9		35.4	52.7
Change Period (Y+Rc), s	* 5.3	4.2		6.0	5.3		6.0	6.0
Max Green Setting (Gmax), s	* 6.7	38.1		59.7	20.8		7.0	46.7
Max Q Clear Time (g_c+I1), s	8.8	12.9		2.0	23.3		9.6	26.0
Green Ext Time (p_c), s	0.0	0.8		17.6	0.0		0.0	8.9

Intersection Summary	
HCM 2010 Ctrl Delay	16.7
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	174	1670	280	0	1706	46	527	95	123	221	0	349
Future Volume (veh/h)	174	1670	280	0	1706	46	527	95	123	221	0	349
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1471	0	1827	1716	1667	1597	1683	1683	0	1667
Adj Flow Rate, veh/h	189	1815	304	0	1854	50	573	103	134	240	0	379
Adj No. of Lanes	1	2	1	0	3	1	2	2	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	19	0	4	2	5	19	4	4	0	5
Cap, veh/h	123	2379	862	0	2911	851	715	403	188	233	0	0
Arrive On Green	0.15	1.00	1.00	0.00	1.00	1.00	0.23	0.13	0.13	0.08	0.00	0.01
Sat Flow, veh/h	1634	3438	1245	0	5152	1458	3079	3034	1414	3109	240	
Grp Volume(v), veh/h	189	1815	304	0	1854	50	573	103	134	240	122.3	
Grp Sat Flow(s),veh/h/ln	1634	1719	1245	0	1663	1458	1540	1517	1414	1554	F	
Q Serve(g_s), s	9.0	0.0	0.0	0.0	0.0	0.0	21.1	3.7	10.9	9.0		
Cycle Q Clear(g_c), s	9.0	0.0	0.0	0.0	0.0	0.0	21.1	3.7	10.9	9.0		
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	123	2379	862	0	2911	851	715	403	188	233		
V/C Ratio(X)	1.54	0.76	0.35	0.00	0.64	0.06	0.80	0.26	0.71	1.03		
Avail Cap(c_a), veh/h	123	2379	862	0	2911	851	715	968	451	233		
HCM Platoon Ratio	2.00	2.00	2.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.09	0.09	0.09	0.00	0.68	0.68	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	51.0	0.0	0.0	0.0	0.0	0.0	43.5	46.7	49.8	55.5		
Incr Delay (d2), s/veh	247.7	0.2	0.1	0.0	0.7	0.1	6.5	0.3	4.9	66.7		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1		
%ile BackOfQ(50%),veh/ln	12.4	0.1	10.2	0.0	0.2	1.7	9.6	1.5	4.5	6.0		
LnGrp Delay(d),s/veh	298.7	0.2	0.1	0.0	0.7	0.1	50.0	47.0	54.8	122.3		
LnGrp LOS	F	A	A		A	A	D	D	D	F		
Approach Vol, veh/h		2308			1904			810				
Approach Delay, s/veh		24.6			0.7			50.4				
Approach LOS		C			A			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5		7	8
Phs Duration (G+Y+Rc), s	13.0	20.0		87.0	33.0		13.0	74.0
Change Period (Y+Rc), s	* 5.3	4.2		6.0	5.3		6.0	6.0
Max Green Setting (Gmax), s	* 7.7	38.1		58.7	18.8		7.0	45.7
Max Q Clear Time (g_c+I1), s	11.0	12.9		2.0	23.1		11.0	2.0
Green Ext Time (p_c), s	0.0	0.9		43.3	0.0		0.0	35.3

Intersection Summary	
HCM 2010 Ctrl Delay	24.4
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	174	1670	280	0	1706	46	527	95	123	221	0	349
Future Volume (veh/h)	174	1670	280	0	1706	46	527	95	123	221	0	349
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1471	0	1827	1716	1667	1597	1683	1683	0	1667
Adj Flow Rate, veh/h	189	1815	304	0	1854	50	573	103	134	240	0	379
Adj No. of Lanes	1	3	1	0	3	1	2	2	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	19	0	4	2	5	19	4	4	0	5
Cap, veh/h	123	3418	862	0	2911	851	715	403	188	233	0	0
Arrive On Green	0.05	0.46	0.46	0.00	1.00	1.00	0.23	0.13	0.13	0.08	0.00	0.01
Sat Flow, veh/h	1634	4940	1245	0	5152	1458	3079	3034	1414	3109	240	
Grp Volume(v), veh/h	189	1815	304	0	1854	50	573	103	134	240	122.3	
Grp Sat Flow(s),veh/h/ln	1634	1647	1245	0	1663	1458	1540	1517	1414	1554	F	
Q Serve(g_s), s	9.0	31.4	18.8	0.0	0.0	0.0	21.1	3.7	10.9	9.0		
Cycle Q Clear(g_c), s	9.0	31.4	18.8	0.0	0.0	0.0	21.1	3.7	10.9	9.0		
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	123	3418	862	0	2911	851	715	403	188	233		
V/C Ratio(X)	1.54	0.53	0.35	0.00	0.64	0.06	0.80	0.26	0.71	1.03		
Avail Cap(c_a), veh/h	123	3418	862	0	2911	851	715	968	451	233		
HCM Platoon Ratio	0.67	0.67	0.67	1.00	2.00	2.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.09	0.09	0.09	0.00	0.68	0.68	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	57.0	18.3	14.9	0.0	0.0	0.0	43.5	46.7	49.8	55.5		
Incr Delay (d2), s/veh	247.7	0.1	0.1	0.0	0.7	0.1	6.5	0.3	4.9	66.7		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1		
%ile BackOfQ(50%),veh/ln	12.5	14.3	15.4	0.0	0.2	1.7	9.6	1.5	4.5	6.0		
LnGrp Delay(d),s/veh	304.7	18.4	15.1	0.0	0.7	0.1	50.0	47.0	54.8	122.3		
LnGrp LOS	F	B	B		A	A	D	D	D	F		
Approach Vol, veh/h		2308			1904			810				
Approach Delay, s/veh		41.4			0.7			50.4				
Approach LOS		D			A			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5		7	8
Phs Duration (G+Y+Rc), s	13.0	20.0		87.0	33.0		13.0	74.0
Change Period (Y+Rc), s	* 5.3	4.2		6.0	5.3		6.0	6.0
Max Green Setting (Gmax), s	* 7.7	38.1		58.7	18.8		7.0	45.7
Max Q Clear Time (g_c+I1), s	11.0	12.9		33.4	23.1		11.0	2.0
Green Ext Time (p_c), s	0.0	0.9		22.0	0.0		0.0	34.8

Intersection Summary	
HCM 2010 Ctrl Delay	31.8
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	211	1997	376	0	1776	49	708	101	158	220	0	417
Future Volume (veh/h)	211	1997	376	0	1776	49	708	101	158	220	0	417
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1471	0	1827	1716	1667	1597	1683	1683	0	1667
Adj Flow Rate, veh/h	229	2171	409	0	1930	53	770	110	172	239	0	453
Adj No. of Lanes	1	2	1	0	3	1	2	2	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	19	0	4	2	5	19	4	4	0	5
Cap, veh/h	386	2323	841	0	2024	592	766	479	224	207	0	0
Arrive On Green	0.47	1.00	1.00	0.00	0.81	0.81	0.25	0.16	0.16	0.07	0.00	0.01
Sat Flow, veh/h	1634	3438	1245	0	5152	1458	3079	3034	1417	3109	239	
Grp Volume(v), veh/h	229	2171	409	0	1930	53	770	110	172	239	165.9	
Grp Sat Flow(s),veh/h/ln	1634	1719	1245	0	1663	1458	1540	1517	1417	1554	F	
Q Serve(g_s), s	12.3	0.0	0.0	0.0	38.7	0.9	29.8	3.8	14.0	8.0		
Cycle Q Clear(g_c), s	12.3	0.0	0.0	0.0	38.7	0.9	29.8	3.8	14.0	8.0		
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	386	2323	841	0	2024	592	766	479	224	207		
V/C Ratio(X)	0.59	0.93	0.49	0.00	0.95	0.09	1.01	0.23	0.77	1.15		
Avail Cap(c_a), veh/h	386	2323	841	0	2024	592	766	968	452	207		
HCM Platoon Ratio	2.00	2.00	2.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.09	0.09	0.09	0.00	0.66	0.66	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	27.4	0.0	0.0	0.0	10.4	6.8	45.1	44.2	48.4	56.0		
Incr Delay (d2), s/veh	0.2	1.0	0.2	0.0	8.5	0.2	34.0	0.2	5.5	109.9		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	5.5	0.3	13.7	0.0	18.0	2.1	16.3	1.6	5.8	6.6		
LnGrp Delay(d),s/veh	27.6	1.0	0.2	0.0	18.9	7.0	79.0	44.4	54.0	165.9		
LnGrp LOS	C	A	A		B	A	F	D	D	F		
Approach Vol, veh/h		2809			1983			1052				
Approach Delay, s/veh		3.0			18.6			71.3				
Approach LOS		A			B			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5		7	8
Phs Duration (G+Y+Rc), s	12.0	22.9		85.1	34.9		32.4	52.7
Change Period (Y+Rc), s	* 5.3	4.2		6.0	5.3		6.0	6.0
Max Green Setting (Gmax), s	* 6.7	38.1		59.7	20.8		7.0	46.7
Max Q Clear Time (g_c+I1), s	10.0	16.0		2.0	31.8		14.3	40.7
Green Ext Time (p_c), s	0.0	1.0		28.8	0.0		0.0	4.4

Intersection Summary	
HCM 2010 Ctrl Delay	26.3
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	232	2078	376	0	1956	55	708	127	158	290	0	464
Future Volume (veh/h)	232	2078	376	0	1956	55	708	127	158	290	0	464
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1471	0	1827	1716	1810	1597	1683	1827	0	1667
Adj Flow Rate, veh/h	252	2259	409	0	2126	60	770	138	172	315	0	504
Adj No. of Lanes	1	2	1	0	3	1	2	2	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	19	0	4	2	5	19	4	4	0	5
Cap, veh/h	385	2291	830	0	1983	580	862	481	225	253	0	0
Arrive On Green	0.47	1.00	1.00	0.00	0.80	0.80	0.26	0.16	0.16	0.07	0.00	0.01
Sat Flow, veh/h	1634	3438	1245	0	5152	1458	3343	3034	1417	3375	315	
Grp Volume(v), veh/h	252	2259	409	0	2126	60	770	138	172	315	194.1	
Grp Sat Flow(s),veh/h/ln	1634	1719	1245	0	1663	1458	1672	1517	1417	1688	F	
Q Serve(g_s), s	14.2	0.0	0.0	0.0	47.7	1.1	26.7	4.8	14.0	9.0		
Cycle Q Clear(g_c), s	14.2	0.0	0.0	0.0	47.7	1.1	26.7	4.8	14.0	9.0		
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	385	2291	830	0	1983	580	862	481	225	253		
V/C Ratio(X)	0.65	0.99	0.49	0.00	1.07	0.10	0.89	0.29	0.77	1.24		
Avail Cap(c_a), veh/h	385	2291	830	0	1983	580	862	968	452	253		
HCM Platoon Ratio	2.00	2.00	2.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.09	0.09	0.09	0.00	0.46	0.46	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	28.0	0.0	0.0	0.0	12.3	7.5	42.9	44.5	48.4	55.5		
Incr Delay (d2), s/veh	0.4	3.3	0.2	0.0	37.9	0.2	11.7	0.3	5.4	138.6		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	6.3	1.0	13.7	0.0	27.5	2.4	13.7	2.0	5.8	9.1		
LnGrp Delay(d),s/veh	28.4	3.3	0.2	0.0	50.2	7.7	54.7	44.8	53.7	194.1		
LnGrp LOS	C	A	A		F	A	D	D	D	F		
Approach Vol, veh/h		2920			2186			1080				
Approach Delay, s/veh		5.0			49.0			53.3				
Approach LOS		A			D			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5		7	8
Phs Duration (G+Y+Rc), s	13.0	23.0		84.0	36.0		32.3	51.7
Change Period (Y+Rc), s	* 5.3	4.2		6.0	5.3		6.0	6.0
Max Green Setting (Gmax), s	* 7.7	38.1		58.7	18.8		7.0	45.7
Max Q Clear Time (g_c+I1), s	11.0	16.0		2.0	28.7		16.2	49.7
Green Ext Time (p_c), s	0.0	1.2		30.8	0.0		0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	37.0
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	232	2078	376	0	1956	55	708	127	158	290	0	464
Future Volume (veh/h)	232	2078	376	0	1956	55	708	127	158	290	0	464
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1471	0	1827	1716	1667	1597	1683	1683	0	1667
Adj Flow Rate, veh/h	252	2259	409	0	2126	60	770	138	172	315	0	504
Adj No. of Lanes	1	3	1	0	3	1	2	2	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	19	0	4	2	5	19	4	4	0	5
Cap, veh/h	123	3292	830	0	2784	814	794	481	225	233	0	0
Arrive On Green	0.05	0.45	0.45	0.00	1.00	1.00	0.26	0.16	0.16	0.07	0.00	0.01
Sat Flow, veh/h	1634	4940	1245	0	5152	1458	3079	3034	1417	3109	315	
Grp Volume(v), veh/h	252	2259	409	0	2126	60	770	138	172	315	239.0	
Grp Sat Flow(s),veh/h/ln	1634	1647	1245	0	1663	1458	1540	1517	1417	1554	F	
Q Serve(g_s), s	9.0	43.8	28.0	0.0	0.0	0.0	29.7	4.8	14.0	9.0		
Cycle Q Clear(g_c), s	9.0	43.8	28.0	0.0	0.0	0.0	29.7	4.8	14.0	9.0		
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	123	3292	830	0	2784	814	794	481	225	233		
V/C Ratio(X)	2.06	0.69	0.49	0.00	0.76	0.07	0.97	0.29	0.77	1.35		
Avail Cap(c_a), veh/h	123	3292	830	0	2784	814	794	968	452	233		
HCM Platoon Ratio	0.67	0.67	0.67	1.00	2.00	2.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.09	0.09	0.09	0.00	0.46	0.46	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	57.0	23.2	18.8	0.0	0.0	0.0	44.1	44.5	48.4	55.5		
Incr Delay (d2), s/veh	477.9	0.1	0.2	0.0	0.9	0.1	24.7	0.3	5.4	183.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	20.3	20.0	21.0	0.0	0.2	2.0	15.3	2.0	5.8	9.8		
LnGrp Delay(d),s/veh	534.9	23.3	19.0	0.0	0.9	0.1	68.8	44.8	53.7	239.0		
LnGrp LOS	F	C	B		A	A	E	D	D	F		
Approach Vol, veh/h		2920			2186			1080				
Approach Delay, s/veh		66.9			0.9			63.4				
Approach LOS		E			A			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5		7	8
Phs Duration (G+Y+Rc), s	13.0	23.0		84.0	36.0		13.0	71.0
Change Period (Y+Rc), s	* 5.3	4.2		6.0	5.3		6.0	6.0
Max Green Setting (Gmax), s	* 7.7	38.1		58.7	18.8		7.0	45.7
Max Q Clear Time (g_c+I1), s	11.0	16.0		45.8	31.7		11.0	2.0
Green Ext Time (p_c), s	0.0	1.2		12.5	0.0		0.0	39.9

Intersection Summary	
HCM 2010 Ctrl Delay	52.4
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	177	723	353	0	574	44	401	106	70	53	0	81
Future Volume (veh/h)	177	723	353	0	574	44	401	106	70	53	0	81
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1471	0	1827	1716	1667	1597	1683	1683	0	1667
Adj Flow Rate, veh/h	192	786	384	0	624	48	436	115	76	58	0	88
Adj No. of Lanes	1	2	1	0	3	1	2	2	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	19	0	4	2	5	19	4	4	0	5
Cap, veh/h	771	2551	925	0	1165	341	570	324	150	131	0	0
Arrive On Green	0.94	1.00	1.00	0.00	0.08	0.08	0.19	0.11	0.11	0.04	0.00	0.01
Sat Flow, veh/h	1634	3438	1246	0	5152	1458	3079	3034	1410	3109	58	
Grp Volume(v), veh/h	192	786	384	0	624	48	436	115	76	58	53.8	
Grp Sat Flow(s),veh/h/ln	1634	1719	1246	0	1663	1458	1540	1517	1410	1554	D	
Q Serve(g_s), s	0.9	0.0	0.0	0.0	13.2	2.7	14.8	3.9	5.6	2.0		
Cycle Q Clear(g_c), s	0.9	0.0	0.0	0.0	13.2	2.7	14.8	3.9	5.6	2.0		
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	771	2551	925	0	1165	341	570	324	150	131		
V/C Ratio(X)	0.25	0.31	0.42	0.00	0.54	0.14	0.76	0.36	0.51	0.44		
Avail Cap(c_a), veh/h	771	2551	925	0	1165	341	570	1056	491	170		
HCM Platoon Ratio	2.00	2.00	2.00	1.00	0.33	0.33	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.91	0.91	0.91	0.00	0.98	0.98	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	1.6	0.0	0.0	0.0	45.0	26.1	42.5	45.6	46.4	51.4		
Incr Delay (d2), s/veh	0.2	0.3	1.3	0.0	1.7	0.8	6.1	0.7	2.6	2.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.4	0.1	12.1	0.0	6.3	2.6	6.8	1.7	2.3	0.9		
LnGrp Delay(d),s/veh	1.8	0.3	1.3	0.0	46.7	26.9	48.7	46.3	49.0	53.8		
LnGrp LOS	A	A	A		D	C	D	D	D	D		
Approach Vol, veh/h		1362			672			627				
Approach Delay, s/veh		0.8			45.3			48.3				
Approach LOS		A			D			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5		7	8
Phs Duration (G+Y+Rc), s	8.6	15.7		85.6	24.4		55.9	29.7
Change Period (Y+Rc), s	5.3	* 4.2		6.0	4.2		6.0	6.0
Max Green Setting (Gmax), s	4.7	* 38		51.7	19.8		22.0	23.7
Max Q Clear Time (g_c+I1), s	4.0	7.6		2.0	16.8		2.9	15.2
Green Ext Time (p_c), s	0.0	1.9		6.9	0.9		5.9	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	23.9
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	212	859	353	0	625	54	401	147	70	73	0	95
Future Volume (veh/h)	212	859	353	0	625	54	401	147	70	73	0	95
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1471	0	1827	1716	1667	1597	1683	1683	0	1667
Adj Flow Rate, veh/h	230	934	384	0	679	59	436	160	76	79	0	103
Adj No. of Lanes	1	2	1	0	3	1	2	2	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	19	0	4	2	5	19	4	4	0	5
Cap, veh/h	764	2537	919	0	1165	341	583	310	144	158	0	0
Arrive On Green	0.94	1.00	1.00	0.00	0.08	0.08	0.19	0.10	0.10	0.05	0.00	0.01
Sat Flow, veh/h	1634	3438	1246	0	5152	1458	3079	3034	1409	3109	79	
Grp Volume(v), veh/h	230	934	384	0	679	59	436	160	76	79	53.3	
Grp Sat Flow(s),veh/h/ln	1634	1719	1246	0	1663	1458	1540	1517	1409	1554	D	
Q Serve(g_s), s	1.4	0.0	0.0	0.0	14.5	3.3	14.7	5.5	5.6	2.7		
Cycle Q Clear(g_c), s	1.4	0.0	0.0	0.0	14.5	3.3	14.7	5.5	5.6	2.7		
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	764	2537	919	0	1165	341	583	310	144	158		
V/C Ratio(X)	0.30	0.37	0.42	0.00	0.58	0.17	0.75	0.52	0.53	0.50		
Avail Cap(c_a), veh/h	764	2537	919	0	1165	341	583	1056	491	170		
HCM Platoon Ratio	2.00	2.00	2.00	1.00	0.33	0.33	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.85	0.85	0.85	0.00	0.98	0.98	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	1.9	0.0	0.0	0.0	45.6	25.6	42.1	46.8	46.9	50.8		
Incr Delay (d2), s/veh	0.2	0.4	1.2	0.0	2.1	1.1	5.3	1.3	3.0	2.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.5	0.1	12.0	0.0	6.9	3.2	6.7	2.4	2.3	1.2		
LnGrp Delay(d),s/veh	2.1	0.4	1.2	0.0	47.7	26.6	47.4	48.1	49.8	53.3		
LnGrp LOS	A	A	A		D	C	D	D	D	D		
Approach Vol, veh/h		1548			738			672				
Approach Delay, s/veh		0.8			46.0			47.8				
Approach LOS		A			D			D				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5		7	8
Phs Duration (G+Y+Rc), s	9.6	15.2		85.2	24.8		55.5	29.7
Change Period (Y+Rc), s	5.3	* 4.2		6.0	4.2		6.0	6.0
Max Green Setting (Gmax), s	4.7	* 38		51.7	19.8		22.0	23.7
Max Q Clear Time (g_c+I1), s	4.7	7.6		2.0	16.7		3.4	16.5
Green Ext Time (p_c), s	0.0	1.3		8.4	0.9		6.8	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	23.6
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	238	1524	474	0	862	56	539	142	119	75	0	109
Future Volume (veh/h)	238	1524	474	0	862	56	539	142	119	75	0	109
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1471	0	1827	1716	1667	1597	1683	1683	0	1667
Adj Flow Rate, veh/h	259	1657	515	0	937	61	586	154	129	82	0	118
Adj No. of Lanes	1	2	1	0	3	1	2	2	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	19	0	4	2	5	19	4	4	0	5
Cap, veh/h	689	2481	899	0	1327	388	649	400	186	140	0	0
Arrive On Green	0.84	1.00	1.00	0.00	0.09	0.09	0.21	0.13	0.13	0.04	0.00	0.01
Sat Flow, veh/h	1634	3438	1246	0	5152	1458	3079	3034	1414	3109	82	
Grp Volume(v), veh/h	259	1657	515	0	937	61	586	154	129	82	61.5	
Grp Sat Flow(s),veh/h/ln	1634	1719	1246	0	1663	1458	1540	1517	1414	1554	E	
Q Serve(g_s), s	4.3	0.0	0.0	0.0	21.6	4.6	21.9	5.5	10.3	3.1		
Cycle Q Clear(g_c), s	4.3	0.0	0.0	0.0	21.6	4.6	21.9	5.5	10.3	3.1		
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	689	2481	899	0	1327	388	649	400	186	140		
V/C Ratio(X)	0.38	0.67	0.57	0.00	0.71	0.16	0.90	0.39	0.69	0.59		
Avail Cap(c_a), veh/h	689	2481	899	0	1327	388	658	985	459	140		
HCM Platoon Ratio	2.00	2.00	2.00	1.00	0.33	0.33	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.31	0.31	0.31	0.00	0.94	0.94	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	5.7	0.0	0.0	0.0	49.3	41.6	45.4	46.9	48.9	55.3		
Incr Delay (d2), s/veh	0.1	0.4	0.8	0.0	3.0	0.8	15.8	0.6	4.5	6.3		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	1.9	0.2	17.1	0.0	10.3	3.9	10.7	2.3	4.2	1.4		
LnGrp Delay(d),s/veh	5.8	0.4	0.8	0.0	52.3	42.4	61.2	47.5	53.5	61.5		
LnGrp LOS	A	A	A		D	D	E	D	D	E		
Approach Vol, veh/h		2431			998			869				
Approach Delay, s/veh		1.1			51.7			57.6				
Approach LOS		A			D			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5		7	8
Phs Duration (G+Y+Rc), s	9.3	19.6		89.1	28.9		53.7	35.4
Change Period (Y+Rc), s	* 5.3	4.2		6.0	* 4.2		6.0	6.0
Max Green Setting (Gmax), s	* 4	38.1		60.4	* 25		25.0	29.4
Max Q Clear Time (g_c+I1), s	5.1	12.3		2.0	23.9		6.3	23.6
Green Ext Time (p_c), s	0.0	1.1		20.2	0.3		11.9	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	25.0
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	273	1660	474	0	913	66	539	183	119	95	0	123
Future Volume (veh/h)	273	1660	474	0	913	66	539	183	119	95	0	123
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1471	0	1827	1716	1667	1597	1683	1683	0	1667
Adj Flow Rate, veh/h	297	1804	515	0	992	72	586	199	129	103	0	134
Adj No. of Lanes	1	2	1	0	3	1	2	2	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	19	0	4	2	5	19	4	4	0	5
Cap, veh/h	687	2476	897	0	1327	388	653	404	188	140	0	0
Arrive On Green	0.84	1.00	1.00	0.00	0.09	0.09	0.21	0.13	0.13	0.04	0.00	0.01
Sat Flow, veh/h	1634	3438	1246	0	5152	1458	3079	3034	1414	3109	103	
Grp Volume(v), veh/h	297	1804	515	0	992	72	586	199	129	103	74.1	
Grp Sat Flow(s),veh/h/ln	1634	1719	1246	0	1663	1458	1540	1517	1414	1554	E	
Q Serve(g_s), s	5.4	0.0	0.0	0.0	22.9	5.4	21.9	7.2	10.3	3.9		
Cycle Q Clear(g_c), s	5.4	0.0	0.0	0.0	22.9	5.4	21.9	7.2	10.3	3.9		
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	687	2476	897	0	1327	388	653	404	188	140		
V/C Ratio(X)	0.43	0.73	0.57	0.00	0.75	0.19	0.90	0.49	0.68	0.74		
Avail Cap(c_a), veh/h	687	2476	897	0	1327	388	658	985	459	140		
HCM Platoon Ratio	2.00	2.00	2.00	1.00	0.33	0.33	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.09	0.09	0.09	0.00	0.93	0.93	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	5.9	0.0	0.0	0.0	49.9	42.0	45.2	47.4	48.8	55.7		
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.0	3.6	1.0	15.1	0.9	4.4	18.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	2.3	0.1	16.9	0.0	11.0	4.6	10.6	3.1	4.2	2.0		
LnGrp Delay(d),s/veh	5.9	0.2	0.2	0.0	53.6	42.9	60.4	48.4	53.1	74.1		
LnGrp LOS	A	A	A		D	D	E	D	D	E		
Approach Vol, veh/h		2616			1064			914				
Approach Delay, s/veh		0.8			52.9			56.7				
Approach LOS		A			D			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5		7	8
Phs Duration (G+Y+Rc), s	9.3	19.7		89.0	29.0		53.6	35.4
Change Period (Y+Rc), s	* 5.3	4.2		6.0	* 4.2		6.0	6.0
Max Green Setting (Gmax), s	* 4	38.1		60.4	* 25		25.0	29.4
Max Q Clear Time (g_c+I1), s	5.9	12.3		2.0	23.9		7.4	24.9
Green Ext Time (p_c), s	0.0	1.3		23.6	0.3		12.3	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	25.1
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	273	1660	474	0	913	66	539	183	119	95	0	123
Future Volume (veh/h)	273	1660	474	0	913	66	539	183	119	95	0	123
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1471	0	1827	1716	1667	1597	1683	1683	0	1667
Adj Flow Rate, veh/h	297	1804	515	0	992	72	586	199	129	103	0	134
Adj No. of Lanes	1	3	1	0	3	1	2	2	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	19	0	4	2	5	19	4	4	0	5
Cap, veh/h	123	3501	883	0	2994	875	664	402	187	183	0	0
Arrive On Green	0.02	0.23	0.23	0.00	1.00	1.00	0.22	0.13	0.13	0.06	0.00	0.01
Sat Flow, veh/h	1634	4940	1246	0	5152	1458	3079	3034	1414	3109	103	
Grp Volume(v), veh/h	297	1804	515	0	992	72	586	199	129	103	57.7	
Grp Sat Flow(s),veh/h/ln	1634	1647	1246	0	1663	1458	1540	1517	1414	1554	E	
Q Serve(g_s), s	9.0	38.2	44.0	0.0	0.0	0.0	22.1	7.3	10.4	3.9		
Cycle Q Clear(g_c), s	9.0	38.2	44.0	0.0	0.0	0.0	22.1	7.3	10.4	3.9		
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	123	3501	883	0	2994	875	664	402	187	183		
V/C Ratio(X)	2.42	0.52	0.58	0.00	0.33	0.08	0.88	0.49	0.69	0.56		
Avail Cap(c_a), veh/h	123	3501	883	0	2994	875	664	968	451	233		
HCM Platoon Ratio	0.33	0.33	0.33	1.00	2.00	2.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.52	0.52	0.52	0.00	0.94	0.94	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	58.5	28.0	30.3	0.0	0.0	0.0	45.6	48.3	49.7	55.0		
Incr Delay (d2), s/veh	653.4	0.3	1.5	0.0	0.3	0.2	13.3	0.9	4.4	2.7		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	26.3	17.6	30.3	0.0	0.1	2.4	10.7	3.1	4.3	1.7		
LnGrp Delay(d),s/veh	711.9	28.3	31.7	0.0	0.3	0.2	58.9	49.3	54.1	57.7		
LnGrp LOS	F	C	C		A	A	E	D	D	E		
Approach Vol, veh/h		2616			1064			914				
Approach Delay, s/veh		106.6			0.3			56.1				
Approach LOS		F			A			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5		7	8
Phs Duration (G+Y+Rc), s	11.1	19.9		89.0	31.0		13.0	76.0
Change Period (Y+Rc), s	* 5.3	4.2		6.0	5.3		6.0	6.0
Max Green Setting (Gmax), s	* 7.7	38.1		58.7	18.8		7.0	45.7
Max Q Clear Time (g_c+I1), s	5.9	12.4		46.0	24.1		11.0	2.0
Green Ext Time (p_c), s	0.1	1.3		10.9	0.0		0.0	28.6

Intersection Summary	
HCM 2010 Ctrl Delay	71.6
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	320	1858	638	0	1020	68	724	191	151	100	0	146
Future Volume (veh/h)	320	1858	638	0	1020	68	724	191	151	100	0	146
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1471	0	1827	1716	1667	1597	1683	1683	0	1667
Adj Flow Rate, veh/h	348	2020	693	0	1109	74	787	208	164	109	0	159
Adj No. of Lanes	1	2	1	0	3	1	2	2	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	19	0	4	2	5	19	4	4	0	5
Cap, veh/h	649	2398	869	0	1327	388	723	473	221	140	0	0
Arrive On Green	0.79	1.00	1.00	0.00	0.09	0.09	0.23	0.16	0.16	0.04	0.00	0.01
Sat Flow, veh/h	1634	3438	1246	0	5152	1458	3079	3034	1417	3109	109	
Grp Volume(v), veh/h	348	2020	693	0	1109	74	787	208	164	109	79.9	
Grp Sat Flow(s),veh/h/ln	1634	1719	1246	0	1663	1458	1540	1517	1417	1554	E	
Q Serve(g_s), s	9.0	0.0	0.0	0.0	25.8	5.6	27.7	7.3	13.0	4.1		
Cycle Q Clear(g_c), s	9.0	0.0	0.0	0.0	25.8	5.6	27.7	7.3	13.0	4.1		
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	649	2398	869	0	1327	388	723	473	221	140		
V/C Ratio(X)	0.54	0.84	0.80	0.00	0.84	0.19	1.09	0.44	0.74	0.78		
Avail Cap(c_a), veh/h	649	2398	869	0	1327	388	723	985	460	140		
HCM Platoon Ratio	2.00	2.00	2.00	1.00	0.33	0.33	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.09	0.09	0.09	0.00	0.91	0.91	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	8.2	0.0	0.0	0.0	51.3	42.0	45.1	45.1	47.5	55.8		
Incr Delay (d2), s/veh	0.1	0.4	0.7	0.0	5.8	1.0	60.0	0.6	4.9	24.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	3.9	0.1	22.9	0.0	12.6	4.7	17.8	3.1	5.4	2.2		
LnGrp Delay(d),s/veh	8.3	0.4	0.7	0.0	57.1	43.0	105.2	45.8	52.4	79.9		
LnGrp LOS	A	A	A		E	D	F	D	D	E		
Approach Vol, veh/h		3061			1183			1159				
Approach Delay, s/veh		1.3			56.2			87.0				
Approach LOS		A			E			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5		7	8
Phs Duration (G+Y+Rc), s	9.3	22.4		86.3	31.7		50.9	35.4
Change Period (Y+Rc), s	* 5.3	4.2		6.0	* 4.2		6.0	6.0
Max Green Setting (Gmax), s	* 4	38.1		60.4	* 25		25.0	29.4
Max Q Clear Time (g_c+I1), s	6.1	15.0		2.0	29.7		11.0	27.8
Green Ext Time (p_c), s	0.0	1.4		32.2	0.0		11.7	0.9

Intersection Summary	
HCM 2010 Ctrl Delay	32.7
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	363	2023	638	0	1084	80	724	244	151	125	0	163
Future Volume (veh/h)	363	2023	638	0	1084	80	724	244	151	125	0	163
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1471	0	1827	1716	1667	1597	1683	1683	0	1667
Adj Flow Rate, veh/h	395	2199	693	0	1178	87	787	265	164	136	0	177
Adj No. of Lanes	1	2	1	0	3	1	2	2	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	19	0	4	2	5	19	4	4	0	5
Cap, veh/h	646	2392	866	0	1327	388	728	479	223	140	0	0
Arrive On Green	0.79	1.00	1.00	0.00	0.27	0.27	0.24	0.16	0.16	0.04	0.00	0.01
Sat Flow, veh/h	1634	3438	1246	0	5152	1458	3079	3034	1417	3109	136	
Grp Volume(v), veh/h	395	2199	693	0	1178	87	787	265	164	136	124.3	
Grp Sat Flow(s),veh/h/ln	1634	1719	1246	0	1663	1458	1540	1517	1417	1554	F	
Q Serve(g_s), s	11.5	0.0	0.0	0.0	26.8	5.5	27.9	9.5	13.0	5.2		
Cycle Q Clear(g_c), s	11.5	0.0	0.0	0.0	26.8	5.5	27.9	9.5	13.0	5.2		
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	646	2392	866	0	1327	388	728	479	223	140		
V/C Ratio(X)	0.61	0.92	0.80	0.00	0.89	0.22	1.08	0.55	0.73	0.97		
Avail Cap(c_a), veh/h	646	2392	866	0	1327	388	728	985	460	140		
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.09	0.09	0.09	0.00	0.91	0.91	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	8.6	0.0	0.0	0.0	41.6	33.8	45.0	45.9	47.3	56.3		
Incr Delay (d2), s/veh	0.2	0.8	0.7	0.0	8.3	1.2	57.2	1.0	4.6	68.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	5.1	0.3	22.9	0.0	13.4	5.1	17.6	4.0	5.4	3.5		
LnGrp Delay(d),s/veh	8.8	0.8	0.7	0.0	50.0	35.0	102.2	46.9	52.0	124.3		
LnGrp LOS	A	A	A		D	D	F	D	D	F		
Approach Vol, veh/h		3287			1265			1216				
Approach Delay, s/veh		1.7			48.9			83.4				
Approach LOS		A			D			F				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5		7	8
Phs Duration (G+Y+Rc), s	9.3	22.6		86.1	31.9		50.7	35.4
Change Period (Y+Rc), s	* 5.3	4.2		6.0	* 4.2		6.0	6.0
Max Green Setting (Gmax), s	* 4	38.1		60.4	* 25		25.0	29.4
Max Q Clear Time (g_c+I1), s	7.2	15.0		2.0	29.9		13.5	28.8
Green Ext Time (p_c), s	0.0	1.7		36.6	0.0		10.2	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	31.5
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	363	2023	638	0	1084	80	724	244	151	125	0	163
Future Volume (veh/h)	363	2023	638	0	1084	80	724	244	151	125	0	163
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1810	1471	0	1827	1716	1667	1597	1683	1683	0	1667
Adj Flow Rate, veh/h	395	2199	693	0	1178	87	787	265	164	136	0	177
Adj No. of Lanes	1	3	1	0	3	1	2	2	1	2	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	5	19	0	4	2	5	19	4	4	0	5
Cap, veh/h	123	3325	838	0	2817	824	773	477	223	217	0	0
Arrive On Green	0.05	0.45	0.45	0.00	1.00	1.00	0.25	0.16	0.16	0.07	0.00	0.01
Sat Flow, veh/h	1634	4940	1245	0	5152	1458	3079	3034	1417	3109	136	
Grp Volume(v), veh/h	395	2199	693	0	1178	87	787	265	164	136	59.0	
Grp Sat Flow(s),veh/h/ln	1634	1647	1245	0	1663	1458	1540	1517	1417	1554	E	
Q Serve(g_s), s	9.0	41.8	58.5	0.0	0.0	0.0	30.1	9.7	13.2	5.1		
Cycle Q Clear(g_c), s	9.0	41.8	58.5	0.0	0.0	0.0	30.1	9.7	13.2	5.1		
Prop In Lane	1.00		1.00	0.00		1.00	1.00		1.00	1.00		
Lane Grp Cap(c), veh/h	123	3325	838	0	2817	824	773	477	223	217		
V/C Ratio(X)	3.22	0.66	0.83	0.00	0.42	0.11	1.02	0.56	0.74	0.63		
Avail Cap(c_a), veh/h	123	3325	838	0	2817	824	773	968	452	233		
HCM Platoon Ratio	0.67	0.67	0.67	1.00	2.00	2.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	0.09	0.09	0.09	0.00	0.90	0.90	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	57.0	22.2	26.8	0.0	0.0	0.0	44.9	46.7	48.2	54.3		
Incr Delay (d2), s/veh	1002.4	0.1	0.9	0.0	0.4	0.2	37.0	1.0	4.7	4.7		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	38.2	19.0	35.7	0.0	0.1	3.0	16.7	4.1	5.5	2.3		
LnGrp Delay(d),s/veh	1059.3	22.3	27.7	0.0	0.4	0.2	82.0	47.7	52.9	59.0		
LnGrp LOS	F	C	C		A	A	F	D	D	E		
Approach Vol, veh/h		3287			1265			1216				
Approach Delay, s/veh		148.1			0.4			70.6				
Approach LOS		F			A			E				

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5		7	8
Phs Duration (G+Y+Rc), s	12.4	22.9		84.8	35.2		13.0	71.8
Change Period (Y+Rc), s	* 5.3	4.2		6.0	5.3		6.0	6.0
Max Green Setting (Gmax), s	* 7.7	38.1		58.7	18.8		7.0	45.7
Max Q Clear Time (g_c+I1), s	7.1	15.2		60.5	32.1		11.0	2.0
Green Ext Time (p_c), s	0.0	1.7		0.0	0.0		0.0	36.1

Intersection Summary	
HCM 2010 Ctrl Delay	98.4
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection 12
Industrial Pkwy Dr & Merle Haggard Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	960	36	62	711	14	87	4	28	40	2	20
Future Volume (veh/h)	57	960	36	62	711	14	87	4	28	40	2	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1828	1750	1716	1828	1750	1683	1831	1750	1683	1830	1750
Adj Flow Rate, veh/h	62	1043	39	67	773	15	95	4	30	43	2	22
Adj No. of Lanes	1	3	0	1	3	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	2
Cap, veh/h	105	2934	110	105	2994	58	112	19	141	107	13	141
Arrive On Green	0.13	1.00	1.00	0.06	0.59	0.59	0.07	0.10	0.09	0.07	0.10	0.09
Sat Flow, veh/h	1634	4938	184	1634	5038	98	1603	184	1377	1603	129	1420
Grp Volume(v), veh/h	62	703	379	67	510	278	95	0	34	43	0	24
Grp Sat Flow(s),veh/h/ln	1634	1664	1795	1634	1663	1810	1603	0	1560	1603	0	1549
Q Serve(g_s), s	3.3	0.0	0.0	3.7	6.8	6.8	5.5	0.0	1.9	2.4	0.0	1.3
Cycle Q Clear(g_c), s	3.3	0.0	0.0	3.7	6.8	6.8	5.5	0.0	1.9	2.4	0.0	1.3
Prop In Lane	1.00		0.10	1.00		0.05	1.00		0.88	1.00		0.92
Lane Grp Cap(c), veh/h	105	1977	1066	105	1976	1075	112	0	160	107	0	154
V/C Ratio(X)	0.59	0.36	0.36	0.64	0.26	0.26	0.85	0.00	0.21	0.40	0.00	0.16
Avail Cap(c_a), veh/h	105	1977	1066	105	1976	1075	112	0	661	107	0	636
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.90	0.82	0.82	0.82	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.3	0.0	0.0	42.4	9.0	9.0	42.8	0.0	38.8	41.6	0.0	38.9
Incr Delay (d2), s/veh	7.4	0.4	0.8	9.8	0.3	0.5	42.3	0.0	0.7	2.4	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.1	0.2	2.0	3.2	3.5	3.7	0.0	0.8	1.1	0.0	0.6
LnGrp Delay(d),s/veh	46.8	0.4	0.8	52.3	9.3	9.5	85.0	0.0	39.5	44.0	0.0	39.3
LnGrp LOS	D	A	A	D	A	A	F		D	D		D
Approach Vol, veh/h		1144			855			129			67	
Approach Delay, s/veh		3.1			12.7			73.0			42.3	
Approach LOS		A			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	13.5	10.0	59.3	10.5	13.2	10.0	59.3
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.0	38.1	4.0	24.3	5.2	36.9	4.0	24.3
Max Q Clear Time (g_c+I1), s	4.4	3.9	5.7	2.0	7.5	3.3	5.3	8.8
Green Ext Time (p_c), s	0.0	0.1	0.0	8.5	0.0	0.1	0.0	7.2

Intersection Summary	
HCM 2010 Ctrl Delay	12.2
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	57	1083	36	62	862	14	87	4	28	40	2	20
Future Volume (veh/h)	57	1083	36	62	862	14	87	4	28	40	2	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1828	1750	1716	1827	1750	1683	1831	1750	1683	1830	1750
Adj Flow Rate, veh/h	62	1177	39	67	937	15	95	4	30	43	2	22
Adj No. of Lanes	1	3	0	1	3	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	2
Cap, veh/h	103	3164	105	96	3206	51	133	17	127	122	11	122
Arrive On Green	0.13	1.00	1.00	0.06	0.63	0.63	0.08	0.09	0.08	0.08	0.09	0.08
Sat Flow, veh/h	1634	4961	164	1634	5058	81	1603	183	1375	1603	129	1417
Grp Volume(v), veh/h	62	789	427	67	616	336	95	0	34	43	0	24
Grp Sat Flow(s),veh/h/ln	1634	1664	1798	1634	1663	1813	1603	0	1558	1603	0	1546
Q Serve(g_s), s	4.3	0.0	0.0	4.8	9.9	9.9	6.9	0.0	2.4	3.0	0.0	1.7
Cycle Q Clear(g_c), s	4.3	0.0	0.0	4.8	9.9	9.9	6.9	0.0	2.4	3.0	0.0	1.7
Prop In Lane	1.00		0.09	1.00		0.04	1.00		0.88	1.00		0.92
Lane Grp Cap(c), veh/h	103	2122	1147	96	2108	1149	133	0	144	122	0	133
V/C Ratio(X)	0.60	0.37	0.37	0.70	0.29	0.29	0.72	0.00	0.24	0.35	0.00	0.18
Avail Cap(c_a), veh/h	110	2122	1147	96	2108	1149	175	0	555	122	0	483
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.89	0.72	0.72	0.72	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.6	0.0	0.0	55.0	9.8	9.8	53.2	0.0	50.6	52.2	0.0	51.0
Incr Delay (d2), s/veh	7.3	0.4	0.8	14.7	0.3	0.5	9.0	0.0	0.8	1.7	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.1	0.3	2.6	4.6	5.1	3.4	0.0	1.1	1.4	0.0	0.8
LnGrp Delay(d),s/veh	57.9	0.4	0.8	69.7	10.0	10.3	62.2	0.0	51.4	53.9	0.0	51.7
LnGrp LOS	E	A	A	E	B	B	E		D	D		D
Approach Vol, veh/h		1278			1019			129			67	
Approach Delay, s/veh		3.4			14.0			59.4			53.1	
Approach LOS		A			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	15.0	11.0	79.9	13.9	14.2	11.5	79.4
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	6.5	41.1	5.0	43.8	11.7	35.9	6.0	42.8
Max Q Clear Time (g_c+I1), s	5.0	4.4	6.8	2.0	8.9	3.7	6.3	11.9
Green Ext Time (p_c), s	0.1	0.1	0.0	12.6	0.1	0.1	0.0	11.6

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	1662	44	75	1462	17	98	5	32	43	2	22
Future Volume (veh/h)	70	1662	44	75	1462	17	98	5	32	43	2	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1828	1750	1716	1827	1750	1683	1831	1750	1683	1830	1750
Adj Flow Rate, veh/h	76	1807	48	82	1589	18	107	5	35	47	2	24
Adj No. of Lanes	1	3	0	1	3	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	2
Cap, veh/h	82	3316	88	82	3374	38	107	21	149	71	10	123
Arrive On Green	0.10	1.00	1.00	0.05	0.66	0.66	0.07	0.11	0.10	0.04	0.09	0.08
Sat Flow, veh/h	1634	4998	133	1634	5085	58	1603	196	1369	1603	119	1425
Grp Volume(v), veh/h	76	1202	653	82	1039	568	107	0	40	47	0	26
Grp Sat Flow(s),veh/h/ln	1634	1663	1804	1634	1663	1817	1603	0	1565	1603	0	1544
Q Serve(g_s), s	5.5	0.0	0.0	6.0	18.3	18.4	8.0	0.0	2.8	3.5	0.0	1.9
Cycle Q Clear(g_c), s	5.5	0.0	0.0	6.0	18.3	18.4	8.0	0.0	2.8	3.5	0.0	1.9
Prop In Lane	1.00		0.07	1.00		0.03	1.00		0.88	1.00		0.92
Lane Grp Cap(c), veh/h	82	2207	1197	82	2207	1206	107	0	170	71	0	133
V/C Ratio(X)	0.93	0.54	0.55	1.00	0.47	0.47	1.00	0.00	0.23	0.66	0.00	0.19
Avail Cap(c_a), veh/h	82	2207	1197	82	2207	1206	107	0	520	71	0	479
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.35	0.35	0.35	0.09	0.09	0.09	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.8	0.0	0.0	57.0	9.9	9.9	56.0	0.0	49.4	56.5	0.0	51.5
Incr Delay (d2), s/veh	40.3	0.3	0.6	30.8	0.1	0.1	87.5	0.0	0.7	20.9	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.1	0.2	3.4	8.4	9.2	6.1	0.0	1.3	2.0	0.0	0.8
LnGrp Delay(d),s/veh	94.1	0.3	0.6	87.8	9.9	10.0	143.5	0.0	50.1	77.4	0.0	52.2
LnGrp LOS	F	A	A	F	A	A	F		D	E		D
Approach Vol, veh/h		1931			1689			147			73	
Approach Delay, s/veh		4.1			13.7			118.1			68.4	
Approach LOS		A			B			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.3	17.1	10.0	83.6	12.0	14.4	10.0	83.6
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.0	38.6	4.0	50.8	6.7	35.9	4.0	50.8
Max Q Clear Time (g_c+I1), s	5.5	4.8	8.0	2.0	10.0	3.9	7.5	20.4
Green Ext Time (p_c), s	0.0	0.2	0.0	29.5	0.0	0.2	0.0	21.8

Intersection Summary	
HCM 2010 Ctrl Delay	13.9
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	1785	44	75	1613	17	98	5	32	43	2	22
Future Volume (veh/h)	70	1785	44	75	1613	17	98	5	32	43	2	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1828	1750	1716	1827	1750	1683	1831	1750	1683	1830	1750
Adj Flow Rate, veh/h	76	1940	48	82	1753	18	107	5	35	47	2	24
Adj No. of Lanes	1	3	0	1	3	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	2
Cap, veh/h	82	3369	83	82	3424	35	93	19	130	78	10	122
Arrive On Green	0.10	1.00	1.00	0.05	0.67	0.67	0.06	0.10	0.08	0.05	0.09	0.07
Sat Flow, veh/h	1634	5008	124	1634	5091	52	1603	195	1366	1603	119	1425
Grp Volume(v), veh/h	76	1288	700	82	1145	626	107	0	40	47	0	26
Grp Sat Flow(s),veh/h/ln	1634	1663	1805	1634	1663	1818	1603	0	1561	1603	0	1544
Q Serve(g_s), s	5.5	0.0	0.0	6.0	20.6	20.6	7.0	0.0	2.9	3.4	0.0	1.9
Cycle Q Clear(g_c), s	5.5	0.0	0.0	6.0	20.6	20.6	7.0	0.0	2.9	3.4	0.0	1.9
Prop In Lane	1.00		0.07	1.00		0.03	1.00		0.88	1.00		0.92
Lane Grp Cap(c), veh/h	82	2237	1214	82	2237	1223	93	0	149	78	0	132
V/C Ratio(X)	0.93	0.58	0.58	1.00	0.51	0.51	1.14	0.00	0.27	0.60	0.00	0.20
Avail Cap(c_a), veh/h	82	2237	1214	82	2237	1223	93	0	513	78	0	485
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.26	0.26	0.26	0.09	0.09	0.09	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.8	0.0	0.0	57.0	9.8	9.8	56.5	0.0	50.9	56.0	0.0	51.6
Incr Delay (d2), s/veh	33.2	0.3	0.5	30.8	0.1	0.1	137.3	0.0	1.0	12.5	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.1	0.2	3.4	9.4	10.3	6.7	0.0	1.3	1.8	0.0	0.8
LnGrp Delay(d),s/veh	87.0	0.3	0.5	87.8	9.9	9.9	193.8	0.0	51.9	68.5	0.0	52.3
LnGrp LOS	F	A	A	F	A	A	F		D	E		D
Approach Vol, veh/h		2064			1853			147			73	
Approach Delay, s/veh		3.6			13.4			155.2			62.7	
Approach LOS		A			B			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.8	15.5	10.0	84.7	11.0	14.3	10.0	84.7
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.0	38.1	4.0	51.3	5.7	36.4	4.0	51.3
Max Q Clear Time (g_c+I1), s	5.4	4.9	8.0	2.0	9.0	3.9	7.5	22.6
Green Ext Time (p_c), s	0.0	0.1	0.0	33.5	0.0	0.1	0.0	22.6

Intersection Summary	
HCM 2010 Ctrl Delay	14.4
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	1785	44	75	1613	17	98	5	32	43	2	22
Future Volume (veh/h)	70	1785	44	75	1613	17	98	5	32	43	2	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1750	1683	1831	1750	1683	1830	1750
Adj Flow Rate, veh/h	76	1940	48	82	1753	18	107	5	35	47	2	24
Adj No. of Lanes	1	3	1	1	3	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	2	4	2	2
Cap, veh/h	82	3355	977	82	3424	35	93	19	130	78	10	122
Arrive On Green	0.10	1.00	1.00	0.05	0.67	0.67	0.06	0.10	0.08	0.05	0.09	0.07
Sat Flow, veh/h	1634	4988	1453	1634	5091	52	1603	195	1366	1603	119	1425
Grp Volume(v), veh/h	76	1940	48	82	1145	626	107	0	40	47	0	26
Grp Sat Flow(s),veh/h/ln	1634	1663	1453	1634	1663	1818	1603	0	1561	1603	0	1544
Q Serve(g_s), s	5.5	0.0	0.0	6.0	20.6	20.6	7.0	0.0	2.9	3.4	0.0	1.9
Cycle Q Clear(g_c), s	5.5	0.0	0.0	6.0	20.6	20.6	7.0	0.0	2.9	3.4	0.0	1.9
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.88	1.00		0.92
Lane Grp Cap(c), veh/h	82	3355	977	82	2237	1223	93	0	149	78	0	132
V/C Ratio(X)	0.93	0.58	0.05	1.00	0.51	0.51	1.14	0.00	0.27	0.60	0.00	0.20
Avail Cap(c_a), veh/h	82	3355	977	82	2237	1223	93	0	513	78	0	485
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.70	0.70	0.70	0.50	0.50	0.50	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.8	0.0	0.0	57.0	9.8	9.8	56.5	0.0	50.9	56.0	0.0	51.6
Incr Delay (d2), s/veh	61.6	0.5	0.1	71.4	0.4	0.8	137.3	0.0	1.0	12.5	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	0.2	0.0	4.3	9.5	10.5	6.7	0.0	1.3	1.8	0.0	0.8
LnGrp Delay(d),s/veh	115.4	0.5	0.1	128.4	10.2	10.6	193.8	0.0	51.9	68.5	0.0	52.3
LnGrp LOS	F	A	A	F	B	B	F		D	E		D
Approach Vol, veh/h		2064			1853			147			73	
Approach Delay, s/veh		4.7			15.6			155.2			62.7	
Approach LOS		A			B			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.8	15.5	10.0	84.7	11.0	14.3	10.0	84.7
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.0	38.1	4.0	51.3	5.7	36.4	4.0	51.3
Max Q Clear Time (g_c+I1), s	5.4	4.9	8.0	2.0	9.0	3.9	7.5	22.6
Green Ext Time (p_c), s	0.0	0.1	0.0	34.8	0.0	0.1	0.0	23.1

Intersection Summary	
HCM 2010 Ctrl Delay	16.0
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	1925	54	92	1649	21	111	5	36	47	2	23
Future Volume (veh/h)	85	1925	54	92	1649	21	111	5	36	47	2	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1828	1750	1716	1827	1750	1683	1831	1750	1683	1830	1750
Adj Flow Rate, veh/h	92	2092	59	100	1792	23	121	5	39	51	2	25
Adj No. of Lanes	1	3	0	1	3	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	2
Cap, veh/h	82	3313	93	82	3371	43	107	17	135	88	10	123
Arrive On Green	0.10	1.00	1.00	0.03	0.44	0.44	0.07	0.10	0.09	0.05	0.09	0.08
Sat Flow, veh/h	1634	4989	140	1634	5076	65	1603	177	1381	1603	114	1429
Grp Volume(v), veh/h	92	1394	757	100	1174	641	121	0	44	51	0	27
Grp Sat Flow(s),veh/h/ln	1634	1663	1802	1634	1663	1816	1603	0	1559	1603	0	1543
Q Serve(g_s), s	6.0	0.0	0.0	6.0	30.8	30.8	8.0	0.0	3.2	3.7	0.0	2.0
Cycle Q Clear(g_c), s	6.0	0.0	0.0	6.0	30.8	30.8	8.0	0.0	3.2	3.7	0.0	2.0
Prop In Lane	1.00		0.08	1.00		0.04	1.00		0.89	1.00		0.93
Lane Grp Cap(c), veh/h	82	2209	1197	82	2209	1206	107	0	152	88	0	133
V/C Ratio(X)	1.13	0.63	0.63	1.22	0.53	0.53	1.13	0.00	0.29	0.58	0.00	0.20
Avail Cap(c_a), veh/h	82	2209	1197	82	2209	1206	107	0	518	88	0	478
HCM Platoon Ratio	2.00	2.00	2.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.09	0.09	0.09	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	54.0	0.0	0.0	58.0	19.7	19.7	56.0	0.0	50.8	55.4	0.0	51.6
Incr Delay (d2), s/veh	70.9	0.1	0.2	110.7	0.1	0.2	127.2	0.0	1.0	9.2	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	0.0	0.1	5.2	14.1	15.5	7.3	0.0	1.4	1.9	0.0	0.9
LnGrp Delay(d),s/veh	124.9	0.1	0.2	168.7	19.8	19.9	183.2	0.0	51.9	64.6	0.0	52.3
LnGrp LOS	F	A	A	F	B	B	F		D	E		D
Approach Vol, veh/h		2243			1915			165			78	
Approach Delay, s/veh		5.3			27.6			148.2			60.3	
Approach LOS		A			C			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	15.7	10.0	83.7	12.0	14.3	10.0	83.7
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.0	38.6	4.0	50.8	6.7	35.9	4.0	50.8
Max Q Clear Time (g_c+I1), s	5.7	5.2	8.0	2.0	10.0	4.0	8.0	32.8
Green Ext Time (p_c), s	0.0	0.1	0.0	35.8	0.0	0.1	0.0	15.8

Intersection Summary	
HCM 2010 Ctrl Delay	21.3
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	2076	54	92	1835	21	111	5	36	47	2	23
Future Volume (veh/h)	85	2076	54	92	1835	21	111	5	36	47	2	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1828	1750	1716	1827	1750	1683	1831	1750	1683	1830	1750
Adj Flow Rate, veh/h	92	2257	59	100	1995	23	121	5	39	51	2	25
Adj No. of Lanes	1	3	0	1	3	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	2
Cap, veh/h	82	2221	58	455	3418	39	93	17	135	75	10	123
Arrive On Green	0.10	0.89	0.89	0.28	0.67	0.67	0.06	0.10	0.09	0.05	0.09	0.08
Sat Flow, veh/h	1634	5000	130	1634	5084	59	1603	177	1381	1603	114	1429
Grp Volume(v), veh/h	92	1499	817	100	1305	713	121	0	44	51	0	27
Grp Sat Flow(s),veh/h/ln	1634	1663	1804	1634	1663	1817	1603	0	1559	1603	0	1543
Q Serve(g_s), s	6.0	53.3	53.3	5.6	25.4	25.4	7.0	0.0	3.2	3.8	0.0	2.0
Cycle Q Clear(g_c), s	6.0	53.3	53.3	5.6	25.4	25.4	7.0	0.0	3.2	3.8	0.0	2.0
Prop In Lane	1.00		0.07	1.00		0.03	1.00		0.89	1.00		0.93
Lane Grp Cap(c), veh/h	82	1478	801	455	2236	1222	93	0	152	75	0	133
V/C Ratio(X)	1.13	1.01	1.02	0.22	0.58	0.58	1.29	0.00	0.29	0.68	0.00	0.20
Avail Cap(c_a), veh/h	82	1478	801	455	2236	1222	93	0	512	75	0	485
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.36	0.36	0.36	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	54.0	6.7	6.7	33.3	10.6	10.6	56.5	0.0	50.8	56.3	0.0	51.6
Incr Delay (d2), s/veh	70.9	11.1	14.9	0.1	0.4	0.7	191.1	0.0	1.0	22.5	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	23.6	26.5	2.6	11.7	12.9	8.1	0.0	1.4	2.1	0.0	0.9
LnGrp Delay(d),s/veh	124.9	17.8	21.6	33.4	11.0	11.4	247.6	0.0	51.9	78.9	0.0	52.3
LnGrp LOS	F	F	F	C	B	B	F		D	E		D
Approach Vol, veh/h		2408			2118			165			78	
Approach Delay, s/veh		23.2			12.2			195.4			69.7	
Approach LOS		C			B			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	15.7	37.4	57.3	11.0	14.3	10.0	84.7
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.0	38.1	4.0	51.3	5.7	36.4	4.0	51.3
Max Q Clear Time (g_c+I1), s	5.8	5.2	7.6	55.3	9.0	4.0	8.0	27.4
Green Ext Time (p_c), s	0.0	0.1	0.0	0.0	0.0	0.1	0.0	11.2

Intersection Summary	
HCM 2010 Ctrl Delay	25.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	85	2076	54	92	1835	21	111	5	36	47	2	23
Future Volume (veh/h)	85	2076	54	92	1835	21	111	5	36	47	2	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1750	1683	1831	1750	1683	1830	1750
Adj Flow Rate, veh/h	92	2257	59	100	1995	23	121	5	39	51	2	25
Adj No. of Lanes	1	3	1	1	3	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	2	4	2	2
Cap, veh/h	82	3353	977	82	3418	39	93	17	135	75	10	123
Arrive On Green	0.10	1.00	1.00	0.05	0.67	0.67	0.06	0.10	0.09	0.05	0.09	0.08
Sat Flow, veh/h	1634	4988	1453	1634	5084	59	1603	177	1381	1603	114	1429
Grp Volume(v), veh/h	92	2257	59	100	1305	713	121	0	44	51	0	27
Grp Sat Flow(s),veh/h/ln	1634	1663	1453	1634	1663	1817	1603	0	1559	1603	0	1543
Q Serve(g_s), s	6.0	0.0	0.0	6.0	25.4	25.4	7.0	0.0	3.2	3.8	0.0	2.0
Cycle Q Clear(g_c), s	6.0	0.0	0.0	6.0	25.4	25.4	7.0	0.0	3.2	3.8	0.0	2.0
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.89	1.00		0.93
Lane Grp Cap(c), veh/h	82	3353	977	82	2236	1222	93	0	152	75	0	133
V/C Ratio(X)	1.13	0.67	0.06	1.22	0.58	0.58	1.29	0.00	0.29	0.68	0.00	0.20
Avail Cap(c_a), veh/h	82	3353	977	82	2236	1222	93	0	512	75	0	485
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.46	0.46	0.46	0.28	0.28	0.28	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	54.0	0.0	0.0	57.0	10.6	10.6	56.5	0.0	50.8	56.3	0.0	51.6
Incr Delay (d2), s/veh	105.3	0.5	0.1	127.7	0.3	0.6	191.1	0.0	1.0	22.5	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	0.2	0.0	5.6	11.7	12.9	8.1	0.0	1.4	2.1	0.0	0.9
LnGrp Delay(d),s/veh	159.3	0.5	0.1	184.7	10.9	11.2	247.6	0.0	51.9	78.9	0.0	52.3
LnGrp LOS	F	A	A	F	B	B	F		D	E		D
Approach Vol, veh/h		2408			2118			165			78	
Approach Delay, s/veh		6.6			19.2			195.4			69.7	
Approach LOS		A			B			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	15.7	10.0	84.7	11.0	14.3	10.0	84.7
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.0	38.1	4.0	51.3	5.7	36.4	4.0	51.3
Max Q Clear Time (g_c+I1), s	5.8	5.2	8.0	2.0	9.0	4.0	8.0	27.4
Green Ext Time (p_c), s	0.0	0.1	0.0	40.8	0.0	0.1	0.0	21.6

Intersection Summary	
HCM 2010 Ctrl Delay	19.7
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	788	66	50	532	21	75	6	13	23	2	12
Future Volume (veh/h)	42	788	66	50	532	21	75	6	13	23	2	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1830	1750	1716	1828	1750	1683	1839	1750	1683	1832	1750
Adj Flow Rate, veh/h	46	857	72	54	578	23	82	7	14	25	2	13
Adj No. of Lanes	1	3	0	1	3	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	2
Cap, veh/h	85	2968	248	95	3143	125	120	50	101	114	19	121
Arrive On Green	0.10	1.00	1.00	0.12	1.00	1.00	0.07	0.09	0.08	0.07	0.09	0.08
Sat Flow, veh/h	1634	4695	393	1634	4925	195	1603	541	1082	1603	208	1353
Grp Volume(v), veh/h	46	607	322	54	390	211	82	0	21	25	0	15
Grp Sat Flow(s),veh/h/ln	1634	1665	1758	1634	1664	1793	1603	0	1624	1603	0	1561
Q Serve(g_s), s	2.9	0.0	0.0	3.4	0.0	0.0	5.5	0.0	1.3	1.6	0.0	1.0
Cycle Q Clear(g_c), s	2.9	0.0	0.0	3.4	0.0	0.0	5.5	0.0	1.3	1.6	0.0	1.0
Prop In Lane	1.00		0.22	1.00		0.11	1.00		0.67	1.00		0.87
Lane Grp Cap(c), veh/h	85	2105	1112	95	2123	1144	120	0	151	114	0	140
V/C Ratio(X)	0.54	0.29	0.29	0.57	0.18	0.18	0.68	0.00	0.14	0.22	0.00	0.11
Avail Cap(c_a), veh/h	89	2105	1112	104	2123	1144	186	0	660	114	0	528
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.95	0.82	0.82	0.82	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.0	0.0	0.0	47.3	0.0	0.0	49.6	0.0	46.3	48.2	0.0	46.6
Incr Delay (d2), s/veh	5.5	0.3	0.6	4.9	0.2	0.3	6.7	0.0	0.4	0.9	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.1	0.2	1.7	0.0	0.1	2.7	0.0	0.6	0.7	0.0	0.4
LnGrp Delay(d),s/veh	53.6	0.3	0.6	52.2	0.2	0.3	56.3	0.0	46.7	49.1	0.0	46.9
LnGrp LOS	D	A	A	D	A	A	E		D	D		D
Approach Vol, veh/h		975			655			103			40	
Approach Delay, s/veh		2.9			4.5			54.3			48.3	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.9	14.2	10.4	73.5	12.2	13.8	9.7	74.2
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.0	43.4	5.0	35.0	11.5	35.9	4.0	36.0
Max Q Clear Time (g_c+I1), s	3.6	3.3	5.4	2.0	7.5	3.0	4.9	2.0
Green Ext Time (p_c), s	0.0	0.0	0.0	7.2	0.1	0.0	0.0	7.2

Intersection Summary	
HCM 2010 Ctrl Delay	7.5
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	42	944	66	50	593	21	75	6	13	23	2	12
Future Volume (veh/h)	42	944	66	50	593	21	75	6	13	23	2	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1829	1750	1716	1828	1750	1683	1839	1750	1683	1832	1750
Adj Flow Rate, veh/h	46	1026	72	54	645	23	82	7	14	25	2	13
Adj No. of Lanes	1	3	0	1	3	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	2
Cap, veh/h	85	3011	211	95	3157	112	120	50	101	114	19	121
Arrive On Green	0.10	1.00	1.00	0.12	1.00	1.00	0.07	0.09	0.08	0.07	0.09	0.08
Sat Flow, veh/h	1634	4764	334	1634	4948	176	1603	541	1082	1603	208	1353
Grp Volume(v), veh/h	46	717	381	54	433	235	82	0	21	25	0	15
Grp Sat Flow(s),veh/h/ln	1634	1665	1769	1634	1664	1796	1603	0	1624	1603	0	1561
Q Serve(g_s), s	2.9	0.0	0.0	3.4	0.0	0.0	5.5	0.0	1.3	1.6	0.0	1.0
Cycle Q Clear(g_c), s	2.9	0.0	0.0	3.4	0.0	0.0	5.5	0.0	1.3	1.6	0.0	1.0
Prop In Lane	1.00		0.19	1.00		0.10	1.00		0.67	1.00		0.87
Lane Grp Cap(c), veh/h	85	2104	1118	95	2123	1146	120	0	151	114	0	140
V/C Ratio(X)	0.54	0.34	0.34	0.57	0.20	0.20	0.68	0.00	0.14	0.22	0.00	0.11
Avail Cap(c_a), veh/h	89	2104	1118	104	2123	1146	186	0	660	114	0	528
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	0.83	0.83	0.83	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.0	0.0	0.0	47.3	0.0	0.0	49.6	0.0	46.3	48.2	0.0	46.6
Incr Delay (d2), s/veh	5.3	0.4	0.8	5.0	0.2	0.3	6.7	0.0	0.4	0.9	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.1	0.2	1.7	0.1	0.1	2.7	0.0	0.6	0.7	0.0	0.4
LnGrp Delay(d),s/veh	53.3	0.4	0.8	52.3	0.2	0.3	56.3	0.0	46.7	49.1	0.0	46.9
LnGrp LOS	D	A	A	D	A	A	E		D	D		D
Approach Vol, veh/h		1144			722			103			40	
Approach Delay, s/veh		2.6			4.1			54.3			48.3	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.9	14.2	10.4	73.5	12.2	13.8	9.7	74.2
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.0	43.4	5.0	35.0	11.5	35.9	4.0	36.0
Max Q Clear Time (g_c+I1), s	3.6	3.3	5.4	2.0	7.5	3.0	4.9	2.0
Green Ext Time (p_c), s	0.0	0.0	0.0	8.8	0.1	0.0	0.0	8.9

Intersection Summary	
HCM 2010 Ctrl Delay	6.7
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	1546	81	61	810	26	85	7	15	25	2	13
Future Volume (veh/h)	51	1546	81	61	810	26	85	7	15	25	2	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1829	1750	1716	1828	1750	1683	1839	1750	1683	1831	1750
Adj Flow Rate, veh/h	55	1680	88	66	880	28	92	8	16	27	2	14
Adj No. of Lanes	1	3	0	1	3	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	2
Cap, veh/h	96	3246	170	83	3281	104	95	48	97	90	17	117
Arrive On Green	0.04	0.45	0.45	0.10	1.00	1.00	0.06	0.09	0.08	0.06	0.09	0.07
Sat Flow, veh/h	1634	4857	254	1634	4969	158	1603	541	1082	1603	195	1363
Grp Volume(v), veh/h	55	1151	617	66	589	319	92	0	24	27	0	16
Grp Sat Flow(s),veh/h/ln	1634	1664	1783	1634	1663	1799	1603	0	1623	1603	0	1558
Q Serve(g_s), s	3.9	29.3	29.4	4.7	0.0	0.0	6.8	0.0	1.6	1.9	0.0	1.1
Cycle Q Clear(g_c), s	3.9	29.3	29.4	4.7	0.0	0.0	6.8	0.0	1.6	1.9	0.0	1.1
Prop In Lane	1.00		0.14	1.00		0.09	1.00		0.67	1.00		0.88
Lane Grp Cap(c), veh/h	96	2224	1191	83	2197	1188	95	0	145	90	0	134
V/C Ratio(X)	0.57	0.52	0.52	0.79	0.27	0.27	0.97	0.00	0.17	0.30	0.00	0.12
Avail Cap(c_a), veh/h	111	2224	1191	83	2197	1188	95	0	542	90	0	498
HCM Platoon Ratio	0.67	0.67	0.67	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.60	0.60	0.60	0.68	0.68	0.68	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	55.2	18.9	18.9	52.4	0.0	0.0	55.4	0.0	50.1	53.5	0.0	50.3
Incr Delay (d2), s/veh	3.2	0.5	1.0	29.4	0.2	0.4	81.5	0.0	0.5	1.9	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	13.7	14.8	2.8	0.1	0.1	5.1	0.0	0.8	0.9	0.0	0.5
LnGrp Delay(d),s/veh	58.4	19.4	19.9	81.8	0.2	0.4	136.9	0.0	50.6	55.4	0.0	50.7
LnGrp LOS	E	B	B	F	A	A	F		D	E		D
Approach Vol, veh/h		1823			974			116			43	
Approach Delay, s/veh		20.8			5.8			119.0			53.6	
Approach LOS		C			A			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	14.5	10.0	82.9	11.0	14.1	10.9	81.9
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.0	38.1	4.0	49.3	5.7	36.4	6.0	47.3
Max Q Clear Time (g_c+I1), s	3.9	3.6	6.7	31.4	8.8	3.1	5.9	2.0
Green Ext Time (p_c), s	0.0	0.1	0.0	11.7	0.0	0.0	0.0	18.9

Intersection Summary	
HCM 2010 Ctrl Delay	20.2
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	1702	81	61	871	26	85	7	15	25	2	13
Future Volume (veh/h)	51	1702	81	61	871	26	85	7	15	25	2	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1829	1750	1716	1828	1750	1683	1839	1750	1683	1831	1750
Adj Flow Rate, veh/h	55	1850	88	66	947	28	92	8	16	27	2	14
Adj No. of Lanes	1	3	0	1	3	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	2
Cap, veh/h	96	3263	155	83	3289	97	95	48	97	90	17	117
Arrive On Green	0.04	0.45	0.45	0.10	1.00	1.00	0.06	0.09	0.08	0.06	0.09	0.07
Sat Flow, veh/h	1634	4883	232	1634	4981	147	1603	541	1082	1603	195	1363
Grp Volume(v), veh/h	55	1260	678	66	632	343	92	0	24	27	0	16
Grp Sat Flow(s),veh/h/ln	1634	1664	1787	1634	1663	1801	1603	0	1623	1603	0	1558
Q Serve(g_s), s	3.9	33.1	33.2	4.7	0.0	0.0	6.8	0.0	1.6	1.9	0.0	1.1
Cycle Q Clear(g_c), s	3.9	33.1	33.2	4.7	0.0	0.0	6.8	0.0	1.6	1.9	0.0	1.1
Prop In Lane	1.00		0.13	1.00		0.08	1.00		0.67	1.00		0.88
Lane Grp Cap(c), veh/h	96	2224	1194	83	2197	1190	95	0	145	90	0	134
V/C Ratio(X)	0.57	0.57	0.57	0.79	0.29	0.29	0.97	0.00	0.17	0.30	0.00	0.12
Avail Cap(c_a), veh/h	111	2224	1194	83	2197	1190	95	0	542	90	0	498
HCM Platoon Ratio	0.67	0.67	0.67	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.49	0.49	0.49	0.69	0.69	0.69	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	55.2	19.9	20.0	52.4	0.0	0.0	55.4	0.0	50.1	53.5	0.0	50.3
Incr Delay (d2), s/veh	2.6	0.5	1.0	29.8	0.2	0.4	81.5	0.0	0.5	1.9	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	15.3	16.8	2.8	0.1	0.1	5.1	0.0	0.8	0.9	0.0	0.5
LnGrp Delay(d),s/veh	57.9	20.5	20.9	82.2	0.2	0.4	136.9	0.0	50.6	55.4	0.0	50.7
LnGrp LOS	E	C	C	F	A	A	F		D	E		D
Approach Vol, veh/h		1993			1041			116			43	
Approach Delay, s/veh		21.7			5.5			119.0			53.6	
Approach LOS		C			A			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	14.5	10.0	82.9	11.0	14.1	10.9	81.9
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.0	38.1	4.0	49.3	5.7	36.4	6.0	47.3
Max Q Clear Time (g_c+I1), s	3.9	3.6	6.7	35.2	8.8	3.1	5.9	2.0
Green Ext Time (p_c), s	0.0	0.1	0.0	10.6	0.0	0.0	0.0	22.0

Intersection Summary	
HCM 2010 Ctrl Delay	20.4
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	1702	81	61	871	26	85	7	15	25	2	13
Future Volume (veh/h)	51	1702	81	61	871	26	85	7	15	25	2	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1828	1750	1683	1839	1750	1683	1831	1750
Adj Flow Rate, veh/h	55	1850	88	66	947	28	92	8	16	27	2	14
Adj No. of Lanes	1	3	1	1	3	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	2	4	2	2
Cap, veh/h	82	3355	977	82	3350	99	93	48	96	89	17	117
Arrive On Green	0.10	1.00	1.00	0.05	0.67	0.67	0.06	0.09	0.08	0.06	0.09	0.07
Sat Flow, veh/h	1634	4988	1453	1634	4981	147	1603	541	1082	1603	195	1363
Grp Volume(v), veh/h	55	1850	88	66	632	343	92	0	24	27	0	16
Grp Sat Flow(s),veh/h/ln	1634	1663	1453	1634	1663	1801	1603	0	1623	1603	0	1558
Q Serve(g_s), s	3.9	0.0	0.0	4.8	9.2	9.2	6.9	0.0	1.7	1.9	0.0	1.1
Cycle Q Clear(g_c), s	3.9	0.0	0.0	4.8	9.2	9.2	6.9	0.0	1.7	1.9	0.0	1.1
Prop In Lane	1.00		1.00	1.00		0.08	1.00		0.67	1.00		0.88
Lane Grp Cap(c), veh/h	82	3355	977	82	2238	1212	93	0	144	89	0	134
V/C Ratio(X)	0.67	0.55	0.09	0.81	0.28	0.28	0.98	0.00	0.17	0.30	0.00	0.12
Avail Cap(c_a), veh/h	82	3355	977	82	2238	1212	93	0	533	89	0	489
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.73	0.73	0.73	0.84	0.84	0.84	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.1	0.0	0.0	56.4	7.9	7.9	56.4	0.0	51.0	54.4	0.0	51.2
Incr Delay (d2), s/veh	14.8	0.5	0.1	37.8	0.3	0.5	87.7	0.0	0.5	1.9	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.2	0.0	3.0	4.3	4.7	5.3	0.0	0.8	0.9	0.0	0.5
LnGrp Delay(d),s/veh	67.8	0.5	0.1	94.2	8.2	8.4	144.1	0.0	51.5	56.3	0.0	51.6
LnGrp LOS	E	A	A	F	A	A	F		D	E		D
Approach Vol, veh/h		1993			1041			116			43	
Approach Delay, s/veh		2.3			13.7			125.0			54.6	
Approach LOS		A			B			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	14.6	10.0	84.7	11.0	14.3	10.0	84.7
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.0	38.1	4.0	51.3	5.7	36.4	4.0	51.3
Max Q Clear Time (g_c+I1), s	3.9	3.7	6.8	2.0	8.9	3.1	5.9	11.2
Green Ext Time (p_c), s	0.0	0.1	0.0	24.1	0.0	0.0	0.0	21.9

Intersection Summary	
HCM 2010 Ctrl Delay	11.2
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	1762	99	74	950	31	96	8	17	27	2	14
Future Volume (veh/h)	63	1762	99	74	950	31	96	8	17	27	2	14
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1829	1750	1716	1828	1750	1683	1839	1750	1683	1831	1750
Adj Flow Rate, veh/h	68	1915	108	80	1033	34	104	9	18	29	2	15
Adj No. of Lanes	1	3	0	1	3	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	2
Cap, veh/h	111	3232	182	83	3232	106	95	48	97	89	16	118
Arrive On Green	0.02	0.22	0.22	0.10	1.00	1.00	0.06	0.09	0.08	0.06	0.09	0.07
Sat Flow, veh/h	1634	4836	272	1634	4962	163	1603	541	1082	1603	183	1373
Grp Volume(v), veh/h	68	1316	707	80	692	375	104	0	27	29	0	17
Grp Sat Flow(s),veh/h/ln	1634	1664	1780	1634	1664	1799	1603	0	1623	1603	0	1556
Q Serve(g_s), s	4.9	41.8	42.0	5.8	0.0	0.0	7.0	0.0	1.8	2.1	0.0	1.2
Cycle Q Clear(g_c), s	4.9	41.8	42.0	5.8	0.0	0.0	7.0	0.0	1.8	2.1	0.0	1.2
Prop In Lane	1.00		0.15	1.00		0.09	1.00		0.67	1.00		0.88
Lane Grp Cap(c), veh/h	111	2225	1189	83	2167	1172	95	0	145	89	0	134
V/C Ratio(X)	0.61	0.59	0.59	0.96	0.32	0.32	1.09	0.00	0.19	0.32	0.00	0.13
Avail Cap(c_a), veh/h	111	2225	1189	83	2167	1172	95	0	542	89	0	497
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.30	0.30	0.30	0.59	0.59	0.59	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.1	31.6	31.6	52.9	0.0	0.0	55.5	0.0	50.2	53.6	0.0	50.4
Incr Delay (d2), s/veh	3.0	0.3	0.7	64.2	0.2	0.4	120.0	0.0	0.6	2.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	19.4	21.0	4.1	0.1	0.1	6.3	0.0	0.8	1.0	0.0	0.5
LnGrp Delay(d),s/veh	59.1	31.9	32.3	117.1	0.2	0.4	175.5	0.0	50.8	55.6	0.0	50.8
LnGrp LOS	E	C	C	F	A	A	F		D	E		D
Approach Vol, veh/h		2091			1147			131			46	
Approach Delay, s/veh		32.9			8.4			149.8			53.9	
Approach LOS		C			A			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	14.5	10.0	82.9	11.0	14.1	12.0	80.9
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.0	38.1	4.0	49.3	5.7	36.4	6.0	47.3
Max Q Clear Time (g_c+I1), s	4.1	3.8	7.8	44.0	9.0	3.2	6.9	2.0
Green Ext Time (p_c), s	0.0	0.1	0.0	4.7	0.0	0.0	0.0	24.3

Intersection Summary	
HCM 2010 Ctrl Delay	29.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	1952	99	74	1026	31	96	8	17	27	2	14
Future Volume (veh/h)	63	1952	99	74	1026	31	96	8	17	27	2	14
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1829	1750	1716	1828	1750	1683	1839	1750	1683	1831	1750
Adj Flow Rate, veh/h	68	2122	108	80	1115	34	104	9	18	29	2	15
Adj No. of Lanes	1	3	0	1	3	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	2
Cap, veh/h	456	3276	166	82	2210	67	93	48	96	88	16	117
Arrive On Green	0.28	0.67	0.67	0.05	0.44	0.44	0.06	0.09	0.08	0.05	0.09	0.07
Sat Flow, veh/h	1634	4866	246	1634	4975	152	1603	541	1082	1603	183	1373
Grp Volume(v), veh/h	68	1448	782	80	745	404	104	0	27	29	0	17
Grp Sat Flow(s),veh/h/ln	1634	1664	1784	1634	1663	1800	1603	0	1623	1603	0	1556
Q Serve(g_s), s	3.8	30.2	30.6	5.9	19.3	19.3	7.0	0.0	1.9	2.1	0.0	1.2
Cycle Q Clear(g_c), s	3.8	30.2	30.6	5.9	19.3	19.3	7.0	0.0	1.9	2.1	0.0	1.2
Prop In Lane	1.00		0.14	1.00		0.08	1.00		0.67	1.00		0.88
Lane Grp Cap(c), veh/h	456	2241	1201	82	1478	800	93	0	144	88	0	132
V/C Ratio(X)	0.15	0.65	0.65	0.98	0.50	0.50	1.11	0.00	0.19	0.33	0.00	0.13
Avail Cap(c_a), veh/h	456	2241	1201	82	1478	800	93	0	533	88	0	489
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.12	0.12	0.12	0.59	0.59	0.59	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	32.5	11.3	11.4	56.9	23.9	23.9	56.5	0.0	51.1	54.6	0.0	51.3
Incr Delay (d2), s/veh	0.0	0.2	0.3	69.9	0.7	1.3	126.7	0.0	0.6	2.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	13.7	15.1	4.2	8.9	9.8	6.4	0.0	0.9	1.0	0.0	0.5
LnGrp Delay(d),s/veh	32.6	11.5	11.7	126.8	24.6	25.2	183.2	0.0	51.7	56.8	0.0	51.7
LnGrp LOS	C	B	B	F	C	C	F		D	E		D
Approach Vol, veh/h		2298			1229			131			46	
Approach Delay, s/veh		12.2			31.5			156.1			54.9	
Approach LOS		B			C			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	14.6	10.0	84.8	11.0	14.2	37.5	57.3
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.0	38.1	4.0	51.3	5.7	36.4	4.0	51.3
Max Q Clear Time (g_c+I1), s	4.1	3.9	7.9	32.6	9.0	3.2	5.8	21.3
Green Ext Time (p_c), s	0.0	0.1	0.0	11.1	0.0	0.0	0.0	5.2

Intersection Summary	
HCM 2010 Ctrl Delay	24.2
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	1952	99	74	1026	31	96	8	17	27	2	14
Future Volume (veh/h)	63	1952	99	74	1026	31	96	8	17	27	2	14
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1828	1750	1683	1839	1750	1683	1831	1750
Adj Flow Rate, veh/h	68	2122	108	80	1115	34	104	9	18	29	2	15
Adj No. of Lanes	1	3	1	1	3	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	2	4	2	2
Cap, veh/h	82	3355	977	82	3347	102	93	48	96	89	16	118
Arrive On Green	0.10	1.00	1.00	0.05	0.67	0.67	0.06	0.09	0.08	0.06	0.09	0.07
Sat Flow, veh/h	1634	4988	1453	1634	4976	152	1603	541	1082	1603	183	1373
Grp Volume(v), veh/h	68	2122	108	80	745	404	104	0	27	29	0	17
Grp Sat Flow(s),veh/h/ln	1634	1663	1453	1634	1663	1801	1603	0	1623	1603	0	1556
Q Serve(g_s), s	4.9	0.0	0.0	5.9	11.3	11.4	7.0	0.0	1.9	2.1	0.0	1.2
Cycle Q Clear(g_c), s	4.9	0.0	0.0	5.9	11.3	11.4	7.0	0.0	1.9	2.1	0.0	1.2
Prop In Lane	1.00		1.00	1.00		0.08	1.00		0.67	1.00		0.88
Lane Grp Cap(c), veh/h	82	3355	977	82	2238	1211	93	0	144	89	0	133
V/C Ratio(X)	0.83	0.63	0.11	0.98	0.33	0.33	1.11	0.00	0.19	0.33	0.00	0.13
Avail Cap(c_a), veh/h	82	3355	977	82	2238	1211	93	0	533	89	0	489
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.47	0.47	0.47	0.77	0.77	0.77	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	53.5	0.0	0.0	56.9	8.3	8.3	56.5	0.0	51.1	54.5	0.0	51.2
Incr Delay (d2), s/veh	27.8	0.4	0.1	80.6	0.3	0.6	126.7	0.0	0.6	2.1	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.1	0.0	4.5	5.3	5.8	6.4	0.0	0.9	1.0	0.0	0.5
LnGrp Delay(d),s/veh	81.3	0.4	0.1	137.5	8.6	8.9	183.2	0.0	51.7	56.6	0.0	51.7
LnGrp LOS	F	A	A	F	A	A	F		D	E		D
Approach Vol, veh/h		2298			1229			131			46	
Approach Delay, s/veh		2.8			17.1			156.1			54.8	
Approach LOS		A			B			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	14.6	10.0	84.7	11.0	14.3	10.0	84.7
Change Period (Y+Rc), s	5.3	5.3	6.0	6.0	5.3	5.3	6.0	6.0
Max Green Setting (Gmax), s	4.0	38.1	4.0	51.3	5.7	36.4	4.0	51.3
Max Q Clear Time (g_c+I1), s	4.1	3.9	7.9	2.0	9.0	3.2	6.9	13.4
Green Ext Time (p_c), s	0.0	0.1	0.0	30.7	0.0	0.0	0.0	26.0

Intersection Summary	
HCM 2010 Ctrl Delay	13.6
HCM 2010 LOS	B

Intersection 13
Porterville Hwy (SR 65) & Merle Haggard Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	731	169	372	578	70	74	270	308	135	319	142
Future Volume (veh/h)	165	731	169	372	578	70	74	270	308	135	319	142
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1471	1827	1471	1471	1827	1471	1683	1597	1683	1683	1597	1683
Adj Flow Rate, veh/h	179	795	184	404	628	76	80	293	335	147	347	154
Adj No. of Lanes	2	2	2	2	2	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	19	4	19	19	4	19	4	19	4	4	19	4
Cap, veh/h	462	1005	622	357	872	308	571	945	437	253	634	293
Arrive On Green	0.17	0.29	0.29	0.13	0.25	0.25	0.18	0.31	0.31	0.08	0.21	0.21
Sat Flow, veh/h	2717	3471	2150	2717	3471	1225	3109	3034	1404	3109	3034	1400
Grp Volume(v), veh/h	179	795	184	404	628	76	80	293	335	147	347	154
Grp Sat Flow(s),veh/h/ln	1359	1736	1075	1359	1736	1225	1554	1517	1404	1554	1517	1400
Q Serve(g_s), s	5.0	18.1	3.1	11.3	14.2	3.0	1.9	6.3	18.5	3.9	8.8	8.4
Cycle Q Clear(g_c), s	5.0	18.1	3.1	11.3	14.2	3.0	1.9	6.3	18.5	3.9	8.8	8.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	462	1005	622	357	872	308	571	945	437	253	634	293
V/C Ratio(X)	0.39	0.79	0.30	1.13	0.72	0.25	0.14	0.31	0.77	0.58	0.55	0.53
Avail Cap(c_a), veh/h	462	1200	743	357	1414	499	571	1447	670	253	1483	684
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.7	28.1	7.0	37.3	29.4	13.1	29.4	22.6	26.8	38.0	30.4	30.2
Incr Delay (d2), s/veh	0.5	3.1	0.3	87.9	1.1	0.4	0.1	0.2	2.8	3.3	0.7	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	9.0	0.9	8.6	6.9	1.4	0.8	2.7	7.5	1.8	3.7	3.4
LnGrp Delay(d),s/veh	32.2	31.2	7.3	125.3	30.6	13.5	29.5	22.7	29.6	41.4	31.1	31.7
LnGrp LOS	C	C	A	F	C	B	C	C	C	D	C	C
Approach Vol, veh/h		1158			1108			708			648	
Approach Delay, s/veh		27.6			63.9			26.7			33.6	
Approach LOS		C			E			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	30.8	15.3	28.9	19.8	22.0	18.6	25.6
Change Period (Y+Rc), s	6.0	6.0	5.7	6.0	6.0	6.0	6.0	5.7
Max Green Setting (Gmax), s	5.0	39.0	9.6	27.7	4.0	40.0	4.0	33.3
Max Q Clear Time (g_c+I1), s	5.9	20.5	13.3	20.1	3.9	10.8	7.0	16.2
Green Ext Time (p_c), s	0.0	2.5	0.0	2.7	0.1	2.1	0.0	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	39.6
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	231	742	215	372	583	100	74	386	308	201	577	288
Future Volume (veh/h)	231	742	215	372	583	100	74	386	308	201	577	288
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1471	1827	1471	1471	1827	1471	1683	1597	1683	1683	1597	1683
Adj Flow Rate, veh/h	251	807	234	404	634	109	80	420	335	218	627	313
Adj No. of Lanes	2	2	2	2	2	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	19	4	19	19	4	19	4	19	4	4	19	4
Cap, veh/h	412	953	590	293	811	286	165	1167	541	275	1275	591
Arrive On Green	0.15	0.27	0.27	0.11	0.23	0.23	0.05	0.38	0.38	0.09	0.42	0.42
Sat Flow, veh/h	2717	3471	2150	2717	3471	1225	3109	3034	1406	3109	3034	1407
Grp Volume(v), veh/h	251	807	234	404	634	109	80	420	335	218	627	313
Grp Sat Flow(s),veh/h/ln	1359	1736	1075	1359	1736	1225	1554	1517	1406	1554	1517	1407
Q Serve(g_s), s	9.8	24.8	7.8	12.2	19.4	6.4	2.8	11.2	14.1	7.8	17.1	10.4
Cycle Q Clear(g_c), s	9.8	24.8	7.8	12.2	19.4	6.4	2.8	11.2	14.1	7.8	17.1	10.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	412	953	590	293	811	286	165	1167	541	275	1275	591
V/C Ratio(X)	0.61	0.85	0.40	1.38	0.78	0.38	0.48	0.36	0.62	0.79	0.49	0.53
Avail Cap(c_a), veh/h	412	1038	643	293	1075	379	165	1167	541	275	1275	591
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.8	38.7	20.3	50.4	40.6	20.7	52.0	24.8	11.8	50.5	23.9	7.5
Incr Delay (d2), s/veh	2.4	5.7	0.4	188.9	2.6	0.8	2.2	0.9	5.2	14.6	1.4	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	12.6	2.3	12.3	9.5	2.2	1.3	4.8	6.2	3.9	7.4	4.6
LnGrp Delay(d),s/veh	47.2	44.5	20.7	239.3	43.2	21.4	54.2	25.7	17.0	65.0	25.3	10.9
LnGrp LOS	D	D	C	F	D	C	D	C	B	E	C	B
Approach Vol, veh/h		1292			1147			835			1158	
Approach Delay, s/veh		40.7			110.2			24.9			28.9	
Approach LOS		D			F			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	47.5	16.5	35.0	10.0	51.5	21.1	30.4
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	6.0	6.0	6.0	5.7
Max Green Setting (Gmax), s	8.0	39.0	10.5	* 32	4.0	43.0	9.0	33.3
Max Q Clear Time (g_c+I1), s	9.8	16.1	14.2	26.8	4.8	19.1	11.8	21.4
Green Ext Time (p_c), s	0.0	8.2	0.0	2.2	0.0	8.3	0.0	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	52.6
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	202	1382	207	1110	1300	135	83	302	923	206	395	176
Future Volume (veh/h)	202	1382	207	1110	1300	135	83	302	923	206	395	176
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1471	1827	1471	1471	1827	1471	1683	1597	1683	1683	1597	1683
Adj Flow Rate, veh/h	220	1502	225	1207	1413	147	90	328	1003	224	429	191
Adj No. of Lanes	2	2	2	2	2	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	19	4	19	19	4	19	4	19	4	4	19	4
Cap, veh/h	226	983	609	385	1186	420	185	1087	504	259	1160	537
Arrive On Green	0.06	0.19	0.19	0.19	0.45	0.45	0.06	0.36	0.36	0.08	0.38	0.38
Sat Flow, veh/h	2717	3471	2150	2717	3471	1228	3109	3034	1405	3109	3034	1406
Grp Volume(v), veh/h	220	1502	225	1207	1413	147	90	328	1003	224	429	191
Grp Sat Flow(s),veh/h/ln	1359	1736	1075	1359	1736	1228	1554	1517	1405	1554	1517	1406
Q Serve(g_s), s	9.7	34.0	8.5	17.0	41.0	9.3	3.4	9.3	26.8	8.5	12.2	11.7
Cycle Q Clear(g_c), s	9.7	34.0	8.5	17.0	41.0	9.3	3.4	9.3	26.8	8.5	12.2	11.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	226	983	609	385	1186	420	185	1087	504	259	1160	537
V/C Ratio(X)	0.97	1.53	0.37	3.14	1.19	0.35	0.49	0.30	1.99	0.86	0.37	0.36
Avail Cap(c_a), veh/h	226	983	609	385	1186	420	233	1087	504	259	1160	537
HCM Platoon Ratio	0.67	0.67	0.67	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	0.72	0.73	0.73	0.73	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.5	48.6	23.7	48.7	32.7	24.1	54.7	27.7	15.0	54.3	26.7	26.5
Incr Delay (d2), s/veh	42.9	241.0	0.3	966.1	92.6	0.4	2.0	0.7	453.2	24.8	0.9	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	49.2	2.6	58.0	34.8	3.2	1.5	4.0	73.8	4.6	5.3	4.8
LnGrp Delay(d),s/veh	99.4	289.6	24.0	1014.8	125.3	24.5	56.6	28.4	468.2	79.2	27.6	28.3
LnGrp LOS	F	F	C	F	F	C	E	C	F	E	C	C
Approach Vol, veh/h		1947			2767			1421			844	
Approach Delay, s/veh		237.4			507.9			340.6			41.4	
Approach LOS		F			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	47.0	21.0	38.0	11.1	49.9	14.0	45.0
Change Period (Y+Rc), s	6.0	6.0	5.7	6.0	6.0	6.0	6.0	5.7
Max Green Setting (Gmax), s	8.0	41.0	15.3	32.0	7.0	42.0	8.0	39.3
Max Q Clear Time (g_c+I1), s	10.5	28.8	19.0	36.0	5.4	14.2	11.7	43.0
Green Ext Time (p_c), s	0.0	7.7	0.0	0.0	0.0	12.3	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	342.0
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	268	1393	253	1110	1305	165	83	418	923	272	653	322
Future Volume (veh/h)	268	1393	253	1110	1305	165	83	418	923	272	653	322
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1471	1827	1471	1471	1827	1471	1683	1597	1683	1683	1597	1683
Adj Flow Rate, veh/h	291	1514	275	1207	1418	179	90	454	1003	296	710	350
Adj No. of Lanes	2	2	2	2	2	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	19	4	19	19	4	19	4	19	4	4	19	4
Cap, veh/h	189	996	617	307	1147	406	188	1187	550	216	1215	563
Arrive On Green	0.07	0.29	0.29	0.11	0.33	0.33	0.06	0.39	0.39	0.07	0.40	0.40
Sat Flow, veh/h	2717	3471	2150	2717	3471	1228	3109	3034	1406	3109	3034	1406
Grp Volume(v), veh/h	291	1514	275	1207	1418	179	90	454	1003	296	710	350
Grp Sat Flow(s),veh/h/ln	1359	1736	1075	1359	1736	1228	1554	1517	1406	1554	1517	1406
Q Serve(g_s), s	8.0	33.0	12.0	13.0	38.0	9.8	3.2	12.3	45.0	8.0	21.1	16.2
Cycle Q Clear(g_c), s	8.0	33.0	12.0	13.0	38.0	9.8	3.2	12.3	45.0	8.0	21.1	16.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	189	996	617	307	1147	406	188	1187	550	216	1215	563
V/C Ratio(X)	1.54	1.52	0.45	3.93	1.24	0.44	0.48	0.38	1.82	1.37	0.58	0.62
Avail Cap(c_a), veh/h	189	996	617	307	1147	406	216	1187	550	216	1215	563
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.55	0.55	0.55	0.72	0.72	0.72	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.5	41.0	33.5	51.0	38.5	16.9	52.3	25.1	35.0	53.5	27.0	13.9
Incr Delay (d2), s/veh	256.9	236.9	0.3	324.0	112.0	0.5	1.9	0.9	377.4	192.5	2.1	5.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.7	48.5	3.6	61.3	36.0	3.4	1.4	5.3	75.1	9.2	9.1	7.0
LnGrp Delay(d),s/veh	310.4	277.9	33.8	375.0	150.5	17.4	54.2	26.0	412.4	246.0	29.0	19.0
LnGrp LOS	F	F	C	F	F	B	D	C	F	F	C	B
Approach Vol, veh/h		2080			2804			1547			1356	
Approach Delay, s/veh		250.1			669.1			278.2			73.8	
Approach LOS		F			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	49.0	17.0	37.0	10.9	50.1	12.0	42.0
Change Period (Y+Rc), s	6.0	6.0	5.7	6.0	6.0	6.0	6.0	5.7
Max Green Setting (Gmax), s	6.0	43.0	11.3	31.0	6.0	43.0	6.0	36.3
Max Q Clear Time (g_c+I1), s	10.0	47.0	15.0	35.0	5.2	23.1	10.0	40.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	13.1	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	375.9
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	268	1393	253	1110	1305	165	83	418	923	272	653	322
Future Volume (veh/h)	268	1393	253	1110	1305	165	83	418	923	272	653	322
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1471	1827	1471	1471	1827	1471	1683	1597	1683	1683	1597	1683
Adj Flow Rate, veh/h	291	1514	275	1207	1418	179	90	454	1003	296	710	350
Adj No. of Lanes	2	3	1	2	3	1	1	2	2	2	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	19	4	19	19	4	19	4	19	4	4	19	4
Cap, veh/h	276	1987	498	276	1974	495	95	1059	879	316	1188	986
Arrive On Green	0.10	0.40	0.40	0.10	0.40	0.40	0.06	0.35	0.35	0.10	0.39	0.39
Sat Flow, veh/h	2717	4988	1250	2717	4988	1250	1603	3034	2517	3109	3034	2517
Grp Volume(v), veh/h	291	1514	275	1207	1418	179	90	454	1003	296	710	350
Grp Sat Flow(s),veh/h/ln	1359	1663	1250	1359	1663	1250	1603	1517	1259	1554	1517	1259
Q Serve(g_s), s	12.0	30.9	20.0	12.0	28.3	11.9	6.6	13.5	41.2	11.2	21.9	11.6
Cycle Q Clear(g_c), s	12.0	30.9	20.0	12.0	28.3	11.9	6.6	13.5	41.2	11.2	21.9	11.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	276	1987	498	276	1974	495	95	1059	879	316	1188	986
V/C Ratio(X)	1.05	0.76	0.55	4.37	0.72	0.36	0.95	0.43	1.14	0.94	0.60	0.36
Avail Cap(c_a), veh/h	276	1987	498	276	1974	495	95	1059	879	316	1188	986
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.58	0.58	0.58	0.72	0.72	0.72	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	30.7	27.4	53.0	30.1	25.1	55.3	29.4	38.4	52.6	28.5	25.4
Incr Delay (d2), s/veh	56.0	1.7	2.6	1521.8	1.7	1.5	74.8	0.3	77.2	34.3	0.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	14.5	7.2	62.9	13.3	4.3	4.9	5.7	23.7	6.3	9.3	4.1
LnGrp Delay(d),s/veh	109.0	32.3	29.9	1574.8	31.8	26.6	130.1	29.7	115.6	86.9	29.3	25.6
LnGrp LOS	F	C	C	F	C	C	F	C	F	F	C	C
Approach Vol, veh/h		2080			2804			1547			1356	
Approach Delay, s/veh		42.7			695.6			91.2			40.9	
Approach LOS		D			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	45.2	16.0	51.3	11.0	50.2	16.0	51.3
Change Period (Y+Rc), s	6.0	6.0	5.7	6.0	6.0	6.0	6.0	* 6
Max Green Setting (Gmax), s	10.0	39.2	10.3	34.8	5.0	44.2	10.0	* 35
Max Q Clear Time (g_c+I1), s	13.2	43.2	14.0	32.9	8.6	23.9	14.0	30.3
Green Ext Time (p_c), s	0.0	0.0	0.0	1.8	0.0	12.9	0.0	4.4

Intersection Summary	
HCM 2010 Ctrl Delay	287.2
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

User approved changes to right turn type.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	247	1582	253	1166	1453	154	92	337	964	246	489	218
Future Volume (veh/h)	247	1582	253	1166	1453	154	92	337	964	246	489	218
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1471	1827	1471	1471	1827	1471	1683	1597	1683	1683	1597	1683
Adj Flow Rate, veh/h	268	1720	275	1267	1579	167	100	366	1048	267	532	237
Adj No. of Lanes	2	2	2	2	2	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	19	4	19	19	4	19	4	19	4	4	19	4
Cap, veh/h	226	983	609	385	1186	420	196	1087	504	259	1149	532
Arrive On Green	0.06	0.19	0.19	0.19	0.45	0.45	0.06	0.36	0.36	0.08	0.38	0.38
Sat Flow, veh/h	2717	3471	2150	2717	3471	1228	3109	3034	1405	3109	3034	1406
Grp Volume(v), veh/h	268	1720	275	1267	1579	167	100	366	1048	267	532	237
Grp Sat Flow(s),veh/h/ln	1359	1736	1075	1359	1736	1228	1554	1517	1405	1554	1517	1406
Q Serve(g_s), s	10.0	34.0	10.5	17.0	41.0	7.9	3.7	10.6	43.0	10.0	15.9	15.1
Cycle Q Clear(g_c), s	10.0	34.0	10.5	17.0	41.0	7.9	3.7	10.6	43.0	10.0	15.9	15.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	226	983	609	385	1186	420	196	1087	504	259	1149	532
V/C Ratio(X)	1.18	1.75	0.45	3.29	1.33	0.40	0.51	0.34	2.08	1.03	0.46	0.45
Avail Cap(c_a), veh/h	226	983	609	385	1186	420	233	1087	504	259	1149	532
HCM Platoon Ratio	0.67	0.67	0.67	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.51	0.51	0.51	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.6	48.6	24.1	48.7	32.7	13.0	54.4	28.1	38.5	55.0	28.1	27.9
Incr Delay (d2), s/veh	103.4	339.1	0.3	1035.7	153.1	0.4	2.0	0.8	493.2	64.1	1.3	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.0	62.6	3.1	61.7	44.8	2.7	1.7	4.5	85.6	6.6	6.9	6.2
LnGrp Delay(d),s/veh	160.1	387.8	24.3	1084.4	185.9	13.4	56.5	28.9	531.7	119.1	29.4	30.5
LnGrp LOS	F	F	C	F	F	B	E	C	F	F	C	C
Approach Vol, veh/h		2263			3013			1514			1036	
Approach Delay, s/veh		316.6			554.2			378.8			52.8	
Approach LOS		F			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	47.0	21.0	38.0	11.6	49.4	14.0	45.0
Change Period (Y+Rc), s	6.0	6.0	5.7	6.0	6.0	6.0	6.0	5.7
Max Green Setting (Gmax), s	8.0	41.0	15.3	32.0	7.0	42.0	8.0	39.3
Max Q Clear Time (g_c+I1), s	12.0	45.0	19.0	36.0	5.7	17.9	12.0	43.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	385.2
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	328	1596	309	1166	1459	191	92	480	964	327	808	398
Future Volume (veh/h)	328	1596	309	1166	1459	191	92	480	964	327	808	398
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1471	1827	1471	1471	1827	1471	1683	1597	1683	1683	1597	1683
Adj Flow Rate, veh/h	357	1735	336	1267	1586	208	100	522	1048	355	878	433
Adj No. of Lanes	2	3	2	2	3	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	19	4	19	19	4	19	4	19	4	4	19	4
Cap, veh/h	182	1556	671	224	1647	406	595	1169	542	511	1086	503
Arrive On Green	0.07	0.31	0.31	0.08	0.33	0.33	0.19	0.39	0.39	0.16	0.36	0.36
Sat Flow, veh/h	2717	4988	2151	2717	4988	1228	3109	3034	1406	3109	3034	1405
Grp Volume(v), veh/h	357	1735	336	1267	1586	208	100	522	1048	355	878	433
Grp Sat Flow(s),veh/h/ln	1359	1663	1075	1359	1663	1228	1554	1517	1406	1554	1517	1405
Q Serve(g_s), s	7.3	34.0	13.9	9.0	34.0	14.9	2.9	13.9	42.0	11.7	28.5	31.2
Cycle Q Clear(g_c), s	7.3	34.0	13.9	9.0	34.0	14.9	2.9	13.9	42.0	11.7	28.5	31.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	182	1556	671	224	1647	406	595	1169	542	511	1086	503
V/C Ratio(X)	1.96	1.12	0.50	5.65	0.96	0.51	0.17	0.45	1.93	0.70	0.81	0.86
Avail Cap(c_a), veh/h	182	1556	671	224	1647	406	595	1169	542	511	1169	542
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.45	0.45	0.45	0.66	0.66	0.66	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.8	37.5	30.6	50.0	35.8	29.4	36.8	24.9	33.5	43.0	31.6	32.5
Incr Delay (d2), s/veh	441.7	56.5	0.2	2097.8	10.7	0.7	0.1	1.2	427.2	4.1	6.5	17.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.9	23.7	4.1	68.7	17.2	5.1	1.3	6.0	80.6	5.3	12.9	14.4
LnGrp Delay(d),s/veh	492.6	94.0	30.3	2147.8	46.6	30.2	36.9	26.1	460.7	47.1	38.1	49.7
LnGrp LOS	F	F	C	F	D	C	D	C	F	D	D	D
Approach Vol, veh/h		2428			3061			1670			1666	
Approach Delay, s/veh		143.9			915.2			299.5			43.0	
Approach LOS		F			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.2	46.0	13.3	38.0	25.2	43.0	11.3	40.0
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	6.0	6.0	6.0	5.7
Max Green Setting (Gmax), s	6.0	40.0	7.3	* 32	6.0	40.0	5.0	34.3
Max Q Clear Time (g_c+I1), s	13.7	44.0	11.0	36.0	4.9	33.2	9.3	36.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.2	3.4	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	421.8
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	328	1596	309	1166	1459	191	92	480	964	327	808	398
Future Volume (veh/h)	328	1596	309	1166	1459	191	92	480	964	327	808	398
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1471	1827	1471	1471	1827	1471	1683	1597	1683	1683	1597	1683
Adj Flow Rate, veh/h	357	1735	336	1267	1586	208	100	522	1048	355	878	433
Adj No. of Lanes	2	3	2	2	3	1	2	2	2	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	19	4	19	19	4	19	4	19	4	4	19	4
Cap, veh/h	276	1987	876	276	1974	495	343	1059	879	316	1033	487
Arrive On Green	0.10	0.40	0.40	0.10	0.40	0.40	0.11	0.35	0.35	0.10	0.34	0.34
Sat Flow, veh/h	2717	4988	2200	2717	4988	1250	3109	3034	2517	3109	3034	1430
Grp Volume(v), veh/h	357	1735	336	1267	1586	208	100	522	1048	355	878	433
Grp Sat Flow(s),veh/h/ln	1359	1663	1100	1359	1663	1250	1554	1517	1259	1554	1517	1430
Q Serve(g_s), s	12.0	37.9	10.1	12.0	33.2	14.2	3.5	16.0	41.2	12.0	31.7	27.8
Cycle Q Clear(g_c), s	12.0	37.9	10.1	12.0	33.2	14.2	3.5	16.0	41.2	12.0	31.7	27.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	276	1987	876	276	1974	495	343	1059	879	316	1033	487
V/C Ratio(X)	1.29	0.87	0.38	4.59	0.80	0.42	0.29	0.49	1.19	1.12	0.85	0.89
Avail Cap(c_a), veh/h	276	1987	876	276	1974	495	343	1059	879	316	1188	560
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.22	0.22	0.22	0.66	0.66	0.66	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	32.8	15.8	53.0	31.6	25.8	48.2	30.2	38.4	53.0	36.1	24.9
Incr Delay (d2), s/veh	137.3	1.3	0.3	618.9	2.4	1.7	0.5	0.4	97.8	88.0	5.4	14.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	17.6	3.1	66.6	15.7	5.2	1.5	6.7	26.2	9.0	14.1	12.9
LnGrp Delay(d),s/veh	190.3	34.1	16.1	671.9	34.0	27.6	48.7	30.5	136.2	141.0	41.5	39.7
LnGrp LOS	F	C	B	F	C	C	D	C	F	F	D	D
Approach Vol, veh/h		2428			3061			1670			1666	
Approach Delay, s/veh		54.6			711.5			97.9			62.2	
Approach LOS		D			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	45.2	16.0	51.3	17.0	44.2	16.0	51.3
Change Period (Y+Rc), s	6.0	6.0	5.7	6.0	6.0	6.0	6.0	* 6
Max Green Setting (Gmax), s	10.0	39.2	10.3	34.8	5.0	44.2	10.0	* 35
Max Q Clear Time (g_c+I1), s	14.0	43.2	14.0	39.9	5.5	33.7	14.0	35.2
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	4.5	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	292.1
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

User approved changes to right turn type.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	206	551	107	193	452	78	90	356	451	87	498	69
Future Volume (veh/h)	206	551	107	193	452	78	90	356	451	87	498	69
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1471	1827	1471	1471	1827	1471	1683	1597	1683	1683	1597	1683
Adj Flow Rate, veh/h	224	599	116	210	491	85	98	387	490	95	541	75
Adj No. of Lanes	2	2	2	2	2	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	19	4	19	19	4	19	4	19	4	4	19	4
Cap, veh/h	362	733	453	291	652	230	895	1130	524	501	745	344
Arrive On Green	0.27	0.42	0.42	0.21	0.38	0.38	0.29	0.37	0.37	0.16	0.25	0.25
Sat Flow, veh/h	2717	3471	2148	2717	3471	1222	3109	3034	1406	3109	3034	1402
Grp Volume(v), veh/h	224	599	116	210	491	85	98	387	490	95	541	75
Grp Sat Flow(s),veh/h/ln	1359	1736	1074	1359	1736	1222	1554	1517	1406	1554	1517	1402
Q Serve(g_s), s	8.0	16.8	3.8	7.9	13.5	5.5	2.5	10.1	36.9	2.9	18.0	4.7
Cycle Q Clear(g_c), s	8.0	16.8	3.8	7.9	13.5	5.5	2.5	10.1	36.9	2.9	18.0	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	362	733	453	291	652	230	895	1130	524	501	745	344
V/C Ratio(X)	0.62	0.82	0.26	0.72	0.75	0.37	0.11	0.34	0.94	0.19	0.73	0.22
Avail Cap(c_a), veh/h	362	1019	631	338	1104	389	895	1131	524	501	1158	535
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.9	29.9	26.2	41.7	32.1	29.6	28.8	24.8	33.3	39.9	38.1	33.1
Incr Delay (d2), s/veh	3.1	3.6	0.3	6.1	1.8	1.0	0.1	0.8	26.3	0.2	6.1	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	8.3	1.1	3.2	6.6	1.9	1.1	4.4	18.1	1.3	8.1	2.0
LnGrp Delay(d),s/veh	41.0	33.5	26.5	47.8	33.9	30.6	28.8	25.7	59.5	40.1	44.2	34.5
LnGrp LOS	D	C	C	D	C	C	C	C	E	D	D	C
Approach Vol, veh/h		939			786			975			711	
Approach Delay, s/veh		34.4			37.2			43.0			42.6	
Approach LOS		C			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.7	45.0	16.1	27.2	35.7	31.0	18.6	24.7
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	6.0	6.0	6.0	5.7
Max Green Setting (Gmax), s	5.0	39.0	12.0	* 30	4.0	40.0	9.0	33.3
Max Q Clear Time (g_c+I1), s	4.9	38.9	9.9	18.8	4.5	20.0	10.0	15.5
Green Ext Time (p_c), s	0.0	0.0	0.2	2.5	0.0	2.5	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	39.2
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	342	555	123	193	462	140	90	593	451	110	588	120
Future Volume (veh/h)	342	555	123	193	462	140	90	593	451	110	588	120
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1471	1827	1471	1471	1827	1471	1683	1597	1683	1683	1597	1683
Adj Flow Rate, veh/h	372	603	134	210	502	152	98	645	490	120	639	130
Adj No. of Lanes	2	2	2	2	2	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	19	4	19	19	4	19	4	19	4	4	19	4
Cap, veh/h	353	738	457	291	668	235	798	1130	524	496	835	386
Arrive On Green	0.26	0.43	0.43	0.21	0.39	0.39	0.26	0.37	0.37	0.16	0.28	0.28
Sat Flow, veh/h	2717	3471	2148	2717	3471	1223	3109	3034	1406	3109	3034	1403
Grp Volume(v), veh/h	372	603	134	210	502	152	98	645	490	120	639	130
Grp Sat Flow(s),veh/h/ln	1359	1736	1074	1359	1736	1223	1554	1517	1406	1554	1517	1403
Q Serve(g_s), s	14.3	16.8	4.5	7.9	13.8	11.2	2.7	18.6	36.9	3.7	21.3	8.1
Cycle Q Clear(g_c), s	14.3	16.8	4.5	7.9	13.8	11.2	2.7	18.6	36.9	3.7	21.3	8.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	353	738	457	291	668	235	798	1130	524	496	835	386
V/C Ratio(X)	1.05	0.82	0.29	0.72	0.75	0.65	0.12	0.57	0.94	0.24	0.77	0.34
Avail Cap(c_a), veh/h	353	1019	631	338	1104	389	798	1131	524	496	1158	536
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.94	0.98	0.98	0.98	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.7	29.7	26.2	41.7	31.5	30.8	31.4	27.5	33.2	40.4	36.6	31.8
Incr Delay (d2), s/veh	61.0	3.5	0.3	6.1	1.7	2.9	0.1	2.1	26.2	0.2	6.6	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.3	8.4	1.3	3.2	6.7	3.9	1.2	8.1	18.1	1.6	9.6	3.4
LnGrp Delay(d),s/veh	101.7	33.3	26.5	47.7	33.2	33.7	31.4	29.6	59.5	40.7	43.2	34.2
LnGrp LOS	F	C	C	D	C	C	C	C	E	D	D	C
Approach Vol, veh/h		1109			864			1233			889	
Approach Delay, s/veh		55.4			36.8			41.6			41.5	
Approach LOS		E			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.6	45.0	16.1	27.4	32.2	34.3	18.3	25.2
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	6.0	6.0	6.0	5.7
Max Green Setting (Gmax), s	5.0	39.0	12.0	* 30	4.0	40.0	9.0	33.3
Max Q Clear Time (g_c+I1), s	5.7	38.9	9.9	18.8	4.7	23.3	16.3	15.8
Green Ext Time (p_c), s	0.0	0.0	0.2	2.5	0.0	3.1	0.0	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	44.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	252	1256	131	340	713	107	101	398	1146	155	617	85
Future Volume (veh/h)	252	1256	131	340	713	107	101	398	1146	155	617	85
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1471	1827	1471	1471	1827	1471	1683	1597	1683	1683	1597	1683
Adj Flow Rate, veh/h	274	1365	142	370	775	116	110	433	1246	168	671	92
Adj No. of Lanes	2	2	2	2	2	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	19	4	19	19	4	19	4	19	4	4	19	4
Cap, veh/h	298	1030	638	207	923	326	919	1311	608	445	849	393
Arrive On Green	0.15	0.39	0.39	0.08	0.27	0.27	0.30	0.43	0.43	0.14	0.28	0.28
Sat Flow, veh/h	2717	3471	2151	2717	3471	1226	3109	3034	1407	3109	3034	1403
Grp Volume(v), veh/h	274	1365	142	370	775	116	110	433	1246	168	671	92
Grp Sat Flow(s),veh/h/ln	1359	1736	1075	1359	1736	1226	1554	1517	1407	1554	1517	1403
Q Serve(g_s), s	11.7	35.0	5.2	9.0	24.9	9.1	3.0	11.2	51.0	5.8	24.1	6.0
Cycle Q Clear(g_c), s	11.7	35.0	5.2	9.0	24.9	9.1	3.0	11.2	51.0	5.8	24.1	6.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	298	1030	638	207	923	326	919	1311	608	445	849	393
V/C Ratio(X)	0.92	1.33	0.22	1.79	0.84	0.36	0.12	0.33	2.05	0.38	0.79	0.23
Avail Cap(c_a), veh/h	298	1030	638	207	1059	374	919	1311	608	445	1285	595
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.77	0.77	0.77	0.97	0.97	0.97	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.9	35.7	26.7	54.5	40.9	35.1	30.3	22.2	33.5	45.8	39.3	32.7
Incr Delay (d2), s/veh	27.0	151.9	0.1	371.6	5.3	0.6	0.1	0.7	477.9	0.5	7.4	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	38.4	1.6	14.1	12.6	3.1	1.3	4.8	100.5	2.5	10.9	2.5
LnGrp Delay(d),s/veh	76.9	187.6	26.8	426.1	46.3	35.8	30.4	22.9	511.4	46.3	46.7	34.1
LnGrp LOS	E	F	C	F	D	D	C	C	F	D	D	C
Approach Vol, veh/h		1781			1261			1789			931	
Approach Delay, s/veh		157.8			156.7			363.6			45.4	
Approach LOS		F			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.2	55.0	13.3	39.0	39.2	37.0	16.9	35.4
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	6.0	6.0	6.0	5.7
Max Green Setting (Gmax), s	5.0	49.0	7.3	* 33	6.0	48.0	6.0	34.3
Max Q Clear Time (g_c+I1), s	7.8	53.0	11.0	37.0	5.0	26.1	13.7	26.9
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.1	3.3	0.0	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	203.3
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	388	1260	147	340	723	169	101	635	1146	178	707	136
Future Volume (veh/h)	388	1260	147	340	723	169	101	635	1146	178	707	136
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1471	1827	1471	1471	1827	1471	1683	1597	1683	1683	1597	1683
Adj Flow Rate, veh/h	422	1370	160	370	786	184	110	690	1246	193	768	148
Adj No. of Lanes	2	2	2	2	2	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	19	4	19	19	4	19	4	19	4	4	19	4
Cap, veh/h	288	1030	638	207	936	331	828	1311	608	445	938	434
Arrive On Green	0.14	0.39	0.39	0.08	0.27	0.27	0.27	0.43	0.43	0.14	0.31	0.31
Sat Flow, veh/h	2717	3471	2151	2717	3471	1226	3109	3034	1407	3109	3034	1404
Grp Volume(v), veh/h	422	1370	160	370	786	184	110	690	1246	193	768	148
Grp Sat Flow(s),veh/h/ln	1359	1736	1075	1359	1736	1226	1554	1517	1407	1554	1517	1404
Q Serve(g_s), s	12.5	35.0	5.9	9.0	25.2	15.2	3.2	19.7	51.0	6.7	27.6	9.6
Cycle Q Clear(g_c), s	12.5	35.0	5.9	9.0	25.2	15.2	3.2	19.7	51.0	6.7	27.6	9.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	288	1030	638	207	936	331	828	1311	608	445	938	434
V/C Ratio(X)	1.47	1.33	0.25	1.79	0.84	0.56	0.13	0.53	2.05	0.43	0.82	0.34
Avail Cap(c_a), veh/h	288	1030	638	207	1059	374	828	1311	608	445	1285	595
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.71	0.71	0.71	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.7	35.7	26.9	54.5	40.7	37.0	32.9	24.6	33.5	46.2	37.7	31.5
Incr Delay (d2), s/veh	223.5	153.6	0.1	371.5	5.4	1.4	0.1	1.5	477.9	0.7	7.9	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.6	38.6	1.7	14.1	12.8	5.3	1.4	8.5	100.5	2.9	12.6	4.0
LnGrp Delay(d),s/veh	274.2	189.3	27.1	426.0	46.1	38.4	33.0	26.1	511.4	46.8	45.6	33.6
LnGrp LOS	F	F	C	F	D	D	C	C	F	D	D	C
Approach Vol, veh/h		1952			1340			2046			1109	
Approach Delay, s/veh		194.4			149.9			322.0			44.2	
Approach LOS		F			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.2	55.0	13.3	39.0	35.7	40.5	16.5	35.8
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	6.0	6.0	6.0	5.7
Max Green Setting (Gmax), s	5.0	49.0	7.3	* 33	6.0	48.0	6.0	34.3
Max Q Clear Time (g_c+I1), s	8.7	53.0	11.0	37.0	5.2	29.6	14.5	27.2
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.1	3.9	0.0	2.6

Intersection Summary	
HCM 2010 Ctrl Delay	199.8
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	388	1260	147	340	723	169	101	635	1146	178	707	136
Future Volume (veh/h)	388	1260	147	340	723	169	101	635	1146	178	707	136
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1471	1827	1471	1471	1827	1471	1683	1597	1683	1683	1597	1683
Adj Flow Rate, veh/h	422	1370	160	370	786	184	110	690	1246	193	768	148
Adj No. of Lanes	2	3	1	2	3	1	1	2	2	2	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	19	4	19	19	4	19	4	19	4	4	19	4
Cap, veh/h	276	1593	399	276	1580	396	95	1059	879	293	1165	967
Arrive On Green	0.10	0.32	0.32	0.10	0.32	0.32	0.06	0.35	0.35	0.09	0.38	0.38
Sat Flow, veh/h	2717	4988	1250	2717	4988	1250	1603	3034	2517	3109	3034	2517
Grp Volume(v), veh/h	422	1370	160	370	786	184	110	690	1246	193	768	148
Grp Sat Flow(s),veh/h/ln	1359	1663	1250	1359	1663	1250	1603	1517	1259	1554	1517	1259
Q Serve(g_s), s	12.0	30.4	11.8	12.0	15.1	13.9	7.0	22.6	41.2	7.1	24.6	4.5
Cycle Q Clear(g_c), s	12.0	30.4	11.8	12.0	15.1	13.9	7.0	22.6	41.2	7.1	24.6	4.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	276	1593	399	276	1580	396	95	1059	879	293	1165	967
V/C Ratio(X)	1.53	0.86	0.40	1.34	0.50	0.46	1.16	0.65	1.42	0.66	0.66	0.15
Avail Cap(c_a), veh/h	276	1593	399	276	1580	396	95	1059	879	316	1188	986
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.69	0.69	0.69	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	37.7	31.4	53.0	32.7	32.3	55.5	32.4	38.4	51.6	30.0	23.8
Incr Delay (d2), s/veh	249.7	4.5	2.1	174.2	1.1	3.7	140.7	1.4	194.7	4.5	1.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	14.1	14.6	4.3	11.2	7.1	5.2	6.8	9.7	38.0	3.2	10.6	1.6
LnGrp Delay(d),s/veh	302.7	42.2	33.4	227.2	33.8	36.0	196.2	33.8	233.1	56.1	31.3	23.9
LnGrp LOS	F	D	C	F	C	D	F	C	F	E	C	C
Approach Vol, veh/h		1952			1340			2046			1109	
Approach Delay, s/veh		97.8			87.5			163.9			34.6	
Approach LOS		F			F			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.1	45.2	16.0	41.7	11.0	49.3	16.0	41.7
Change Period (Y+Rc), s	6.0	6.0	5.7	6.0	6.0	6.0	6.0	* 6
Max Green Setting (Gmax), s	10.0	39.2	10.3	34.8	5.0	44.2	10.0	* 35
Max Q Clear Time (g_c+I1), s	9.1	43.2	14.0	32.4	9.0	26.6	14.0	17.1
Green Ext Time (p_c), s	0.1	0.0	0.0	2.1	0.0	13.1	0.0	11.5

Intersection Summary	
HCM 2010 Ctrl Delay	105.8
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

User approved changes to right turn type.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	309	1407	160	368	832	127	112	445	1206	180	764	106
Future Volume (veh/h)	309	1407	160	368	832	127	112	445	1206	180	764	106
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1471	1827	1471	1471	1827	1471	1683	1597	1683	1683	1597	1683
Adj Flow Rate, veh/h	336	1529	174	400	904	138	122	484	1311	196	830	115
Adj No. of Lanes	2	2	2	2	2	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	19	4	19	19	4	19	4	19	4	4	19	4
Cap, veh/h	231	1030	638	207	1008	356	776	1311	608	445	988	458
Arrive On Green	0.11	0.39	0.39	0.10	0.39	0.39	0.25	0.43	0.43	0.14	0.33	0.33
Sat Flow, veh/h	2717	3471	2151	2717	3471	1227	3109	3034	1407	3109	3034	1405
Grp Volume(v), veh/h	336	1529	174	400	904	138	122	484	1311	196	830	115
Grp Sat Flow(s),veh/h/ln	1359	1736	1075	1359	1736	1227	1554	1517	1407	1554	1517	1405
Q Serve(g_s), s	10.0	35.0	6.5	9.0	28.9	9.6	3.6	12.7	51.0	6.8	30.0	7.1
Cycle Q Clear(g_c), s	10.0	35.0	6.5	9.0	28.9	9.6	3.6	12.7	51.0	6.8	30.0	7.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	231	1030	638	207	1008	356	776	1311	608	445	988	458
V/C Ratio(X)	1.45	1.49	0.27	1.93	0.90	0.39	0.16	0.37	2.16	0.44	0.84	0.25
Avail Cap(c_a), veh/h	231	1030	638	207	1059	374	776	1311	608	445	1285	595
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.64	0.64	0.64	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.3	35.7	27.1	53.0	34.6	28.6	34.6	22.6	33.5	46.2	36.9	29.2
Incr Delay (d2), s/veh	219.1	221.7	0.1	435.2	9.5	0.7	0.1	0.8	525.7	0.7	8.5	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.8	48.4	1.9	15.9	15.1	3.3	1.6	5.5	108.6	3.0	13.7	2.9
LnGrp Delay(d),s/veh	271.4	257.4	27.2	488.2	44.1	29.3	34.7	23.4	559.2	46.9	45.4	30.5
LnGrp LOS	F	F	C	F	D	C	C	C	F	D	D	C
Approach Vol, veh/h		2039			1442			1917			1141	
Approach Delay, s/veh		240.1			165.8			390.6			44.2	
Approach LOS		F			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.2	55.0	13.3	39.0	33.8	42.4	14.0	38.3
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	6.0	6.0	6.0	5.7
Max Green Setting (Gmax), s	5.0	49.0	7.3	* 33	6.0	48.0	6.0	34.3
Max Q Clear Time (g_c+I1), s	8.8	53.0	11.0	37.0	5.6	32.0	12.0	30.9
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.1	3.9	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	233.6
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	474	1412	180	368	844	203	112	737	1206	209	876	170
Future Volume (veh/h)	474	1412	180	368	844	203	112	737	1206	209	876	170
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1471	1827	1471	1471	1827	1471	1683	1597	1683	1683	1597	1683
Adj Flow Rate, veh/h	515	1535	196	400	917	221	122	801	1311	227	952	185
Adj No. of Lanes	2	2	2	2	2	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	19	4	19	19	4	19	4	19	4	4	19	4
Cap, veh/h	223	1030	638	207	1018	360	667	1311	608	445	1095	507
Arrive On Green	0.08	0.30	0.30	0.10	0.39	0.39	0.21	0.43	0.43	0.14	0.36	0.36
Sat Flow, veh/h	2717	3471	2151	2717	3471	1227	3109	3034	1407	3109	3034	1406
Grp Volume(v), veh/h	515	1535	196	400	917	221	122	801	1311	227	952	185
Grp Sat Flow(s),veh/h/ln	1359	1736	1075	1359	1736	1227	1554	1517	1407	1554	1517	1406
Q Serve(g_s), s	9.7	35.0	8.3	9.0	29.3	17.0	3.8	24.0	51.0	8.0	34.5	11.4
Cycle Q Clear(g_c), s	9.7	35.0	8.3	9.0	29.3	17.0	3.8	24.0	51.0	8.0	34.5	11.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	223	1030	638	207	1018	360	667	1311	608	445	1095	507
V/C Ratio(X)	2.31	1.49	0.31	1.93	0.90	0.61	0.18	0.61	2.16	0.51	0.87	0.36
Avail Cap(c_a), veh/h	223	1030	638	207	1059	374	667	1311	608	445	1285	596
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.55	0.55	0.55	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.2	41.5	32.1	53.0	34.4	30.6	37.9	25.8	33.5	46.7	35.1	27.8
Incr Delay (d2), s/veh	596.9	223.8	0.1	435.0	9.8	2.7	0.1	2.1	525.7	1.0	9.4	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	22.1	48.7	2.5	15.9	15.4	6.0	1.6	10.4	108.6	3.5	15.8	4.7
LnGrp Delay(d),s/veh	651.0	265.3	32.3	488.1	44.2	33.3	38.0	28.0	559.2	47.7	44.6	29.8
LnGrp LOS	F	F	C	F	D	C	D	C	F	D	D	C
Approach Vol, veh/h		2246			1538			2234			1364	
Approach Delay, s/veh		333.4			158.1			340.3			43.1	
Approach LOS		F			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.2	55.0	13.3	39.0	29.6	46.6	13.7	38.6
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	6.0	6.0	6.0	5.7
Max Green Setting (Gmax), s	5.0	49.0	7.3	* 33	6.0	48.0	6.0	34.3
Max Q Clear Time (g_c+I1), s	10.0	53.0	11.0	37.0	5.8	36.5	11.7	31.3
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	4.1	0.0	1.6

Intersection Summary	
HCM 2010 Ctrl Delay	245.3
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	474	1412	180	368	844	203	112	737	1206	209	876	170
Future Volume (veh/h)	474	1412	180	368	844	203	112	737	1206	209	876	170
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1471	1827	1471	1471	1827	1471	1683	1597	1683	1683	1597	1683
Adj Flow Rate, veh/h	515	1535	196	400	917	221	122	801	1311	227	952	185
Adj No. of Lanes	2	3	1	2	3	1	1	2	2	2	2	2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	19	4	19	19	4	19	4	19	4	4	19	4
Cap, veh/h	276	1987	498	276	1974	495	95	1059	879	316	1188	986
Arrive On Green	0.10	0.40	0.40	0.10	0.40	0.40	0.06	0.35	0.35	0.10	0.39	0.39
Sat Flow, veh/h	2717	4988	1250	2717	4988	1250	1603	3034	2517	3109	3034	2517
Grp Volume(v), veh/h	515	1535	196	400	917	221	122	801	1311	227	952	185
Grp Sat Flow(s),veh/h/ln	1359	1663	1250	1359	1663	1250	1603	1517	1259	1554	1517	1259
Q Serve(g_s), s	12.0	31.6	13.2	12.0	16.1	15.3	7.0	27.6	41.2	8.3	32.8	5.7
Cycle Q Clear(g_c), s	12.0	31.6	13.2	12.0	16.1	15.3	7.0	27.6	41.2	8.3	32.8	5.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	276	1987	498	276	1974	495	95	1059	879	316	1188	986
V/C Ratio(X)	1.86	0.77	0.39	1.45	0.46	0.45	1.28	0.76	1.49	0.72	0.80	0.19
Avail Cap(c_a), veh/h	276	1987	498	276	1974	495	95	1059	879	316	1188	986
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.48	0.48	0.48	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	30.9	25.3	53.0	26.4	26.2	55.5	34.0	38.4	51.4	31.8	23.6
Incr Delay (d2), s/veh	395.4	1.5	1.1	219.8	0.7	2.8	186.2	3.2	227.3	7.6	4.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.7	14.8	4.7	12.9	7.5	5.7	8.0	11.9	42.0	3.9	14.4	2.0
LnGrp Delay(d),s/veh	448.4	32.3	26.5	272.8	27.1	28.9	241.7	37.1	265.7	59.0	35.9	23.7
LnGrp LOS	F	C	C	F	C	C	F	D	F	E	D	C
Approach Vol, veh/h		2246			1538			2234			1364	
Approach Delay, s/veh		127.2			91.3			182.4			38.1	
Approach LOS		F			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	45.2	16.0	51.3	11.0	50.2	16.0	51.3
Change Period (Y+Rc), s	6.0	6.0	5.7	6.0	6.0	6.0	6.0	* 6
Max Green Setting (Gmax), s	10.0	39.2	10.3	34.8	5.0	44.2	10.0	* 35
Max Q Clear Time (g_c+I1), s	10.3	43.2	14.0	33.6	9.0	34.8	14.0	18.1
Green Ext Time (p_c), s	0.0	0.0	0.0	1.1	0.0	8.3	0.0	12.5

Intersection Summary	
HCM 2010 Ctrl Delay	120.0
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

User approved changes to right turn type.

Intersection 14
Pegasus Dr & Merle Haggard Dr



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	884	254	44	746	321	106
Future Volume (veh/h)	884	254	44	746	321	106
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.99	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1835	1750	1683	1863	1683	1683
Adj Flow Rate, veh/h	961	276	48	811	349	115
Adj No. of Lanes	3	0	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	2	4	4
Cap, veh/h	1620	464	135	3029	686	315
Arrive On Green	0.42	0.42	0.08	0.60	0.22	0.22
Sat Flow, veh/h	4029	1107	1603	5253	3109	1430
Grp Volume(v), veh/h	830	407	48	811	349	115
Grp Sat Flow(s),veh/h/ln	1670	1632	1603	1695	1554	1430
Q Serve(g_s), s	8.4	8.4	1.2	3.3	4.3	3.0
Cycle Q Clear(g_c), s	8.4	8.4	1.2	3.3	4.3	3.0
Prop In Lane		0.68	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1400	684	135	3029	686	315
V/C Ratio(X)	0.59	0.59	0.36	0.27	0.51	0.36
Avail Cap(c_a), veh/h	2841	1388	295	5729	2359	1085
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.8	9.8	18.8	4.2	14.9	14.4
Incr Delay (d2), s/veh	0.4	0.8	1.6	0.0	0.6	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	3.9	0.6	1.5	1.9	1.2
LnGrp Delay(d),s/veh	10.2	10.6	20.4	4.3	15.5	15.1
LnGrp LOS	B	B	C	A	B	B
Approach Vol, veh/h	1237			859	464	
Approach Delay, s/veh	10.3			5.2	15.4	
Approach LOS	B			A	B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		13.6	7.7	22.2				29.9
Change Period (Y+Rc), s		5.3	5.7	5.7				5.7
Max Green Setting (Gmax), s		31.7	6.3	35.3				47.3
Max Q Clear Time (g_c+I1), s		6.3	3.2	10.4				5.3
Green Ext Time (p_c), s		2.0	1.2	5.9				4.1

Intersection Summary	
HCM 2010 Ctrl Delay	9.5
HCM 2010 LOS	A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	961	254	44	781	321	106
Future Volume (veh/h)	961	254	44	781	321	106
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1834	1750	1683	1863	1683	1683
Adj Flow Rate, veh/h	1045	276	48	849	349	115
Adj No. of Lanes	3	0	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	2	4	4
Cap, veh/h	2747	725	82	3973	471	217
Arrive On Green	0.70	0.70	0.05	0.78	0.15	0.15
Sat Flow, veh/h	4109	1041	1603	5253	3109	1430
Grp Volume(v), veh/h	884	437	48	849	349	115
Grp Sat Flow(s),veh/h/ln	1669	1646	1603	1695	1554	1430
Q Serve(g_s), s	13.0	13.0	3.5	5.2	12.8	8.8
Cycle Q Clear(g_c), s	13.0	13.0	3.5	5.2	12.8	8.8
Prop In Lane		0.63	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2326	1147	82	3973	471	217
V/C Ratio(X)	0.38	0.38	0.59	0.21	0.74	0.53
Avail Cap(c_a), veh/h	2326	1147	148	3973	993	457
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.57	0.57	0.81	0.81	1.00	1.00
Uniform Delay (d), s/veh	7.5	7.5	55.2	3.4	48.3	46.6
Incr Delay (d2), s/veh	0.3	0.6	5.3	0.1	2.3	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	6.0	1.7	2.5	5.6	3.6
LnGrp Delay(d),s/veh	7.7	8.0	60.5	3.5	50.6	48.6
LnGrp LOS	A	A	E	A	D	D
Approach Vol, veh/h	1321			897	464	
Approach Delay, s/veh	7.8			6.6	50.1	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		22.0	10.1	86.9				97.0
Change Period (Y+Rc), s		5.3	5.7	5.7				5.7
Max Green Setting (Gmax), s		36.7	9.3	56.3				71.3
Max Q Clear Time (g_c+I1), s		14.8	5.5	15.0				7.2
Green Ext Time (p_c), s		1.9	0.0	14.1				15.2

Intersection Summary	
HCM 2010 Ctrl Delay	14.7
HCM 2010 LOS	B



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2102	287	80	2235	326	133
Future Volume (veh/h)	2102	287	80	2235	326	133
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1831	1750	1683	1863	1683	1683
Adj Flow Rate, veh/h	2285	312	87	2429	354	145
Adj No. of Lanes	3	0	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	2	4	4
Cap, veh/h	3115	414	80	3972	473	218
Arrive On Green	1.00	1.00	0.05	0.78	0.15	0.15
Sat Flow, veh/h	4628	593	1603	5253	3109	1430
Grp Volume(v), veh/h	1690	907	87	2429	354	145
Grp Sat Flow(s),veh/h/ln	1666	1724	1603	1695	1554	1430
Q Serve(g_s), s	0.0	0.0	6.0	24.0	13.1	11.5
Cycle Q Clear(g_c), s	0.0	0.0	6.0	24.0	13.1	11.5
Prop In Lane		0.34	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2326	1203	80	3972	473	218
V/C Ratio(X)	0.73	0.75	1.09	0.61	0.75	0.67
Avail Cap(c_a), veh/h	2326	1203	80	3972	811	373
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.09	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	57.0	5.5	48.7	48.0
Incr Delay (d2), s/veh	0.2	0.4	56.2	0.1	2.4	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.6	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	3.9	11.0	5.8	4.8
LnGrp Delay(d),s/veh	0.2	0.4	113.8	5.6	51.1	51.5
LnGrp LOS	A	A	F	A	D	D
Approach Vol, veh/h	2597			2516	499	
Approach Delay, s/veh	0.3			9.3	51.2	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		22.3	10.0	87.7				97.7
Change Period (Y+Rc), s		5.3	5.7	5.7				5.7
Max Green Setting (Gmax), s		30.0	4.3	69.0				79.0
Max Q Clear Time (g_c+I1), s		15.1	8.0	2.0				26.0
Green Ext Time (p_c), s		1.9	0.0	60.6				48.9

Intersection Summary	
HCM 2010 Ctrl Delay	8.8
HCM 2010 LOS	A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2179	287	80	2270	326	133
Future Volume (veh/h)	2179	287	80	2270	326	133
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1831	1750	1683	1863	1683	1683
Adj Flow Rate, veh/h	2368	312	87	2467	354	145
Adj No. of Lanes	3	0	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	2	4	4
Cap, veh/h	3131	400	80	3972	473	218
Arrive On Green	0.70	0.70	0.05	0.78	0.15	0.15
Sat Flow, veh/h	4651	574	1603	5253	3109	1430
Grp Volume(v), veh/h	1741	939	87	2467	354	145
Grp Sat Flow(s),veh/h/ln	1666	1727	1603	1695	1554	1430
Q Serve(g_s), s	39.6	43.2	6.0	24.7	13.1	11.5
Cycle Q Clear(g_c), s	39.6	43.2	6.0	24.7	13.1	11.5
Prop In Lane		0.33	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2325	1205	80	3972	473	218
V/C Ratio(X)	0.75	0.78	1.09	0.62	0.75	0.67
Avail Cap(c_a), veh/h	2325	1205	80	3972	811	373
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.09	1.00	1.00
Uniform Delay (d), s/veh	11.5	12.0	57.0	5.6	48.7	48.0
Incr Delay (d2), s/veh	0.2	0.5	56.2	0.1	2.4	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.6	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.0	20.5	3.9	11.4	5.8	4.8
LnGrp Delay(d),s/veh	11.7	12.5	113.8	5.6	51.1	51.5
LnGrp LOS	B	B	F	A	D	D
Approach Vol, veh/h	2680			2554	499	
Approach Delay, s/veh	12.0			9.3	51.2	
Approach LOS	B			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		22.3	10.0	87.7				97.7
Change Period (Y+Rc), s		5.3	5.7	5.7				5.7
Max Green Setting (Gmax), s		30.0	4.3	69.0				79.0
Max Q Clear Time (g_c+I1), s		15.1	8.0	45.2				26.7
Green Ext Time (p_c), s		1.9	0.0	23.0				48.8

Intersection Summary	
HCM 2010 Ctrl Delay	14.2
HCM 2010 LOS	B



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2179	287	80	2270	326	133
Future Volume (veh/h)	2179	287	80	2270	326	133
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1831	1750	1683	1863	1683	1683
Adj Flow Rate, veh/h	2368	312	87	2467	354	145
Adj No. of Lanes	3	0	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	2	4	4
Cap, veh/h	3131	400	80	3972	473	218
Arrive On Green	0.70	0.70	0.05	0.78	0.15	0.15
Sat Flow, veh/h	4651	574	1603	5253	3109	1430
Grp Volume(v), veh/h	1741	939	87	2467	354	145
Grp Sat Flow(s),veh/h/ln	1666	1727	1603	1695	1554	1430
Q Serve(g_s), s	39.6	43.2	6.0	24.7	13.1	11.5
Cycle Q Clear(g_c), s	39.6	43.2	6.0	24.7	13.1	11.5
Prop In Lane		0.33	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2325	1205	80	3972	473	218
V/C Ratio(X)	0.75	0.78	1.09	0.62	0.75	0.67
Avail Cap(c_a), veh/h	2325	1205	80	3972	811	373
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.21	0.21	0.09	0.09	1.00	1.00
Uniform Delay (d), s/veh	11.5	12.0	57.0	5.6	48.7	48.0
Incr Delay (d2), s/veh	0.5	1.1	56.2	0.1	2.4	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.6	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.0	20.7	3.9	11.4	5.8	4.8
LnGrp Delay(d),s/veh	11.9	13.1	113.8	5.6	51.1	51.5
LnGrp LOS	B	B	F	A	D	D
Approach Vol, veh/h	2680			2554	499	
Approach Delay, s/veh	12.3			9.3	51.2	
Approach LOS	B			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		22.3	10.0	87.7				97.7
Change Period (Y+Rc), s		5.3	5.7	5.7				5.7
Max Green Setting (Gmax), s		30.0	4.3	69.0				79.0
Max Q Clear Time (g_c+I1), s		15.1	8.0	45.2				26.7
Green Ext Time (p_c), s		1.9	0.0	23.0				48.8

Intersection Summary	
HCM 2010 Ctrl Delay	14.4
HCM 2010 LOS	B



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2233	325	91	2419	331	134
Future Volume (veh/h)	2233	325	91	2419	331	134
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1831	1750	1683	1863	1683	1683
Adj Flow Rate, veh/h	2427	353	99	2629	360	146
Adj No. of Lanes	3	0	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	2	4	4
Cap, veh/h	3084	432	80	3962	479	221
Arrive On Green	1.00	1.00	0.05	0.78	0.15	0.15
Sat Flow, veh/h	4597	620	1603	5253	3109	1430
Grp Volume(v), veh/h	1802	978	99	2629	360	146
Grp Sat Flow(s),veh/h/ln	1667	1719	1603	1695	1554	1430
Q Serve(g_s), s	0.0	0.0	6.0	28.4	13.3	11.5
Cycle Q Clear(g_c), s	0.0	0.0	6.0	28.4	13.3	11.5
Prop In Lane		0.36	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2319	1196	80	3962	479	221
V/C Ratio(X)	0.78	0.82	1.24	0.66	0.75	0.66
Avail Cap(c_a), veh/h	2319	1196	80	3962	811	373
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.09	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	57.0	6.1	48.5	47.8
Incr Delay (d2), s/veh	0.2	0.6	115.7	0.1	2.4	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.2	5.2	12.9	5.9	4.8
LnGrp Delay(d),s/veh	0.2	0.6	172.7	6.1	50.9	51.2
LnGrp LOS	A	A	F	A	D	D
Approach Vol, veh/h	2780			2728	506	
Approach Delay, s/veh	0.4			12.2	51.0	
Approach LOS	A			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		22.5	10.0	87.5				97.5
Change Period (Y+Rc), s		5.3	5.7	5.7				5.7
Max Green Setting (Gmax), s		30.0	4.3	69.0				79.0
Max Q Clear Time (g_c+I1), s		15.3	8.0	2.0				30.4
Green Ext Time (p_c), s		1.9	0.0	63.1				46.5

Intersection Summary	
HCM 2010 Ctrl Delay	10.0
HCM 2010 LOS	A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2328	325	91	2462	331	134
Future Volume (veh/h)	2328	325	91	2462	331	134
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1831	1750	1683	1863	1683	1683
Adj Flow Rate, veh/h	2530	353	99	2676	360	146
Adj No. of Lanes	3	0	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	2	4	4
Cap, veh/h	3103	415	80	3962	479	221
Arrive On Green	0.70	0.70	0.05	0.78	0.15	0.15
Sat Flow, veh/h	4625	596	1603	5253	3109	1430
Grp Volume(v), veh/h	1863	1020	99	2676	360	146
Grp Sat Flow(s),veh/h/ln	1666	1723	1603	1695	1554	1430
Q Serve(g_s), s	46.2	53.0	6.0	29.4	13.3	11.5
Cycle Q Clear(g_c), s	46.2	53.0	6.0	29.4	13.3	11.5
Prop In Lane		0.35	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2319	1199	80	3962	479	221
V/C Ratio(X)	0.80	0.85	1.24	0.68	0.75	0.66
Avail Cap(c_a), veh/h	2319	1199	80	3962	811	373
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.09	1.00	1.00
Uniform Delay (d), s/veh	12.6	13.6	57.0	6.2	48.5	47.8
Incr Delay (d2), s/veh	0.3	0.8	115.7	0.1	2.4	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.0	25.2	5.2	13.7	5.9	4.8
LnGrp Delay(d),s/veh	12.9	14.4	172.7	6.3	50.9	51.2
LnGrp LOS	B	B	F	A	D	D
Approach Vol, veh/h	2883			2775	506	
Approach Delay, s/veh	13.4			12.2	51.0	
Approach LOS	B			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		22.5	10.0	87.5				97.5
Change Period (Y+Rc), s		5.3	5.7	5.7				5.7
Max Green Setting (Gmax), s		30.0	4.3	69.0				79.0
Max Q Clear Time (g_c+I1), s		15.3	8.0	55.0				31.4
Green Ext Time (p_c), s		1.9	0.0	13.9				45.9

Intersection Summary	
HCM 2010 Ctrl Delay	15.9
HCM 2010 LOS	B



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2328	325	91	2462	331	134
Future Volume (veh/h)	2328	325	91	2462	331	134
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1831	1750	1683	1863	1683	1683
Adj Flow Rate, veh/h	2530	353	99	2676	360	146
Adj No. of Lanes	3	0	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	2	4	4
Cap, veh/h	3103	415	80	3962	479	221
Arrive On Green	0.70	0.70	0.05	0.78	0.15	0.15
Sat Flow, veh/h	4625	596	1603	5253	3109	1430
Grp Volume(v), veh/h	1863	1020	99	2676	360	146
Grp Sat Flow(s),veh/h/ln	1666	1723	1603	1695	1554	1430
Q Serve(g_s), s	46.2	53.0	6.0	29.4	13.3	11.5
Cycle Q Clear(g_c), s	46.2	53.0	6.0	29.4	13.3	11.5
Prop In Lane		0.35	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2319	1199	80	3962	479	221
V/C Ratio(X)	0.80	0.85	1.24	0.68	0.75	0.66
Avail Cap(c_a), veh/h	2319	1199	80	3962	811	373
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.09	1.00	1.00
Uniform Delay (d), s/veh	12.6	13.6	57.0	6.2	48.5	47.8
Incr Delay (d2), s/veh	0.3	0.8	115.7	0.1	2.4	3.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.0	25.2	5.2	13.7	5.9	4.8
LnGrp Delay(d),s/veh	12.9	14.4	172.7	6.3	50.9	51.2
LnGrp LOS	B	B	F	A	D	D
Approach Vol, veh/h	2883			2775	506	
Approach Delay, s/veh	13.4			12.2	51.0	
Approach LOS	B			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		22.5	10.0	87.5				97.5
Change Period (Y+Rc), s		5.3	5.7	5.7				5.7
Max Green Setting (Gmax), s		30.0	4.3	69.0				79.0
Max Q Clear Time (g_c+I1), s		15.3	8.0	55.0				31.4
Green Ext Time (p_c), s		1.9	0.0	13.9				45.9

Intersection Summary	
HCM 2010 Ctrl Delay	15.9
HCM 2010 LOS	B



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	741	356	75	558	174	30
Future Volume (veh/h)	741	356	75	558	174	30
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1838	1750	1683	1863	1683	1683
Adj Flow Rate, veh/h	805	387	82	607	189	33
Adj No. of Lanes	3	0	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	2	4	4
Cap, veh/h	2395	1115	126	4225	300	138
Arrive On Green	1.00	1.00	0.08	0.83	0.10	0.10
Sat Flow, veh/h	3511	1557	1603	5253	3109	1430
Grp Volume(v), veh/h	805	387	82	607	189	33
Grp Sat Flow(s),veh/h/ln	1673	1557	1603	1695	1554	1430
Q Serve(g_s), s	0.0	0.0	5.5	2.5	6.4	2.3
Cycle Q Clear(g_c), s	0.0	0.0	5.5	2.5	6.4	2.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2395	1115	126	4225	300	138
V/C Ratio(X)	0.34	0.35	0.65	0.14	0.63	0.24
Avail Cap(c_a), veh/h	2395	1115	248	4225	933	429
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.70	0.70	0.93	0.93	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	49.2	1.8	47.8	46.0
Incr Delay (d2), s/veh	0.3	0.6	5.2	0.1	2.2	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.2	2.6	1.2	2.8	1.0
LnGrp Delay(d),s/veh	0.3	0.6	54.4	1.9	50.0	46.9
LnGrp LOS	A	A	D	A	D	D
Approach Vol, veh/h	1192			689	222	
Approach Delay, s/veh	0.4			8.1	49.5	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		14.6	12.7	82.7				95.4
Change Period (Y+Rc), s		5.3	5.7	5.7				5.7
Max Green Setting (Gmax), s		31.7	15.3	46.3				67.3
Max Q Clear Time (g_c+I1), s		8.4	7.5	2.0				4.5
Green Ext Time (p_c), s		0.9	0.1	10.7				11.1

Intersection Summary	
HCM 2010 Ctrl Delay	8.1
HCM 2010 LOS	A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	768	356	75	630	174	30
Future Volume (veh/h)	768	356	75	630	174	30
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.99	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1838	1750	1683	1863	1683	1683
Adj Flow Rate, veh/h	835	387	82	685	189	33
Adj No. of Lanes	3	0	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	2	4	4
Cap, veh/h	1463	675	574	4225	300	138
Arrive On Green	0.87	0.87	0.36	0.83	0.10	0.10
Sat Flow, veh/h	3518	1547	1603	5253	3109	1430
Grp Volume(v), veh/h	833	389	82	685	189	33
Grp Sat Flow(s),veh/h/ln	1673	1555	1603	1695	1554	1430
Q Serve(g_s), s	6.9	7.0	3.8	2.9	6.4	2.3
Cycle Q Clear(g_c), s	6.9	7.0	3.8	2.9	6.4	2.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1460	678	574	4225	300	138
V/C Ratio(X)	0.57	0.57	0.14	0.16	0.63	0.24
Avail Cap(c_a), veh/h	1460	678	574	4225	933	429
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.63	0.63	0.90	0.90	1.00	1.00
Uniform Delay (d), s/veh	4.4	4.4	23.9	1.8	47.8	46.0
Incr Delay (d2), s/veh	1.0	2.2	0.1	0.1	2.2	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	3.2	1.7	1.4	2.8	1.0
LnGrp Delay(d),s/veh	5.4	6.6	24.0	1.9	50.0	46.9
LnGrp LOS	A	A	C	A	D	D
Approach Vol, veh/h	1222			767	222	
Approach Delay, s/veh	5.8			4.3	49.5	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		14.6	43.4	52.0				95.4
Change Period (Y+Rc), s		5.3	5.7	5.7				5.7
Max Green Setting (Gmax), s		31.7	15.3	46.3				67.3
Max Q Clear Time (g_c+I1), s		8.4	5.8	9.0				4.9
Green Ext Time (p_c), s		0.9	2.4	6.3				3.6

Intersection Summary	
HCM 2010 Ctrl Delay	9.7
HCM 2010 LOS	A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2103	403	90	975	177	55
Future Volume (veh/h)	2103	403	90	975	177	55
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1833	1750	1683	1863	1683	1683
Adj Flow Rate, veh/h	2286	438	98	1060	192	60
Adj No. of Lanes	3	0	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	2	4	4
Cap, veh/h	2355	431	398	4254	298	137
Arrive On Green	1.00	1.00	0.25	0.84	0.10	0.10
Sat Flow, veh/h	4414	777	1603	5253	3109	1430
Grp Volume(v), veh/h	1771	953	98	1060	192	60
Grp Sat Flow(s),veh/h/ln	1668	1691	1603	1695	1554	1430
Q Serve(g_s), s	0.0	65.4	5.8	5.1	7.0	4.7
Cycle Q Clear(g_c), s	0.0	65.4	5.8	5.1	7.0	4.7
Prop In Lane		0.46	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1849	937	398	4254	298	137
V/C Ratio(X)	0.96	1.02	0.25	0.25	0.65	0.44
Avail Cap(c_a), veh/h	1849	937	398	4254	825	379
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.81	0.81	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	35.5	2.0	51.4	50.4
Incr Delay (d2), s/veh	1.8	13.4	0.3	0.1	2.3	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.5	2.6	2.4	3.1	1.9
LnGrp Delay(d),s/veh	1.8	13.4	35.8	2.1	53.8	52.6
LnGrp LOS	A	F	D	A	D	D
Approach Vol, veh/h	2724			1158	252	
Approach Delay, s/veh	5.9			5.0	53.5	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		15.3	33.3	69.4				102.7
Change Period (Y+Rc), s		5.3	5.7	5.7				5.7
Max Green Setting (Gmax), s		30.0	7.6	63.7				77.0
Max Q Clear Time (g_c+I1), s		9.0	7.8	67.4				7.1
Green Ext Time (p_c), s		1.0	0.0	0.0				6.1

Intersection Summary	
HCM 2010 Ctrl Delay	8.5
HCM 2010 LOS	A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2130	403	90	1047	177	55
Future Volume (veh/h)	2130	403	90	1047	177	55
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1833	1750	1683	1863	1683	1683
Adj Flow Rate, veh/h	2315	438	98	1138	192	60
Adj No. of Lanes	3	0	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	2	4	4
Cap, veh/h	2361	426	398	4254	298	137
Arrive On Green	1.00	1.00	0.25	0.84	0.10	0.10
Sat Flow, veh/h	4425	768	1603	5253	3109	1430
Grp Volume(v), veh/h	1788	965	98	1138	192	60
Grp Sat Flow(s),veh/h/ln	1668	1693	1603	1695	1554	1430
Q Serve(g_s), s	0.0	65.4	5.8	5.6	7.0	4.7
Cycle Q Clear(g_c), s	0.0	65.4	5.8	5.6	7.0	4.7
Prop In Lane		0.45	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1848	938	398	4254	298	137
V/C Ratio(X)	0.97	1.03	0.25	0.27	0.65	0.44
Avail Cap(c_a), veh/h	1848	938	398	4254	825	379
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.78	0.78	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	35.5	2.0	51.4	50.4
Incr Delay (d2), s/veh	2.2	17.5	0.2	0.1	2.3	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	4.6	2.6	2.6	3.1	1.9
LnGrp Delay(d),s/veh	2.2	17.5	35.8	2.2	53.8	52.6
LnGrp LOS	A	F	D	A	D	D
Approach Vol, veh/h	2753			1236	252	
Approach Delay, s/veh	7.6			4.8	53.5	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		15.3	33.3	69.4				102.7
Change Period (Y+Rc), s		5.3	5.7	5.7				5.7
Max Green Setting (Gmax), s		30.0	7.6	63.7				77.0
Max Q Clear Time (g_c+I1), s		9.0	7.8	67.4				7.6
Green Ext Time (p_c), s		1.0	0.0	0.0				6.6

Intersection Summary	
HCM 2010 Ctrl Delay	9.5
HCM 2010 LOS	A



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2130	403	90	1047	177	55
Future Volume (veh/h)	2130	403	90	1047	177	55
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1833	1750	1683	1863	1683	1683
Adj Flow Rate, veh/h	2315	438	98	1138	192	60
Adj No. of Lanes	3	0	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	2	4	4
Cap, veh/h	3216	580	80	4263	296	136
Arrive On Green	0.75	0.75	0.05	0.84	0.10	0.10
Sat Flow, veh/h	4425	769	1603	5253	3109	1430
Grp Volume(v), veh/h	1788	965	98	1138	192	60
Grp Sat Flow(s),veh/h/ln	1668	1694	1603	1695	1554	1430
Q Serve(g_s), s	34.0	39.0	6.0	5.6	7.1	4.8
Cycle Q Clear(g_c), s	34.0	39.0	6.0	5.6	7.1	4.8
Prop In Lane		0.45	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2518	1279	80	4263	296	136
V/C Ratio(X)	0.71	0.75	1.22	0.27	0.65	0.44
Avail Cap(c_a), veh/h	2518	1279	80	4263	811	373
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.20	0.20	0.75	0.75	1.00	1.00
Uniform Delay (d), s/veh	7.8	8.4	57.0	2.0	52.4	51.3
Incr Delay (d2), s/veh	0.3	0.8	158.7	0.1	2.4	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.5	18.3	6.2	2.6	3.2	2.0
LnGrp Delay(d),s/veh	8.1	9.2	215.7	2.1	54.8	53.5
LnGrp LOS	A	A	F	A	D	D
Approach Vol, veh/h	2753			1236	252	
Approach Delay, s/veh	8.5			19.1	54.5	
Approach LOS	A			B	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		15.4	10.0	94.6				104.6
Change Period (Y+Rc), s		5.3	5.7	5.7				5.7
Max Green Setting (Gmax), s		30.0	4.3	69.0				79.0
Max Q Clear Time (g_c+I1), s		9.1	8.0	41.0				7.6
Green Ext Time (p_c), s		1.0	0.0	24.1				50.3

Intersection Summary	
HCM 2010 Ctrl Delay	14.3
HCM 2010 LOS	B



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2213	456	109	1113	179	56
Future Volume (veh/h)	2213	456	109	1113	179	56
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1833	1750	1683	1863	1683	1683
Adj Flow Rate, veh/h	2405	496	118	1210	195	61
Adj No. of Lanes	3	0	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	2	4	4
Cap, veh/h	2332	451	396	4248	301	138
Arrive On Green	1.00	1.00	0.25	0.84	0.10	0.10
Sat Flow, veh/h	4372	814	1603	5253	3109	1430
Grp Volume(v), veh/h	1874	1027	118	1210	195	61
Grp Sat Flow(s),veh/h/ln	1668	1685	1603	1695	1554	1430
Q Serve(g_s), s	65.4	65.4	7.1	6.1	7.1	4.7
Cycle Q Clear(g_c), s	65.4	65.4	7.1	6.1	7.1	4.7
Prop In Lane		0.48	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1849	934	396	4248	301	138
V/C Ratio(X)	1.01	1.10	0.30	0.28	0.65	0.44
Avail Cap(c_a), veh/h	1849	934	396	4248	825	379
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.73	0.73	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	36.1	2.1	51.4	50.3
Incr Delay (d2), s/veh	10.0	46.8	0.3	0.1	2.3	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	12.1	3.1	2.8	3.2	2.0
LnGrp Delay(d),s/veh	10.0	46.8	36.4	2.2	53.7	52.5
LnGrp LOS	F	F	D	A	D	D
Approach Vol, veh/h	2901			1328	256	
Approach Delay, s/veh	23.1			5.3	53.4	
Approach LOS	C			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		15.4	33.2	69.4				102.6
Change Period (Y+Rc), s		5.3	5.7	5.7				5.7
Max Green Setting (Gmax), s		30.0	7.6	63.7				77.0
Max Q Clear Time (g_c+I1), s		9.1	9.1	67.4				8.1
Green Ext Time (p_c), s		1.0	0.0	0.0				7.3

Intersection Summary	
HCM 2010 Ctrl Delay	19.5
HCM 2010 LOS	B



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2247	456	109	1201	179	56
Future Volume (veh/h)	2247	456	109	1201	179	56
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1833	1750	1683	1863	1683	1683
Adj Flow Rate, veh/h	2442	496	118	1305	195	61
Adj No. of Lanes	3	0	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	2	4	4
Cap, veh/h	2339	445	396	4248	301	138
Arrive On Green	1.00	1.00	0.25	0.84	0.10	0.10
Sat Flow, veh/h	4385	803	1603	5253	3109	1430
Grp Volume(v), veh/h	1896	1042	118	1305	195	61
Grp Sat Flow(s),veh/h/ln	1668	1687	1603	1695	1554	1430
Q Serve(g_s), s	0.0	65.4	7.1	6.7	7.1	4.7
Cycle Q Clear(g_c), s	0.0	65.4	7.1	6.7	7.1	4.7
Prop In Lane		0.48	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1849	935	396	4248	301	138
V/C Ratio(X)	1.03	1.11	0.30	0.31	0.65	0.44
Avail Cap(c_a), veh/h	1849	935	396	4248	825	379
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.69	0.69	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	36.1	2.1	51.4	50.3
Incr Delay (d2), s/veh	14.3	53.1	0.3	0.1	2.3	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	13.8	3.1	3.1	3.2	2.0
LnGrp Delay(d),s/veh	14.3	53.1	36.4	2.3	53.7	52.5
LnGrp LOS	F	F	D	A	D	D
Approach Vol, veh/h	2938			1423	256	
Approach Delay, s/veh	28.1			5.1	53.4	
Approach LOS	C			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		15.4	33.2	69.4				102.6
Change Period (Y+Rc), s		5.3	5.7	5.7				5.7
Max Green Setting (Gmax), s		30.0	7.6	63.7				77.0
Max Q Clear Time (g_c+I1), s		9.1	9.1	67.4				8.7
Green Ext Time (p_c), s		1.0	0.0	0.0				8.2

Intersection Summary	
HCM 2010 Ctrl Delay	22.4
HCM 2010 LOS	C

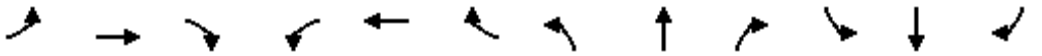


Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	2247	456	109	1201	179	56
Future Volume (veh/h)	2247	456	109	1201	179	56
Number	4	14	3	8	5	12
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1833	1750	1683	1863	1683	1683
Adj Flow Rate, veh/h	2442	496	118	1305	195	61
Adj No. of Lanes	3	0	1	3	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	4	4	2	4	4
Cap, veh/h	3181	606	80	4257	299	138
Arrive On Green	0.75	0.75	0.05	0.84	0.10	0.10
Sat Flow, veh/h	4385	804	1603	5253	3109	1430
Grp Volume(v), veh/h	1896	1042	118	1305	195	61
Grp Sat Flow(s),veh/h/ln	1668	1688	1603	1695	1554	1430
Q Serve(g_s), s	38.9	47.6	6.0	6.7	7.3	4.8
Cycle Q Clear(g_c), s	38.9	47.6	6.0	6.7	7.3	4.8
Prop In Lane		0.48	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2515	1272	80	4257	299	138
V/C Ratio(X)	0.75	0.82	1.47	0.31	0.65	0.44
Avail Cap(c_a), veh/h	2515	1272	80	4257	811	373
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.63	0.63	1.00	1.00
Uniform Delay (d), s/veh	8.4	9.5	57.0	2.1	52.3	51.2
Incr Delay (d2), s/veh	0.2	0.6	250.4	0.1	2.4	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.7	21.9	8.2	3.2	3.2	2.0
LnGrp Delay(d),s/veh	8.6	10.1	307.4	2.3	54.7	53.4
LnGrp LOS	A	B	F	A	D	D
Approach Vol, veh/h	2938			1423	256	
Approach Delay, s/veh	9.1			27.6	54.4	
Approach LOS	A			C	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4				8
Phs Duration (G+Y+Rc), s		15.5	10.0	94.5				104.5
Change Period (Y+Rc), s		5.3	5.7	5.7				5.7
Max Green Setting (Gmax), s		30.0	4.3	69.0				79.0
Max Q Clear Time (g_c+I1), s		9.3	8.0	49.6				8.7
Green Ext Time (p_c), s		1.0	0.0	18.0				55.7

Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B

Intersection 15
Wings Wy & Merle Haggard Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	847	51	21	471	25	54	2	26	50	1	378
Future Volume (veh/h)	275	847	51	21	471	25	54	2	26	50	1	378
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Lanes Open During Work Zone												
Adj Sat Flow, veh/h/ln	1723	1841	1723	1723	1841	1723	1695	1870	1695	1695	1870	1695
Adj Flow Rate, veh/h	299	921	55	23	512	27	59	2	28	54	1	411
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	398	1650	686	105	1328	552	130	86	117	972	1118	450
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.12	0.47	0.47	0.03	0.38	0.38	0.04	0.05	0.05	0.31	0.31	0.31
Unsig. Movement Delay												
Ln Grp Delay, s/veh	53.9	22.9	16.9	55.0	26.6	2.7	56.3	52.5	41.0	27.9	27.0	58.3
Ln Grp LOS	D	C	B	E	C	A	E	D	D	C	C	E
Approach Vol, veh/h		1275			562			89			466	
Approach Delay, s/veh		29.9			26.6			51.4			54.7	
Approach LOS		C			C			D			D	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs	2	1	3	4	5	6	7	8
Case No	3.0	2.0	2.0	3.0	2.0	3.0	2.0	3.0
Phs Duration (G+Y+Rc), s	9.3	39.7	7.8	58.2	8.8	40.2	18.4	47.7
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green (Gmax), s	38.1	4.3	4.0	46.6	4.0	38.4	14.3	36.3
Max Allow Headway (MAH), s	4.4	4.2	4.1	4.1	4.2	4.4	4.1	4.1
Max Q Clear (g_c+I1), s	3.1	3.4	2.8	23.7	4.1	33.8	12.4	14.2
Green Ext Time (g_e), s	0.1	0.0	0.0	4.5	0.0	0.8	0.2	2.2
Prob of Phs Call (p_c)	1.00	0.82	0.52	1.00	0.85	1.00	1.00	1.00
Prob of Max Out (p_x)	0.00	1.00	1.00	0.00	1.00	0.94	1.00	0.00

Left-Turn Movement Data								
Assigned Mvmt		1	3		5		7	
Mvmt Sat Flow, veh/h		3132	3183		3132		3183	

Through Movement Data								
Assigned Mvmt	2			4		6		8
Mvmt Sat Flow, veh/h	1870			3497		3554		3497

Right-Turn Movement Data								
Assigned Mvmt	12			14		16		18
Mvmt Sat Flow, veh/h	2529			1455		1430		1454

Left Lane Group Data								
Assigned Mvmt	0	1	3	0	5	0	7	0
Lane Assignment		L (Prot)	L (Prot)		L (Prot)		L (Prot)	

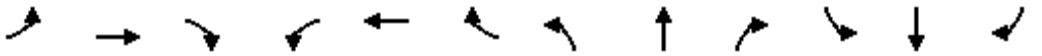
Lanes in Grp	0	2	2	0	2	0	2	0
Grp Vol (v), veh/h	0	54	23	0	59	0	299	0
Grp Sat Flow (s), veh/h/ln	0	1566	1591	0	1566	0	1591	0
Q Serve Time (g_s), s	0.0	1.4	0.8	0.0	2.1	0.0	10.4	0.0
Cycle Q Clear Time (g_c), s	0.0	1.4	0.8	0.0	2.1	0.0	10.4	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	0	0	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	0	972	105	0	130	0	398	0
V/C Ratio (X)	0.00	0.06	0.22	0.00	0.45	0.00	0.75	0.00
Avail Cap (c_a), veh/h	0	972	158	0	144	0	443	0
Upstream Filter (I)	0.00	1.00	0.83	0.00	1.00	0.00	0.82	0.00
Uniform Delay (d1), s/veh	0.0	27.8	54.2	0.0	53.8	0.0	48.6	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.9	0.0	2.4	0.0	5.3	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	27.9	55.0	0.0	56.3	0.0	53.9	0.0
1st-Term Q (Q1), veh/ln	0.0	0.5	0.3	0.0	0.8	0.0	4.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00
%ile Back of Q (50%), veh/ln	0.0	0.5	0.3	0.0	0.9	0.0	4.3	0.0
%ile Storage Ratio (RQ%)	0.00	0.09	0.05	0.00	0.09	0.00	0.47	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	2	0	0	4	0	6	0	8
Lane Assignment	T			T		T		T
Lanes in Grp	1	0	0	2	0	2	0	2
Grp Vol (v), veh/h	2	0	0	921	0	1	0	512
Grp Sat Flow (s), veh/h/ln	1870	0	0	1749	0	1777	0	1749
Q Serve Time (g_s), s	0.1	0.0	0.0	21.7	0.0	0.0	0.0	12.2
Cycle Q Clear Time (g_c), s	0.1	0.0	0.0	21.7	0.0	0.0	0.0	12.2
Lane Grp Cap (c), veh/h	86	0	0	1650	0	1118	0	1328
V/C Ratio (X)	0.02	0.00	0.00	0.56	0.00	0.00	0.00	0.39
Avail Cap (c_a), veh/h	641	0	0	1650	0	1227	0	1328
Upstream Filter (I)	1.00	0.00	0.00	0.82	0.00	1.00	0.00	0.83
Uniform Delay (d1), s/veh	52.4	0.0	0.0	21.8	0.0	27.0	0.0	25.9
Incr Delay (d2), s/veh	0.1	0.0	0.0	1.1	0.0	0.0	0.0	0.7
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	52.5	0.0	0.0	22.9	0.0	27.0	0.0	26.6
1st-Term Q (Q1), veh/ln	0.1	0.0	0.0	8.2	0.0	0.0	0.0	4.8
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.1

3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.1	0.0	0.0	8.4	0.0	0.0	0.0	4.9
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.10
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	12	0	0	14	0	16	0	18
Lane Assignment	R			R		R		R
Lanes in Grp	2	0	0	1	0	1	0	1
Grp Vol (v), veh/h	28	0	0	55	0	411	0	27
Grp Sat Flow (s), veh/h/ln	1264	0	0	1455	0	1430	0	1454
Q Serve Time (g_s), s	1.1	0.0	0.0	2.4	0.0	31.8	0.0	0.5
Cycle Q Clear Time (g_c), s	1.1	0.0	0.0	2.4	0.0	31.8	0.0	0.5
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00
Lane Grp Cap (c), veh/h	117	0	0	686	0	450	0	552
V/C Ratio (X)	0.24	0.00	0.00	0.08	0.00	0.91	0.00	0.05
Avail Cap (c_a), veh/h	866	0	0	686	0	494	0	552
Upstream Filter (I)	1.00	0.00	0.00	0.82	0.00	1.00	0.00	0.83
Uniform Delay (d1), s/veh	39.9	0.0	0.0	16.7	0.0	37.9	0.0	2.6
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.2	0.0	20.4	0.0	0.1
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	41.0	0.0	0.0	16.9	0.0	58.3	0.0	2.7
1st-Term Q (Q1), veh/ln	0.4	0.0	0.0	0.7	0.0	10.4	0.0	0.4
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.4	0.0	0.0	0.8	0.0	13.0	0.0	0.5
%ile Storage Ratio (RQ%)	0.04	0.00	0.00	0.06	0.00	1.68	0.00	0.07
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	34.8
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	924	51	21	506	25	54	2	26	50	1	378
Future Volume (veh/h)	275	924	51	21	506	25	54	2	26	50	1	378
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q, veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj (A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Lanes Open During Work Zone												
Adj Sat Flow, veh/h/ln	1723	1841	1723	1723	1841	1723	1695	1870	1695	1695	1870	1695
Adj Flow Rate, veh/h	299	1004	55	23	550	27	59	2	28	54	1	411
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Opposing Right Turn Influence	Yes			Yes			Yes			Yes		
Cap, veh/h	398	1650	686	105	1328	552	130	86	117	972	1118	450
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Prop Arrive On Green	0.12	0.47	0.47	0.03	0.38	0.38	0.04	0.05	0.05	0.31	0.31	0.31
Unsig. Movement Delay												
Ln Grp Delay, s/veh	54.5	24.1	16.9	55.0	27.0	2.7	56.3	52.5	41.0	27.9	27.0	58.3
Ln Grp LOS	D	C	B	E	C	A	E	D	D	C	C	E
Approach Vol, veh/h		1358			600			89			466	
Approach Delay, s/veh		30.5			27.0			51.4			54.7	
Approach LOS		C			C			D			D	

Timer:	1	2	3	4	5	6	7	8
Assigned Phs	2	1	3	4	5	6	7	8
Case No	3.0	2.0	2.0	3.0	2.0	3.0	2.0	3.0
Phs Duration (G+Y+Rc), s	9.3	39.7	7.8	58.2	8.8	40.2	18.4	47.7
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green (Gmax), s	38.1	4.3	4.0	46.6	4.0	38.4	14.3	36.3
Max Allow Headway (MAH), s	4.4	4.2	4.1	4.1	4.2	4.4	4.1	4.1
Max Q Clear (g_c+I1), s	3.1	3.4	2.8	26.5	4.1	33.8	12.4	15.3
Green Ext Time (g_e), s	0.1	0.0	0.0	4.9	0.0	0.8	0.2	2.4
Prob of Phs Call (p_c)	1.00	0.82	0.52	1.00	0.85	1.00	1.00	1.00
Prob of Max Out (p_x)	0.00	1.00	1.00	0.00	1.00	0.94	1.00	0.00

Left-Turn Movement Data								
Assigned Mvmt		1	3		5		7	
Mvmt Sat Flow, veh/h		3132	3183		3132		3183	

Through Movement Data								
Assigned Mvmt	2			4		6		8
Mvmt Sat Flow, veh/h	1870			3497		3554		3497

Right-Turn Movement Data								
Assigned Mvmt	12			14		16		18
Mvmt Sat Flow, veh/h	2529			1455		1430		1454

Left Lane Group Data								
Assigned Mvmt	0	1	3	0	5	0	7	0
Lane Assignment		L (Prot)	L (Prot)		L (Prot)		L (Prot)	

Lanes in Grp	0	2	2	0	2	0	2	0
Grp Vol (v), veh/h	0	54	23	0	59	0	299	0
Grp Sat Flow (s), veh/h/ln	0	1566	1591	0	1566	0	1591	0
Q Serve Time (g_s), s	0.0	1.4	0.8	0.0	2.1	0.0	10.4	0.0
Cycle Q Clear Time (g_c), s	0.0	1.4	0.8	0.0	2.1	0.0	10.4	0.0
Perm LT Sat Flow (s_l), veh/h/ln	0	0	0	0	0	0	0	0
Shared LT Sat Flow (s_sh), veh/h/ln	0	0	0	0	0	0	0	0
Perm LT Eff Green (g_p), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Serve Time (g_u), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Perm LT Q Serve Time (g_ps), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Time to First Blk (g_f), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Serve Time pre Blk (g_fs), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop LT Inside Lane (P_L)	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00
Lane Grp Cap (c), veh/h	0	972	105	0	130	0	398	0
V/C Ratio (X)	0.00	0.06	0.22	0.00	0.45	0.00	0.75	0.00
Avail Cap (c_a), veh/h	0	972	158	0	144	0	443	0
Upstream Filter (I)	0.00	1.00	0.80	0.00	1.00	0.00	0.92	0.00
Uniform Delay (d1), s/veh	0.0	27.8	54.2	0.0	53.8	0.0	48.6	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.8	0.0	2.4	0.0	5.9	0.0
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	0.0	27.9	55.0	0.0	56.3	0.0	54.5	0.0
1st-Term Q (Q1), veh/ln	0.0	0.5	0.3	0.0	0.8	0.0	4.0	0.0
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	0.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00
%ile Back of Q (50%), veh/ln	0.0	0.5	0.3	0.0	0.9	0.0	4.3	0.0
%ile Storage Ratio (RQ%)	0.00	0.09	0.05	0.00	0.09	0.00	0.48	0.00
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Middle Lane Group Data								
Assigned Mvmt	2	0	0	4	0	6	0	8
Lane Assignment	T			T		T		T
Lanes in Grp	1	0	0	2	0	2	0	2
Grp Vol (v), veh/h	2	0	0	1004	0	1	0	550
Grp Sat Flow (s), veh/h/ln	1870	0	0	1749	0	1777	0	1749
Q Serve Time (g_s), s	0.1	0.0	0.0	24.5	0.0	0.0	0.0	13.3
Cycle Q Clear Time (g_c), s	0.1	0.0	0.0	24.5	0.0	0.0	0.0	13.3
Lane Grp Cap (c), veh/h	86	0	0	1650	0	1118	0	1328
V/C Ratio (X)	0.02	0.00	0.00	0.61	0.00	0.00	0.00	0.41
Avail Cap (c_a), veh/h	641	0	0	1650	0	1227	0	1328
Upstream Filter (I)	1.00	0.00	0.00	0.92	0.00	1.00	0.00	0.80
Uniform Delay (d1), s/veh	52.4	0.0	0.0	22.5	0.0	27.0	0.0	26.3
Incr Delay (d2), s/veh	0.1	0.0	0.0	1.5	0.0	0.0	0.0	0.8
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	52.5	0.0	0.0	24.1	0.0	27.0	0.0	27.0
1st-Term Q (Q1), veh/ln	0.1	0.0	0.0	9.2	0.0	0.0	0.0	5.2
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.1

3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.1	0.0	0.0	9.6	0.0	0.0	0.0	5.4
%ile Storage Ratio (RQ%)	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.11
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Right Lane Group Data								
Assigned Mvmt	12	0	0	14	0	16	0	18
Lane Assignment	R			R		R		R
Lanes in Grp	2	0	0	1	0	1	0	1
Grp Vol (v), veh/h	28	0	0	55	0	411	0	27
Grp Sat Flow (s), veh/h/ln	1264	0	0	1455	0	1430	0	1454
Q Serve Time (g_s), s	1.1	0.0	0.0	2.4	0.0	31.8	0.0	0.5
Cycle Q Clear Time (g_c), s	1.1	0.0	0.0	2.4	0.0	31.8	0.0	0.5
Prot RT Sat Flow (s_R), veh/h/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prot RT Eff Green (g_R), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Prop RT Outside Lane (P_R)	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00
Lane Grp Cap (c), veh/h	117	0	0	686	0	450	0	552
V/C Ratio (X)	0.24	0.00	0.00	0.08	0.00	0.91	0.00	0.05
Avail Cap (c_a), veh/h	866	0	0	686	0	494	0	552
Upstream Filter (I)	1.00	0.00	0.00	0.92	0.00	1.00	0.00	0.80
Uniform Delay (d1), s/veh	39.9	0.0	0.0	16.7	0.0	37.9	0.0	2.6
Incr Delay (d2), s/veh	1.1	0.0	0.0	0.2	0.0	20.4	0.0	0.1
Initial Q Delay (d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	41.0	0.0	0.0	16.9	0.0	58.3	0.0	2.7
1st-Term Q (Q1), veh/ln	0.4	0.0	0.0	0.7	0.0	10.4	0.0	0.4
2nd-Term Q (Q2), veh/ln	0.0	0.0	0.0	0.0	0.0	2.6	0.0	0.0
3rd-Term Q (Q3), veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q Factor (f_B%)	1.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00
%ile Back of Q (50%), veh/ln	0.4	0.0	0.0	0.8	0.0	13.0	0.0	0.5
%ile Storage Ratio (RQ%)	0.04	0.00	0.00	0.06	0.00	1.68	0.00	0.07
Initial Q (Qb), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Final (Residual) Q (Qe), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Delay (ds), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Q (Qs), veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sat Cap (cs), veh/h	0	0	0	0	0	0	0	0
Initial Q Clear Time (tc), h	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	34.9
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1072	1319	148	40	1156	164	163	31	49	172	15	1160
Future Volume (veh/h)	1072	1319	148	40	1156	164	163	31	49	172	15	1160
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	1165	1434	161	43	1257	178	177	34	53	187	16	1261
Adj No. of Lanes	2	2	1	2	2	1	2	1	2	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	449	1569	657	125	1215	508	137	89	120	1017	1171	471
Arrive On Green	0.14	0.45	0.45	0.04	0.35	0.35	0.04	0.05	0.05	0.33	0.33	0.33
Sat Flow, veh/h	3170	3471	1453	3170	3471	1452	3109	1863	2517	3109	3539	1424
Grp Volume(v), veh/h	1165	1434	161	43	1257	178	177	34	53	187	16	1261
Grp Sat Flow(s),veh/h/ln	1585	1736	1453	1585	1736	1452	1554	1863	1259	1554	1770	1424
Q Serve(g_s), s	17.0	46.3	6.1	1.6	42.0	10.9	5.3	2.1	2.1	5.2	0.4	39.7
Cycle Q Clear(g_c), s	17.0	46.3	6.1	1.6	42.0	10.9	5.3	2.1	2.1	5.2	0.4	39.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	449	1569	657	125	1215	508	137	89	120	1017	1171	471
V/C Ratio(X)	2.59	0.91	0.24	0.34	1.03	0.35	1.29	0.38	0.44	0.18	0.01	2.68
Avail Cap(c_a), veh/h	449	1569	657	151	1215	508	137	553	747	1017	1171	471
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.41	0.41	0.41	0.54	0.54	0.54	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.5	30.7	11.3	56.1	39.0	28.9	57.3	55.4	41.6	28.9	27.0	40.2
Incr Delay (d2), s/veh	720.1	4.5	0.4	0.9	28.5	1.0	173.8	2.7	2.5	0.1	0.0	760.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	52.3	23.1	2.5	0.7	24.9	4.5	5.6	1.2	0.8	2.2	0.2	115.1
LnGrp Delay(d),s/veh	771.6	35.1	11.6	57.0	67.5	29.9	231.2	58.1	44.2	29.0	27.0	800.9
LnGrp LOS	F	D	B	E	F	C	F	E	D	C	C	F
Approach Vol, veh/h		2760			1478			264			1464	
Approach Delay, s/veh		344.6			62.7			171.3			693.8	
Approach LOS		F			E			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	43.3	9.7	8.7	58.3	9.3	43.7	21.0	46.0
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	8.1	34.3	4.0	51.6	4.0	38.4	15.3	40.3
Max Q Clear Time (g_c+I1), s	7.2	4.1	3.6	48.3	7.3	41.7	19.0	44.0
Green Ext Time (p_c), s	0.2	0.3	0.0	3.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	352.8
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1072	1396	148	40	1191	164	163	31	49	172	15	1160
Future Volume (veh/h)	1072	1396	148	40	1191	164	163	31	49	172	15	1160
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	1165	1517	161	43	1295	178	177	34	53	187	16	1261
Adj No. of Lanes	2	2	1	2	2	1	2	1	2	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	449	1569	657	125	1215	508	137	89	120	1017	1171	471
Arrive On Green	0.14	0.45	0.45	0.04	0.35	0.35	0.04	0.05	0.05	0.33	0.33	0.33
Sat Flow, veh/h	3170	3471	1453	3170	3471	1452	3109	1863	2517	3109	3539	1424
Grp Volume(v), veh/h	1165	1517	161	43	1295	178	177	34	53	187	16	1261
Grp Sat Flow(s),veh/h/ln	1585	1736	1453	1585	1736	1452	1554	1863	1259	1554	1770	1424
Q Serve(g_s), s	17.0	51.0	6.1	1.6	42.0	10.9	5.3	2.1	2.1	5.2	0.4	39.7
Cycle Q Clear(g_c), s	17.0	51.0	6.1	1.6	42.0	10.9	5.3	2.1	2.1	5.2	0.4	39.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	449	1569	657	125	1215	508	137	89	120	1017	1171	471
V/C Ratio(X)	2.59	0.97	0.24	0.34	1.07	0.35	1.29	0.38	0.44	0.18	0.01	2.68
Avail Cap(c_a), veh/h	449	1569	657	151	1215	508	137	553	747	1017	1171	471
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.36	0.36	0.36	0.53	0.53	0.53	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.5	32.0	11.3	56.1	39.0	28.9	57.3	55.4	41.6	28.9	27.0	40.2
Incr Delay (d2), s/veh	719.7	7.8	0.3	0.9	39.3	1.0	173.8	2.7	2.5	0.1	0.0	760.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	52.3	26.1	2.5	0.7	26.7	4.5	5.6	1.2	0.8	2.2	0.2	115.1
LnGrp Delay(d),s/veh	771.2	39.8	11.6	57.0	78.3	29.9	231.2	58.1	44.2	29.0	27.0	800.9
LnGrp LOS	F	D	B	E	F	C	F	E	D	C	C	F
Approach Vol, veh/h		2843			1516			264			1464	
Approach Delay, s/veh		337.9			72.0			171.3			693.8	
Approach LOS		F			E			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	43.3	9.7	8.7	58.3	9.3	43.7	21.0	46.0
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	8.1	34.3	4.0	51.6	4.0	38.4	15.3	40.3
Max Q Clear Time (g_c+I1), s	7.2	4.1	3.6	53.0	7.3	41.7	19.0	44.0
Green Ext Time (p_c), s	0.2	0.3	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	350.1
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1072	1396	148	40	1191	164	163	31	49	172	15	1160
Future Volume (veh/h)	1072	1396	148	40	1191	164	163	31	49	172	15	1160
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	1165	1517	161	43	1295	178	177	34	53	187	16	1261
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	448	2242	654	125	1735	505	137	216	87	984	1180	475
Arrive On Green	0.14	0.45	0.45	0.08	0.70	0.70	0.04	0.06	0.06	0.32	0.33	0.33
Sat Flow, veh/h	3170	4988	1453	3170	4988	1452	3109	3539	1430	3109	3539	1424
Grp Volume(v), veh/h	1165	1517	161	43	1295	178	177	34	53	187	16	1261
Grp Sat Flow(s),veh/h/ln	1585	1663	1453	1585	1663	1452	1554	1770	1430	1554	1770	1424
Q Serve(g_s), s	17.0	28.9	8.2	1.5	19.7	2.2	5.3	1.1	3.7	5.3	0.4	40.0
Cycle Q Clear(g_c), s	17.0	28.9	8.2	1.5	19.7	2.2	5.3	1.1	3.7	5.3	0.4	40.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	448	2242	654	125	1735	505	137	216	87	984	1180	475
V/C Ratio(X)	2.60	0.68	0.25	0.34	0.75	0.35	1.29	0.16	0.61	0.19	0.01	2.66
Avail Cap(c_a), veh/h	448	2242	654	151	1775	517	137	1053	426	984	1180	475
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.36	0.36	0.36	0.60	0.60	0.60	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.5	26.1	20.4	53.8	14.9	1.7	57.4	53.4	41.0	29.8	26.8	40.0
Incr Delay (d2), s/veh	722.9	0.6	0.3	1.0	1.0	0.3	173.8	0.3	6.6	0.1	0.0	751.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	52.4	13.3	3.4	0.7	8.8	0.8	5.6	0.5	1.6	2.3	0.2	114.8
LnGrp Delay(d),s/veh	774.4	26.7	20.8	54.7	15.9	2.0	231.2	53.7	47.6	29.9	26.8	791.6
LnGrp LOS	F	C	C	D	B	A	F	D	D	C	C	F
Approach Vol, veh/h		2843			1516			264			1464	
Approach Delay, s/veh		332.8			15.4			171.5			686.0	
Approach LOS		F			B			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	42.0	11.3	8.7	58.0	9.3	44.0	21.0	45.7
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	8.3	34.4	4.0	51.3	4.0	38.7	14.3	41.0
Max Q Clear Time (g_c+I1), s	7.3	5.7	3.5	30.9	7.3	42.0	19.0	21.7
Green Ext Time (p_c), s	0.8	0.3	0.0	15.6	0.0	0.0	0.0	14.9

Intersection Summary	
HCM 2010 Ctrl Delay	331.7
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1140	1528	161	45	1271	170	182	31	59	189	16	1290
Future Volume (veh/h)	1140	1528	161	45	1271	170	182	31	59	189	16	1290
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	1239	1661	175	49	1382	185	198	34	64	205	17	1402
Adj No. of Lanes	2	2	1	2	2	1	2	1	2	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	396	1535	643	130	1244	520	155	97	131	1030	1180	475
Arrive On Green	0.13	0.44	0.44	0.04	0.36	0.36	0.05	0.05	0.05	0.33	0.33	0.33
Sat Flow, veh/h	3170	3471	1453	3170	3471	1452	3109	1863	2517	3109	3539	1424
Grp Volume(v), veh/h	1239	1661	175	49	1382	185	198	34	64	205	17	1402
Grp Sat Flow(s),veh/h/ln	1585	1736	1453	1585	1736	1452	1554	1863	1259	1554	1770	1424
Q Serve(g_s), s	15.0	53.1	6.8	1.8	43.0	11.2	6.0	2.1	2.6	5.7	0.4	40.0
Cycle Q Clear(g_c), s	15.0	53.1	6.8	1.8	43.0	11.2	6.0	2.1	2.6	5.7	0.4	40.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	396	1535	643	130	1244	520	155	97	131	1030	1180	475
V/C Ratio(X)	3.13	1.08	0.27	0.38	1.11	0.36	1.27	0.35	0.49	0.20	0.01	2.95
Avail Cap(c_a), veh/h	396	1535	643	151	1244	520	155	567	766	1030	1180	475
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.25	0.25	0.25	0.49	0.49	0.49	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.5	33.5	11.6	56.0	38.5	28.3	57.0	54.9	41.3	28.7	26.8	40.0
Incr Delay (d2), s/veh	958.8	40.3	0.3	0.9	56.3	0.9	163.7	2.2	2.8	0.1	0.0	885.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	59.3	34.0	2.7	0.8	30.3	4.7	6.1	1.1	0.9	2.4	0.2	132.4
LnGrp Delay(d),s/veh	1011.3	73.8	11.9	56.9	94.8	29.2	220.7	57.1	44.1	28.8	26.8	925.0
LnGrp LOS	F	F	B	E	F	C	F	E	D	C	C	F
Approach Vol, veh/h		3075			1616			296			1624	
Approach Delay, s/veh		448.0			86.1			163.7			802.5	
Approach LOS		F			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	43.8	10.2	8.9	57.1	10.0	44.0	19.0	47.0
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	8.2	35.2	4.0	50.6	4.7	38.7	13.3	41.3
Max Q Clear Time (g_c+I1), s	7.7	4.6	3.8	55.1	8.0	42.0	17.0	45.0
Green Ext Time (p_c), s	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	433.9
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1140	1623	161	45	1314	170	182	31	59	189	16	1290
Future Volume (veh/h)	1140	1623	161	45	1314	170	182	31	59	189	16	1290
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	1239	1764	175	49	1428	185	198	34	64	205	17	1402
Adj No. of Lanes	2	2	1	2	2	1	2	1	2	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	370	1624	680	130	1361	570	155	97	131	951	1089	438
Arrive On Green	0.12	0.47	0.47	0.03	0.26	0.26	0.05	0.05	0.05	0.31	0.31	0.31
Sat Flow, veh/h	3170	3471	1454	3170	3471	1453	3109	1863	2517	3109	3539	1423
Grp Volume(v), veh/h	1239	1764	175	49	1428	185	198	34	64	205	17	1402
Grp Sat Flow(s),veh/h/ln	1585	1736	1454	1585	1736	1453	1554	1863	1259	1554	1770	1423
Q Serve(g_s), s	14.0	56.1	6.4	1.8	47.1	4.2	6.0	2.1	2.6	5.9	0.4	26.0
Cycle Q Clear(g_c), s	14.0	56.1	6.4	1.8	47.1	4.2	6.0	2.1	2.6	5.9	0.4	26.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	370	1624	680	130	1361	570	155	97	131	951	1089	438
V/C Ratio(X)	3.35	1.09	0.26	0.38	1.05	0.32	1.27	0.35	0.49	0.22	0.02	3.20
Avail Cap(c_a), veh/h	370	1624	680	151	1361	570	155	567	766	951	1180	474
HCM Platoon Ratio	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.17	0.17	0.17	0.51	0.51	0.51	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	31.9	10.2	56.8	44.2	3.6	57.0	54.9	41.3	30.9	28.9	20.6
Incr Delay (d2), s/veh	1058.8	41.1	0.2	0.9	32.0	0.8	163.7	2.2	2.8	0.1	0.0	995.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	60.5	36.1	2.6	0.8	28.6	1.8	6.1	1.1	0.9	2.5	0.2	131.4
LnGrp Delay(d),s/veh	1111.8	73.0	10.4	57.8	76.3	4.4	220.7	57.1	44.1	31.1	28.9	1016.5
LnGrp LOS	F	F	B	E	F	A	F	E	D	C	C	F
Approach Vol, veh/h		3178			1662			296			1624	
Approach Delay, s/veh		474.6			67.7			163.7			881.7	
Approach LOS		F			E			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	40.7	10.2	8.9	60.1	10.0	40.9	18.0	51.1
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	8.2	35.2	4.0	50.6	4.7	38.7	12.3	42.3
Max Q Clear Time (g_c+I1), s	7.9	4.6	3.8	58.1	8.0	28.0	16.0	49.1
Green Ext Time (p_c), s	0.1	0.4	0.0	0.0	0.0	7.4	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	458.7
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1140	1623	161	45	1314	170	182	31	59	189	16	1290
Future Volume (veh/h)	1140	1623	161	45	1314	170	182	31	59	189	16	1290
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	1239	1764	175	49	1428	185	198	34	64	205	17	1402
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	443	2235	651	130	1742	507	137	240	97	963	1180	475
Arrive On Green	0.14	0.45	0.45	0.08	0.70	0.70	0.04	0.07	0.07	0.31	0.33	0.33
Sat Flow, veh/h	3170	4988	1453	3170	4988	1452	3109	3539	1430	3109	3539	1424
Grp Volume(v), veh/h	1239	1764	175	49	1428	185	198	34	64	205	17	1402
Grp Sat Flow(s),veh/h/ln	1585	1663	1453	1585	1663	1452	1554	1770	1430	1554	1770	1424
Q Serve(g_s), s	16.8	36.2	9.1	1.8	24.2	2.3	5.3	1.1	4.5	5.8	0.4	40.0
Cycle Q Clear(g_c), s	16.8	36.2	9.1	1.8	24.2	2.3	5.3	1.1	4.5	5.8	0.4	40.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	443	2235	651	130	1742	507	137	240	97	963	1180	475
V/C Ratio(X)	2.79	0.79	0.27	0.38	0.82	0.36	1.44	0.14	0.66	0.21	0.01	2.95
Avail Cap(c_a), veh/h	443	2235	651	151	1775	517	137	1053	426	963	1180	475
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.17	0.17	0.17	0.56	0.56	0.56	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.6	28.3	20.8	53.6	15.4	1.8	57.4	52.6	40.5	30.6	26.8	40.0
Incr Delay (d2), s/veh	808.8	0.5	0.2	1.0	1.8	0.2	235.1	0.3	7.4	0.1	0.0	885.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	57.1	16.8	3.6	0.8	10.9	0.8	6.8	0.5	2.0	2.5	0.2	132.4
LnGrp Delay(d),s/veh	860.5	28.8	20.9	54.6	17.2	2.1	292.4	52.9	47.9	30.7	26.8	925.0
LnGrp LOS	F	C	C	D	B	A	F	D	D	C	C	F
Approach Vol, veh/h		3178			1662			296			1624	
Approach Delay, s/veh		352.6			16.6			212.0			802.7	
Approach LOS		F			B			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	41.2	12.1	8.9	57.8	9.3	44.0	20.8	45.9
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	8.3	34.4	4.0	51.3	4.0	38.7	14.3	41.0
Max Q Clear Time (g_c+I1), s	7.8	6.5	3.8	38.2	7.3	42.0	18.8	26.2
Green Ext Time (p_c), s	0.4	0.3	0.0	11.5	0.0	0.0	0.0	12.8

Intersection Summary	
HCM 2010 Ctrl Delay	372.0
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	413	431	50	21	597	64	28	1	11	8	0	130
Future Volume (veh/h)	413	431	50	21	597	64	28	1	11	8	0	130
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	449	468	54	23	649	70	30	1	12	9	0	141
Adj No. of Lanes	2	2	1	2	2	1	2	1	2	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	188	1450	607	901	2231	935	100	84	113	365	461	184
Arrive On Green	0.06	0.42	0.42	0.28	0.64	0.64	0.03	0.04	0.04	0.12	0.00	0.13
Sat Flow, veh/h	3170	3471	1453	3170	3471	1455	3109	1863	2517	3109	3539	1414
Grp Volume(v), veh/h	449	468	54	23	649	70	30	1	12	9	0	141
Grp Sat Flow(s),veh/h/ln	1585	1736	1453	1585	1736	1455	1554	1863	1259	1554	1770	1414
Q Serve(g_s), s	7.0	10.7	2.7	0.6	9.7	0.9	1.1	0.1	0.5	0.3	0.0	9.4
Cycle Q Clear(g_c), s	7.0	10.7	2.7	0.6	9.7	0.9	1.1	0.1	0.5	0.3	0.0	9.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	188	1450	607	901	2231	935	100	84	113	365	461	184
V/C Ratio(X)	2.39	0.32	0.09	0.03	0.29	0.07	0.30	0.01	0.11	0.02	0.00	0.77
Avail Cap(c_a), veh/h	188	1450	607	901	2231	935	184	654	883	365	1191	476
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	0.70	0.70	0.70	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	55.5	23.1	20.8	30.5	9.3	1.3	55.8	53.8	54.1	46.1	0.0	34.0
Incr Delay (d2), s/veh	639.5	0.6	0.3	0.0	0.2	0.1	1.7	0.1	0.4	0.0	0.0	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.8	5.2	1.1	0.3	4.7	0.4	0.5	0.0	0.2	0.1	0.0	4.0
LnGrp Delay(d),s/veh	695.0	23.7	21.0	30.5	9.5	1.4	57.5	53.9	54.5	46.1	0.0	40.5
LnGrp LOS	F	C	C	C	A	A	E	D	D	D		D
Approach Vol, veh/h		971			742			43			150	
Approach Delay, s/veh		333.9			9.4			56.5			40.9	
Approach LOS		F			A			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.9	9.3	37.5	53.3	7.8	19.4	11.0	79.8
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	4.0	40.1	4.3	47.6	5.7	38.4	5.3	46.6
Max Q Clear Time (g_c+I1), s	2.3	2.5	2.6	12.7	3.1	11.4	9.0	11.7
Green Ext Time (p_c), s	0.0	0.0	0.6	2.2	0.0	0.5	0.0	3.4

Intersection Summary	
HCM 2010 Ctrl Delay	178.3
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	413	458	50	21	669	64	28	1	11	8	0	130
Future Volume (veh/h)	413	458	50	21	669	64	28	1	11	8	0	130
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	449	498	54	23	727	70	30	1	12	9	0	141
Adj No. of Lanes	2	2	1	2	2	1	2	1	2	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	188	1450	607	901	2231	935	100	84	113	365	461	184
Arrive On Green	0.06	0.42	0.42	0.57	1.00	1.00	0.03	0.04	0.04	0.12	0.00	0.13
Sat Flow, veh/h	3170	3471	1453	3170	3471	1455	3109	1863	2517	3109	3539	1414
Grp Volume(v), veh/h	449	498	54	23	727	70	30	1	12	9	0	141
Grp Sat Flow(s),veh/h/ln	1585	1736	1453	1585	1736	1455	1554	1863	1259	1554	1770	1414
Q Serve(g_s), s	7.0	11.5	2.7	0.4	0.0	0.0	1.1	0.1	0.5	0.3	0.0	9.4
Cycle Q Clear(g_c), s	7.0	11.5	2.7	0.4	0.0	0.0	1.1	0.1	0.5	0.3	0.0	9.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	188	1450	607	901	2231	935	100	84	113	365	461	184
V/C Ratio(X)	2.39	0.34	0.09	0.03	0.33	0.07	0.30	0.01	0.11	0.02	0.00	0.77
Avail Cap(c_a), veh/h	188	1450	607	901	2231	935	184	654	883	365	1191	476
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.92	0.67	0.67	0.67	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	55.5	23.3	20.8	18.3	0.0	0.0	55.8	53.8	54.1	46.1	0.0	34.0
Incr Delay (d2), s/veh	639.3	0.6	0.3	0.0	0.3	0.1	1.7	0.1	0.4	0.0	0.0	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.8	5.7	1.1	0.2	0.1	0.0	0.5	0.0	0.2	0.1	0.0	4.0
LnGrp Delay(d),s/veh	694.8	23.9	21.0	18.3	0.3	0.1	57.5	53.9	54.5	46.1	0.0	40.5
LnGrp LOS	F	C	C	B	A	A	E	D	D	D		D
Approach Vol, veh/h		1001			820			43			150	
Approach Delay, s/veh		324.7			0.8			56.5			40.9	
Approach LOS		F			A			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.9	9.3	37.5	53.3	7.8	19.4	11.0	79.8
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	4.0	40.1	4.3	47.6	5.7	38.4	5.3	46.6
Max Q Clear Time (g_c+I1), s	2.3	2.5	2.4	13.5	3.1	11.4	9.0	2.0
Green Ext Time (p_c), s	0.0	0.0	0.8	2.4	0.0	0.5	0.0	3.8

Intersection Summary	
HCM 2010 Ctrl Delay	165.9
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1385	846	136	38	900	221	82	46	30	35	6	235
Future Volume (veh/h)	1385	846	136	38	900	221	82	46	30	35	6	235
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	1505	920	148	41	978	240	89	50	33	38	7	255
Adj No. of Lanes	2	2	1	2	2	1	2	1	2	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	864	1967	824	124	1157	484	137	104	141	637	767	308
Arrive On Green	0.27	0.57	0.57	0.04	0.33	0.33	0.04	0.06	0.06	0.21	0.22	0.22
Sat Flow, veh/h	3170	3471	1454	3170	3471	1452	3109	1863	2517	3109	3539	1420
Grp Volume(v), veh/h	1505	920	148	41	978	240	89	50	33	38	7	255
Grp Sat Flow(s),veh/h/ln	1585	1736	1454	1585	1736	1452	1554	1863	1259	1554	1770	1420
Q Serve(g_s), s	32.7	18.7	4.0	1.5	31.4	15.8	3.4	3.1	1.3	1.2	0.2	20.6
Cycle Q Clear(g_c), s	32.7	18.7	4.0	1.5	31.4	15.8	3.4	3.1	1.3	1.2	0.2	20.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	864	1967	824	124	1157	484	137	104	141	637	767	308
V/C Ratio(X)	1.74	0.47	0.18	0.33	0.85	0.50	0.65	0.48	0.23	0.06	0.01	0.83
Avail Cap(c_a), veh/h	864	1967	824	151	1157	484	137	616	833	637	1171	470
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.48	0.48	0.48	0.61	0.61	0.61	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.7	15.3	5.8	56.1	37.1	31.9	56.4	55.0	40.6	38.4	36.9	44.9
Incr Delay (d2), s/veh	336.6	0.4	0.2	0.9	4.8	2.2	10.2	3.4	0.8	0.0	0.0	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	54.6	9.1	1.6	0.7	15.7	6.6	1.7	1.7	0.5	0.5	0.1	8.7
LnGrp Delay(d),s/veh	380.3	15.7	6.0	57.1	42.0	34.2	66.6	58.4	41.4	38.4	36.9	52.2
LnGrp LOS	F	B	A	E	D	C	E	E	D	D	D	D
Approach Vol, veh/h		2573			1259			172			300	
Approach Delay, s/veh		228.4			41.0			59.4			50.1	
Approach LOS		F			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.6	10.7	8.7	72.0	9.3	30.0	36.7	44.0
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	4.0	38.4	4.0	51.6	4.0	38.4	17.3	38.3
Max Q Clear Time (g_c+I1), s	3.2	5.1	3.5	20.7	5.4	22.6	34.7	33.4
Green Ext Time (p_c), s	0.0	0.3	0.0	17.4	0.0	0.9	0.0	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	154.4
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1385	873	136	38	972	221	82	46	30	35	6	235
Future Volume (veh/h)	1385	873	136	38	972	221	82	46	30	35	6	235
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	1505	949	148	41	1057	240	89	50	33	38	7	255
Adj No. of Lanes	2	2	1	2	2	1	2	1	2	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	864	1967	824	124	1157	484	137	104	141	637	767	308
Arrive On Green	0.27	0.57	0.57	0.04	0.33	0.33	0.04	0.06	0.06	0.21	0.22	0.22
Sat Flow, veh/h	3170	3471	1454	3170	3471	1452	3109	1863	2517	3109	3539	1420
Grp Volume(v), veh/h	1505	949	148	41	1057	240	89	50	33	38	7	255
Grp Sat Flow(s),veh/h/ln	1585	1736	1454	1585	1736	1452	1554	1863	1259	1554	1770	1420
Q Serve(g_s), s	32.7	19.6	4.0	1.5	35.0	15.8	3.4	3.1	1.3	1.2	0.2	20.6
Cycle Q Clear(g_c), s	32.7	19.6	4.0	1.5	35.0	15.8	3.4	3.1	1.3	1.2	0.2	20.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	864	1967	824	124	1157	484	137	104	141	637	767	308
V/C Ratio(X)	1.74	0.48	0.18	0.33	0.91	0.50	0.65	0.48	0.23	0.06	0.01	0.83
Avail Cap(c_a), veh/h	864	1967	824	151	1157	484	137	616	833	637	1171	470
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.47	0.47	0.47	0.56	0.56	0.56	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.7	15.5	5.8	56.1	38.3	31.9	56.4	55.0	40.6	38.4	36.9	44.9
Incr Delay (d2), s/veh	336.5	0.4	0.2	0.9	7.7	2.0	10.2	3.4	0.8	0.0	0.0	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	54.6	9.5	1.6	0.7	18.0	6.6	1.7	1.7	0.5	0.5	0.1	8.7
LnGrp Delay(d),s/veh	380.2	15.9	6.0	57.0	46.0	34.0	66.6	58.4	41.4	38.4	36.9	52.2
LnGrp LOS	F	B	A	E	D	C	E	E	D	D	D	D
Approach Vol, veh/h		2602			1338			172			300	
Approach Delay, s/veh		226.0			44.2			59.4			50.1	
Approach LOS		F			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	28.6	10.7	8.7	72.0	9.3	30.0	36.7	44.0
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	4.0	38.4	4.0	51.6	4.0	38.4	17.3	38.3
Max Q Clear Time (g_c+I1), s	3.2	5.1	3.5	21.6	5.4	22.6	34.7	37.0
Green Ext Time (p_c), s	0.0	0.3	0.0	17.4	0.0	0.9	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	152.4
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1385	873	136	38	972	221	82	46	30	35	6	235
Future Volume (veh/h)	1385	873	136	38	972	221	82	46	30	35	6	235
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	1505	949	148	41	1057	240	89	50	33	38	7	255
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	819	2826	824	124	1732	504	137	174	70	658	768	308
Arrive On Green	0.26	0.57	0.57	0.08	0.69	0.69	0.04	0.05	0.05	0.21	0.22	0.22
Sat Flow, veh/h	3170	4988	1454	3170	4988	1452	3109	3539	1430	3109	3539	1420
Grp Volume(v), veh/h	1505	949	148	41	1057	240	89	50	33	38	7	255
Grp Sat Flow(s),veh/h/ln	1585	1663	1454	1585	1663	1452	1554	1770	1430	1554	1770	1420
Q Serve(g_s), s	31.0	12.2	5.9	1.5	13.5	4.8	3.4	1.6	2.3	1.2	0.2	20.6
Cycle Q Clear(g_c), s	31.0	12.2	5.9	1.5	13.5	4.8	3.4	1.6	2.3	1.2	0.2	20.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	819	2826	824	124	1732	504	137	174	70	658	768	308
V/C Ratio(X)	1.84	0.34	0.18	0.33	0.61	0.48	0.65	0.29	0.47	0.06	0.01	0.83
Avail Cap(c_a), veh/h	819	2826	824	151	1775	517	137	1053	426	658	1180	473
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.35	0.35	0.35	0.55	0.55	0.55	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.5	13.9	12.5	53.8	14.0	3.7	56.4	55.0	41.6	37.7	36.9	44.8
Incr Delay (d2), s/veh	378.8	0.1	0.2	0.9	0.3	0.4	10.2	0.9	4.8	0.0	0.0	7.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	56.6	5.7	2.4	0.7	6.1	1.9	1.7	0.8	1.0	0.5	0.1	8.7
LnGrp Delay(d),s/veh	423.3	14.0	12.7	54.7	14.3	4.1	66.6	55.9	46.4	37.8	36.9	52.0
LnGrp LOS	F	B	B	D	B	A	E	E	D	D	D	D
Approach Vol, veh/h		2602			1338			172			300	
Approach Delay, s/veh		250.7			13.7			59.6			49.8	
Approach LOS		F			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.4	9.9	8.7	72.0	9.3	30.0	35.0	45.7
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	8.3	34.4	4.0	51.3	4.0	38.7	14.3	41.0
Max Q Clear Time (g_c+I1), s	3.2	4.3	3.5	14.2	5.4	22.6	33.0	15.5
Green Ext Time (p_c), s	0.6	0.3	0.0	15.9	0.0	1.0	0.0	13.5

Intersection Summary	
HCM 2010 Ctrl Delay	157.7
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1486	953	149	43	1045	237	92	47	34	38	6	280
Future Volume (veh/h)	1486	953	149	43	1045	237	92	47	34	38	6	280
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	1615	1036	162	47	1136	258	100	51	37	41	7	304
Adj No. of Lanes	2	2	1	2	2	1	2	1	2	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	765	1854	777	129	1157	484	137	105	142	732	877	352
Arrive On Green	0.24	0.53	0.53	0.04	0.33	0.33	0.04	0.06	0.06	0.24	0.25	0.25
Sat Flow, veh/h	3170	3471	1454	3170	3471	1452	3109	1863	2517	3109	3539	1422
Grp Volume(v), veh/h	1615	1036	162	47	1136	258	100	51	37	41	7	304
Grp Sat Flow(s),veh/h/ln	1585	1736	1454	1585	1736	1452	1554	1863	1259	1554	1770	1422
Q Serve(g_s), s	29.0	23.8	4.9	1.7	38.9	17.3	3.8	3.2	1.5	1.2	0.2	24.6
Cycle Q Clear(g_c), s	29.0	23.8	4.9	1.7	38.9	17.3	3.8	3.2	1.5	1.2	0.2	24.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	765	1854	777	129	1157	484	137	105	142	732	877	352
V/C Ratio(X)	2.11	0.56	0.21	0.37	0.98	0.53	0.73	0.48	0.26	0.06	0.01	0.86
Avail Cap(c_a), veh/h	765	1854	777	151	1157	484	137	616	833	732	1171	470
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.38	0.38	0.38	0.53	0.53	0.53	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.5	18.6	7.2	56.1	39.6	32.4	56.6	54.9	40.4	35.5	34.0	43.2
Incr Delay (d2), s/veh	501.8	0.5	0.2	0.9	15.5	2.2	17.6	3.4	1.0	0.0	0.0	12.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	66.0	11.5	2.0	0.8	21.1	7.3	2.0	1.7	0.5	0.5	0.1	10.8
LnGrp Delay(d),s/veh	547.3	19.0	7.4	57.0	55.1	34.7	74.3	58.3	41.4	35.6	34.0	55.2
LnGrp LOS	F	B	A	E	E	C	E	E	D	D	C	E
Approach Vol, veh/h		2813			1441			188			352	
Approach Delay, s/veh		321.7			51.5			63.5			52.5	
Approach LOS		F			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.3	10.8	8.9	68.1	9.3	33.7	33.0	44.0
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	4.0	38.4	4.0	51.6	4.0	38.4	17.3	38.3
Max Q Clear Time (g_c+I1), s	3.2	5.2	3.7	25.8	5.8	26.6	31.0	40.9
Green Ext Time (p_c), s	0.0	0.3	0.0	17.4	0.0	1.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	210.6
HCM 2010 LOS	F



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1486	987	149	43	1133	237	92	47	34	38	6	280
Future Volume (veh/h)	1486	987	149	43	1133	237	92	47	34	38	6	280
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	1615	1073	162	47	1232	258	100	51	37	41	7	304
Adj No. of Lanes	2	2	1	2	2	1	2	1	2	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	739	1854	777	129	1186	496	137	105	142	732	877	352
Arrive On Green	0.23	0.53	0.53	0.04	0.34	0.34	0.04	0.06	0.06	0.24	0.25	0.25
Sat Flow, veh/h	3170	3471	1454	3170	3471	1452	3109	1863	2517	3109	3539	1422
Grp Volume(v), veh/h	1615	1073	162	47	1232	258	100	51	37	41	7	304
Grp Sat Flow(s),veh/h/ln	1585	1736	1454	1585	1736	1452	1554	1863	1259	1554	1770	1422
Q Serve(g_s), s	28.0	25.0	4.9	1.7	41.0	17.1	3.8	3.2	1.5	1.2	0.2	24.6
Cycle Q Clear(g_c), s	28.0	25.0	4.9	1.7	41.0	17.1	3.8	3.2	1.5	1.2	0.2	24.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	739	1854	777	129	1186	496	137	105	142	732	877	352
V/C Ratio(X)	2.19	0.58	0.21	0.37	1.04	0.52	0.73	0.48	0.26	0.06	0.01	0.86
Avail Cap(c_a), veh/h	739	1854	777	151	1186	496	137	616	833	732	1171	470
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.36	0.36	0.36	0.46	0.46	0.46	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.0	18.9	7.2	56.1	39.5	31.6	56.6	54.9	40.4	35.5	34.0	43.2
Incr Delay (d2), s/veh	535.7	0.5	0.2	0.8	28.8	1.8	17.6	3.4	1.0	0.0	0.0	12.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	67.2	12.0	2.0	0.8	24.3	7.1	2.0	1.7	0.5	0.5	0.1	10.8
LnGrp Delay(d),s/veh	581.7	19.3	7.4	56.9	68.3	33.4	74.3	58.3	41.4	35.6	34.0	55.2
LnGrp LOS	F	B	A	E	F	C	E	E	D	D	C	E
Approach Vol, veh/h		2850			1537			188			352	
Approach Delay, s/veh		337.3			62.1			63.5			52.5	
Approach LOS		F			E			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.3	10.8	8.9	68.1	9.3	33.7	32.0	45.0
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	4.0	38.4	4.0	51.6	4.0	38.4	16.3	39.3
Max Q Clear Time (g_c+I1), s	3.2	5.2	3.7	27.0	5.8	26.6	30.0	43.0
Green Ext Time (p_c), s	0.0	0.3	0.0	17.1	0.0	1.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	220.7
HCM 2010 LOS	F

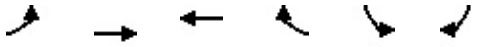


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1486	987	149	43	1133	237	92	47	34	38	6	280
Future Volume (veh/h)	1486	987	149	43	1133	237	92	47	34	38	6	280
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	1615	1073	162	47	1232	258	100	51	37	41	7	304
Adj No. of Lanes	2	3	1	2	3	1	2	2	1	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	715	2663	776	129	1740	507	137	183	74	747	878	353
Arrive On Green	0.23	0.53	0.53	0.08	0.70	0.70	0.04	0.05	0.05	0.24	0.25	0.25
Sat Flow, veh/h	3170	4988	1454	3170	4988	1452	3109	3539	1430	3109	3539	1422
Grp Volume(v), veh/h	1615	1073	162	47	1232	258	100	51	37	41	7	304
Grp Sat Flow(s),veh/h/ln	1585	1663	1454	1585	1663	1452	1554	1770	1430	1554	1770	1422
Q Serve(g_s), s	27.1	15.3	7.0	1.7	17.7	4.8	3.8	1.7	2.6	1.2	0.2	24.5
Cycle Q Clear(g_c), s	27.1	15.3	7.0	1.7	17.7	4.8	3.8	1.7	2.6	1.2	0.2	24.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	715	2663	776	129	1740	507	137	183	74	747	878	353
V/C Ratio(X)	2.26	0.40	0.21	0.37	0.71	0.51	0.73	0.28	0.50	0.05	0.01	0.86
Avail Cap(c_a), veh/h	715	2663	776	151	1775	517	137	1053	426	747	1180	474
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.13	0.13	0.13	0.54	0.54	0.54	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	46.5	16.6	14.7	53.7	14.5	3.1	56.6	54.7	41.4	35.1	34.0	43.2
Incr Delay (d2), s/veh	566.8	0.1	0.1	0.9	0.7	0.4	17.6	0.8	5.1	0.0	0.0	11.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	68.1	7.1	2.8	0.7	7.9	1.9	2.0	0.8	1.1	0.5	0.1	10.8
LnGrp Delay(d),s/veh	613.2	16.7	14.7	54.6	15.2	3.6	74.3	55.6	46.5	35.1	34.0	54.9
LnGrp LOS	F	B	B	D	B	A	E	E	D	D	C	D
Approach Vol, veh/h		2850			1537			188			352	
Approach Delay, s/veh		354.6			14.4			63.7			52.2	
Approach LOS		F			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.9	10.2	8.9	68.1	9.3	33.8	31.1	45.9
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	8.3	34.4	4.0	51.3	4.0	38.7	14.3	41.0
Max Q Clear Time (g_c+I1), s	3.2	4.6	3.7	17.3	5.8	26.5	29.1	19.7
Green Ext Time (p_c), s	0.7	0.3	0.0	18.5	0.0	1.0	0.0	14.0

Intersection Summary	
HCM 2010 Ctrl Delay	215.8
HCM 2010 LOS	F

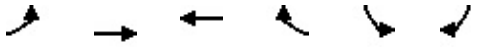
Intersection 16
Landings Way & Merle Haggard Dr



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	36	862	480	0	0	0
Future Volume (veh/h)	36	862	480	0	0	0
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1683	1863	1683	1683
Adj Flow Rate, veh/h	39	937	522	0	0	0
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4
Cap, veh/h	77	1264	872	432	876	782
Arrive On Green	0.05	0.36	0.27	0.00	0.00	0.00
Sat Flow, veh/h	1634	3563	3281	1583	1603	1430
Grp Volume(v), veh/h	39	937	522	0	0	0
Grp Sat Flow(s),veh/h/ln	1634	1736	1599	1583	1603	1430
Q Serve(g_s), s	2.1	21.2	12.8	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.1	21.2	12.8	0.0	0.0	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	77	1264	872	432	876	782
V/C Ratio(X)	0.51	0.74	0.60	0.00	0.00	0.00
Avail Cap(c_a), veh/h	103	2546	2000	990	876	782
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.97	0.00	0.00	0.00
Uniform Delay (d), s/veh	41.8	24.9	28.5	0.0	0.0	0.0
Incr Delay (d2), s/veh	4.7	0.8	0.6	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	10.3	5.7	0.0	0.0	0.0
LnGrp Delay(d),s/veh	46.5	25.7	29.1	0.0	0.0	0.0
LnGrp LOS	D	C	C			
Approach Vol, veh/h		976	522		0	
Approach Delay, s/veh		26.6	29.1		0.0	
Approach LOS		C	C			

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				36.8		53.2	8.3	28.5
Change Period (Y+Rc), s				5.7		5.3	5.7	5.7
Max Green Setting (Gmax), s				64.3		14.7	4.0	54.6
Max Q Clear Time (g_c+I1), s				23.2		0.0	4.1	14.8
Green Ext Time (p_c), s				7.9		0.0	0.0	7.9

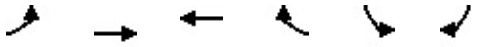
Intersection Summary	
HCM 2010 Ctrl Delay	27.4
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	36	939	515	0	0	0
Future Volume (veh/h)	36	939	515	0	0	0
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1683	1863	1683	1683
Adj Flow Rate, veh/h	39	1021	560	0	0	0
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4
Cap, veh/h	71	1249	905	448	919	820
Arrive On Green	0.06	0.48	0.38	0.00	0.00	0.00
Sat Flow, veh/h	1634	3563	3281	1583	1603	1430
Grp Volume(v), veh/h	39	1021	560	0	0	0
Grp Sat Flow(s),veh/h/ln	1634	1736	1599	1583	1603	1430
Q Serve(g_s), s	2.8	30.2	17.1	0.0	0.0	0.0
Cycle Q Clear(g_c), s	2.8	30.2	17.1	0.0	0.0	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	71	1249	905	448	919	820
V/C Ratio(X)	0.55	0.82	0.62	0.00	0.00	0.00
Avail Cap(c_a), veh/h	78	2777	2299	1139	919	820
HCM Platoon Ratio	1.33	1.33	1.33	1.33	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.96	0.00	0.00	0.00
Uniform Delay (d), s/veh	55.4	27.9	32.1	0.0	0.0	0.0
Incr Delay (d2), s/veh	6.1	1.2	0.7	0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	14.6	7.6	0.0	0.0	0.0
LnGrp Delay(d),s/veh	61.5	29.2	32.8	0.0	0.0	0.0
LnGrp LOS	E	C	C			
Approach Vol, veh/h		1060	560		0	
Approach Delay, s/veh		30.3	32.8		0.0	
Approach LOS		C	C			

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				47.2		72.8	9.2	38.0
Change Period (Y+Rc), s				5.7		5.3	5.7	5.7
Max Green Setting (Gmax), s				94.3		14.7	4.0	84.6
Max Q Clear Time (g_c+I1), s				32.2		0.0	4.8	19.1
Green Ext Time (p_c), s				9.2		0.0	0.0	9.2

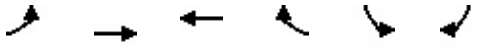
Intersection Summary	
HCM 2010 Ctrl Delay	31.2
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	342	1160	708	142	252	534
Future Volume (veh/h)	342	1160	708	142	252	534
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1683	1863	1683	1683
Adj Flow Rate, veh/h	372	1261	770	154	274	580
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4
Cap, veh/h	417	2006	920	455	565	504
Arrive On Green	0.26	0.58	0.29	0.29	0.35	0.35
Sat Flow, veh/h	1634	3563	3281	1583	1603	1430
Grp Volume(v), veh/h	372	1261	770	154	274	580
Grp Sat Flow(s),veh/h/ln	1634	1736	1599	1583	1603	1430
Q Serve(g_s), s	25.2	27.7	26.0	8.8	15.4	40.5
Cycle Q Clear(g_c), s	25.2	27.7	26.0	8.8	15.4	40.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	417	2006	920	455	565	504
V/C Ratio(X)	0.89	0.63	0.84	0.34	0.48	1.15
Avail Cap(c_a), veh/h	455	2113	945	468	565	504
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.51	0.51	0.89	0.89	1.00	1.00
Uniform Delay (d), s/veh	41.3	16.1	38.4	32.3	29.1	37.2
Incr Delay (d2), s/veh	10.5	0.3	5.9	0.4	3.0	88.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.6	13.2	12.2	3.9	7.2	38.8
LnGrp Delay(d),s/veh	51.8	16.4	44.3	32.7	32.0	125.7
LnGrp LOS	D	B	D	C	C	F
Approach Vol, veh/h		1633	924		854	
Approach Delay, s/veh		24.4	42.4		95.7	
Approach LOS		C	D		F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				70.5		44.5	33.4	37.1
Change Period (Y+Rc), s				5.7		5.3	5.7	5.7
Max Green Setting (Gmax), s				68.3		35.7	30.3	32.3
Max Q Clear Time (g_c+I1), s				29.7		42.5	27.2	28.0
Green Ext Time (p_c), s				14.5		0.0	0.4	3.4

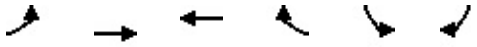
Intersection Summary	
HCM 2010 Ctrl Delay	47.1
HCM 2010 LOS	D



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	342	1237	743	142	252	534
Future Volume (veh/h)	342	1237	743	142	252	534
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1683	1863	1683	1683
Adj Flow Rate, veh/h	372	1345	808	154	274	580
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4
Cap, veh/h	460	2062	887	439	539	481
Arrive On Green	0.28	0.59	0.56	0.56	0.34	0.34
Sat Flow, veh/h	1634	3563	3281	1583	1603	1430
Grp Volume(v), veh/h	372	1345	808	154	274	580
Grp Sat Flow(s),veh/h/ln	1634	1736	1599	1583	1603	1430
Q Serve(g_s), s	24.3	29.5	26.2	6.2	15.7	38.7
Cycle Q Clear(g_c), s	24.3	29.5	26.2	6.2	15.7	38.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	460	2062	887	439	539	481
V/C Ratio(X)	0.81	0.65	0.91	0.35	0.51	1.21
Avail Cap(c_a), veh/h	497	2234	973	482	539	481
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.42	0.42	0.88	0.88	1.00	1.00
Uniform Delay (d), s/veh	38.4	15.5	24.3	19.9	30.5	38.2
Incr Delay (d2), s/veh	4.0	0.3	10.5	0.4	3.4	110.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.5	14.1	12.6	2.7	7.4	40.2
LnGrp Delay(d),s/veh	42.4	15.7	34.8	20.3	33.9	149.0
LnGrp LOS	D	B	C	C	C	F
Approach Vol, veh/h		1717	962		854	
Approach Delay, s/veh		21.5	32.5		112.1	
Approach LOS		C	C		F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				72.3		42.7	36.4	35.9
Change Period (Y+Rc), s				5.7		5.3	5.7	5.7
Max Green Setting (Gmax), s				72.3		31.7	33.3	33.3
Max Q Clear Time (g_c+I1), s				31.5		40.7	26.3	28.2
Green Ext Time (p_c), s				10.5		0.0	4.4	2.1

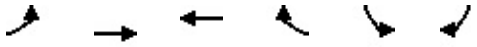
Intersection Summary	
HCM 2010 Ctrl Delay	46.4
HCM 2010 LOS	D



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	342	1237	743	142	252	534
Future Volume (veh/h)	342	1237	743	142	252	534
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1688	1900	1683	1683
Adj Flow Rate, veh/h	372	1345	808	154	274	580
Adj No. of Lanes	1	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	4	4	4
Cap, veh/h	419	2668	954	180	639	570
Arrive On Green	0.51	1.00	0.49	0.49	0.40	0.40
Sat Flow, veh/h	1634	5152	4045	737	1603	1430
Grp Volume(v), veh/h	372	1345	636	326	274	580
Grp Sat Flow(s),veh/h/ln	1634	1663	1536	1558	1603	1430
Q Serve(g_s), s	24.4	0.0	21.6	22.0	14.9	47.8
Cycle Q Clear(g_c), s	24.4	0.0	21.6	22.0	14.9	47.8
Prop In Lane	1.00			0.47	1.00	1.00
Lane Grp Cap(c), veh/h	419	2668	752	382	639	570
V/C Ratio(X)	0.89	0.50	0.85	0.85	0.43	1.02
Avail Cap(c_a), veh/h	436	3200	1050	532	639	570
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.77	0.77	0.87	0.87	1.00	1.00
Uniform Delay (d), s/veh	27.7	0.0	28.6	28.7	26.2	36.1
Incr Delay (d2), s/veh	15.4	0.1	4.1	8.3	2.1	42.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.5	0.0	9.4	10.1	6.9	36.9
LnGrp Delay(d),s/veh	43.0	0.1	32.8	37.0	28.3	78.3
LnGrp LOS	D	A	C	D	C	F
Approach Vol, veh/h		1717	962		854	
Approach Delay, s/veh		9.4	34.2		62.3	
Approach LOS		A	C		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				68.2		51.8	34.8	33.4
Change Period (Y+Rc), s				5.7		5.3	5.7	5.7
Max Green Setting (Gmax), s				75.3		33.7	30.3	39.3
Max Q Clear Time (g_c+I1), s				2.0		49.8	26.4	24.0
Green Ext Time (p_c), s				10.6		0.0	2.7	3.7

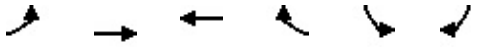
Intersection Summary	
HCM 2010 Ctrl Delay	28.9
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	351	1370	796	142	252	534
Future Volume (veh/h)	351	1370	796	142	252	534
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1683	1863	1683	1683
Adj Flow Rate, veh/h	382	1489	865	154	274	580
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4
Cap, veh/h	427	2146	1025	508	495	442
Arrive On Green	0.26	0.62	0.32	0.32	0.31	0.31
Sat Flow, veh/h	1634	3563	3281	1583	1603	1430
Grp Volume(v), veh/h	382	1489	865	154	274	580
Grp Sat Flow(s),veh/h/ln	1634	1736	1599	1583	1603	1430
Q Serve(g_s), s	24.8	31.5	27.7	8.1	15.7	34.0
Cycle Q Clear(g_c), s	24.8	31.5	27.7	8.1	15.7	34.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	427	2146	1025	508	495	442
V/C Ratio(X)	0.89	0.69	0.84	0.30	0.55	1.31
Avail Cap(c_a), veh/h	446	2209	1046	518	495	442
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.23	0.23	0.86	0.86	1.00	1.00
Uniform Delay (d), s/veh	39.2	14.0	34.8	28.1	31.7	38.0
Incr Delay (d2), s/veh	5.7	0.2	5.5	0.3	4.4	156.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.8	15.0	13.0	3.5	7.5	41.9
LnGrp Delay(d),s/veh	44.8	14.2	40.3	28.4	36.1	194.0
LnGrp LOS	D	B	D	C	D	F
Approach Vol, veh/h		1871	1019		854	
Approach Delay, s/veh		20.5	38.5		143.4	
Approach LOS		C	D		F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				72.0		38.0	32.7	39.3
Change Period (Y+Rc), s				5.7		5.3	5.7	5.7
Max Green Setting (Gmax), s				68.3		30.7	28.3	34.3
Max Q Clear Time (g_c+I1), s				33.5		36.0	26.8	29.7
Green Ext Time (p_c), s				17.5		0.0	0.2	3.9

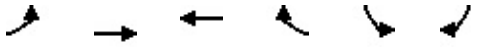
Intersection Summary	
HCM 2010 Ctrl Delay	53.4
HCM 2010 LOS	D



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	351	1465	839	142	252	534
Future Volume (veh/h)	351	1465	839	142	252	534
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1683	1863	1683	1683
Adj Flow Rate, veh/h	382	1592	912	154	274	580
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4
Cap, veh/h	454	2236	1064	527	463	414
Arrive On Green	0.56	1.00	0.33	0.33	0.29	0.29
Sat Flow, veh/h	1634	3563	3281	1583	1603	1430
Grp Volume(v), veh/h	382	1592	912	154	274	580
Grp Sat Flow(s),veh/h/ln	1634	1736	1599	1583	1603	1430
Q Serve(g_s), s	23.4	0.0	32.0	8.6	17.6	34.7
Cycle Q Clear(g_c), s	23.4	0.0	32.0	8.6	17.6	34.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	454	2236	1064	527	463	414
V/C Ratio(X)	0.84	0.71	0.86	0.29	0.59	1.40
Avail Cap(c_a), veh/h	498	2632	1343	665	463	414
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.84	0.84	1.00	1.00
Uniform Delay (d), s/veh	24.4	0.0	37.4	29.6	36.6	42.7
Incr Delay (d2), s/veh	1.2	0.1	4.0	0.3	5.5	195.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.5	0.0	14.6	3.8	8.5	45.9
LnGrp Delay(d),s/veh	25.6	0.1	41.3	29.8	42.0	237.8
LnGrp LOS	C	A	D	C	D	F
Approach Vol, veh/h		1974	1066		854	
Approach Delay, s/veh		5.0	39.7		175.0	
Approach LOS		A	D		F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				81.3		38.7	37.4	43.9
Change Period (Y+Rc), s				5.7		5.3	5.7	5.7
Max Green Setting (Gmax), s				89.3		19.7	34.9	48.7
Max Q Clear Time (g_c+I1), s				2.0		36.7	25.4	34.0
Green Ext Time (p_c), s				14.8		0.0	6.3	4.3

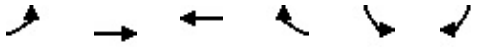
Intersection Summary	
HCM 2010 Ctrl Delay	51.8
HCM 2010 LOS	D



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	351	1465	839	142	252	534
Future Volume (veh/h)	351	1465	839	142	252	534
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1687	1900	1683	1683
Adj Flow Rate, veh/h	382	1592	912	154	274	580
Adj No. of Lanes	1	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	4	4	4
Cap, veh/h	426	2787	1051	177	600	536
Arrive On Green	0.52	1.00	0.53	0.53	0.37	0.37
Sat Flow, veh/h	1634	5152	4124	668	1603	1430
Grp Volume(v), veh/h	382	1592	704	362	274	580
Grp Sat Flow(s),veh/h/ln	1634	1663	1536	1569	1603	1430
Q Serve(g_s), s	25.2	0.0	23.9	24.1	15.5	44.9
Cycle Q Clear(g_c), s	25.2	0.0	23.9	24.1	15.5	44.9
Prop In Lane	1.00			0.43	1.00	1.00
Lane Grp Cap(c), veh/h	426	2787	813	415	600	536
V/C Ratio(X)	0.90	0.57	0.87	0.87	0.46	1.08
Avail Cap(c_a), veh/h	436	3200	1049	536	600	536
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.65	0.65	0.84	0.84	1.00	1.00
Uniform Delay (d), s/veh	27.2	0.0	26.4	26.4	28.3	37.5
Incr Delay (d2), s/veh	14.6	0.1	5.4	10.2	2.5	63.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.0	0.0	10.6	11.4	7.3	38.3
LnGrp Delay(d),s/veh	41.9	0.1	31.8	36.7	30.8	100.7
LnGrp LOS	D	A	C	D	C	F
Approach Vol, veh/h		1974	1066		854	
Approach Delay, s/veh		8.2	33.4		78.3	
Approach LOS		A	C		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				71.1		48.9	35.3	35.8
Change Period (Y+Rc), s				5.7		5.3	5.7	5.7
Max Green Setting (Gmax), s				75.3		33.7	30.3	39.3
Max Q Clear Time (g_c+I1), s				2.0		46.9	27.2	26.1
Green Ext Time (p_c), s				13.9		0.0	2.4	3.9

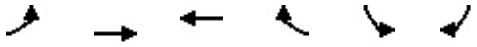
Intersection Summary	
HCM 2010 Ctrl Delay	30.5
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	437	607	107	45	24
Future Volume (veh/h)	38	437	607	107	45	24
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1683	1863	1683	1683
Adj Flow Rate, veh/h	41	475	660	116	49	26
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4
Cap, veh/h	77	1291	910	451	878	784
Arrive On Green	0.05	0.37	0.28	0.28	0.55	0.55
Sat Flow, veh/h	1634	3563	3281	1583	1603	1430
Grp Volume(v), veh/h	41	475	660	116	49	26
Grp Sat Flow(s),veh/h/ln	1634	1736	1599	1583	1603	1430
Q Serve(g_s), s	2.5	10.0	18.6	5.7	1.4	0.8
Cycle Q Clear(g_c), s	2.5	10.0	18.6	5.7	1.4	0.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	77	1291	910	451	878	784
V/C Ratio(X)	0.53	0.37	0.73	0.26	0.06	0.03
Avail Cap(c_a), veh/h	163	2534	1886	934	878	784
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.96	0.96	1.00	1.00
Uniform Delay (d), s/veh	46.5	22.8	32.2	27.6	10.5	10.4
Incr Delay (d2), s/veh	5.5	0.2	1.1	0.3	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	4.8	8.3	2.5	0.7	1.1
LnGrp Delay(d),s/veh	52.0	23.0	33.3	27.9	10.7	10.5
LnGrp LOS	D	C	C	C	B	B
Approach Vol, veh/h		516	776		75	
Approach Delay, s/veh		25.3	32.5		10.6	
Approach LOS		C	C		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				41.2		58.8	8.7	32.5
Change Period (Y+Rc), s				5.7		5.3	5.7	5.7
Max Green Setting (Gmax), s				71.3		17.7	8.3	57.3
Max Q Clear Time (g_c+I1), s				12.0		3.4	4.5	20.6
Green Ext Time (p_c), s				6.3		0.2	0.0	6.2

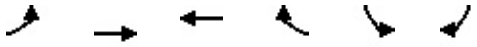
Intersection Summary	
HCM 2010 Ctrl Delay	28.6
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	38	464	679	107	45	24
Future Volume (veh/h)	38	464	679	107	45	24
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1683	1863	1683	1683
Adj Flow Rate, veh/h	41	504	738	116	49	26
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4
Cap, veh/h	83	1270	899	445	908	810
Arrive On Green	0.10	0.73	0.28	0.28	0.57	0.57
Sat Flow, veh/h	1634	3563	3281	1583	1603	1430
Grp Volume(v), veh/h	41	504	738	116	49	26
Grp Sat Flow(s),veh/h/ln	1634	1736	1599	1583	1603	1430
Q Serve(g_s), s	2.8	6.5	25.5	6.7	1.6	0.9
Cycle Q Clear(g_c), s	2.8	6.5	25.5	6.7	1.6	0.9
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	83	1270	899	445	908	810
V/C Ratio(X)	0.49	0.40	0.82	0.26	0.05	0.03
Avail Cap(c_a), veh/h	152	2677	2059	1020	908	810
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.94	0.94	1.00	1.00
Uniform Delay (d), s/veh	51.6	10.9	39.6	32.9	11.4	11.3
Incr Delay (d2), s/veh	4.4	0.2	1.8	0.3	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	3.0	11.5	3.0	0.7	1.2
LnGrp Delay(d),s/veh	56.0	11.1	41.5	33.2	11.6	11.4
LnGrp LOS	E	B	D	C	B	B
Approach Vol, veh/h		545	854		75	
Approach Delay, s/veh		14.5	40.3		11.5	
Approach LOS		B	D		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				47.2		70.8	10.0	37.2
Change Period (Y+Rc), s				5.7		5.3	5.7	5.7
Max Green Setting (Gmax), s				89.3		17.7	9.3	74.3
Max Q Clear Time (g_c+I1), s				8.5		3.6	4.8	27.5
Green Ext Time (p_c), s				2.4		0.2	1.0	4.0

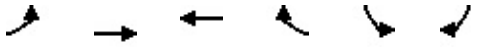
Intersection Summary	
HCM 2010 Ctrl Delay	29.3
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	373	558	866	321	118	172
Future Volume (veh/h)	373	558	866	321	118	172
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1683	1863	1683	1683
Adj Flow Rate, veh/h	405	607	941	349	128	187
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4
Cap, veh/h	460	2348	1126	558	382	341
Arrive On Green	0.28	0.68	0.35	0.35	0.24	0.24
Sat Flow, veh/h	1634	3563	3281	1583	1603	1430
Grp Volume(v), veh/h	405	607	941	349	128	187
Grp Sat Flow(s),veh/h/ln	1634	1736	1599	1583	1603	1430
Q Serve(g_s), s	22.3	6.4	25.4	17.2	6.2	10.8
Cycle Q Clear(g_c), s	22.3	6.4	25.4	17.2	6.2	10.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	460	2348	1126	558	382	341
V/C Ratio(X)	0.88	0.26	0.84	0.63	0.33	0.55
Avail Cap(c_a), veh/h	469	2548	1292	640	382	341
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.77	0.77	1.00	1.00
Uniform Delay (d), s/veh	32.2	6.0	28.0	25.3	29.6	31.4
Incr Delay (d2), s/veh	16.0	0.1	3.4	1.2	2.4	6.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.1	3.1	11.8	7.6	3.0	9.1
LnGrp Delay(d),s/veh	48.2	6.0	31.4	26.5	32.0	37.6
LnGrp LOS	D	A	C	C	C	D
Approach Vol, veh/h		1012	1290		315	
Approach Delay, s/veh		22.9	30.1		35.3	
Approach LOS		C	C		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				67.6		26.4	30.5	37.1
Change Period (Y+Rc), s				5.7		5.3	5.7	5.7
Max Green Setting (Gmax), s				67.3		15.7	25.3	36.3
Max Q Clear Time (g_c+I1), s				8.4		12.8	24.3	27.4
Green Ext Time (p_c), s				4.7		0.4	0.5	4.0

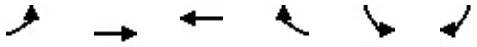
Intersection Summary	
HCM 2010 Ctrl Delay	27.9
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	373	585	938	321	118	172
Future Volume (veh/h)	373	585	938	321	118	172
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1683	1863	1683	1683
Adj Flow Rate, veh/h	405	636	1020	349	128	187
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4
Cap, veh/h	461	2413	1186	587	352	314
Arrive On Green	0.28	0.70	0.37	0.37	0.22	0.22
Sat Flow, veh/h	1634	3563	3281	1583	1603	1430
Grp Volume(v), veh/h	405	636	1020	349	128	187
Grp Sat Flow(s),veh/h/ln	1634	1736	1599	1583	1603	1430
Q Serve(g_s), s	22.2	6.4	27.7	16.7	6.4	11.0
Cycle Q Clear(g_c), s	22.2	6.4	27.7	16.7	6.4	11.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	461	2413	1186	587	352	314
V/C Ratio(X)	0.88	0.26	0.86	0.59	0.36	0.60
Avail Cap(c_a), veh/h	469	2548	1292	640	352	314
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.72	0.72	1.00	1.00
Uniform Delay (d), s/veh	32.2	5.3	27.3	23.9	31.1	32.9
Incr Delay (d2), s/veh	15.8	0.1	4.2	0.9	2.9	8.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.0	3.0	12.9	7.4	3.1	9.3
LnGrp Delay(d),s/veh	48.1	5.4	31.5	24.8	34.0	41.0
LnGrp LOS	D	A	C	C	C	D
Approach Vol, veh/h		1041	1369		315	
Approach Delay, s/veh		22.0	29.8		38.2	
Approach LOS		C	C		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				69.4		24.6	30.5	38.9
Change Period (Y+Rc), s				5.7		5.3	5.7	5.7
Max Green Setting (Gmax), s				67.3		15.7	25.3	36.3
Max Q Clear Time (g_c+I1), s				8.4		13.0	24.2	29.7
Green Ext Time (p_c), s				4.9		0.3	0.5	3.5

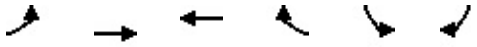
Intersection Summary	
HCM 2010 Ctrl Delay	27.8
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	373	585	938	321	118	172
Future Volume (veh/h)	373	585	938	321	118	172
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1691	1900	1683	1683
Adj Flow Rate, veh/h	405	636	1020	349	128	187
Adj No. of Lanes	1	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	4	4	4
Cap, veh/h	432	3092	1095	375	502	448
Arrive On Green	0.53	1.00	0.64	0.64	0.31	0.31
Sat Flow, veh/h	1634	5152	3553	1163	1603	1430
Grp Volume(v), veh/h	405	636	923	446	128	187
Grp Sat Flow(s),veh/h/ln	1634	1663	1539	1486	1603	1430
Q Serve(g_s), s	27.8	0.0	32.0	32.1	7.2	12.4
Cycle Q Clear(g_c), s	27.8	0.0	32.0	32.1	7.2	12.4
Prop In Lane	1.00			0.78	1.00	1.00
Lane Grp Cap(c), veh/h	432	3092	991	478	502	448
V/C Ratio(X)	0.94	0.21	0.93	0.93	0.25	0.42
Avail Cap(c_a), veh/h	436	3200	1052	508	502	448
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.75	0.75	1.00	1.00
Uniform Delay (d), s/veh	27.3	0.0	20.2	20.2	30.7	32.5
Incr Delay (d2), s/veh	27.2	0.0	11.1	19.2	1.2	2.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.6	0.0	14.6	15.2	3.3	10.8
LnGrp Delay(d),s/veh	54.5	0.0	31.2	39.4	32.0	35.4
LnGrp LOS	D	A	C	D	C	D
Approach Vol, veh/h		1041	1369		315	
Approach Delay, s/veh		21.2	33.9		34.0	
Approach LOS		C	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				78.4		41.6	35.8	42.6
Change Period (Y+Rc), s				5.7		5.3	5.7	5.7
Max Green Setting (Gmax), s				75.3		33.7	30.3	39.3
Max Q Clear Time (g_c+I1), s				2.0		14.4	29.8	34.1
Green Ext Time (p_c), s				4.9		1.1	0.3	2.9

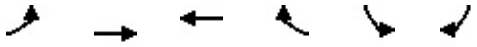
Intersection Summary	
HCM 2010 Ctrl Delay	29.1
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	382	665	977	340	118	172
Future Volume (veh/h)	382	665	977	340	118	172
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1683	1863	1683	1683
Adj Flow Rate, veh/h	415	723	1062	370	128	187
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4
Cap, veh/h	466	2458	1215	602	331	296
Arrive On Green	0.29	0.71	0.38	0.38	0.21	0.21
Sat Flow, veh/h	1634	3563	3281	1583	1603	1430
Grp Volume(v), veh/h	415	723	1062	370	128	187
Grp Sat Flow(s),veh/h/ln	1634	1736	1599	1583	1603	1430
Q Serve(g_s), s	22.9	7.2	29.0	17.8	6.5	11.2
Cycle Q Clear(g_c), s	22.9	7.2	29.0	17.8	6.5	11.2
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	466	2458	1215	602	331	296
V/C Ratio(X)	0.89	0.29	0.87	0.61	0.39	0.63
Avail Cap(c_a), veh/h	469	2548	1292	640	331	296
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.69	0.69	1.00	1.00
Uniform Delay (d), s/veh	32.2	5.1	27.0	23.6	32.1	34.0
Incr Delay (d2), s/veh	17.0	0.1	4.7	1.1	3.4	9.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.5	3.4	13.5	7.9	3.2	9.5
LnGrp Delay(d),s/veh	49.2	5.1	31.7	24.7	35.5	43.9
LnGrp LOS	D	A	C	C	D	D
Approach Vol, veh/h		1138	1432		315	
Approach Delay, s/veh		21.2	29.9		40.5	
Approach LOS		C	C		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				70.6		23.4	30.8	39.7
Change Period (Y+Rc), s				5.7		5.3	5.7	5.7
Max Green Setting (Gmax), s				67.3		15.7	25.3	36.3
Max Q Clear Time (g_c+I1), s				9.2		13.2	24.9	31.0
Green Ext Time (p_c), s				5.5		0.3	0.2	3.1

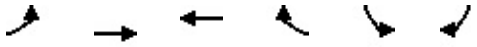
Intersection Summary	
HCM 2010 Ctrl Delay	27.6
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	382	699	1065	340	118	172
Future Volume (veh/h)	382	699	1065	340	118	172
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1683	1863	1683	1683
Adj Flow Rate, veh/h	415	760	1158	370	128	187
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4
Cap, veh/h	466	2517	1270	629	304	271
Arrive On Green	0.29	0.73	0.40	0.40	0.19	0.19
Sat Flow, veh/h	1634	3563	3281	1583	1603	1430
Grp Volume(v), veh/h	415	760	1158	370	128	187
Grp Sat Flow(s),veh/h/ln	1634	1736	1599	1583	1603	1430
Q Serve(g_s), s	22.9	7.2	32.2	17.3	6.6	11.5
Cycle Q Clear(g_c), s	22.9	7.2	32.2	17.3	6.6	11.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	466	2517	1270	629	304	271
V/C Ratio(X)	0.89	0.30	0.91	0.59	0.42	0.69
Avail Cap(c_a), veh/h	469	2548	1292	640	304	271
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	0.59	0.59	1.00	1.00
Uniform Delay (d), s/veh	32.2	4.5	26.8	22.3	33.5	35.5
Incr Delay (d2), s/veh	16.8	0.1	6.3	0.8	4.2	13.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.4	3.4	15.3	7.6	3.3	9.8
LnGrp Delay(d),s/veh	48.9	4.6	33.0	23.1	37.8	48.9
LnGrp LOS	D	A	C	C	D	D
Approach Vol, veh/h		1175	1528		315	
Approach Delay, s/veh		20.3	30.6		44.4	
Approach LOS		C	C		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				72.2		21.8	30.8	41.3
Change Period (Y+Rc), s				5.7		5.3	5.7	5.7
Max Green Setting (Gmax), s				67.3		15.7	25.3	36.3
Max Q Clear Time (g_c+I1), s				9.2		13.5	24.9	34.2
Green Ext Time (p_c), s				5.7		0.3	0.3	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	28.0
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	382	699	1065	340	118	172
Future Volume (veh/h)	382	699	1065	340	118	172
Number	7	4	8	18	1	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1691	1900	1683	1683
Adj Flow Rate, veh/h	415	760	1158	370	128	187
Adj No. of Lanes	1	3	3	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	4	4	4
Cap, veh/h	436	3200	1184	378	467	417
Arrive On Green	0.53	1.00	0.68	0.68	0.29	0.29
Sat Flow, veh/h	1634	5152	3617	1107	1603	1430
Grp Volume(v), veh/h	415	760	1028	500	128	187
Grp Sat Flow(s),veh/h/ln	1634	1663	1538	1495	1603	1430
Q Serve(g_s), s	28.9	0.0	38.3	38.3	7.4	12.8
Cycle Q Clear(g_c), s	28.9	0.0	38.3	38.3	7.4	12.8
Prop In Lane	1.00			0.74	1.00	1.00
Lane Grp Cap(c), veh/h	436	3200	1051	511	467	417
V/C Ratio(X)	0.95	0.24	0.98	0.98	0.27	0.45
Avail Cap(c_a), veh/h	436	3200	1051	511	467	417
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.68	0.68	1.00	1.00
Uniform Delay (d), s/veh	27.3	0.0	18.6	18.6	32.7	34.6
Incr Delay (d2), s/veh	30.2	0.0	17.9	27.5	1.4	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.3	0.0	18.3	19.2	3.5	11.0
LnGrp Delay(d),s/veh	57.5	0.0	36.5	46.1	34.2	38.1
LnGrp LOS	E	A	D	D	C	D
Approach Vol, veh/h		1175	1528		315	
Approach Delay, s/veh		20.3	39.6		36.5	
Approach LOS		C	D		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs				4		6	7	8
Phs Duration (G+Y+Rc), s				81.0		39.0	36.0	45.0
Change Period (Y+Rc), s				5.7		5.3	5.7	5.7
Max Green Setting (Gmax), s				75.3		33.7	30.3	39.3
Max Q Clear Time (g_c+I1), s				2.0		14.8	30.9	40.3
Green Ext Time (p_c), s				5.8		1.1	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	31.8
HCM 2010 LOS	C

Intersection 17
Airport Dr & Merle Haggard Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	615	143	33	263	1	63	67	46	9	139	153
Future Volume (veh/h)	64	615	143	33	263	1	63	67	46	9	139	153
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	70	668	155	36	286	1	68	73	50	10	151	166
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	521	2102	883	68	1141	479	103	296	117	208	279	214
Arrive On Green	0.32	0.61	0.61	0.01	0.11	0.11	0.06	0.08	0.08	0.13	0.15	0.15
Sat Flow, veh/h	1634	3471	1458	1634	3471	1458	1603	3539	1405	1603	1863	1430
Grp Volume(v), veh/h	70	668	155	36	286	1	68	73	50	10	151	166
Grp Sat Flow(s),veh/h/ln	1634	1736	1458	1634	1736	1458	1603	1770	1405	1603	1863	1430
Q Serve(g_s), s	3.5	10.8	3.2	2.5	8.7	0.1	4.8	2.2	3.3	0.6	8.6	12.8
Cycle Q Clear(g_c), s	3.5	10.8	3.2	2.5	8.7	0.1	4.8	2.2	3.3	0.6	8.6	12.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	521	2102	883	68	1141	479	103	296	117	208	279	214
V/C Ratio(X)	0.13	0.32	0.18	0.53	0.25	0.00	0.66	0.25	0.43	0.05	0.54	0.78
Avail Cap(c_a), veh/h	521	2102	883	128	1141	479	195	1237	491	208	538	413
HCM Platoon Ratio	1.00	1.00	1.00	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.69	0.69	0.69	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.9	11.1	3.4	55.6	38.3	34.4	52.6	49.3	36.5	43.8	45.3	47.0
Incr Delay (d2), s/veh	0.1	0.3	0.3	6.2	0.5	0.0	7.1	0.4	2.4	0.1	1.6	5.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	5.2	1.3	1.3	4.3	0.0	2.3	1.1	1.4	0.3	4.6	5.4
LnGrp Delay(d),s/veh	28.0	11.4	3.7	61.8	38.8	34.5	59.7	49.7	39.0	43.9	46.9	53.0
LnGrp LOS	C	B	A	E	D	C	E	D	D	D	D	D
Approach Vol, veh/h		893			323			191			327	
Approach Delay, s/veh		11.3			41.4			50.5			49.9	
Approach LOS		B			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	13.6	8.8	73.6	11.4	21.2	40.6	41.8
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	5.7	38.9	7.3	41.1	12.7	31.9	12.3	36.1
Max Q Clear Time (g_c+I1), s	2.6	5.3	4.5	12.8	6.8	14.8	5.5	10.7
Green Ext Time (p_c), s	0.0	0.5	0.0	4.0	0.1	1.1	2.3	1.1

Intersection Summary	
HCM 2010 Ctrl Delay	28.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	665	170	33	285	1	76	67	46	9	139	153
Future Volume (veh/h)	64	665	170	33	285	1	76	67	46	9	139	153
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	70	723	185	36	310	1	83	73	50	10	151	166
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	109	1264	531	457	2005	842	120	306	122	218	275	211
Arrive On Green	0.13	0.73	0.73	0.28	0.58	0.58	0.07	0.09	0.09	0.14	0.15	0.15
Sat Flow, veh/h	1634	3471	1458	1634	3471	1458	1603	3539	1405	1603	1863	1430
Grp Volume(v), veh/h	70	723	185	36	310	1	83	73	50	10	151	166
Grp Sat Flow(s),veh/h/ln	1634	1736	1458	1634	1736	1458	1603	1770	1405	1603	1863	1430
Q Serve(g_s), s	4.9	11.6	4.1	1.9	5.0	0.0	6.1	2.3	4.0	0.7	9.0	13.4
Cycle Q Clear(g_c), s	4.9	11.6	4.1	1.9	5.0	0.0	6.1	2.3	4.0	0.7	9.0	13.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	109	1264	531	457	2005	842	120	306	122	218	275	211
V/C Ratio(X)	0.64	0.57	0.35	0.08	0.15	0.00	0.69	0.24	0.41	0.05	0.55	0.79
Avail Cap(c_a), veh/h	218	1264	531	457	2005	842	240	1218	484	218	486	373
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.62	0.62	0.62	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.7	11.9	6.0	31.8	11.8	2.2	54.2	51.1	51.9	45.1	47.4	49.3
Incr Delay (d2), s/veh	3.9	1.2	1.1	0.1	0.2	0.0	7.0	0.4	2.2	0.1	1.7	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	5.6	1.7	0.9	2.4	0.0	2.9	1.1	1.7	0.3	4.8	5.7
LnGrp Delay(d),s/veh	54.6	13.1	7.1	31.9	11.9	2.2	61.1	51.5	54.1	45.1	49.1	55.6
LnGrp LOS	D	B	A	C	B	A	E	D	D	D	D	E
Approach Vol, veh/h		978			347			206			327	
Approach Delay, s/veh		15.0			14.0			56.0			52.3	
Approach LOS		B			B			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.3	14.4	37.6	47.7	13.0	21.7	12.0	73.3
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	6.7	40.0	9.3	42.0	16.7	30.0	14.3	37.0
Max Q Clear Time (g_c+I1), s	2.7	6.0	3.9	13.6	8.1	15.4	6.9	7.0
Green Ext Time (p_c), s	0.5	0.5	0.1	4.2	0.1	1.0	0.1	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	25.9
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	874	373	39	447	15	223	75	51	17	150	160
Future Volume (veh/h)	79	874	373	39	447	15	223	75	51	17	150	160
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	86	950	405	42	486	16	242	82	55	18	163	174
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	129	1784	750	75	1670	702	286	302	120	355	239	184
Arrive On Green	0.08	0.51	0.51	0.05	0.48	0.48	0.18	0.09	0.09	0.22	0.13	0.13
Sat Flow, veh/h	1634	3471	1458	1634	3471	1458	1603	3539	1405	1603	1863	1430
Grp Volume(v), veh/h	86	950	405	42	486	16	242	82	55	18	163	174
Grp Sat Flow(s),veh/h/ln	1634	1736	1458	1634	1736	1458	1603	1770	1405	1603	1863	1430
Q Serve(g_s), s	6.1	22.0	9.8	3.0	10.1	0.3	17.5	2.6	3.8	1.1	10.0	11.7
Cycle Q Clear(g_c), s	6.1	22.0	9.8	3.0	10.1	0.3	17.5	2.6	3.8	1.1	10.0	11.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	129	1784	750	75	1670	702	286	302	120	355	239	184
V/C Ratio(X)	0.67	0.53	0.54	0.56	0.29	0.02	0.85	0.27	0.46	0.05	0.68	0.95
Avail Cap(c_a), veh/h	191	1784	750	109	1670	702	414	1268	504	355	279	215
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.77	0.77	0.77	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.8	19.5	3.7	56.1	18.8	2.5	47.7	51.4	38.1	36.8	50.0	33.9
Incr Delay (d2), s/veh	4.6	0.9	2.2	6.2	0.4	0.1	10.4	0.5	2.7	0.1	5.4	43.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	10.8	4.3	1.5	5.0	0.1	8.6	1.3	1.6	0.5	5.5	6.9
LnGrp Delay(d),s/veh	58.4	20.4	5.9	62.2	19.2	2.5	58.1	51.9	40.8	36.8	55.4	77.8
LnGrp LOS	E	C	A	E	B	A	E	D	D	D	E	E
Approach Vol, veh/h		1441			544			379			355	
Approach Delay, s/veh		18.6			22.0			54.2			65.4	
Approach LOS		B			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.6	14.2	9.5	65.7	25.4	19.4	13.4	61.7
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	4.7	41.7	6.3	45.3	29.7	16.7	12.3	39.3
Max Q Clear Time (g_c+I1), s	3.1	5.8	5.0	24.0	19.5	13.7	8.1	12.1
Green Ext Time (p_c), s	0.2	0.5	0.0	9.1	0.6	0.4	0.1	10.0

Intersection Summary	
HCM 2010 Ctrl Delay	30.4
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	924	400	39	469	15	236	75	51	17	150	160
Future Volume (veh/h)	79	924	400	39	469	15	236	75	51	17	150	160
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	86	1004	435	42	510	16	257	82	55	18	163	174
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	296	1663	699	76	1195	502	302	306	122	399	274	210
Arrive On Green	0.06	0.16	0.16	0.05	0.34	0.34	0.19	0.09	0.09	0.25	0.15	0.15
Sat Flow, veh/h	1634	3471	1458	1634	3471	1458	1603	3539	1405	1603	1863	1430
Grp Volume(v), veh/h	86	1004	435	42	510	16	257	82	55	18	163	174
Grp Sat Flow(s),veh/h/ln	1634	1736	1458	1634	1736	1458	1603	1770	1405	1603	1863	1430
Q Serve(g_s), s	5.8	31.0	14.3	2.9	13.0	0.8	17.8	2.5	3.6	1.0	9.4	13.6
Cycle Q Clear(g_c), s	5.8	31.0	14.3	2.9	13.0	0.8	17.8	2.5	3.6	1.0	9.4	13.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	296	1663	699	76	1195	502	302	306	122	399	274	210
V/C Ratio(X)	0.29	0.60	0.62	0.56	0.43	0.03	0.85	0.27	0.45	0.05	0.60	0.83
Avail Cap(c_a), veh/h	296	1663	699	107	1195	502	408	1243	494	399	275	211
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.75	0.75	0.75	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.0	38.3	7.8	53.7	29.0	25.0	45.1	49.1	35.9	32.8	45.9	47.6
Incr Delay (d2), s/veh	0.4	1.2	3.1	6.0	1.1	0.1	12.0	0.5	2.6	0.0	3.4	22.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	15.2	6.4	1.4	6.4	0.4	8.9	1.2	1.5	0.4	5.1	6.7
LnGrp Delay(d),s/veh	47.4	39.5	10.9	59.7	30.0	25.1	57.1	49.6	38.6	32.8	49.3	70.6
LnGrp LOS	D	D	B	E	C	C	E	D	D	C	D	E
Approach Vol, veh/h		1525			568			394			355	
Approach Delay, s/veh		31.8			32.1			52.9			58.9	
Approach LOS		C			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.7	13.9	9.3	59.1	25.7	20.9	24.8	43.6
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	4.6	39.1	5.8	43.5	28.0	15.7	11.4	37.9
Max Q Clear Time (g_c+I1), s	3.0	5.6	4.9	33.0	19.8	15.6	7.8	15.0
Green Ext Time (p_c), s	0.2	0.5	0.0	5.2	0.6	0.0	2.1	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	38.2
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	79	924	400	39	469	15	236	75	51	17	150	160
Future Volume (veh/h)	79	924	400	39	469	15	236	75	51	17	150	160
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	86	1004	435	42	510	16	257	82	55	18	163	174
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	275	1710	718	75	1284	540	299	301	120	390	264	203
Arrive On Green	0.06	0.16	0.16	0.05	0.37	0.37	0.19	0.09	0.09	0.24	0.14	0.14
Sat Flow, veh/h	1634	3471	1458	1634	3471	1458	1603	3539	1405	1603	1863	1430
Grp Volume(v), veh/h	86	1004	435	42	510	16	257	82	55	18	163	174
Grp Sat Flow(s),veh/h/ln	1634	1736	1458	1634	1736	1458	1603	1770	1405	1603	1863	1430
Q Serve(g_s), s	6.1	32.1	14.8	3.0	13.0	0.8	18.6	2.6	3.8	1.0	9.9	14.3
Cycle Q Clear(g_c), s	6.1	32.1	14.8	3.0	13.0	0.8	18.6	2.6	3.8	1.0	9.9	14.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	275	1710	718	75	1284	540	299	301	120	390	264	203
V/C Ratio(X)	0.31	0.59	0.61	0.56	0.40	0.03	0.86	0.27	0.46	0.05	0.62	0.86
Avail Cap(c_a), veh/h	275	1710	718	109	1284	540	374	1171	465	390	264	203
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	0.88	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.0	39.0	7.8	56.1	27.9	24.1	47.3	51.4	38.1	34.8	48.4	50.3
Incr Delay (d2), s/veh	0.6	1.3	3.3	6.2	0.9	0.1	15.1	0.5	2.7	0.0	4.3	28.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	15.8	6.6	1.5	6.4	0.4	9.5	1.3	1.6	0.5	5.4	7.3
LnGrp Delay(d),s/veh	50.6	40.3	11.1	62.3	28.8	24.2	62.3	51.9	40.8	34.8	52.7	79.2
LnGrp LOS	D	D	B	E	C	C	E	D	D	C	D	E
Approach Vol, veh/h		1525			568			394			355	
Approach Delay, s/veh		32.5			31.1			57.1			64.8	
Approach LOS		C			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.2	14.2	9.5	63.1	26.4	21.0	24.2	48.4
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	4.0	38.4	6.3	49.3	26.7	15.7	12.9	42.7
Max Q Clear Time (g_c+I1), s	3.0	5.8	5.0	34.1	20.6	16.3	8.1	15.0
Green Ext Time (p_c), s	0.1	0.5	0.0	6.4	0.5	0.0	2.9	2.2

Intersection Summary	
HCM 2010 Ctrl Delay	39.7
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	985	399	46	504	15	231	83	57	17	152	163
Future Volume (veh/h)	91	985	399	46	504	15	231	83	57	17	152	163
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	99	1071	434	50	548	16	251	90	62	18	165	177
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	143	1745	733	85	1622	681	292	315	125	357	241	185
Arrive On Green	0.09	0.50	0.50	0.05	0.47	0.47	0.18	0.09	0.09	0.22	0.13	0.13
Sat Flow, veh/h	1634	3471	1458	1634	3471	1458	1603	3539	1406	1603	1863	1430
Grp Volume(v), veh/h	99	1071	434	50	548	16	251	90	62	18	165	177
Grp Sat Flow(s),veh/h/ln	1634	1736	1458	1634	1736	1458	1603	1770	1406	1603	1863	1430
Q Serve(g_s), s	7.1	26.6	11.2	3.6	12.0	0.3	18.2	2.9	4.3	1.1	10.2	11.8
Cycle Q Clear(g_c), s	7.1	26.6	11.2	3.6	12.0	0.3	18.2	2.9	4.3	1.1	10.2	11.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	143	1745	733	85	1622	681	292	315	125	357	241	185
V/C Ratio(X)	0.69	0.61	0.59	0.59	0.34	0.02	0.86	0.29	0.49	0.05	0.68	0.96
Avail Cap(c_a), veh/h	199	1745	733	109	1622	681	347	1162	462	357	292	224
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.69	0.69	0.69	0.93	0.93	0.93	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.2	21.5	4.1	55.6	20.2	2.8	47.6	51.1	37.3	36.7	49.9	33.0
Incr Delay (d2), s/veh	4.1	1.1	2.4	5.9	0.5	0.1	16.8	0.5	3.0	0.1	5.0	43.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	12.9	4.9	1.8	5.8	0.1	9.4	1.4	1.8	0.5	5.6	6.9
LnGrp Delay(d),s/veh	57.3	22.6	6.6	61.5	20.7	2.9	64.3	51.6	40.3	36.7	54.9	76.9
LnGrp LOS	E	C	A	E	C	A	E	D	D	D	D	E
Approach Vol, veh/h		1604			614			403			360	
Approach Delay, s/veh		20.4			23.6			57.8			64.8	
Approach LOS		C			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.7	14.7	10.2	64.3	25.9	19.5	14.5	60.1
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	4.1	38.1	6.3	49.5	24.7	17.5	12.9	42.9
Max Q Clear Time (g_c+I1), s	3.1	6.3	5.6	28.6	20.2	13.8	9.1	14.0
Green Ext Time (p_c), s	0.1	0.6	0.0	10.3	0.4	0.5	0.1	11.9

Intersection Summary	
HCM 2010 Ctrl Delay	31.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	1046	433	46	532	15	246	83	57	17	152	163
Future Volume (veh/h)	91	1046	433	46	532	15	246	83	57	17	152	163
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	99	1137	471	50	578	16	267	90	62	18	165	177
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	144	1682	707	86	1558	654	308	320	127	374	246	189
Arrive On Green	0.09	0.48	0.48	0.05	0.45	0.45	0.19	0.09	0.09	0.23	0.13	0.13
Sat Flow, veh/h	1634	3471	1458	1634	3471	1458	1603	3539	1407	1603	1863	1430
Grp Volume(v), veh/h	99	1137	471	50	578	16	267	90	62	18	165	177
Grp Sat Flow(s),veh/h/ln	1634	1736	1458	1634	1736	1458	1603	1770	1407	1603	1863	1430
Q Serve(g_s), s	6.8	28.9	12.3	3.4	12.7	0.3	18.6	2.7	4.1	1.0	9.7	11.2
Cycle Q Clear(g_c), s	6.8	28.9	12.3	3.4	12.7	0.3	18.6	2.7	4.1	1.0	9.7	11.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	144	1682	707	86	1558	654	308	320	127	374	246	189
V/C Ratio(X)	0.69	0.68	0.67	0.58	0.37	0.02	0.87	0.28	0.49	0.05	0.67	0.94
Avail Cap(c_a), veh/h	199	1682	707	99	1558	654	332	1209	481	374	337	259
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.68	0.68	0.68	0.94	0.94	0.94	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.9	22.7	4.3	53.2	21.0	2.8	45.1	48.8	35.2	34.2	47.5	31.0
Incr Delay (d2), s/veh	3.9	1.5	3.4	5.9	0.6	0.1	20.0	0.5	2.9	0.1	3.2	33.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	14.1	5.5	1.7	6.2	0.1	9.9	1.4	1.7	0.5	5.2	6.2
LnGrp Delay(d),s/veh	54.7	24.2	7.6	59.1	21.6	2.8	65.1	49.3	38.1	34.2	50.7	64.4
LnGrp LOS	D	C	A	E	C	A	E	D	D	C	D	E
Approach Vol, veh/h		1707			644			419			360	
Approach Delay, s/veh		21.4			24.0			57.7			56.6	
Approach LOS		C			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	30.8	14.4	10.0	59.7	26.1	19.2	14.2	55.6
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	4.0	38.0	5.3	45.7	22.5	19.5	12.3	38.7
Max Q Clear Time (g_c+I1), s	3.0	6.1	5.4	30.9	20.6	13.2	8.8	14.7
Green Ext Time (p_c), s	0.1	0.6	0.0	9.0	0.2	0.7	0.1	12.0

Intersection Summary	
HCM 2010 Ctrl Delay	30.9
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	1046	433	46	532	15	246	83	57	17	152	163
Future Volume (veh/h)	91	1046	433	46	532	15	246	83	57	17	152	163
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	99	1137	471	50	578	16	267	90	62	18	165	177
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	265	1667	700	85	1284	540	309	315	125	393	264	203
Arrive On Green	0.05	0.16	0.16	0.05	0.37	0.37	0.19	0.09	0.09	0.25	0.14	0.14
Sat Flow, veh/h	1634	3471	1458	1634	3471	1458	1603	3539	1406	1603	1863	1430
Grp Volume(v), veh/h	99	1137	471	50	578	16	267	90	62	18	165	177
Grp Sat Flow(s),veh/h/ln	1634	1736	1458	1634	1736	1458	1603	1770	1406	1603	1863	1430
Q Serve(g_s), s	7.0	37.1	16.3	3.6	15.1	0.8	19.4	2.9	4.3	1.0	10.0	14.5
Cycle Q Clear(g_c), s	7.0	37.1	16.3	3.6	15.1	0.8	19.4	2.9	4.3	1.0	10.0	14.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	265	1667	700	85	1284	540	309	315	125	393	264	203
V/C Ratio(X)	0.37	0.68	0.67	0.59	0.45	0.03	0.86	0.29	0.49	0.05	0.63	0.87
Avail Cap(c_a), veh/h	265	1667	700	109	1284	540	374	1171	465	393	264	203
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	0.84	0.94	0.94	0.94	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.9	41.8	8.3	55.6	28.6	24.1	46.9	51.1	37.3	34.6	48.5	50.4
Incr Delay (d2), s/veh	0.7	1.9	4.3	5.9	1.1	0.1	16.2	0.5	3.0	0.0	4.6	31.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	18.3	7.4	1.8	7.4	0.4	10.0	1.4	1.8	0.5	5.5	7.5
LnGrp Delay(d),s/veh	51.6	43.8	12.6	61.6	29.6	24.2	63.2	51.6	40.3	34.6	53.1	82.1
LnGrp LOS	D	D	B	E	C	C	E	D	D	C	D	F
Approach Vol, veh/h		1707			644			419			360	
Approach Delay, s/veh		35.6			32.0			57.3			66.4	
Approach LOS		D			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.4	14.7	10.2	61.6	27.1	21.0	23.5	48.4
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	4.0	38.4	6.3	49.3	26.7	15.7	12.9	42.7
Max Q Clear Time (g_c+I1), s	3.0	6.3	5.6	39.1	21.4	16.5	9.0	17.1
Green Ext Time (p_c), s	0.1	0.6	0.0	5.7	0.5	0.0	2.6	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	41.3
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	260	65	38	378	4	109	76	10	2	61	123
Future Volume (veh/h)	96	260	65	38	378	4	109	76	10	2	61	123
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	104	283	71	41	411	4	118	83	11	2	66	134
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	150	1168	491	526	1965	826	160	267	106	210	198	152
Arrive On Green	0.09	0.34	0.34	0.64	1.00	1.00	0.10	0.08	0.08	0.13	0.11	0.11
Sat Flow, veh/h	1634	3471	1458	1634	3471	1458	1603	3539	1402	1603	1863	1430
Grp Volume(v), veh/h	104	283	71	41	411	4	118	83	11	2	66	134
Grp Sat Flow(s),veh/h/ln	1634	1736	1458	1634	1736	1458	1603	1770	1402	1603	1863	1430
Q Serve(g_s), s	7.3	7.0	4.0	1.1	0.0	0.0	8.4	2.6	0.9	0.1	3.9	8.7
Cycle Q Clear(g_c), s	7.3	7.0	4.0	1.1	0.0	0.0	8.4	2.6	0.9	0.1	3.9	8.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	150	1168	491	526	1965	826	160	267	106	210	198	152
V/C Ratio(X)	0.69	0.24	0.14	0.08	0.21	0.00	0.74	0.31	0.10	0.01	0.33	0.88
Avail Cap(c_a), veh/h	291	1168	491	526	1965	826	326	1239	491	210	415	319
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.0	28.3	27.3	14.5	0.0	0.0	51.6	51.6	50.8	44.6	48.8	33.0
Incr Delay (d2), s/veh	5.4	0.5	0.6	0.1	0.2	0.0	6.5	0.7	0.4	0.0	1.0	14.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	3.4	1.7	0.5	0.1	0.0	4.0	1.3	0.3	0.1	2.1	4.0
LnGrp Delay(d),s/veh	57.3	28.8	27.9	14.5	0.2	0.0	58.1	52.3	51.2	44.7	49.8	47.7
LnGrp LOS	E	C	C	B	A	A	E	D	D	D	D	D
Approach Vol, veh/h		458			456			212			202	
Approach Delay, s/veh		35.1			1.5			55.5			48.3	
Approach LOS		D			A			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.4	12.9	42.0	43.7	15.8	16.6	14.9	70.8
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	7.7	40.0	10.3	38.0	22.7	25.0	19.3	29.0
Max Q Clear Time (g_c+I1), s	2.1	4.6	3.1	9.0	10.4	10.7	9.3	2.0
Green Ext Time (p_c), s	0.1	0.3	0.1	1.4	0.3	0.6	0.2	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	28.8
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	278	75	38	423	4	135	76	10	2	61	123
Future Volume (veh/h)	96	278	75	38	423	4	135	76	10	2	61	123
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	104	302	82	41	460	4	147	83	11	2	66	134
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	152	2014	846	75	1850	777	193	276	109	241	201	154
Arrive On Green	0.09	0.58	0.58	0.05	0.53	0.53	0.12	0.08	0.08	0.15	0.11	0.11
Sat Flow, veh/h	1634	3471	1458	1634	3471	1458	1603	3539	1403	1603	1863	1430
Grp Volume(v), veh/h	104	302	82	41	460	4	147	83	11	2	66	134
Grp Sat Flow(s),veh/h/ln	1634	1736	1458	1634	1736	1458	1603	1770	1403	1603	1863	1430
Q Serve(g_s), s	6.8	4.4	1.3	2.7	7.8	0.1	9.8	2.4	0.7	0.1	3.6	8.0
Cycle Q Clear(g_c), s	6.8	4.4	1.3	2.7	7.8	0.1	9.8	2.4	0.7	0.1	3.6	8.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	152	2014	846	75	1850	777	193	276	109	241	201	154
V/C Ratio(X)	0.68	0.15	0.10	0.54	0.25	0.01	0.76	0.30	0.10	0.01	0.33	0.87
Avail Cap(c_a), veh/h	267	2014	846	149	1850	777	335	1326	525	241	430	330
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.95	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.3	10.6	2.2	51.3	13.8	2.5	46.9	47.9	33.7	39.8	45.4	29.9
Incr Delay (d2), s/veh	5.1	0.2	0.2	5.9	0.3	0.0	6.1	0.6	0.4	0.0	0.9	13.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	2.1	0.6	1.3	3.9	0.0	4.7	1.2	0.3	0.1	1.9	3.7
LnGrp Delay(d),s/veh	53.4	10.8	2.5	57.3	14.1	2.5	53.0	48.5	34.1	39.8	46.3	43.5
LnGrp LOS	D	B	A	E	B	A	D	D	C	D	D	D
Approach Vol, veh/h		488			505			241			202	
Approach Delay, s/veh		18.4			17.6			50.6			44.4	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.5	12.6	9.1	67.8	17.2	15.9	14.3	62.6
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	5.9	39.9	8.3	33.9	21.7	24.1	16.3	25.9
Max Q Clear Time (g_c+I1), s	2.1	4.4	4.7	6.4	11.8	10.0	8.8	9.8
Green Ext Time (p_c), s	0.1	0.3	0.0	3.7	0.3	0.6	0.1	3.3

Intersection Summary	
HCM 2010 Ctrl Delay	27.2
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	113	339	142	45	608	14	312	85	11	2	62	131
Future Volume (veh/h)	113	339	142	45	608	14	312	85	11	2	62	131
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	123	368	154	49	661	15	339	92	12	2	67	142
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	172	1570	660	86	1387	583	386	285	113	431	202	155
Arrive On Green	0.11	0.45	0.45	0.05	0.40	0.40	0.24	0.08	0.08	0.27	0.11	0.11
Sat Flow, veh/h	1634	3471	1458	1634	3471	1458	1603	3539	1404	1603	1863	1430
Grp Volume(v), veh/h	123	368	154	49	661	15	339	92	12	2	67	142
Grp Sat Flow(s),veh/h/ln	1634	1736	1458	1634	1736	1458	1603	1770	1404	1603	1863	1430
Q Serve(g_s), s	8.0	7.1	2.6	3.2	15.5	0.3	22.4	2.7	0.7	0.1	3.7	8.4
Cycle Q Clear(g_c), s	8.0	7.1	2.6	3.2	15.5	0.3	22.4	2.7	0.7	0.1	3.7	8.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	172	1570	660	86	1387	583	386	285	113	431	202	155
V/C Ratio(X)	0.72	0.23	0.23	0.57	0.48	0.03	0.88	0.32	0.11	0.00	0.33	0.91
Avail Cap(c_a), veh/h	223	1570	660	138	1387	583	495	1438	570	431	271	208
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.6	18.4	2.5	50.9	24.5	2.9	40.2	47.7	32.9	29.4	45.3	29.1
Incr Delay (d2), s/veh	7.2	0.3	0.8	5.6	1.1	0.1	13.5	0.6	0.4	0.0	0.9	33.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	3.5	1.2	1.6	7.7	0.1	11.3	1.3	0.3	0.0	1.9	4.7
LnGrp Delay(d),s/veh	54.8	18.8	3.3	56.5	25.6	3.0	53.7	48.4	33.4	29.4	46.3	62.4
LnGrp LOS	D	B	A	E	C	A	D	D	C	C	D	E
Approach Vol, veh/h		645			725			443			211	
Approach Delay, s/veh		22.0			27.2			52.0			57.0	
Approach LOS		C			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.6	12.9	9.8	53.8	30.5	15.9	15.6	48.0
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	4.0	43.4	7.6	33.0	32.7	14.7	13.3	27.3
Max Q Clear Time (g_c+I1), s	2.1	4.7	5.2	9.1	24.4	10.4	10.0	17.5
Green Ext Time (p_c), s	0.3	0.4	0.0	5.4	0.8	0.3	0.1	3.8

Intersection Summary	
HCM 2010 Ctrl Delay	34.1
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	113	357	152	45	653	14	338	85	11	2	62	131
Future Volume (veh/h)	113	357	152	45	653	14	338	85	11	2	62	131
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	123	388	165	49	710	15	367	92	12	2	67	142
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	172	1506	633	86	1324	556	416	1254	505	22	202	155
Arrive On Green	0.10	0.43	0.43	0.05	0.38	0.38	0.26	0.35	0.35	0.01	0.11	0.11
Sat Flow, veh/h	1634	3471	1458	1634	3471	1458	1603	3539	1424	1603	1863	1430
Grp Volume(v), veh/h	123	388	165	49	710	15	367	92	12	2	67	142
Grp Sat Flow(s),veh/h/ln	1634	1736	1458	1634	1736	1458	1603	1770	1424	1603	1863	1430
Q Serve(g_s), s	8.0	7.8	2.8	3.2	17.5	0.7	24.2	1.9	0.6	0.1	3.7	8.4
Cycle Q Clear(g_c), s	8.0	7.8	2.8	3.2	17.5	0.7	24.2	1.9	0.6	0.1	3.7	8.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	172	1506	633	86	1324	556	416	1254	505	22	202	155
V/C Ratio(X)	0.72	0.26	0.26	0.57	0.54	0.03	0.88	0.07	0.02	0.09	0.33	0.91
Avail Cap(c_a), veh/h	208	1506	633	138	1324	556	495	1438	579	77	271	208
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.6	19.8	2.6	50.9	26.5	21.3	39.1	23.5	23.1	53.5	45.3	29.1
Incr Delay (d2), s/veh	8.7	0.4	1.0	5.6	1.5	0.1	15.0	0.0	0.0	1.7	0.9	33.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	3.9	1.3	1.6	8.7	0.3	12.4	0.9	0.2	0.1	1.9	4.7
LnGrp Delay(d),s/veh	56.3	20.2	3.5	56.5	27.9	21.4	54.1	23.6	23.1	55.2	46.3	62.4
LnGrp LOS	E	C	A	E	C	C	D	C	C	E	D	E
Approach Vol, veh/h		676			774			471			211	
Approach Delay, s/veh		22.7			29.6			47.3			57.2	
Approach LOS		C			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.5	43.0	9.8	51.7	32.6	15.9	15.5	45.9
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	4.0	43.4	7.6	33.0	32.7	14.7	12.3	28.3
Max Q Clear Time (g_c+I1), s	2.1	3.9	5.2	9.8	26.2	10.4	10.0	19.5
Green Ext Time (p_c), s	0.0	1.9	0.0	5.9	1.1	0.3	0.1	3.8

Intersection Summary	
HCM 2010 Ctrl Delay	34.1
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	113	357	152	45	653	14	338	85	11	2	62	131
Future Volume (veh/h)	113	357	152	45	653	14	338	85	11	2	62	131
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	123	388	165	49	710	15	367	92	12	2	67	142
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	226	1586	666	84	1284	540	374	274	109	450	233	179
Arrive On Green	0.05	0.15	0.15	0.05	0.37	0.37	0.23	0.08	0.08	0.28	0.13	0.13
Sat Flow, veh/h	1634	3471	1458	1634	3471	1458	1603	3539	1403	1603	1863	1430
Grp Volume(v), veh/h	123	388	165	49	710	15	367	92	12	2	67	142
Grp Sat Flow(s),veh/h/ln	1634	1736	1458	1634	1736	1458	1603	1770	1403	1603	1863	1430
Q Serve(g_s), s	8.8	11.8	4.7	3.5	19.4	0.8	27.3	3.0	0.8	0.1	3.9	11.6
Cycle Q Clear(g_c), s	8.8	11.8	4.7	3.5	19.4	0.8	27.3	3.0	0.8	0.1	3.9	11.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	226	1586	666	84	1284	540	374	274	109	450	233	179
V/C Ratio(X)	0.54	0.24	0.25	0.59	0.55	0.03	0.98	0.34	0.11	0.00	0.29	0.79
Avail Cap(c_a), veh/h	226	1586	666	109	1284	540	374	1171	464	450	264	203
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.6	32.7	5.1	55.7	29.9	24.1	45.7	52.4	37.1	31.1	47.6	51.0
Incr Delay (d2), s/veh	2.7	0.4	0.9	6.0	1.6	0.1	41.5	0.7	0.4	0.0	0.7	17.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	5.8	2.1	1.7	9.6	0.3	16.4	1.5	0.3	0.0	2.1	5.4
LnGrp Delay(d),s/veh	56.2	33.1	6.0	61.7	31.6	24.2	87.2	53.1	37.5	31.1	48.3	68.2
LnGrp LOS	E	C	A	E	C	C	F	D	D	C	D	E
Approach Vol, veh/h		676			774			471			211	
Approach Delay, s/veh		30.7			33.3			79.3			61.6	
Approach LOS		C			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	37.7	13.3	10.1	58.8	32.0	19.0	20.6	48.4
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	4.0	38.4	6.3	49.3	26.7	15.7	12.9	42.7
Max Q Clear Time (g_c+I1), s	2.1	5.0	5.5	13.8	29.3	13.6	10.8	21.4
Green Ext Time (p_c), s	0.3	0.4	0.0	2.8	0.0	0.2	0.4	3.1

Intersection Summary	
HCM 2010 Ctrl Delay	45.4
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	386	154	53	690	15	326	94	12	2	63	134
Future Volume (veh/h)	131	386	154	53	690	15	326	94	12	2	63	134
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	142	420	167	58	750	16	354	102	13	2	68	146
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	193	1477	621	98	1276	536	403	1229	495	23	206	158
Arrive On Green	0.12	0.43	0.43	0.06	0.37	0.37	0.25	0.35	0.35	0.01	0.11	0.11
Sat Flow, veh/h	1634	3471	1458	1634	3471	1458	1603	3539	1424	1603	1863	1430
Grp Volume(v), veh/h	142	420	167	58	750	16	354	102	13	2	68	146
Grp Sat Flow(s),veh/h/ln	1634	1736	1458	1634	1736	1458	1603	1770	1424	1603	1863	1430
Q Serve(g_s), s	8.8	8.3	2.9	3.6	18.3	0.7	22.3	2.0	0.6	0.1	3.5	8.0
Cycle Q Clear(g_c), s	8.8	8.3	2.9	3.6	18.3	0.7	22.3	2.0	0.6	0.1	3.5	8.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	193	1477	621	98	1276	536	403	1229	495	23	206	158
V/C Ratio(X)	0.74	0.28	0.27	0.59	0.59	0.03	0.88	0.08	0.03	0.09	0.33	0.92
Avail Cap(c_a), veh/h	218	1477	621	154	1276	536	458	1372	552	81	284	218
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	0.94	0.94	0.94	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.7	19.7	2.7	48.1	26.8	21.2	37.8	23.0	22.6	51.0	43.1	26.3
Incr Delay (d2), s/veh	10.4	0.5	1.0	5.2	1.9	0.1	16.1	0.0	0.0	1.6	0.9	33.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	4.1	1.3	1.8	9.1	0.3	11.6	1.0	0.3	0.1	1.9	4.6
LnGrp Delay(d),s/veh	55.2	20.2	3.8	53.3	28.6	21.3	53.9	23.1	22.6	52.6	44.0	59.8
LnGrp LOS	E	C	A	D	C	C	D	C	C	D	D	E
Approach Vol, veh/h		729			824			469			216	
Approach Delay, s/veh		23.2			30.2			46.3			54.7	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.5	40.5	10.3	48.7	30.4	15.6	16.4	42.6
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	4.0	39.4	8.2	31.4	28.7	14.7	12.3	27.3
Max Q Clear Time (g_c+I1), s	2.1	4.0	5.6	10.3	24.3	10.0	10.8	20.3
Green Ext Time (p_c), s	0.0	1.9	0.0	6.1	0.8	0.3	0.1	3.5

Intersection Summary	
HCM 2010 Ctrl Delay	33.7
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	408	166	53	747	15	356	94	12	2	63	134
Future Volume (veh/h)	131	408	166	53	747	15	356	94	12	2	63	134
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	142	443	180	58	812	16	387	102	13	2	68	146
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	194	1381	580	99	1179	495	432	1296	522	24	208	160
Arrive On Green	0.12	0.40	0.40	0.06	0.34	0.34	0.27	0.37	0.37	0.02	0.11	0.11
Sat Flow, veh/h	1634	3471	1458	1634	3471	1458	1603	3539	1424	1603	1863	1430
Grp Volume(v), veh/h	142	443	180	58	812	16	387	102	13	2	68	146
Grp Sat Flow(s),veh/h/ln	1634	1736	1458	1634	1736	1458	1603	1770	1424	1603	1863	1430
Q Serve(g_s), s	8.4	8.8	3.1	3.5	20.2	0.7	23.3	1.9	0.6	0.1	3.4	7.5
Cycle Q Clear(g_c), s	8.4	8.8	3.1	3.5	20.2	0.7	23.3	1.9	0.6	0.1	3.4	7.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	194	1381	580	99	1179	495	432	1296	522	24	208	160
V/C Ratio(X)	0.73	0.32	0.31	0.58	0.69	0.03	0.90	0.08	0.02	0.08	0.33	0.91
Avail Cap(c_a), veh/h	203	1381	580	158	1179	495	452	1391	560	85	305	235
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	0.93	0.93	0.93	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	42.5	20.8	2.7	45.7	28.5	22.0	35.2	20.7	20.3	48.6	40.9	24.5
Incr Delay (d2), s/veh	11.6	0.6	1.3	4.9	3.1	0.1	19.7	0.0	0.0	1.4	0.9	27.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.4	4.3	1.4	1.7	10.1	0.3	12.7	0.9	0.2	0.1	1.8	4.2
LnGrp Delay(d),s/veh	54.1	21.4	4.1	50.7	31.5	22.2	54.8	20.7	20.3	50.0	41.8	52.4
LnGrp LOS	D	C	A	D	C	C	D	C	C	D	D	D
Approach Vol, veh/h		765			886			502			216	
Approach Delay, s/veh		23.4			32.6			47.0			49.1	
Approach LOS		C			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.5	40.6	10.1	43.8	30.9	15.2	15.9	38.0
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	4.0	38.0	8.0	28.0	26.9	15.1	10.7	25.3
Max Q Clear Time (g_c+I1), s	2.1	3.9	5.5	10.8	25.3	9.5	10.4	22.2
Green Ext Time (p_c), s	0.0	2.1	0.0	6.2	0.4	0.4	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	34.2
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	131	408	166	53	747	15	356	94	12	2	63	134
Future Volume (veh/h)	131	408	166	53	747	15	356	94	12	2	63	134
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1827	1716	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	142	443	180	58	812	16	387	102	13	2	68	146
Adj No. of Lanes	1	2	1	1	2	1	1	2	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	2	4	2	4	4	2	4
Cap, veh/h	221	1553	653	95	1284	540	374	284	113	450	238	183
Arrive On Green	0.04	0.15	0.15	0.06	0.37	0.37	0.23	0.08	0.08	0.28	0.13	0.13
Sat Flow, veh/h	1634	3471	1458	1634	3471	1458	1603	3539	1404	1603	1863	1430
Grp Volume(v), veh/h	142	443	180	58	812	16	387	102	13	2	68	146
Grp Sat Flow(s),veh/h/ln	1634	1736	1458	1634	1736	1458	1603	1770	1404	1603	1863	1430
Q Serve(g_s), s	10.3	13.6	5.3	4.2	23.1	0.8	28.0	3.3	0.9	0.1	4.0	11.9
Cycle Q Clear(g_c), s	10.3	13.6	5.3	4.2	23.1	0.8	28.0	3.3	0.9	0.1	4.0	11.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	221	1553	653	95	1284	540	374	284	113	450	238	183
V/C Ratio(X)	0.64	0.29	0.28	0.61	0.63	0.03	1.03	0.36	0.12	0.00	0.29	0.80
Avail Cap(c_a), veh/h	221	1553	653	109	1284	540	374	1171	464	450	264	203
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	0.92	0.92	0.92	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.4	34.1	5.6	55.2	31.1	24.1	46.0	52.3	36.2	31.1	47.4	50.8
Incr Delay (d2), s/veh	6.0	0.5	1.0	7.1	2.2	0.1	55.9	0.8	0.4	0.0	0.7	18.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.0	6.7	2.3	2.1	11.4	0.4	18.2	1.6	0.3	0.0	2.1	5.6
LnGrp Delay(d),s/veh	60.4	34.5	6.6	62.2	33.3	24.2	101.9	53.0	36.7	31.1	48.0	69.1
LnGrp LOS	E	C	A	E	C	C	F	D	D	C	D	E
Approach Vol, veh/h		765			886			502			216	
Approach Delay, s/veh		32.8			35.0			90.2			62.1	
Approach LOS		C			D			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	37.7	13.6	11.0	57.7	32.0	19.3	20.3	48.4
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	4.0	38.4	6.3	49.3	26.7	15.7	12.9	42.7
Max Q Clear Time (g_c+I1), s	2.1	5.3	6.2	15.6	30.0	13.9	12.3	25.1
Green Ext Time (p_c), s	0.3	0.4	0.0	3.3	0.0	0.1	0.0	3.5

Intersection Summary	
HCM 2010 Ctrl Delay	48.5
HCM 2010 LOS	D

Intersection 18
McCray & 7th Standard Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	516	82	13	233	26	37	54	14	19	56	40
Future Volume (veh/h)	61	516	82	13	233	26	37	54	14	19	56	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1830	1750	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	66	561	89	14	253	28	40	59	15	21	61	43
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	4	4	2	4
Cap, veh/h	108	2443	1001	45	2097	230	63	195	145	40	169	125
Arrive On Green	0.02	0.23	0.23	0.03	0.67	0.65	0.04	0.10	0.10	0.02	0.09	0.09
Sat Flow, veh/h	1634	3471	1423	1634	3153	345	1603	1863	1387	1603	1863	1383
Grp Volume(v), veh/h	66	561	89	14	138	143	40	59	15	21	61	43
Grp Sat Flow(s),veh/h/ln	1634	1736	1423	1634	1739	1759	1603	1863	1387	1603	1863	1383
Q Serve(g_s), s	4.6	15.1	3.0	1.0	3.3	3.4	2.8	3.4	1.1	1.5	3.5	2.8
Cycle Q Clear(g_c), s	4.6	15.1	3.0	1.0	3.3	3.4	2.8	3.4	1.1	1.5	3.5	2.8
Prop In Lane	1.00		1.00	1.00		0.20	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	108	2443	1001	45	1157	1170	63	195	145	40	169	125
V/C Ratio(X)	0.61	0.23	0.09	0.31	0.12	0.12	0.64	0.30	0.10	0.53	0.36	0.34
Avail Cap(c_a), veh/h	256	2443	1001	128	1157	1170	181	599	446	153	567	421
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.8	18.9	4.3	54.9	7.0	7.1	54.4	47.6	46.6	55.4	49.2	34.1
Incr Delay (d2), s/veh	5.3	0.2	0.2	3.9	0.2	0.2	10.2	0.9	0.3	10.4	1.3	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	7.3	1.2	0.5	1.6	1.7	1.4	1.8	0.4	0.8	1.9	1.1
LnGrp Delay(d),s/veh	60.1	19.1	4.5	58.8	7.2	7.3	64.7	48.4	46.9	65.8	50.5	35.7
LnGrp LOS	E	B	A	E	A	A	E	D	D	E	D	D
Approach Vol, veh/h		716			295			114			125	
Approach Delay, s/veh		21.0			9.7			53.9			48.0	
Approach LOS		C			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.9	16.1	7.1	84.9	8.5	14.4	11.6	80.5
Change Period (Y+Rc), s	4.9	4.9	5.7	5.7	4.9	4.9	5.7	5.7
Max Green Setting (Gmax), s	10.1	36.1	7.3	40.3	12.1	34.1	16.3	31.3
Max Q Clear Time (g_c+I1), s	3.5	5.4	3.0	17.1	4.8	5.5	6.6	5.4
Green Ext Time (p_c), s	0.0	0.4	0.0	3.8	0.2	0.3	0.1	3.9

Intersection Summary	
HCM 2010 Ctrl Delay	24.1
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	61	561	87	13	253	26	39	54	14	19	56	40
Future Volume (veh/h)	61	561	87	13	253	26	39	54	14	19	56	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1830	1750	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	66	610	95	14	275	28	42	59	15	21	61	43
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	4	4	2	4
Cap, veh/h	112	1121	457	588	1955	197	66	191	142	62	186	138
Arrive On Green	0.07	0.32	0.32	0.36	0.61	0.60	0.04	0.10	0.10	0.04	0.10	0.10
Sat Flow, veh/h	1634	3471	1415	1634	3182	321	1603	1863	1387	1603	1863	1386
Grp Volume(v), veh/h	66	610	95	14	149	154	42	59	15	21	61	43
Grp Sat Flow(s),veh/h/ln	1634	1736	1415	1634	1739	1764	1603	1863	1387	1603	1863	1386
Q Serve(g_s), s	3.6	13.1	3.3	0.5	3.3	3.4	2.3	2.7	0.9	1.2	2.8	2.6
Cycle Q Clear(g_c), s	3.6	13.1	3.3	0.5	3.3	3.4	2.3	2.7	0.9	1.2	2.8	2.6
Prop In Lane	1.00		1.00	1.00		0.18	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	112	1121	457	588	1068	1084	66	191	142	62	186	138
V/C Ratio(X)	0.59	0.54	0.21	0.02	0.14	0.14	0.64	0.31	0.11	0.34	0.33	0.31
Avail Cap(c_a), veh/h	174	1121	457	588	1068	1084	123	714	532	88	673	501
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.1	25.3	12.7	18.8	7.4	7.5	43.0	37.9	37.1	42.6	38.1	38.0
Incr Delay (d2), s/veh	4.6	1.8	1.0	0.0	0.3	0.3	9.7	0.9	0.3	3.2	1.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	6.6	1.4	0.2	1.7	1.7	1.2	1.4	0.4	0.6	1.5	1.1
LnGrp Delay(d),s/veh	45.8	27.1	13.7	18.8	7.7	7.8	52.7	38.8	37.4	45.8	39.1	39.3
LnGrp LOS	D	C	B	B	A	A	D	D	D	D	D	D
Approach Vol, veh/h		771			317			116			125	
Approach Delay, s/veh		27.0			8.2			43.6			40.3	
Approach LOS		C			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.5	13.3	36.8	33.4	7.8	13.1	10.2	59.9
Change Period (Y+Rc), s	4.9	4.9	5.7	5.7	4.9	4.9	5.7	5.7
Max Green Setting (Gmax), s	4.1	34.0	4.0	27.7	6.1	32.0	8.0	23.7
Max Q Clear Time (g_c+I1), s	3.2	4.7	2.5	15.1	4.3	4.8	5.6	5.4
Green Ext Time (p_c), s	0.0	0.2	0.0	2.5	0.0	0.4	0.0	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	25.2
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	706	165	17	384	34	104	61	16	19	56	44
Future Volume (veh/h)	77	706	165	17	384	34	104	61	16	19	56	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1830	1750	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	84	767	179	18	417	37	113	66	17	21	61	48
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	4	4	2	4
Cap, veh/h	134	1121	457	498	1761	155	153	197	147	145	188	140
Arrive On Green	0.08	0.32	0.32	0.30	0.55	0.53	0.10	0.11	0.11	0.09	0.10	0.10
Sat Flow, veh/h	1634	3471	1415	1634	3224	285	1603	1863	1387	1603	1863	1386
Grp Volume(v), veh/h	84	767	179	18	224	230	113	66	17	21	61	48
Grp Sat Flow(s),veh/h/ln	1634	1736	1415	1634	1738	1771	1603	1863	1387	1603	1863	1386
Q Serve(g_s), s	4.5	17.5	6.0	0.7	6.1	6.2	6.2	3.0	1.0	1.1	2.8	2.9
Cycle Q Clear(g_c), s	4.5	17.5	6.0	0.7	6.1	6.2	6.2	3.0	1.0	1.1	2.8	2.9
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	134	1121	457	498	949	967	153	197	147	145	188	140
V/C Ratio(X)	0.63	0.68	0.39	0.04	0.24	0.24	0.74	0.34	0.12	0.14	0.32	0.34
Avail Cap(c_a), veh/h	162	1121	457	498	949	967	158	716	534	145	633	471
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.82	0.82	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.4	26.8	10.8	22.2	10.8	10.9	40.1	37.7	36.8	38.1	38.0	38.1
Incr Delay (d2), s/veh	4.5	2.8	2.1	0.0	0.6	0.6	16.2	1.0	0.3	0.5	1.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	8.7	2.6	0.3	3.1	3.2	3.4	1.6	0.4	0.5	1.5	1.2
LnGrp Delay(d),s/veh	44.9	29.6	12.9	22.3	11.3	11.4	56.3	38.7	37.2	38.6	39.0	39.6
LnGrp LOS	D	C	B	C	B	B	E	D	D	D	D	D
Approach Vol, veh/h		1030			472			196			130	
Approach Delay, s/veh		27.9			11.8			48.7			39.2	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.2	13.6	31.8	33.4	12.7	13.2	11.5	53.7
Change Period (Y+Rc), s	4.9	4.9	5.7	5.7	4.9	4.9	5.7	5.7
Max Green Setting (Gmax), s	4.0	34.1	4.0	27.7	8.1	30.0	7.3	24.4
Max Q Clear Time (g_c+I1), s	3.1	5.0	2.7	19.5	8.2	4.9	6.5	8.2
Green Ext Time (p_c), s	0.0	0.3	0.3	2.8	0.0	0.4	0.0	1.5

Intersection Summary	
HCM 2010 Ctrl Delay	26.8
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	751	170	17	404	34	106	61	16	19	56	44
Future Volume (veh/h)	77	751	170	17	404	34	106	61	16	19	56	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1830	1750	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	84	816	185	18	439	37	115	66	17	21	61	48
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	4	4	2	4
Cap, veh/h	130	1268	518	478	1875	157	153	310	233	41	181	134
Arrive On Green	0.08	0.37	0.37	0.29	0.58	0.56	0.10	0.17	0.17	0.03	0.10	0.10
Sat Flow, veh/h	1634	3471	1416	1634	3240	272	1603	1863	1397	1603	1863	1385
Grp Volume(v), veh/h	84	816	185	18	235	241	115	66	17	21	61	48
Grp Sat Flow(s),veh/h/ln	1634	1736	1416	1634	1738	1773	1603	1863	1397	1603	1863	1385
Q Serve(g_s), s	5.3	20.9	7.0	0.8	7.0	7.1	7.5	3.3	0.6	1.4	3.3	3.5
Cycle Q Clear(g_c), s	5.3	20.9	7.0	0.8	7.0	7.1	7.5	3.3	0.6	1.4	3.3	3.5
Prop In Lane	1.00		1.00	1.00		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	130	1268	518	478	1006	1026	153	310	233	41	181	134
V/C Ratio(X)	0.65	0.64	0.36	0.04	0.23	0.24	0.75	0.21	0.07	0.51	0.34	0.36
Avail Cap(c_a), veh/h	211	1268	518	478	1006	1026	225	695	521	90	538	400
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.78	0.78	0.78	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.8	28.2	11.5	27.1	11.0	11.1	47.2	38.5	10.9	51.5	45.1	45.2
Incr Delay (d2), s/veh	4.2	2.0	1.5	0.0	0.5	0.5	7.9	0.3	0.1	9.3	1.1	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	10.3	2.9	0.4	3.5	3.7	3.7	1.7	0.2	0.7	1.7	1.4
LnGrp Delay(d),s/veh	52.0	30.1	13.0	27.1	11.5	11.6	55.1	38.9	11.1	60.8	46.2	46.8
LnGrp LOS	D	C	B	C	B	B	E	D	B	E	D	D
Approach Vol, veh/h		1085			494			198			130	
Approach Delay, s/veh		28.9			12.1			45.9			48.8	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	21.8	35.3	43.1	14.2	14.4	12.5	65.9
Change Period (Y+Rc), s	4.9	4.9	5.7	5.7	4.9	4.9	5.7	5.7
Max Green Setting (Gmax), s	5.1	39.0	4.3	37.4	14.1	30.0	12.1	29.6
Max Q Clear Time (g_c+I1), s	3.4	5.3	2.8	22.9	9.5	5.5	7.3	9.1
Green Ext Time (p_c), s	0.0	0.7	0.0	4.0	0.1	0.7	0.1	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	27.7
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	751	170	17	404	34	106	61	16	19	56	44
Future Volume (veh/h)	77	751	170	17	404	34	106	61	16	19	56	44
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1830	1750	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	84	816	185	18	439	37	115	66	17	21	61	48
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	4	4	2	4
Cap, veh/h	130	1268	518	478	1875	157	153	310	233	41	181	134
Arrive On Green	0.08	0.37	0.37	0.29	0.58	0.56	0.10	0.17	0.17	0.03	0.10	0.10
Sat Flow, veh/h	1634	3471	1416	1634	3240	272	1603	1863	1397	1603	1863	1385
Grp Volume(v), veh/h	84	816	185	18	235	241	115	66	17	21	61	48
Grp Sat Flow(s),veh/h/ln	1634	1736	1416	1634	1738	1773	1603	1863	1397	1603	1863	1385
Q Serve(g_s), s	5.3	20.9	7.0	0.8	7.0	7.1	7.5	3.3	0.6	1.4	3.3	3.5
Cycle Q Clear(g_c), s	5.3	20.9	7.0	0.8	7.0	7.1	7.5	3.3	0.6	1.4	3.3	3.5
Prop In Lane	1.00		1.00	1.00		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	130	1268	518	478	1006	1026	153	310	233	41	181	134
V/C Ratio(X)	0.65	0.64	0.36	0.04	0.23	0.24	0.75	0.21	0.07	0.51	0.34	0.36
Avail Cap(c_a), veh/h	211	1268	518	478	1006	1026	225	695	521	90	538	400
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.80	0.80	0.80	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.8	28.2	11.5	27.1	11.0	11.1	47.2	38.5	10.9	51.5	45.1	45.2
Incr Delay (d2), s/veh	4.3	2.0	1.5	0.0	0.5	0.5	7.9	0.3	0.1	9.3	1.1	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	10.3	2.9	0.4	3.5	3.7	3.7	1.7	0.2	0.7	1.7	1.4
LnGrp Delay(d),s/veh	52.1	30.2	13.1	27.1	11.5	11.6	55.1	38.9	11.1	60.8	46.2	46.8
LnGrp LOS	D	C	B	C	B	B	E	D	B	E	D	D
Approach Vol, veh/h		1085			494			198			130	
Approach Delay, s/veh		29.0			12.1			45.9			48.8	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	21.8	35.3	43.1	14.2	14.4	12.5	65.9
Change Period (Y+Rc), s	4.9	4.9	5.7	5.7	4.9	4.9	5.7	5.7
Max Green Setting (Gmax), s	5.1	39.0	4.3	37.4	14.1	30.0	12.1	29.6
Max Q Clear Time (g_c+I1), s	3.4	5.3	2.8	22.9	9.5	5.5	7.3	9.1
Green Ext Time (p_c), s	0.0	0.7	0.0	4.0	0.1	0.7	0.1	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	27.7
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	817	183	22	471	43	109	69	18	19	55	43
Future Volume (veh/h)	90	817	183	22	471	43	109	69	18	19	55	43
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1830	1750	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	98	888	199	24	512	47	118	75	20	21	60	47
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	4	4	2	4
Cap, veh/h	150	1121	457	494	1714	157	158	205	153	142	187	139
Arrive On Green	0.09	0.32	0.32	0.30	0.53	0.51	0.10	0.11	0.11	0.09	0.10	0.10
Sat Flow, veh/h	1634	3471	1415	1634	3213	294	1603	1863	1388	1603	1863	1386
Grp Volume(v), veh/h	98	888	199	24	276	283	118	75	20	21	60	47
Grp Sat Flow(s),veh/h/ln	1634	1736	1415	1634	1738	1769	1603	1863	1388	1603	1863	1386
Q Serve(g_s), s	5.3	21.2	6.7	0.9	8.0	8.1	6.5	3.4	1.2	1.1	2.7	2.9
Cycle Q Clear(g_c), s	5.3	21.2	6.7	0.9	8.0	8.1	6.5	3.4	1.2	1.1	2.7	2.9
Prop In Lane	1.00		1.00	1.00		0.17	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	150	1121	457	494	927	943	158	205	153	142	187	139
V/C Ratio(X)	0.65	0.79	0.44	0.05	0.30	0.30	0.75	0.37	0.13	0.15	0.32	0.34
Avail Cap(c_a), veh/h	162	1121	457	494	927	943	158	716	534	142	633	471
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.77	0.77	0.77	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.9	28.0	10.9	22.5	11.8	11.9	39.9	37.5	36.6	38.3	38.1	38.1
Incr Delay (d2), s/veh	6.4	4.5	2.3	0.0	0.8	0.8	17.3	1.1	0.4	0.5	1.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	10.8	2.9	0.4	4.0	4.2	3.6	1.8	0.5	0.5	1.5	1.2
LnGrp Delay(d),s/veh	46.3	32.5	13.2	22.5	12.6	12.7	57.2	38.6	36.9	38.7	39.1	39.6
LnGrp LOS	D	C	B	C	B	B	E	D	D	D	D	D
Approach Vol, veh/h		1185			583			213			128	
Approach Delay, s/veh		30.4			13.1			48.8			39.2	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	14.0	31.5	33.4	13.0	13.1	12.4	52.5
Change Period (Y+Rc), s	4.9	4.9	5.7	5.7	4.9	4.9	5.7	5.7
Max Green Setting (Gmax), s	4.0	34.1	4.0	27.7	8.1	30.0	7.3	24.4
Max Q Clear Time (g_c+I1), s	3.1	5.4	2.9	23.2	8.5	4.9	7.3	10.1
Green Ext Time (p_c), s	0.0	0.3	0.3	2.1	0.0	0.4	0.0	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	28.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	872	189	22	496	43	112	69	18	19	55	43
Future Volume (veh/h)	90	872	189	22	496	43	112	69	18	19	55	43
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1830	1750	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	98	948	205	24	539	47	122	75	20	21	60	47
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	4	4	2	4
Cap, veh/h	146	1268	518	471	1823	159	160	318	239	41	180	134
Arrive On Green	0.09	0.37	0.37	0.29	0.56	0.55	0.10	0.17	0.17	0.03	0.10	0.10
Sat Flow, veh/h	1634	3471	1416	1634	3229	281	1603	1863	1397	1603	1863	1385
Grp Volume(v), veh/h	98	948	205	24	289	297	122	75	20	21	60	47
Grp Sat Flow(s),veh/h/ln	1634	1736	1416	1634	1738	1771	1603	1863	1397	1603	1863	1385
Q Serve(g_s), s	6.2	25.5	7.8	1.1	9.3	9.4	7.9	3.7	0.7	1.4	3.2	3.4
Cycle Q Clear(g_c), s	6.2	25.5	7.8	1.1	9.3	9.4	7.9	3.7	0.7	1.4	3.2	3.4
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	146	1268	518	471	981	1000	160	318	239	41	180	134
V/C Ratio(X)	0.67	0.75	0.40	0.05	0.29	0.30	0.76	0.24	0.08	0.51	0.33	0.35
Avail Cap(c_a), veh/h	211	1268	518	471	981	1000	225	695	521	90	538	400
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.70	0.70	0.70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.2	29.6	11.5	27.5	12.2	12.3	46.9	38.3	10.9	51.5	45.1	45.2
Incr Delay (d2), s/veh	3.7	2.8	1.6	0.0	0.8	0.8	9.4	0.4	0.1	9.3	1.1	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	12.7	3.2	0.5	4.6	4.8	3.9	1.9	0.3	0.7	1.7	1.4
LnGrp Delay(d),s/veh	50.9	32.5	13.0	27.5	12.9	13.0	56.3	38.7	11.1	60.8	46.2	46.7
LnGrp LOS	D	C	B	C	B	B	E	D	B	E	D	D
Approach Vol, veh/h		1251			610			217			128	
Approach Delay, s/veh		30.7			13.6			46.0			48.8	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	22.3	34.9	43.1	14.7	14.4	13.5	64.4
Change Period (Y+Rc), s	4.9	4.9	5.7	5.7	4.9	4.9	5.7	5.7
Max Green Setting (Gmax), s	5.1	39.0	4.3	37.4	14.1	30.0	12.1	29.6
Max Q Clear Time (g_c+I1), s	3.4	5.7	3.1	27.5	9.9	5.4	8.2	11.4
Green Ext Time (p_c), s	0.0	0.7	0.0	3.8	0.1	0.7	0.1	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	28.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	872	189	22	496	43	112	69	18	19	55	43
Future Volume (veh/h)	90	872	189	22	496	43	112	69	18	19	55	43
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1830	1750	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	98	948	205	24	539	47	122	75	20	21	60	47
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	4	4	2	4
Cap, veh/h	146	1268	518	471	1823	159	160	318	239	41	180	134
Arrive On Green	0.09	0.37	0.37	0.29	0.56	0.55	0.10	0.17	0.17	0.03	0.10	0.10
Sat Flow, veh/h	1634	3471	1416	1634	3229	281	1603	1863	1397	1603	1863	1385
Grp Volume(v), veh/h	98	948	205	24	289	297	122	75	20	21	60	47
Grp Sat Flow(s),veh/h/ln	1634	1736	1416	1634	1738	1771	1603	1863	1397	1603	1863	1385
Q Serve(g_s), s	6.2	25.5	7.8	1.1	9.3	9.4	7.9	3.7	0.7	1.4	3.2	3.4
Cycle Q Clear(g_c), s	6.2	25.5	7.8	1.1	9.3	9.4	7.9	3.7	0.7	1.4	3.2	3.4
Prop In Lane	1.00		1.00	1.00		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	146	1268	518	471	981	1000	160	318	239	41	180	134
V/C Ratio(X)	0.67	0.75	0.40	0.05	0.29	0.30	0.76	0.24	0.08	0.51	0.33	0.35
Avail Cap(c_a), veh/h	211	1268	518	471	981	1000	225	695	521	90	538	400
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	0.72	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.2	29.6	11.5	27.5	12.2	12.3	46.9	38.3	10.9	51.5	45.1	45.2
Incr Delay (d2), s/veh	3.8	2.9	1.6	0.0	0.8	0.8	9.4	0.4	0.1	9.3	1.1	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	12.8	3.2	0.5	4.6	4.8	3.9	1.9	0.3	0.7	1.7	1.4
LnGrp Delay(d),s/veh	51.0	32.6	13.1	27.5	12.9	13.0	56.3	38.7	11.1	60.8	46.2	46.7
LnGrp LOS	D	C	B	C	B	B	E	D	B	E	D	D
Approach Vol, veh/h		1251			610			217			128	
Approach Delay, s/veh		30.8			13.6			46.0			48.8	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	22.3	34.9	43.1	14.7	14.4	13.5	64.4
Change Period (Y+Rc), s	4.9	4.9	5.7	5.7	4.9	4.9	5.7	5.7
Max Green Setting (Gmax), s	5.1	39.0	4.3	37.4	14.1	30.0	12.1	29.6
Max Q Clear Time (g_c+I1), s	3.4	5.7	3.1	27.5	9.9	5.4	8.2	11.4
Green Ext Time (p_c), s	0.0	0.7	0.0	3.8	0.1	0.7	0.1	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	28.6
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	283	25	11	271	10	51	20	24	18	31	66
Future Volume (veh/h)	16	283	25	11	271	10	51	20	24	18	31	66
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1828	1750	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	17	308	27	12	295	11	55	22	26	20	34	72
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	4	4	2	4
Cap, veh/h	604	2371	972	42	1156	43	81	150	111	121	196	146
Arrive On Green	0.74	1.00	1.00	0.03	0.34	0.32	0.05	0.08	0.08	0.08	0.11	0.11
Sat Flow, veh/h	1634	3471	1422	1634	3411	127	1603	1863	1379	1603	1863	1387
Grp Volume(v), veh/h	17	308	27	12	150	156	55	22	26	20	34	72
Grp Sat Flow(s),veh/h/ln	1634	1736	1422	1634	1737	1801	1603	1863	1379	1603	1863	1387
Q Serve(g_s), s	0.3	0.0	0.0	0.9	7.4	7.4	4.0	1.3	1.8	1.4	2.0	5.8
Cycle Q Clear(g_c), s	0.3	0.0	0.0	0.9	7.4	7.4	4.0	1.3	1.8	1.4	2.0	5.8
Prop In Lane	1.00		1.00	1.00		0.07	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	604	2371	972	42	589	611	81	150	111	121	196	146
V/C Ratio(X)	0.03	0.13	0.03	0.29	0.25	0.26	0.68	0.15	0.23	0.17	0.17	0.49
Avail Cap(c_a), veh/h	604	2371	972	125	589	611	231	663	491	122	537	400
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.7	0.0	0.0	56.5	28.2	28.3	55.0	50.5	39.5	51.1	48.1	49.8
Incr Delay (d2), s/veh	0.0	0.1	0.1	3.8	1.0	1.0	9.4	0.4	1.1	0.6	0.4	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.4	3.7	3.9	2.0	0.7	0.7	0.6	1.0	2.3
LnGrp Delay(d),s/veh	9.8	0.1	0.1	60.2	29.3	29.3	64.4	50.9	40.6	51.7	48.5	52.4
LnGrp LOS	A	A	A	E	C	C	E	D	D	D	D	D
Approach Vol, veh/h		352			318			103			126	
Approach Delay, s/veh		0.6			30.4			55.5			51.3	
Approach LOS		A			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.9	13.5	7.0	84.6	10.0	16.4	47.6	44.0
Change Period (Y+Rc), s	4.9	4.9	5.7	5.7	4.9	4.9	5.7	5.7
Max Green Setting (Gmax), s	8.1	41.1	7.3	40.3	16.1	33.1	9.3	38.3
Max Q Clear Time (g_c+I1), s	3.4	3.8	2.9	2.0	6.0	7.8	2.3	9.4
Green Ext Time (p_c), s	0.1	0.1	0.0	1.5	0.1	0.4	0.8	1.0

Intersection Summary	
HCM 2010 Ctrl Delay	24.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	299	27	11	312	10	55	20	24	18	31	66
Future Volume (veh/h)	16	299	27	11	312	10	55	20	24	18	31	66
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		0.96	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1828	1750	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	17	325	29	12	339	11	60	22	26	20	34	72
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	4	4	2	4
Cap, veh/h	598	2358	966	42	1163	38	87	150	111	127	196	146
Arrive On Green	0.37	0.68	0.68	0.03	0.34	0.32	0.05	0.08	0.08	0.08	0.11	0.11
Sat Flow, veh/h	1634	3471	1422	1634	3430	111	1603	1863	1379	1603	1863	1387
Grp Volume(v), veh/h	17	325	29	12	171	179	60	22	26	20	34	72
Grp Sat Flow(s),veh/h/ln	1634	1736	1422	1634	1737	1804	1603	1863	1379	1603	1863	1387
Q Serve(g_s), s	0.8	3.9	0.4	0.9	8.5	8.6	4.3	1.3	1.8	1.4	2.0	5.8
Cycle Q Clear(g_c), s	0.8	3.9	0.4	0.9	8.5	8.6	4.3	1.3	1.8	1.4	2.0	5.8
Prop In Lane	1.00		1.00	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	598	2358	966	42	589	612	87	150	111	127	196	146
V/C Ratio(X)	0.03	0.14	0.03	0.29	0.29	0.29	0.69	0.15	0.23	0.16	0.17	0.49
Avail Cap(c_a), veh/h	598	2358	966	125	589	612	231	663	491	127	537	400
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.99	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.0	6.7	1.7	56.5	28.6	28.7	54.8	50.5	39.5	50.7	48.1	49.8
Incr Delay (d2), s/veh	0.0	0.1	0.1	3.8	1.2	1.2	9.2	0.4	1.1	0.6	0.4	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	1.9	0.2	0.4	4.3	4.5	2.1	0.7	0.7	0.6	1.0	2.3
LnGrp Delay(d),s/veh	24.0	6.8	1.8	60.2	29.8	29.9	64.0	50.9	40.6	51.3	48.5	52.4
LnGrp LOS	C	A	A	E	C	C	E	D	D	D	D	D
Approach Vol, veh/h		371			362			108			126	
Approach Delay, s/veh		7.2			30.9			55.7			51.2	
Approach LOS		A			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.3	13.5	7.0	84.2	10.4	16.4	47.2	44.0
Change Period (Y+Rc), s	4.9	4.9	5.7	5.7	4.9	4.9	5.7	5.7
Max Green Setting (Gmax), s	8.1	41.1	7.3	40.3	16.1	33.1	9.3	38.3
Max Q Clear Time (g_c+I1), s	3.4	3.8	2.9	5.9	6.3	7.8	2.8	10.6
Green Ext Time (p_c), s	0.1	0.1	0.0	1.5	0.1	0.4	0.8	1.2

Intersection Summary	
HCM 2010 Ctrl Delay	27.2
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	362	39	14	449	13	128	23	27	18	31	72
Future Volume (veh/h)	21	362	39	14	449	13	128	23	27	18	31	72
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1828	1750	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	23	393	42	15	488	14	139	25	29	20	34	78
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	4	4	2	4
Cap, veh/h	61	1067	435	488	1960	56	181	171	127	211	206	153
Arrive On Green	0.04	0.31	0.31	0.30	0.57	0.55	0.11	0.09	0.09	0.13	0.11	0.11
Sat Flow, veh/h	1634	3471	1414	1634	3445	99	1603	1863	1384	1603	1863	1388
Grp Volume(v), veh/h	23	393	42	15	246	256	139	25	29	20	34	78
Grp Sat Flow(s),veh/h/ln	1634	1736	1414	1634	1737	1807	1603	1863	1384	1603	1863	1388
Q Serve(g_s), s	1.3	8.3	2.0	0.6	6.7	6.7	7.9	1.2	1.8	1.0	1.6	4.2
Cycle Q Clear(g_c), s	1.3	8.3	2.0	0.6	6.7	6.7	7.9	1.2	1.8	1.0	1.6	4.2
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	61	1067	435	488	988	1028	181	171	127	211	206	153
V/C Ratio(X)	0.38	0.37	0.10	0.03	0.25	0.25	0.77	0.15	0.23	0.09	0.17	0.51
Avail Cap(c_a), veh/h	106	1067	435	488	988	1028	213	745	553	211	612	456
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.2	25.4	23.2	23.3	10.2	10.2	40.5	39.3	39.6	35.9	37.9	27.9
Incr Delay (d2), s/veh	3.7	1.0	0.4	0.0	0.6	0.6	13.2	0.4	0.9	0.2	0.4	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	4.1	0.8	0.3	3.4	3.5	4.2	0.6	0.7	0.5	0.8	1.7
LnGrp Delay(d),s/veh	47.9	26.4	23.7	23.3	10.8	10.8	53.7	39.7	40.5	36.1	38.3	30.5
LnGrp LOS	D	C	C	C	B	B	D	D	D	D	D	C
Approach Vol, veh/h		458			517			193			132	
Approach Delay, s/veh		27.2			11.1			49.9			33.3	
Approach LOS		C			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.4	12.6	32.1	32.9	14.6	14.4	7.5	57.5
Change Period (Y+Rc), s	4.9	4.9	5.7	5.7	4.9	4.9	5.7	5.7
Max Green Setting (Gmax), s	4.9	36.7	4.0	27.2	11.6	30.0	4.4	26.8
Max Q Clear Time (g_c+I1), s	3.0	3.8	2.6	10.3	9.9	6.2	3.3	8.7
Green Ext Time (p_c), s	0.1	0.2	0.3	1.6	0.1	0.4	0.0	1.7

Intersection Summary	
HCM 2010 Ctrl Delay	24.8
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	378	41	14	490	13	132	23	27	18	31	72
Future Volume (veh/h)	21	378	41	14	490	13	132	23	27	18	31	72
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1828	1750	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	23	411	45	15	533	14	143	25	29	20	34	78
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	4	4	2	4
Cap, veh/h	61	1067	435	484	1957	51	185	171	127	215	206	153
Arrive On Green	0.04	0.31	0.31	0.30	0.57	0.55	0.12	0.09	0.09	0.13	0.11	0.11
Sat Flow, veh/h	1634	3471	1414	1634	3455	91	1603	1863	1384	1603	1863	1388
Grp Volume(v), veh/h	23	411	45	15	268	279	143	25	29	20	34	78
Grp Sat Flow(s),veh/h/ln	1634	1736	1414	1634	1736	1809	1603	1863	1384	1603	1863	1388
Q Serve(g_s), s	1.3	8.7	2.1	0.6	7.4	7.5	8.1	1.2	1.8	1.0	1.6	4.2
Cycle Q Clear(g_c), s	1.3	8.7	2.1	0.6	7.4	7.5	8.1	1.2	1.8	1.0	1.6	4.2
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	61	1067	435	484	984	1025	185	171	127	215	206	153
V/C Ratio(X)	0.38	0.39	0.10	0.03	0.27	0.27	0.77	0.15	0.23	0.09	0.17	0.51
Avail Cap(c_a), veh/h	106	1067	435	484	984	1025	213	745	553	215	612	456
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.2	25.6	23.3	23.5	10.4	10.5	40.4	39.3	39.6	35.7	37.9	27.9
Incr Delay (d2), s/veh	3.7	1.0	0.5	0.0	0.7	0.7	14.0	0.4	0.9	0.2	0.4	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	4.3	0.9	0.3	3.8	3.9	4.3	0.6	0.7	0.5	0.8	1.7
LnGrp Delay(d),s/veh	47.9	26.6	23.7	23.5	11.1	11.1	54.4	39.7	40.5	35.9	38.3	30.5
LnGrp LOS	D	C	C	C	B	B	D	D	D	D	D	C
Approach Vol, veh/h		479			562			197			132	
Approach Delay, s/veh		27.4			11.5			50.5			33.3	
Approach LOS		C			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.6	12.6	31.9	32.9	14.9	14.4	7.5	57.2
Change Period (Y+Rc), s	4.9	4.9	5.7	5.7	4.9	4.9	5.7	5.7
Max Green Setting (Gmax), s	4.9	36.7	4.0	27.2	11.6	30.0	4.4	26.8
Max Q Clear Time (g_c+I1), s	3.0	3.8	2.6	10.7	10.1	6.2	3.3	9.5
Green Ext Time (p_c), s	0.1	0.2	0.3	1.7	0.1	0.4	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	24.7
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	378	41	14	490	13	132	23	27	18	31	72
Future Volume (veh/h)	21	378	41	14	490	13	132	23	27	18	31	72
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1828	1750	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	23	411	45	15	533	14	143	25	29	20	34	78
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	4	4	2	4
Cap, veh/h	56	1268	518	421	2034	53	182	377	283	40	212	158
Arrive On Green	0.03	0.37	0.37	0.26	0.59	0.57	0.11	0.20	0.20	0.03	0.11	0.11
Sat Flow, veh/h	1634	3471	1416	1634	3455	91	1603	1863	1400	1603	1863	1389
Grp Volume(v), veh/h	23	411	45	15	268	279	143	25	29	20	34	78
Grp Sat Flow(s),veh/h/ln	1634	1736	1416	1634	1736	1809	1603	1863	1400	1603	1863	1389
Q Serve(g_s), s	1.5	9.1	1.5	0.7	8.0	8.0	9.3	1.2	1.0	1.3	1.8	5.6
Cycle Q Clear(g_c), s	1.5	9.1	1.5	0.7	8.0	8.0	9.3	1.2	1.0	1.3	1.8	5.6
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	56	1268	518	421	1022	1065	182	377	283	40	212	158
V/C Ratio(X)	0.41	0.32	0.09	0.04	0.26	0.26	0.79	0.07	0.10	0.50	0.16	0.49
Avail Cap(c_a), veh/h	211	1268	518	421	1022	1065	225	695	522	90	538	401
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.98	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.6	24.4	9.5	29.7	10.7	10.7	46.2	34.5	11.0	51.5	42.8	44.5
Incr Delay (d2), s/veh	4.6	0.7	0.3	0.0	0.6	0.6	13.7	0.1	0.2	9.1	0.3	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	4.5	0.6	0.3	4.0	4.1	4.8	0.6	0.4	0.7	0.9	2.3
LnGrp Delay(d),s/veh	55.2	25.1	9.8	29.8	11.3	11.3	59.9	34.6	11.1	60.6	43.1	46.9
LnGrp LOS	E	C	A	C	B	B	E	C	B	E	D	D
Approach Vol, veh/h		479			562			197			132	
Approach Delay, s/veh		25.1			11.8			49.5			48.0	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	25.6	31.6	43.1	16.1	16.2	7.7	67.0
Change Period (Y+Rc), s	4.9	4.9	5.7	5.7	4.9	4.9	5.7	5.7
Max Green Setting (Gmax), s	5.1	39.0	4.3	37.4	14.1	30.0	12.1	29.6
Max Q Clear Time (g_c+I1), s	3.3	3.2	2.7	11.1	11.3	7.6	3.5	10.0
Green Ext Time (p_c), s	0.0	0.6	0.0	1.9	0.1	0.6	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	25.4
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	423	44	18	550	17	135	25	31	18	31	71
Future Volume (veh/h)	24	423	44	18	550	17	135	25	31	18	31	71
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1828	1750	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	26	460	48	20	598	18	147	27	34	20	34	77
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	4	4	2	4
Cap, veh/h	64	1067	435	481	1936	58	189	177	132	213	205	152
Arrive On Green	0.04	0.31	0.31	0.29	0.56	0.54	0.12	0.10	0.10	0.13	0.11	0.11
Sat Flow, veh/h	1634	3471	1414	1634	3440	103	1603	1863	1384	1603	1863	1388
Grp Volume(v), veh/h	26	460	48	20	302	314	147	27	34	20	34	77
Grp Sat Flow(s),veh/h/ln	1634	1736	1414	1634	1737	1806	1603	1863	1384	1603	1863	1388
Q Serve(g_s), s	1.5	9.9	2.3	0.8	8.6	8.7	8.4	1.3	2.1	1.0	1.6	4.1
Cycle Q Clear(g_c), s	1.5	9.9	2.3	0.8	8.6	8.7	8.4	1.3	2.1	1.0	1.6	4.1
Prop In Lane	1.00		1.00	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	64	1067	435	481	977	1017	189	177	132	213	205	152
V/C Ratio(X)	0.41	0.43	0.11	0.04	0.31	0.31	0.78	0.15	0.26	0.09	0.17	0.51
Avail Cap(c_a), veh/h	106	1067	435	481	977	1017	213	745	554	213	612	456
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.1	26.0	23.3	23.7	10.9	10.9	40.2	39.1	39.5	35.8	37.9	27.8
Incr Delay (d2), s/veh	4.0	1.2	0.5	0.0	0.8	0.8	14.8	0.4	1.0	0.2	0.4	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	4.9	1.0	0.4	4.3	4.5	4.5	0.7	0.9	0.5	0.8	1.7
LnGrp Delay(d),s/veh	48.1	27.2	23.8	23.7	11.7	11.7	55.0	39.5	40.5	36.0	38.3	30.3
LnGrp LOS	D	C	C	C	B	B	E	D	D	D	D	C
Approach Vol, veh/h		534			636			208			131	
Approach Delay, s/veh		27.9			12.1			50.6			33.3	
Approach LOS		C			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.5	12.9	31.7	32.9	15.1	14.3	7.7	56.9
Change Period (Y+Rc), s	4.9	4.9	5.7	5.7	4.9	4.9	5.7	5.7
Max Green Setting (Gmax), s	4.9	36.7	4.0	27.2	11.6	30.0	4.4	26.8
Max Q Clear Time (g_c+I1), s	3.0	4.1	2.8	11.9	10.4	6.1	3.5	10.7
Green Ext Time (p_c), s	0.1	0.2	0.3	1.9	0.1	0.4	0.0	2.1

Intersection Summary	
HCM 2010 Ctrl Delay	24.8
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	442	46	18	601	17	141	25	31	18	31	71
Future Volume (veh/h)	24	442	46	18	601	17	141	25	31	18	31	71
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1828	1750	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	26	480	50	20	653	18	153	27	34	20	34	77
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	4	4	2	4
Cap, veh/h	64	1067	435	475	1928	53	195	177	132	219	205	152
Arrive On Green	0.04	0.31	0.31	0.29	0.56	0.54	0.12	0.10	0.10	0.14	0.11	0.11
Sat Flow, veh/h	1634	3471	1414	1634	3450	95	1603	1863	1384	1603	1863	1388
Grp Volume(v), veh/h	26	480	50	20	329	342	153	27	34	20	34	77
Grp Sat Flow(s),veh/h/ln	1634	1736	1414	1634	1736	1808	1603	1863	1384	1603	1863	1388
Q Serve(g_s), s	1.5	10.4	2.4	0.8	9.7	9.7	8.7	1.3	2.1	1.0	1.6	4.1
Cycle Q Clear(g_c), s	1.5	10.4	2.4	0.8	9.7	9.7	8.7	1.3	2.1	1.0	1.6	4.1
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	64	1067	435	475	971	1011	195	177	132	219	205	152
V/C Ratio(X)	0.41	0.45	0.12	0.04	0.34	0.34	0.78	0.15	0.26	0.09	0.17	0.51
Avail Cap(c_a), veh/h	106	1067	435	475	971	1011	213	745	554	219	612	456
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.1	26.2	23.4	23.9	11.3	11.3	40.1	39.1	39.5	35.5	37.9	27.8
Incr Delay (d2), s/veh	3.9	1.3	0.5	0.0	0.9	0.9	16.0	0.4	1.0	0.2	0.4	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	5.2	1.0	0.4	4.8	5.0	4.7	0.7	0.9	0.5	0.8	1.7
LnGrp Delay(d),s/veh	48.0	27.5	23.9	24.0	12.2	12.2	56.0	39.5	40.5	35.7	38.3	30.3
LnGrp LOS	D	C	C	C	B	B	E	D	D	D	D	C
Approach Vol, veh/h		556			691			214			131	
Approach Delay, s/veh		28.1			12.6			51.5			33.2	
Approach LOS		C			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.8	12.9	31.3	32.9	15.5	14.3	7.7	56.5
Change Period (Y+Rc), s	4.9	4.9	5.7	5.7	4.9	4.9	5.7	5.7
Max Green Setting (Gmax), s	4.9	36.7	4.0	27.2	11.6	30.0	4.4	26.8
Max Q Clear Time (g_c+I1), s	3.0	4.1	2.8	12.4	10.7	6.1	3.5	11.7
Green Ext Time (p_c), s	0.1	0.2	0.3	1.9	0.0	0.4	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	24.9
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	442	46	18	601	17	141	25	31	18	31	71
Future Volume (veh/h)	24	442	46	18	601	17	141	25	31	18	31	71
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1827	1716	1716	1828	1750	1683	1863	1683	1683	1863	1683
Adj Flow Rate, veh/h	26	480	50	20	653	18	153	27	34	20	34	77
Adj No. of Lanes	1	2	1	1	2	0	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	2	2	4	4	4	2	4	4	2	4
Cap, veh/h	59	1268	518	412	2005	55	192	387	291	40	211	158
Arrive On Green	0.04	0.37	0.37	0.25	0.58	0.57	0.12	0.21	0.21	0.03	0.11	0.11
Sat Flow, veh/h	1634	3471	1416	1634	3450	95	1603	1863	1400	1603	1863	1389
Grp Volume(v), veh/h	26	480	50	20	329	342	153	27	34	20	34	77
Grp Sat Flow(s),veh/h/ln	1634	1736	1416	1634	1736	1808	1603	1863	1400	1603	1863	1389
Q Serve(g_s), s	1.7	10.9	1.6	1.0	10.5	10.5	9.9	1.2	1.2	1.3	1.8	5.6
Cycle Q Clear(g_c), s	1.7	10.9	1.6	1.0	10.5	10.5	9.9	1.2	1.2	1.3	1.8	5.6
Prop In Lane	1.00		1.00	1.00		0.05	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	59	1268	518	412	1009	1051	192	387	291	40	211	158
V/C Ratio(X)	0.44	0.38	0.10	0.05	0.33	0.33	0.80	0.07	0.12	0.50	0.16	0.49
Avail Cap(c_a), veh/h	211	1268	518	412	1009	1051	225	695	522	90	538	401
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.97	0.97	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.5	25.0	9.2	30.3	11.6	11.6	45.8	34.1	11.0	51.5	42.8	44.5
Incr Delay (d2), s/veh	5.0	0.8	0.4	0.0	0.9	0.8	15.7	0.1	0.2	9.1	0.4	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	5.3	0.7	0.5	5.3	5.5	5.3	0.7	0.5	0.7	0.9	2.2
LnGrp Delay(d),s/veh	55.5	25.8	9.6	30.4	12.4	12.4	61.6	34.1	11.2	60.6	43.2	46.9
LnGrp LOS	E	C	A	C	B	B	E	C	B	E	D	D
Approach Vol, veh/h		556			691			214			131	
Approach Delay, s/veh		25.8			12.9			50.1			48.0	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	26.3	31.0	43.1	16.8	16.1	7.9	66.2
Change Period (Y+Rc), s	4.9	4.9	5.7	5.7	4.9	4.9	5.7	5.7
Max Green Setting (Gmax), s	5.1	39.0	4.3	37.4	14.1	30.0	12.1	29.6
Max Q Clear Time (g_c+I1), s	3.3	3.2	3.0	12.9	11.9	7.6	3.7	12.5
Green Ext Time (p_c), s	0.0	0.7	0.0	2.2	0.1	0.6	0.0	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	25.3
HCM 2010 LOS	C

Intersection 19
N Chester Ave & 7th Standard Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	425	95	8	197	145	76	120	11	325	162	21
Future Volume (veh/h)	16	425	95	8	197	145	76	120	11	325	162	21
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1833	1750	1716	1842	1750	1683	1860	1750	1683	1863	1683
Adj Flow Rate, veh/h	17	462	103	9	214	158	83	130	12	353	176	23
Adj No. of Lanes	1	2	0	1	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	4
Cap, veh/h	136	760	168	65	440	308	797	449	41	432	534	210
Arrive On Green	0.08	0.27	0.24	0.04	0.23	0.20	0.26	0.14	0.11	0.27	0.15	0.15
Sat Flow, veh/h	1634	2825	625	1634	1950	1365	3109	3266	297	1603	3539	1395
Grp Volume(v), veh/h	17	284	281	9	191	181	83	70	72	353	176	23
Grp Sat Flow(s),veh/h/ln	1634	1742	1708	1634	1750	1565	1554	1767	1797	1603	1770	1395
Q Serve(g_s), s	0.5	8.0	8.2	0.3	5.3	5.8	1.1	2.0	2.0	11.6	2.5	0.8
Cycle Q Clear(g_c), s	0.5	8.0	8.2	0.3	5.3	5.8	1.1	2.0	2.0	11.6	2.5	0.8
Prop In Lane	1.00		0.37	1.00		0.87	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	136	469	460	65	395	353	797	243	247	432	534	210
V/C Ratio(X)	0.13	0.60	0.61	0.14	0.48	0.51	0.10	0.29	0.29	0.82	0.33	0.11
Avail Cap(c_a), veh/h	165	1086	1065	165	1091	976	797	979	996	484	2628	1036
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.9	18.0	18.3	26.1	18.9	19.8	16.0	21.8	21.9	19.3	21.4	20.6
Incr Delay (d2), s/veh	0.4	1.3	1.3	1.0	0.9	1.2	0.1	0.6	0.7	9.6	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	4.0	4.0	0.2	2.6	2.6	0.5	1.0	1.1	6.2	1.2	0.3
LnGrp Delay(d),s/veh	24.3	19.2	19.6	27.1	19.9	20.9	16.1	22.4	22.6	28.8	21.7	20.9
LnGrp LOS	C	B	B	C	B	C	B	C	C	C	C	C
Approach Vol, veh/h		582			381			225			552	
Approach Delay, s/veh		19.6			20.5			20.1			26.2	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.2	11.7	6.2	19.2	18.4	12.5	8.7	16.7
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	15.7	29.9	4.0	33.4	5.1	40.5	4.0	33.4
Max Q Clear Time (g_c+I1), s	13.6	4.0	2.3	10.2	3.1	4.5	2.5	7.8
Green Ext Time (p_c), s	0.3	0.4	0.0	2.1	0.4	0.8	0.4	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	22.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	16	448	117	8	207	145	86	120	11	325	162	21
Future Volume (veh/h)	16	448	117	8	207	145	86	120	11	325	162	21
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1834	1750	1716	1842	1750	1683	1860	1750	1683	1863	1683
Adj Flow Rate, veh/h	17	487	127	9	225	158	93	130	12	353	176	23
Adj No. of Lanes	1	2	0	1	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	4
Cap, veh/h	154	768	199	63	450	301	791	443	40	429	527	208
Arrive On Green	0.09	0.28	0.25	0.04	0.23	0.20	0.25	0.14	0.11	0.27	0.15	0.15
Sat Flow, veh/h	1634	2729	707	1634	1990	1331	3109	3266	297	1603	3539	1395
Grp Volume(v), veh/h	17	310	304	9	196	187	93	70	72	353	176	23
Grp Sat Flow(s),veh/h/ln	1634	1743	1693	1634	1749	1572	1554	1767	1797	1603	1770	1395
Q Serve(g_s), s	0.6	9.0	9.2	0.3	5.7	6.1	1.3	2.0	2.1	12.0	2.6	0.8
Cycle Q Clear(g_c), s	0.6	9.0	9.2	0.3	5.7	6.1	1.3	2.0	2.1	12.0	2.6	0.8
Prop In Lane	1.00		0.42	1.00		0.85	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	154	491	477	63	396	356	791	239	243	429	527	208
V/C Ratio(X)	0.11	0.63	0.64	0.14	0.50	0.52	0.12	0.29	0.30	0.82	0.33	0.11
Avail Cap(c_a), veh/h	161	1057	1027	161	1061	953	791	952	969	471	2507	988
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.0	18.2	18.5	26.9	19.5	20.3	16.6	22.5	22.6	19.9	22.1	21.3
Incr Delay (d2), s/veh	0.3	1.3	1.4	1.0	1.0	1.2	0.1	0.7	0.7	10.4	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	4.5	4.4	0.2	2.8	2.8	0.6	1.0	1.1	6.5	1.3	0.3
LnGrp Delay(d),s/veh	24.3	19.5	20.0	27.9	20.5	21.5	16.6	23.2	23.3	30.3	22.4	21.6
LnGrp LOS	C	B	B	C	C	C	B	C	C	C	C	C
Approach Vol, veh/h		631			392			235			552	
Approach Delay, s/veh		19.9			21.2			20.6			27.5	
Approach LOS		B			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.5	11.8	6.2	20.3	18.7	12.6	9.4	17.1
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	15.7	29.9	4.0	33.4	5.9	39.7	4.0	33.4
Max Q Clear Time (g_c+I1), s	14.0	4.1	2.3	11.2	3.3	4.6	2.6	8.1
Green Ext Time (p_c), s	0.3	0.4	0.0	2.3	0.5	0.8	0.4	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	22.6
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	595	171	10	288	181	124	132	12	361	180	23
Future Volume (veh/h)	21	595	171	10	288	181	124	132	12	361	180	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1835	1750	1716	1841	1750	1683	1860	1750	1683	1863	1683
Adj Flow Rate, veh/h	23	647	186	11	313	197	135	143	13	392	196	25
Adj No. of Lanes	1	2	0	1	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	4
Cap, veh/h	71	857	246	55	647	396	262	443	40	469	1217	483
Arrive On Green	0.04	0.32	0.30	0.03	0.31	0.29	0.08	0.14	0.12	0.29	0.34	0.34
Sat Flow, veh/h	1634	2662	764	1634	2069	1268	3109	3271	294	1603	3539	1405
Grp Volume(v), veh/h	23	423	410	11	263	247	135	76	80	392	196	25
Grp Sat Flow(s),veh/h/ln	1634	1743	1683	1634	1749	1589	1554	1767	1798	1603	1770	1405
Q Serve(g_s), s	1.0	16.1	16.2	0.5	9.0	9.5	3.1	2.9	3.0	17.0	2.8	0.9
Cycle Q Clear(g_c), s	1.0	16.1	16.2	0.5	9.0	9.5	3.1	2.9	3.0	17.0	2.8	0.9
Prop In Lane	1.00		0.45	1.00		0.80	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	71	561	542	55	546	496	262	239	244	469	1217	483
V/C Ratio(X)	0.32	0.75	0.76	0.20	0.48	0.50	0.52	0.32	0.33	0.84	0.16	0.05
Avail Cap(c_a), veh/h	157	1036	1000	126	1006	914	479	744	758	825	2768	1099
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.4	22.5	22.9	34.8	20.6	21.3	32.5	28.9	29.1	24.5	16.9	16.2
Incr Delay (d2), s/veh	2.6	2.1	2.2	1.7	0.7	0.8	1.6	0.8	0.8	4.0	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	8.1	7.9	0.2	4.4	4.3	1.4	1.5	1.5	8.0	1.4	0.3
LnGrp Delay(d),s/veh	37.0	24.6	25.0	36.5	21.3	22.1	34.0	29.7	29.8	28.5	16.9	16.3
LnGrp LOS	D	C	C	D	C	C	C	C	C	C	B	B
Approach Vol, veh/h		856			521			291			613	
Approach Delay, s/veh		25.1			22.0			31.7			24.3	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.7	14.0	6.5	27.8	10.2	29.5	7.2	27.1
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	36.8	29.9	4.0	42.3	10.1	56.6	5.4	40.9
Max Q Clear Time (g_c+I1), s	19.0	5.0	2.5	18.2	5.1	4.8	3.0	11.5
Green Ext Time (p_c), s	1.4	1.4	0.4	3.3	0.2	1.5	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	25.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	618	193	10	298	181	134	132	12	361	180	23
Future Volume (veh/h)	21	618	193	10	298	181	134	132	12	361	180	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1835	1750	1716	1840	1750	1683	1860	1750	1683	1863	1683
Adj Flow Rate, veh/h	23	672	210	11	324	197	146	143	13	392	196	25
Adj No. of Lanes	1	2	0	1	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	4
Cap, veh/h	52	1282	400	40	1017	604	229	355	32	387	979	388
Arrive On Green	0.03	0.49	0.48	0.02	0.48	0.47	0.07	0.11	0.10	0.24	0.28	0.28
Sat Flow, veh/h	1634	2606	814	1634	2099	1246	3109	3270	293	1603	3539	1403
Grp Volume(v), veh/h	23	450	432	11	269	252	146	76	80	392	196	25
Grp Sat Flow(s),veh/h/ln	1634	1744	1676	1634	1748	1597	1554	1767	1797	1603	1770	1403
Q Serve(g_s), s	1.7	21.2	21.4	0.8	11.2	11.8	5.5	4.8	5.0	29.0	5.1	1.6
Cycle Q Clear(g_c), s	1.7	21.2	21.4	0.8	11.2	11.8	5.5	4.8	5.0	29.0	5.1	1.6
Prop In Lane	1.00		0.49	1.00		0.78	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	52	858	825	40	847	773	229	192	195	387	979	388
V/C Ratio(X)	0.44	0.52	0.52	0.28	0.32	0.33	0.64	0.40	0.41	1.01	0.20	0.06
Avail Cap(c_a), veh/h	82	858	825	78	847	773	288	459	467	387	1448	574
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	20.9	21.2	57.5	18.8	19.4	54.0	49.8	50.0	45.5	33.2	32.0
Incr Delay (d2), s/veh	5.7	2.3	2.4	3.7	1.0	1.1	3.1	1.3	1.4	48.8	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	10.7	10.5	0.4	5.6	5.4	2.5	2.4	2.5	18.1	2.5	0.6
LnGrp Delay(d),s/veh	62.7	23.1	23.6	61.2	19.8	20.5	57.1	51.2	51.4	94.4	33.3	32.0
LnGrp LOS	E	C	C	E	B	C	E	D	D	F	C	C
Approach Vol, veh/h		905			532			302			613	
Approach Delay, s/veh		24.4			21.0			54.1			72.3	
Approach LOS		C			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.0	17.0	6.9	63.0	12.8	37.2	7.8	62.1
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	27.7	29.9	4.0	36.4	9.8	47.8	4.3	36.1
Max Q Clear Time (g_c+I1), s	31.0	7.0	2.8	23.4	7.5	7.1	3.7	13.8
Green Ext Time (p_c), s	0.0	1.4	0.0	4.8	0.1	1.5	0.0	5.9

Intersection Summary	
HCM 2010 Ctrl Delay	39.9
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	618	193	10	298	181	134	132	12	361	180	23
Future Volume (veh/h)	21	618	193	10	298	181	134	132	12	361	180	23
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1835	1750	1716	1840	1750	1683	1860	1750	1683	1863	1683
Adj Flow Rate, veh/h	23	672	210	11	324	197	146	143	13	392	196	25
Adj No. of Lanes	1	2	0	1	2	0	2	2	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	4
Cap, veh/h	52	1513	472	40	1203	714	459	335	30	496	404	159
Arrive On Green	0.03	0.58	0.57	0.02	0.57	0.56	0.15	0.10	0.09	0.16	0.11	0.11
Sat Flow, veh/h	1634	2606	814	1634	2099	1246	3109	3270	293	3109	3539	1389
Grp Volume(v), veh/h	23	449	433	11	268	253	146	76	80	392	196	25
Grp Sat Flow(s),veh/h/ln	1634	1744	1677	1634	1748	1597	1554	1767	1796	1554	1770	1389
Q Serve(g_s), s	1.7	17.5	17.7	0.8	9.3	9.8	5.0	4.9	5.0	14.6	6.2	1.7
Cycle Q Clear(g_c), s	1.7	17.5	17.7	0.8	9.3	9.8	5.0	4.9	5.0	14.6	6.2	1.7
Prop In Lane	1.00		0.49	1.00		0.78	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	52	1012	973	40	1001	915	459	181	184	496	404	159
V/C Ratio(X)	0.44	0.44	0.44	0.28	0.27	0.28	0.32	0.42	0.43	0.79	0.49	0.16
Avail Cap(c_a), veh/h	82	1012	973	78	1001	915	459	459	467	751	1448	568
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	14.2	14.5	57.5	12.9	13.4	45.7	50.5	50.7	48.5	49.9	35.8
Incr Delay (d2), s/veh	5.7	1.4	1.5	3.7	0.7	0.7	0.4	1.6	1.6	3.3	0.9	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	8.8	8.5	0.4	4.7	4.5	2.2	2.5	2.6	6.5	3.1	0.7
LnGrp Delay(d),s/veh	62.7	15.6	16.0	61.2	13.6	14.1	46.1	52.1	52.3	51.8	50.8	36.3
LnGrp LOS	E	B	B	E	B	B	D	D	D	D	D	D
Approach Vol, veh/h		905			532			302			613	
Approach Delay, s/veh		17.0			14.8			49.3			50.8	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.1	16.3	6.9	73.6	21.7	17.7	7.8	72.7
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	27.7	29.9	4.0	36.4	9.8	47.8	4.3	36.1
Max Q Clear Time (g_c+I1), s	16.6	7.0	2.8	19.7	7.0	8.2	3.7	11.8
Green Ext Time (p_c), s	1.3	0.6	0.0	5.4	0.3	0.9	0.0	6.0

Intersection Summary	
HCM 2010 Ctrl Delay	29.5
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	753	207	12	343	222	132	145	13	402	200	26
Future Volume (veh/h)	27	753	207	12	343	222	132	145	13	402	200	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1835	1750	1716	1841	1750	1683	1860	1750	1683	1863	1683
Adj Flow Rate, veh/h	29	818	225	13	373	241	143	158	14	437	217	28
Adj No. of Lanes	1	2	0	1	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	4
Cap, veh/h	67	972	267	50	715	454	249	416	36	495	1259	500
Arrive On Green	0.04	0.36	0.34	0.03	0.35	0.33	0.08	0.13	0.11	0.31	0.36	0.36
Sat Flow, veh/h	1634	2691	740	1634	2038	1295	3109	3279	287	1603	3539	1405
Grp Volume(v), veh/h	29	530	513	13	319	295	143	84	88	437	217	28
Grp Sat Flow(s),veh/h/ln	1634	1743	1688	1634	1749	1585	1554	1767	1799	1603	1770	1405
Q Serve(g_s), s	1.6	25.9	26.0	0.7	13.4	13.9	4.1	4.1	4.2	24.0	3.9	1.2
Cycle Q Clear(g_c), s	1.6	25.9	26.0	0.7	13.4	13.9	4.1	4.1	4.2	24.0	3.9	1.2
Prop In Lane	1.00		0.44	1.00		0.82	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	67	629	610	50	613	556	249	224	228	495	1259	500
V/C Ratio(X)	0.43	0.84	0.84	0.26	0.52	0.53	0.57	0.38	0.38	0.88	0.17	0.06
Avail Cap(c_a), veh/h	125	827	801	100	803	728	382	594	605	658	2209	877
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.4	27.2	27.6	43.9	23.9	24.6	41.1	37.1	37.3	30.4	20.5	19.6
Incr Delay (d2), s/veh	4.3	6.1	6.3	2.7	0.7	0.8	2.1	1.0	1.1	10.7	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	13.4	13.1	0.4	6.6	6.2	1.8	2.1	2.1	12.0	1.9	0.5
LnGrp Delay(d),s/veh	47.8	33.3	33.9	46.6	24.6	25.4	43.2	38.2	38.3	41.2	20.6	19.7
LnGrp LOS	D	C	C	D	C	C	D	D	D	D	C	B
Approach Vol, veh/h		1072			627			315			682	
Approach Delay, s/veh		34.0			25.4			40.5			33.7	
Approach LOS		C			C			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	32.7	15.8	6.8	37.5	11.4	37.0	7.8	36.5
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	36.8	29.9	4.0	42.3	10.1	56.6	5.4	40.9
Max Q Clear Time (g_c+I1), s	26.0	6.2	2.7	28.0	6.1	5.9	3.6	15.9
Green Ext Time (p_c), s	1.3	1.6	0.4	3.8	0.2	1.7	0.0	2.4

Intersection Summary	
HCM 2010 Ctrl Delay	32.7
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	780	235	12	356	222	144	145	13	402	200	26
Future Volume (veh/h)	27	780	235	12	356	222	144	145	13	402	200	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1835	1750	1716	1841	1750	1683	1860	1750	1683	1863	1683
Adj Flow Rate, veh/h	29	848	255	13	387	241	157	158	14	437	217	28
Adj No. of Lanes	1	2	0	1	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	4
Cap, veh/h	58	1279	384	42	986	605	240	371	32	387	983	390
Arrive On Green	0.04	0.49	0.47	0.03	0.48	0.46	0.08	0.11	0.10	0.24	0.28	0.28
Sat Flow, veh/h	1634	2633	791	1634	2070	1270	3109	3278	287	1603	3539	1403
Grp Volume(v), veh/h	29	561	542	13	326	302	157	84	88	437	217	28
Grp Sat Flow(s),veh/h/ln	1634	1743	1680	1634	1748	1592	1554	1767	1798	1603	1770	1403
Q Serve(g_s), s	2.1	29.3	29.5	0.9	14.4	14.9	5.9	5.3	5.5	29.0	5.7	1.8
Cycle Q Clear(g_c), s	2.1	29.3	29.5	0.9	14.4	14.9	5.9	5.3	5.5	29.0	5.7	1.8
Prop In Lane	1.00		0.47	1.00		0.80	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	58	847	817	42	833	759	240	200	204	387	983	390
V/C Ratio(X)	0.50	0.66	0.66	0.31	0.39	0.40	0.66	0.42	0.43	1.13	0.22	0.07
Avail Cap(c_a), veh/h	82	847	817	78	833	759	288	459	468	387	1448	574
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.8	23.4	23.8	57.4	20.2	20.8	53.8	49.6	49.7	45.5	33.3	31.9
Incr Delay (d2), s/veh	6.6	4.1	4.2	4.0	1.4	1.6	4.0	1.4	1.4	85.4	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	15.0	14.6	0.5	7.3	6.9	2.7	2.7	2.8	22.0	2.8	0.7
LnGrp Delay(d),s/veh	63.5	27.4	28.0	61.4	21.6	22.4	57.8	51.0	51.1	130.9	33.5	32.0
LnGrp LOS	E	C	C	E	C	C	E	D	D	F	C	C
Approach Vol, veh/h		1132			641			329			682	
Approach Delay, s/veh		28.6			22.8			54.3			95.8	
Approach LOS		C			C			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	33.0	17.6	7.1	62.3	13.2	37.3	8.2	61.2
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	27.7	29.9	4.0	36.4	9.8	47.8	4.3	36.1
Max Q Clear Time (g_c+I1), s	31.0	7.5	2.9	31.5	7.9	7.7	4.1	16.9
Green Ext Time (p_c), s	0.0	1.6	0.0	3.1	0.1	1.7	0.0	7.4

Intersection Summary	
HCM 2010 Ctrl Delay	46.8
HCM 2010 LOS	D



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	780	235	12	356	222	144	145	13	402	200	26
Future Volume (veh/h)	27	780	235	12	356	222	144	145	13	402	200	26
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1835	1750	1716	1841	1750	1683	1860	1750	1683	1863	1683
Adj Flow Rate, veh/h	29	848	255	13	387	241	157	158	14	437	217	28
Adj No. of Lanes	1	2	0	1	2	0	2	2	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	4
Cap, veh/h	58	1476	443	42	1141	700	499	348	30	541	423	166
Arrive On Green	0.04	0.56	0.55	0.03	0.55	0.54	0.16	0.11	0.10	0.17	0.12	0.12
Sat Flow, veh/h	1634	2633	791	1634	2070	1271	3109	3278	287	3109	3539	1390
Grp Volume(v), veh/h	29	561	542	13	326	302	157	84	88	437	217	28
Grp Sat Flow(s),veh/h/ln	1634	1743	1681	1634	1748	1593	1554	1767	1798	1554	1770	1390
Q Serve(g_s), s	2.1	25.0	25.3	0.9	12.3	12.9	5.4	5.4	5.5	16.2	6.9	1.9
Cycle Q Clear(g_c), s	2.1	25.0	25.3	0.9	12.3	12.9	5.4	5.4	5.5	16.2	6.9	1.9
Prop In Lane	1.00		0.47	1.00		0.80	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	58	977	942	42	964	878	499	188	191	541	423	166
V/C Ratio(X)	0.50	0.57	0.58	0.31	0.34	0.34	0.31	0.45	0.46	0.81	0.51	0.17
Avail Cap(c_a), veh/h	82	977	942	78	964	878	499	459	467	751	1448	569
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	56.8	17.1	17.4	57.4	14.9	15.3	44.5	50.3	50.5	47.6	49.6	35.1
Incr Delay (d2), s/veh	6.6	2.5	2.6	4.0	1.0	1.1	0.4	1.7	1.7	4.6	1.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	12.7	12.3	0.5	6.2	5.9	2.3	2.7	2.8	7.3	3.4	0.7
LnGrp Delay(d),s/veh	63.5	19.5	20.0	61.4	15.8	16.4	44.9	52.0	52.2	52.2	50.5	35.5
LnGrp LOS	E	B	B	E	B	B	D	D	D	D	D	D
Approach Vol, veh/h		1132			641			329			682	
Approach Delay, s/veh		20.9			17.0			48.7			51.0	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.9	16.8	7.1	71.3	23.3	18.3	8.2	70.1
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	27.7	29.9	4.0	36.4	9.8	47.8	4.3	36.1
Max Q Clear Time (g_c+I1), s	18.2	7.5	2.9	27.3	7.4	8.9	4.1	14.9
Green Ext Time (p_c), s	1.4	0.6	0.0	4.9	0.3	1.0	0.0	7.7

Intersection Summary	
HCM 2010 Ctrl Delay	30.6
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	302	74	7	192	142	74	100	8	153	107	22
Future Volume (veh/h)	8	302	74	7	192	142	74	100	8	153	107	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1834	1750	1716	1842	1750	1683	1860	1750	1683	1863	1683
Adj Flow Rate, veh/h	9	328	80	8	209	154	80	109	9	166	116	24
Adj No. of Lanes	1	2	0	1	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	4
Cap, veh/h	82	703	169	82	495	346	471	523	43	249	574	227
Arrive On Green	0.05	0.25	0.21	0.05	0.25	0.21	0.15	0.16	0.13	0.16	0.16	0.16
Sat Flow, veh/h	1634	2775	666	1634	1953	1364	3109	3301	269	1603	3539	1396
Grp Volume(v), veh/h	9	204	204	8	186	177	80	58	60	166	116	24
Grp Sat Flow(s),veh/h/ln	1634	1742	1699	1634	1750	1567	1554	1767	1804	1603	1770	1396
Q Serve(g_s), s	0.2	4.1	4.3	0.2	3.7	4.1	0.9	1.2	1.2	4.1	1.2	0.6
Cycle Q Clear(g_c), s	0.2	4.1	4.3	0.2	3.7	4.1	0.9	1.2	1.2	4.1	1.2	0.6
Prop In Lane	1.00		0.39	1.00		0.87	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	82	441	431	82	444	397	471	280	286	249	574	227
V/C Ratio(X)	0.11	0.46	0.47	0.10	0.42	0.45	0.17	0.21	0.21	0.67	0.20	0.11
Avail Cap(c_a), veh/h	223	1462	1426	223	1468	1315	471	1318	1345	268	2716	1071
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.0	13.2	13.6	19.0	13.0	13.8	15.5	15.3	15.4	16.6	15.2	14.9
Incr Delay (d2), s/veh	0.6	0.8	0.8	0.5	0.6	0.8	0.2	0.4	0.4	5.6	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.1	2.1	0.1	1.8	1.9	0.4	0.6	0.6	2.2	0.6	0.2
LnGrp Delay(d),s/veh	19.6	14.0	14.4	19.5	13.7	14.6	15.6	15.7	15.8	22.3	15.3	15.1
LnGrp LOS	B	B	B	B	B	B	B	B	B	C	B	B
Approach Vol, veh/h		417			371			198			306	
Approach Delay, s/veh		14.3			14.2			15.7			19.1	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.5	10.6	6.1	14.6	10.3	10.8	6.1	14.6
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	5.7	29.9	4.0	33.4	4.8	30.8	4.0	33.4
Max Q Clear Time (g_c+I1), s	6.1	3.2	2.2	6.3	2.9	3.2	2.2	6.1
Green Ext Time (p_c), s	0.0	0.5	0.0	1.5	0.1	0.5	0.0	1.3

Intersection Summary	
HCM 2010 Ctrl Delay	15.6
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	310	82	7	213	142	95	100	8	153	107	22
Future Volume (veh/h)	8	310	82	7	213	142	95	100	8	153	107	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1834	1750	1716	1841	1750	1683	1860	1750	1683	1863	1683
Adj Flow Rate, veh/h	9	337	89	8	232	154	103	109	9	166	116	24
Adj No. of Lanes	1	2	0	1	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	4
Cap, veh/h	81	704	183	83	528	335	468	517	42	249	571	225
Arrive On Green	0.05	0.26	0.22	0.05	0.26	0.22	0.15	0.16	0.13	0.16	0.16	0.16
Sat Flow, veh/h	1634	2726	709	1634	2037	1293	3109	3301	269	1603	3539	1396
Grp Volume(v), veh/h	9	214	212	8	198	188	103	58	60	166	116	24
Grp Sat Flow(s),veh/h/ln	1634	1743	1692	1634	1749	1581	1554	1767	1804	1603	1770	1396
Q Serve(g_s), s	0.2	4.4	4.6	0.2	4.0	4.3	1.2	1.2	1.2	4.1	1.2	0.6
Cycle Q Clear(g_c), s	0.2	4.4	4.6	0.2	4.0	4.3	1.2	1.2	1.2	4.1	1.2	0.6
Prop In Lane	1.00		0.42	1.00		0.82	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	81	450	437	83	453	410	468	277	283	249	571	225
V/C Ratio(X)	0.11	0.47	0.49	0.10	0.44	0.46	0.22	0.21	0.21	0.67	0.20	0.11
Avail Cap(c_a), veh/h	221	1450	1407	221	1455	1315	468	1306	1334	266	2692	1062
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.2	13.2	13.6	19.1	13.1	13.8	15.7	15.5	15.6	16.8	15.3	15.1
Incr Delay (d2), s/veh	0.6	0.8	0.8	0.5	0.7	0.8	0.2	0.4	0.4	5.8	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.2	2.2	0.1	2.0	2.0	0.5	0.6	0.6	2.2	0.6	0.2
LnGrp Delay(d),s/veh	19.7	14.0	14.4	19.6	13.7	14.6	16.0	15.9	16.0	22.6	15.5	15.3
LnGrp LOS	B	B	B	B	B	B	B	B	B	C	B	B
Approach Vol, veh/h		435			394			221			306	
Approach Delay, s/veh		14.3			14.2			16.0			19.3	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.5	10.6	6.1	14.9	10.4	10.8	6.1	14.9
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	5.7	29.9	4.0	33.4	4.8	30.8	4.0	33.4
Max Q Clear Time (g_c+I1), s	6.1	3.2	2.2	6.6	3.2	3.2	2.2	6.3
Green Ext Time (p_c), s	0.0	0.6	0.0	1.5	0.1	0.5	0.0	1.4

Intersection Summary	
HCM 2010 Ctrl Delay	15.7
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	402	108	9	283	180	130	110	9	170	119	24
Future Volume (veh/h)	10	402	108	9	283	180	130	110	9	170	119	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1834	1750	1716	1841	1750	1683	1860	1750	1683	1863	1683
Adj Flow Rate, veh/h	11	437	117	10	308	196	141	120	10	185	129	26
Adj No. of Lanes	1	2	0	1	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	4
Cap, veh/h	82	788	209	79	594	368	476	500	41	249	543	214
Arrive On Green	0.05	0.29	0.25	0.05	0.29	0.25	0.15	0.15	0.12	0.16	0.15	0.15
Sat Flow, veh/h	1634	2713	720	1634	2060	1275	3109	3298	271	1603	3539	1395
Grp Volume(v), veh/h	11	279	275	10	260	244	141	64	66	185	129	26
Grp Sat Flow(s),veh/h/ln	1634	1743	1690	1634	1749	1586	1554	1767	1803	1603	1770	1395
Q Serve(g_s), s	0.3	6.1	6.3	0.3	5.6	6.0	1.8	1.4	1.5	5.0	1.4	0.7
Cycle Q Clear(g_c), s	0.3	6.1	6.3	0.3	5.6	6.0	1.8	1.4	1.5	5.0	1.4	0.7
Prop In Lane	1.00		0.43	1.00		0.80	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	82	506	491	79	504	457	476	268	273	249	543	214
V/C Ratio(X)	0.13	0.55	0.56	0.13	0.52	0.53	0.30	0.24	0.24	0.74	0.24	0.12
Avail Cap(c_a), veh/h	207	1357	1316	207	1361	1235	476	1223	1248	249	2496	984
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.5	13.5	13.9	20.6	13.4	14.1	16.9	16.8	16.9	18.2	16.8	16.5
Incr Delay (d2), s/veh	0.7	0.9	1.0	0.7	0.8	1.0	0.3	0.5	0.5	11.4	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	3.0	3.1	0.1	2.8	2.7	0.8	0.7	0.8	2.9	0.7	0.3
LnGrp Delay(d),s/veh	21.2	14.5	14.9	21.3	14.2	15.1	17.3	17.3	17.4	29.6	17.0	16.7
LnGrp LOS	C	B	B	C	B	B	B	B	B	C	B	B
Approach Vol, veh/h		565			514			271			340	
Approach Delay, s/veh		14.8			14.8			17.3			23.8	
Approach LOS		B			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	10.8	6.2	17.1	10.9	10.9	6.3	17.0
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	5.7	29.9	4.0	33.4	5.1	30.5	4.0	33.4
Max Q Clear Time (g_c+I1), s	7.0	3.5	2.3	8.3	3.8	3.4	2.3	8.0
Green Ext Time (p_c), s	0.0	0.5	0.0	2.0	0.1	0.6	0.0	1.9

Intersection Summary	
HCM 2010 Ctrl Delay	17.0
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	410	116	9	304	180	151	110	9	170	119	24
Future Volume (veh/h)	10	410	116	9	304	180	151	110	9	170	119	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1835	1750	1716	1840	1750	1683	1860	1750	1683	1863	1683
Adj Flow Rate, veh/h	11	446	126	10	330	196	164	120	10	185	129	26
Adj No. of Lanes	1	2	0	1	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	4
Cap, veh/h	80	791	221	78	622	361	473	497	41	247	541	213
Arrive On Green	0.05	0.30	0.26	0.05	0.29	0.26	0.15	0.15	0.12	0.15	0.15	0.15
Sat Flow, veh/h	1634	2678	750	1634	2116	1227	3109	3298	271	1603	3539	1395
Grp Volume(v), veh/h	11	289	283	10	271	255	164	64	66	185	129	26
Grp Sat Flow(s),veh/h/ln	1634	1743	1685	1634	1748	1595	1554	1767	1803	1603	1770	1395
Q Serve(g_s), s	0.3	6.4	6.5	0.3	5.9	6.2	2.1	1.4	1.5	5.0	1.5	0.7
Cycle Q Clear(g_c), s	0.3	6.4	6.5	0.3	5.9	6.2	2.1	1.4	1.5	5.0	1.5	0.7
Prop In Lane	1.00		0.44	1.00		0.77	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	80	515	497	78	514	469	473	266	272	247	541	213
V/C Ratio(X)	0.14	0.56	0.57	0.13	0.53	0.54	0.35	0.24	0.24	0.75	0.24	0.12
Avail Cap(c_a), veh/h	205	1346	1301	205	1350	1232	473	1213	1238	247	2477	976
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.7	13.5	13.9	20.7	13.4	14.1	17.2	17.0	17.1	18.4	16.9	16.6
Incr Delay (d2), s/veh	0.8	1.0	1.0	0.7	0.8	1.0	0.4	0.5	0.5	12.0	0.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	3.2	3.2	0.1	2.9	2.9	0.9	0.7	0.8	3.0	0.7	0.3
LnGrp Delay(d),s/veh	21.4	14.5	14.9	21.5	14.3	15.1	17.7	17.5	17.6	30.3	17.1	16.9
LnGrp LOS	C	B	B	C	B	B	B	B	B	C	B	B
Approach Vol, veh/h		583			536			294			340	
Approach Delay, s/veh		14.8			14.8			17.6			24.3	
Approach LOS		B			B			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	10.9	6.2	17.4	10.9	10.9	6.2	17.4
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	5.7	29.9	4.0	33.4	5.1	30.5	4.0	33.4
Max Q Clear Time (g_c+I1), s	7.0	3.5	2.3	8.5	4.1	3.5	2.3	8.2
Green Ext Time (p_c), s	0.0	0.5	0.0	2.1	0.1	0.6	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	17.1
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	410	116	9	304	180	151	110	9	170	119	24
Future Volume (veh/h)	10	410	116	9	304	180	151	110	9	170	119	24
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1835	1750	1716	1840	1750	1683	1860	1750	1683	1863	1683
Adj Flow Rate, veh/h	11	446	126	10	330	196	164	120	10	185	129	26
Adj No. of Lanes	1	2	0	1	2	0	2	2	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	4
Cap, veh/h	40	1750	490	39	1382	802	290	329	27	281	344	134
Arrive On Green	0.02	0.65	0.64	0.02	0.65	0.64	0.09	0.10	0.09	0.09	0.10	0.10
Sat Flow, veh/h	1634	2681	751	1634	2119	1230	3109	3297	271	3109	3539	1385
Grp Volume(v), veh/h	11	289	283	10	271	255	164	64	66	185	129	26
Grp Sat Flow(s),veh/h/ln	1634	1743	1689	1634	1748	1601	1554	1767	1801	1554	1770	1385
Q Serve(g_s), s	0.8	8.3	8.5	0.7	7.7	8.1	6.1	4.0	4.1	6.9	4.1	1.8
Cycle Q Clear(g_c), s	0.8	8.3	8.5	0.7	7.7	8.1	6.1	4.0	4.1	6.9	4.1	1.8
Prop In Lane	1.00		0.44	1.00		0.77	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	40	1138	1102	39	1140	1044	290	176	180	281	344	134
V/C Ratio(X)	0.28	0.25	0.26	0.26	0.24	0.24	0.57	0.36	0.37	0.66	0.38	0.19
Avail Cap(c_a), veh/h	82	1138	1102	78	1140	1044	290	459	468	751	1448	567
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	8.7	8.9	57.6	8.6	9.0	52.1	50.4	50.6	52.8	50.8	38.2
Incr Delay (d2), s/veh	3.7	0.5	0.6	3.5	0.5	0.6	2.6	1.2	1.3	2.6	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	4.1	4.2	0.4	3.8	3.7	2.7	2.0	2.1	3.1	2.0	0.7
LnGrp Delay(d),s/veh	61.2	9.2	9.4	61.0	9.1	9.5	54.7	51.7	51.8	55.4	51.4	38.9
LnGrp LOS	E	A	A	E	A	A	D	D	D	E	D	D
Approach Vol, veh/h		583			536			294			340	
Approach Delay, s/veh		10.3			10.3			53.4			52.6	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.8	16.0	6.8	82.3	15.2	15.6	6.9	82.2
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	27.7	29.9	4.0	36.4	9.8	47.8	4.3	36.1
Max Q Clear Time (g_c+I1), s	8.9	6.1	2.7	10.5	8.1	6.1	2.8	10.1
Green Ext Time (p_c), s	0.7	1.0	0.0	4.4	0.2	0.6	0.0	4.4

Intersection Summary	
HCM 2010 Ctrl Delay	25.7
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	515	136	11	337	220	138	121	10	189	132	27
Future Volume (veh/h)	13	515	136	11	337	220	138	121	10	189	132	27
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1834	1750	1716	1841	1750	1683	1860	1750	1683	1863	1683
Adj Flow Rate, veh/h	14	560	148	12	366	239	150	132	11	205	143	29
Adj No. of Lanes	1	2	0	1	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	4
Cap, veh/h	105	892	235	77	632	405	443	495	41	231	538	212
Arrive On Green	0.06	0.33	0.29	0.05	0.31	0.28	0.14	0.15	0.12	0.14	0.15	0.15
Sat Flow, veh/h	1634	2719	716	1634	2029	1302	3109	3298	272	1603	3539	1395
Grp Volume(v), veh/h	14	358	350	12	315	290	150	70	73	205	143	29
Grp Sat Flow(s),veh/h/ln	1634	1743	1692	1634	1749	1582	1554	1767	1803	1603	1770	1395
Q Serve(g_s), s	0.4	8.4	8.6	0.3	7.3	7.7	2.1	1.7	1.7	6.1	1.7	0.9
Cycle Q Clear(g_c), s	0.4	8.4	8.6	0.3	7.3	7.7	2.1	1.7	1.7	6.1	1.7	0.9
Prop In Lane	1.00		0.42	1.00		0.82	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	105	572	555	77	545	493	443	265	271	231	538	212
V/C Ratio(X)	0.13	0.63	0.63	0.16	0.58	0.59	0.34	0.26	0.27	0.89	0.27	0.14
Avail Cap(c_a), veh/h	192	1262	1225	192	1266	1145	443	1137	1160	231	2321	915
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.4	13.8	14.1	22.2	14.0	14.7	18.7	18.2	18.3	20.3	18.2	17.8
Incr Delay (d2), s/veh	0.6	1.1	1.2	0.9	1.0	1.1	0.4	0.5	0.5	31.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.2	4.1	0.2	3.6	3.4	0.9	0.9	0.9	4.7	0.9	0.3
LnGrp Delay(d),s/veh	22.0	14.9	15.3	23.1	15.0	15.9	19.2	18.8	18.9	51.3	18.4	18.1
LnGrp LOS	C	B	B	C	B	B	B	B	B	D	B	B
Approach Vol, veh/h		722			617			293			377	
Approach Delay, s/veh		15.2			15.6			19.0			36.3	
Approach LOS		B			B			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	11.3	6.3	19.9	10.9	11.4	7.1	19.1
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	5.7	29.9	4.0	33.4	5.1	30.5	4.0	33.4
Max Q Clear Time (g_c+I1), s	8.1	3.7	2.3	10.6	4.1	3.7	2.4	9.7
Green Ext Time (p_c), s	0.0	0.6	0.0	2.7	0.1	0.6	0.0	2.3

Intersection Summary	
HCM 2010 Ctrl Delay	19.8
HCM 2010 LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	525	146	11	364	220	162	121	10	189	132	27
Future Volume (veh/h)	13	525	146	11	364	220	162	121	10	189	132	27
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1835	1750	1716	1840	1750	1683	1860	1750	1683	1863	1683
Adj Flow Rate, veh/h	14	571	159	12	396	239	176	132	11	205	143	29
Adj No. of Lanes	1	2	0	1	2	0	2	2	0	1	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	4
Cap, veh/h	102	896	249	77	667	397	439	493	41	229	535	211
Arrive On Green	0.06	0.33	0.30	0.05	0.32	0.28	0.14	0.15	0.12	0.14	0.15	0.15
Sat Flow, veh/h	1634	2684	745	1634	2094	1247	3109	3298	272	1603	3539	1395
Grp Volume(v), veh/h	14	370	360	12	330	305	176	70	73	205	143	29
Grp Sat Flow(s),veh/h/ln	1634	1743	1687	1634	1748	1592	1554	1767	1803	1603	1770	1395
Q Serve(g_s), s	0.4	8.8	8.9	0.3	7.8	8.1	2.5	1.7	1.8	6.2	1.8	0.9
Cycle Q Clear(g_c), s	0.4	8.8	8.9	0.3	7.8	8.1	2.5	1.7	1.8	6.2	1.8	0.9
Prop In Lane	1.00		0.44	1.00		0.78	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	102	582	563	77	557	507	439	264	270	229	535	211
V/C Ratio(X)	0.14	0.64	0.64	0.16	0.59	0.60	0.40	0.26	0.27	0.89	0.27	0.14
Avail Cap(c_a), veh/h	190	1249	1209	190	1253	1141	439	1126	1149	229	2298	906
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.7	13.8	14.2	22.4	14.0	14.7	19.1	18.4	18.6	20.6	18.4	18.0
Incr Delay (d2), s/veh	0.6	1.2	1.2	0.9	1.0	1.2	0.6	0.5	0.5	33.0	0.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	4.4	4.3	0.2	3.8	3.7	1.1	0.9	0.9	4.8	0.9	0.4
LnGrp Delay(d),s/veh	22.3	15.0	15.4	23.3	15.0	15.8	19.7	19.0	19.1	53.6	18.6	18.3
LnGrp LOS	C	B	B	C	B	B	B	B	B	D	B	B
Approach Vol, veh/h		744			647			319			377	
Approach Delay, s/veh		15.3			15.6			19.4			37.6	
Approach LOS		B			B			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.0	11.3	6.3	20.4	10.9	11.4	7.0	19.6
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	5.7	29.9	4.0	33.4	5.1	30.5	4.0	33.4
Max Q Clear Time (g_c+I1), s	8.2	3.8	2.3	10.9	4.5	3.8	2.4	10.1
Green Ext Time (p_c), s	0.0	0.6	0.0	2.8	0.1	0.6	0.0	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	20.0
HCM 2010 LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	525	146	11	364	220	162	121	10	189	132	27
Future Volume (veh/h)	13	525	146	11	364	220	162	121	10	189	132	27
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1716	1835	1750	1716	1840	1750	1683	1860	1750	1683	1863	1683
Adj Flow Rate, veh/h	14	571	159	12	396	239	176	132	11	205	143	29
Adj No. of Lanes	1	2	0	1	2	0	2	2	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	4	4	2	4	4	4	2	2	4	2	4
Cap, veh/h	43	1732	481	41	1348	803	299	329	27	302	356	140
Arrive On Green	0.03	0.64	0.63	0.03	0.64	0.63	0.10	0.10	0.09	0.10	0.10	0.10
Sat Flow, veh/h	1634	2687	746	1634	2097	1249	3109	3297	271	3109	3539	1386
Grp Volume(v), veh/h	14	370	360	12	329	306	176	70	73	205	143	29
Grp Sat Flow(s),veh/h/ln	1634	1743	1690	1634	1748	1597	1554	1767	1801	1554	1770	1386
Q Serve(g_s), s	1.0	11.5	11.7	0.9	9.9	10.4	6.5	4.5	4.6	7.6	4.5	2.0
Cycle Q Clear(g_c), s	1.0	11.5	11.7	0.9	9.9	10.4	6.5	4.5	4.6	7.6	4.5	2.0
Prop In Lane	1.00		0.44	1.00		0.78	1.00		0.15	1.00		1.00
Lane Grp Cap(c), veh/h	43	1123	1089	41	1124	1027	299	176	180	302	356	140
V/C Ratio(X)	0.32	0.33	0.33	0.29	0.29	0.30	0.59	0.40	0.41	0.68	0.40	0.21
Avail Cap(c_a), veh/h	82	1123	1089	78	1124	1027	299	459	468	751	1448	567
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.3	9.6	9.8	57.4	9.4	9.8	51.9	50.6	50.8	52.3	50.6	37.7
Incr Delay (d2), s/veh	4.2	0.8	0.8	3.9	0.7	0.7	3.0	1.4	1.5	2.7	0.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	5.7	5.7	0.4	5.0	4.8	2.9	2.2	2.3	3.4	2.3	0.8
LnGrp Delay(d),s/veh	61.5	10.4	10.7	61.3	10.1	10.5	54.9	52.1	52.3	55.0	51.3	38.4
LnGrp LOS	E	B	B	E	B	B	D	D	D	E	D	D
Approach Vol, veh/h		744			647			319			377	
Approach Delay, s/veh		11.5			11.2			53.7			52.3	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.7	16.0	7.0	81.3	15.6	16.1	7.2	81.2
Change Period (Y+Rc), s	5.3	5.3	5.7	5.7	5.3	5.3	5.7	5.7
Max Green Setting (Gmax), s	27.7	29.9	4.0	36.4	9.8	47.8	4.3	36.1
Max Q Clear Time (g_c+I1), s	9.6	6.6	2.9	13.7	8.5	6.5	3.0	12.4
Green Ext Time (p_c), s	0.7	0.6	0.0	5.7	0.2	0.7	0.0	5.7

Intersection Summary	
HCM 2010 Ctrl Delay	25.2
HCM 2010 LOS	C

Appendix M

Water Supply Assessment

Water Supply Assessment

SCH# 2019060111

Malibu Vineyards Industrial Parkway Project

Prepared for:

Malibu Vineyards, L.P.
GPA 9, Map 80; GPA 23, Map 81; ZCC 13, Map 80; ZCC 92, Map 81;
PD 2, Map 80; PD 74, Map 81; PD 75, Map 81

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February 21, 2023

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LIST OF ABBREVIATIONS

af	acre feet
AFY	acre-feet per year
Cawelo	Cawelo Water District
CEQA	California Environmental Quality Act
cfs	cubic feet per second
Class 1	surface water service area
Class 2	groundwater service area
CVP	Central Valley Project
DWR	California Department of Water Resources
gpm	gallons per minute
GSA	Groundwater Sustainability Agency
GSP	groundwater sustainability plan
ID4	Kern County Water Agency Improvement District No. 4
KCWA	Kern County Water Agency
Kern River GSA	Kern River Groundwater Sustainability Agency
MDBM	Mount Diablo Base and Meridian
NORMWD	North of the River Municipal Water District
North Kern WSD	North Kern Water Storage District
OMWC	Oildale Mutual Water Company
RRID	Rosedale Ranch Improvement District
sf	square feet
SGMA	Sustainable Groundwater Management Act
SR 99	State Route 99
SWP	State Water Project
WSA	water supply assessment

1 INTRODUCTION AND OVERVIEW

1.1 PURPOSE

Senate Bill 610 (Wat. Code, Section 10910 et seq.) requires the preparation of a water supply assessment (WSA) in connection with the environmental review of any "project" as defined in Water Code section 10912, subdivision (a). These defined "projects" include major development proposals, such as a "proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet." (Wat. Code, 10912, subd. (a)(3)). In most circumstances, a city or county, acting as a California Environmental Quality Act (CEQA) lead agency, requests the "public water system" that supplies water to the project area to prepare such a document. The WSA must include an evaluation of sufficiency of the water supplies available to the water supplier to meet existing and anticipated future demands, including the demand associated with the project over a twenty-year horizon that includes normal, single-dry and multiple-dry years.

The WSA must identify existing water supply entitlements, water rights, or water service contracts held by the water supplier or relevant to the identified water received in prior years by the public water system. If the public water supplier includes groundwater supplies, the WSA must describe all groundwater basins from which the proposed project will be supplied. For each basin that has not been adjudicated, the assessment should indicate whether the California Department of Water Resources (DWR) has identified the basin as overdrafted or has projected that the basin will become overdrafted if present management conditions continue. In addition, the report should provide a detailed description of the efforts being undertaken in the basin to eliminate the long-term overdraft condition.

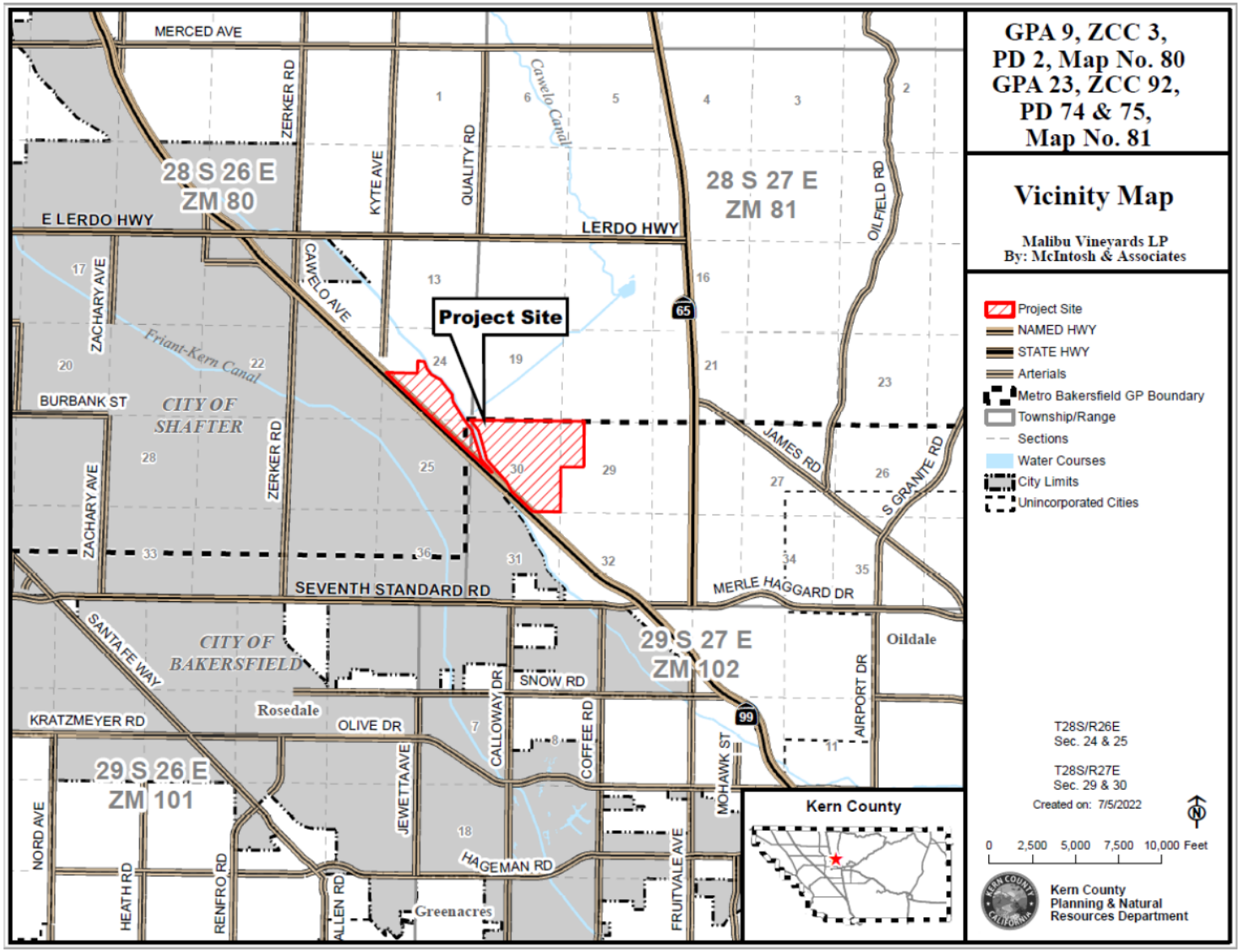
If the WSA concludes that additional water supplies are necessary, the public water supplier must submit plans for acquiring additional water supplies, including the measures that would be taken to acquire and develop those supplies. The future water supply projects and programs discussion may be based upon proposed methods of financing, estimated costs, information related to federal, state and local permits and the estimated timeframes within which the public water system expects to be able to acquire the additional supplies.

1.2 PROJECT AREA CHARACTERISTICS

The project site is located within unincorporated Kern County, north of Imperial Avenue and generally east of State Route 99 (SR 99), with site access from Saco Road and Imperial Avenue. The project site is just east of the City of Shafter, which is on the west side of SR 99, and approximately one mile north of the City of Bakersfield. Figure 1 shows the project vicinity.

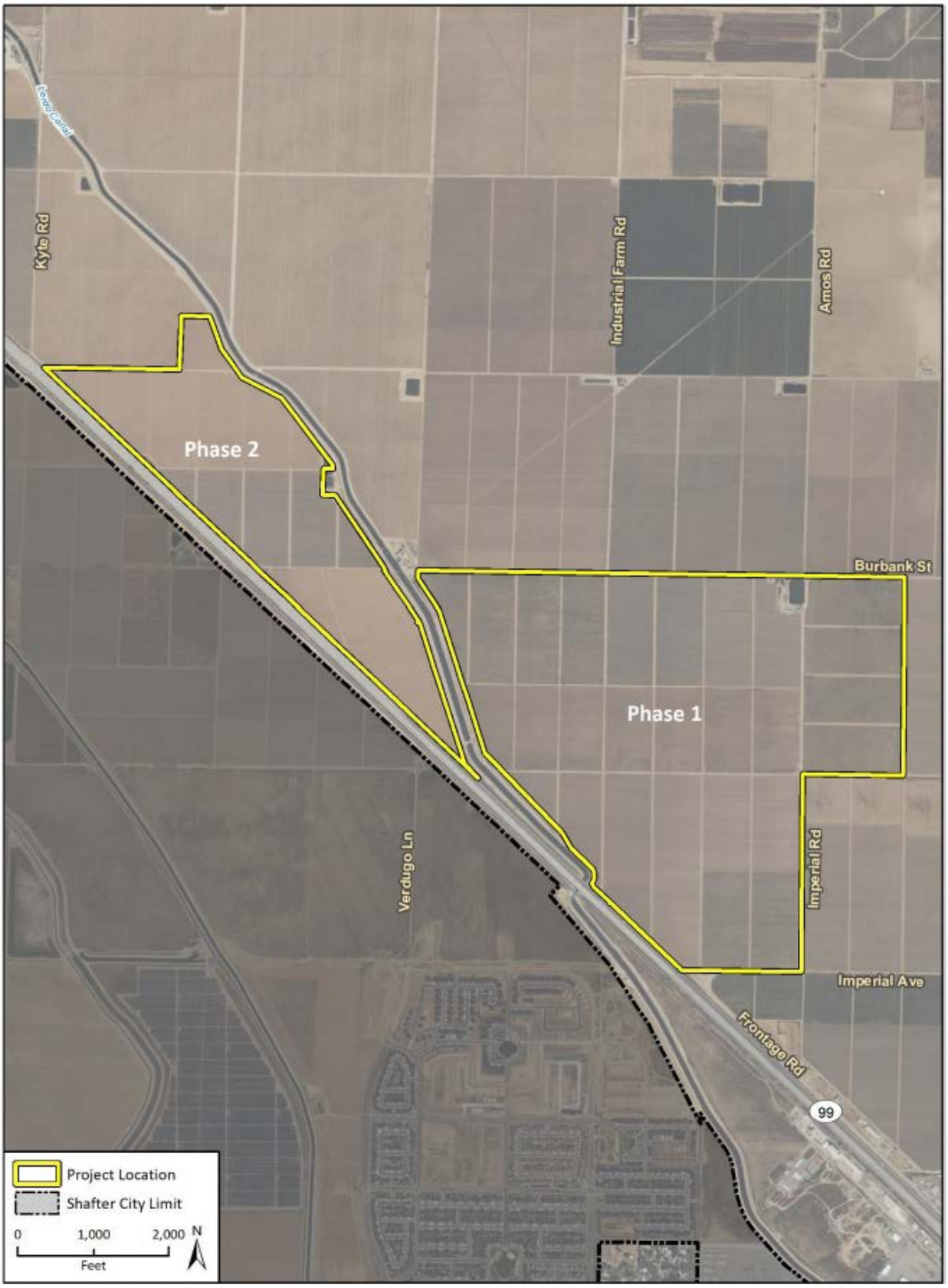
The Beardsley/Lerdo Canal trends northwest to southeast though the center of project site, dividing the two phases of the project. Phase 1 would include seven parcels consisting of approximately 534 acres, and is located between Burbank Street to the north, and Imperial Avenue to the south, with the western boundary being the Beardsley/Lerdo Canal. Phase 1 is in Kern County Zone Map 81, as portions of Sections 29 and 30, Township 28 South, Range 27 East in the Mount Diablo Base and Meridian (MDBM). Phase 2 would include 14 parcels consisting of approximately 205 acres, with the western boundary SR 99, and the eastern boundary the Beardsley/Lerdo Canal. The site is located generally south of Lerdo Highway, and north of Imperial Avenue. Phase 2 is in Zone Maps 80 and 81, as portions of Sections 24 and 25, Township 28 South, Range 26 East, MDBM, and Section 30 of Township 28 South, Range 27 East, MDBM. Figure 2 shows the project location and aerial photo of the site.

The project is located solely within the jurisdiction of Kern County, in two Zone Maps (Zone Map 80, and Zone Map 81). The project site is zoned Exclusive Agriculture (A). A portion of the project site is within the Kern County General Plan, designated as Map Code 8.1 (Intensive Agriculture), and a portion of the project site is within the Metropolitan Bakersfield General Plan, designated R-IA (Intensive Agriculture).



Source: Kern County 2022.

Figure 1 Vicinity Map



Source: Kern County 2022.

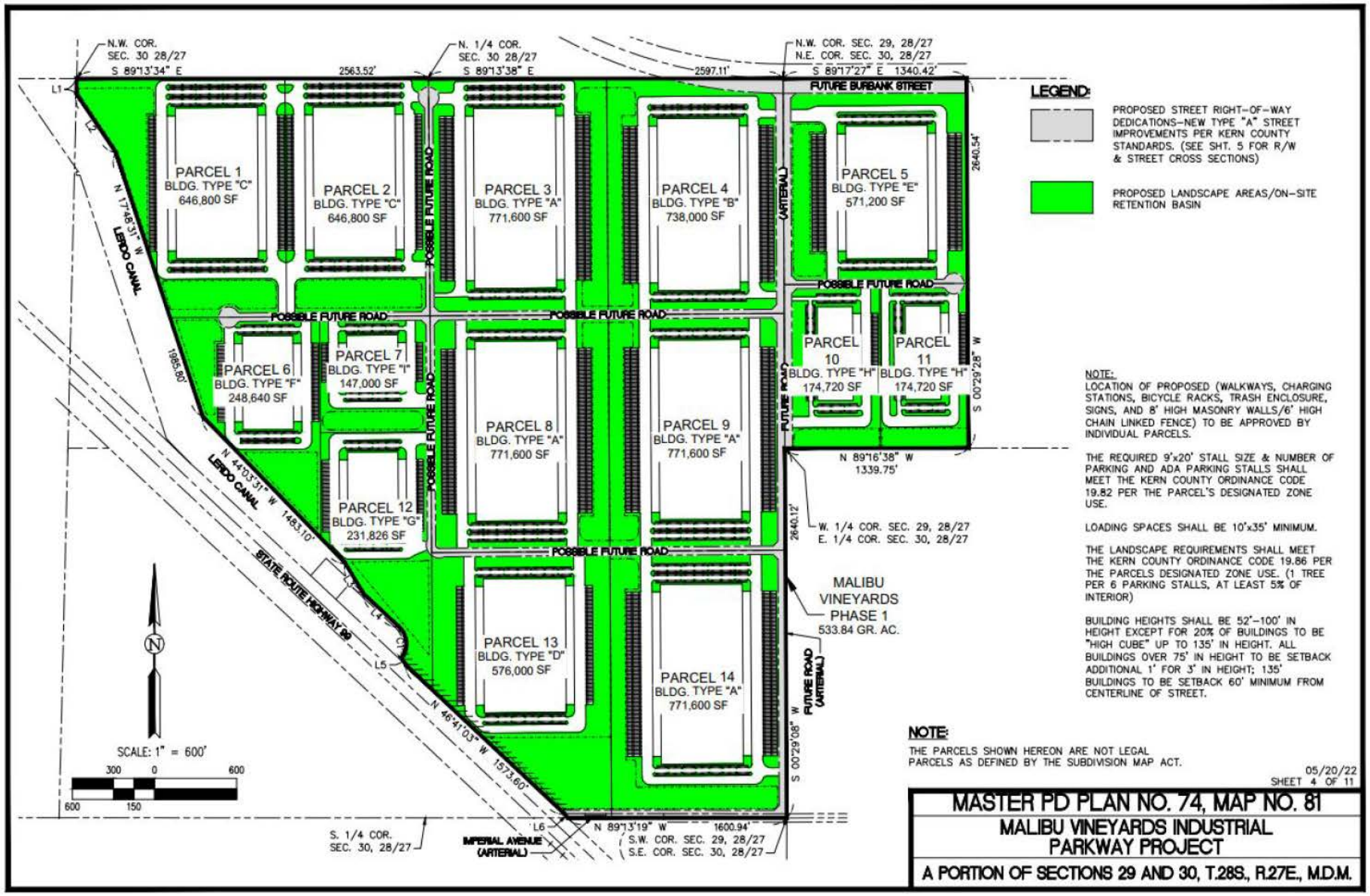
Figure 2 Project Location

1.3 PROPOSED PROJECT

The proposed Malibu Vineyards Industrial Parkway Project (proposed project) involves the development of approximately 8,907,446 square feet (sf) of industrial use space on approximately 739 acres of existing vineyard. The project is proposed by Malibu Vineyards, L.P. (project proponent), and would be developed over two phases, as described above. The industrial park would consist of 22 industrial (warehouse) buildings and additional mini warehouses, with associated office space and truck docks, parking, and access roads.

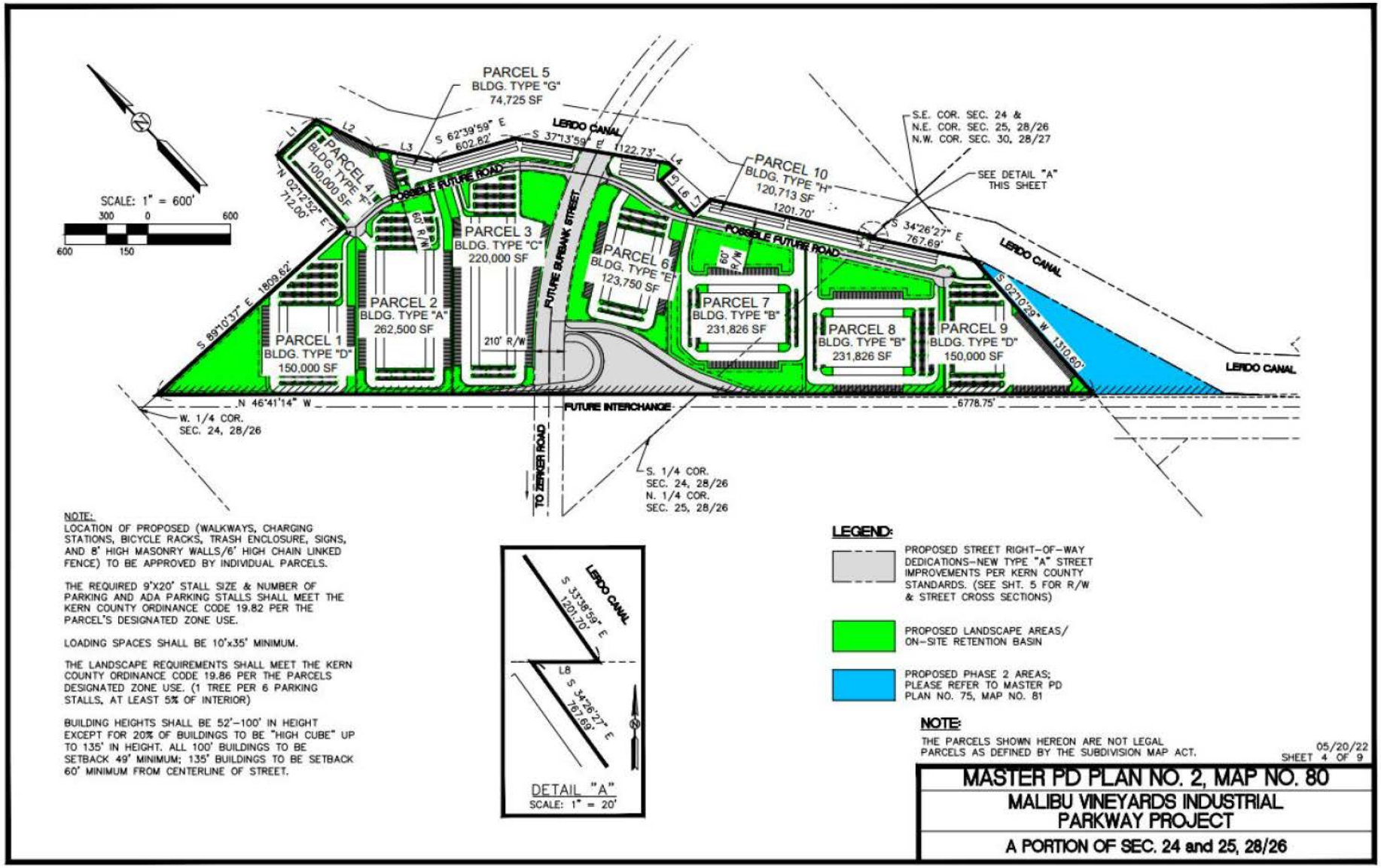
Phase 1 involves development of 14 buildings totaling up to 7,242,106 square feet of warehouse and office space (7,169,686 sf of warehouse and 65,952 sf of office) on approximately 534 acres. Phase 1 would also include 6,439,657 sf of landscape area. Phase 2 involves development of 8 buildings and additional mini warehouses totaling up to 1,665,340 sf of warehouse and office space (1,559,588 sf of warehouse and 16,653 sf of office), on approximately 205 acres. Phase 2 would also include 1,969,669 square feet of landscape area. Of the total 8,907,446 sf of industrial warehouse and office use space, up to 25 percent, or approximately 2,226,862 sf, would consist of refrigerated warehouse space. The project phasing plans are depicted in Figures 3 and 4.

The project site is generally lacking in domestic utilities, which would need to be developed in conjunction with the proposed project. Water service is proposed to be provided by Oildale Mutual Water Company (OMWC). Off-site improvements would include extension of OMWC's 6-inch domestic water line and 12-inch non-potable water line from Quinn Road along Imperial Avenue to the southeast corner of the proposed project. Before OMWC could provide water service to the project site, OMWC would need to annex the project area into its service area. The proposed annexation would involve the entirety of the approximately 739-acre project site and would need to be considered and approved by OMWC and the Kern County Local Agency Formation Commission.



Source: Kern County 2022.

Figure 3 Site Plan, Phase 1



Source: Kern County 2022.

Figure 4 Site Plan, Phase 2

1.4 DESCRIPTION OF THE SERVICE AREA

The project area is currently within the service boundaries of two water districts – phase 1 is within Cawelo Water District (Cawelo) and phase 2 is within the North Kern Water Services District (North Kern WSD). The Malibu Vineyards Industrial Parkway Project is proposed to be served by OMWC, which would need to annex the project area within its service boundary. Each of the water districts service areas is described below.

1.4.1 Cawelo

Cawelo encompasses an area of 45,724 acres, located in the north-central portion of Kern County, between U.S. Highway 99 on the west and State Highway 65 on the east, Oildale on the south and the community of McFarland on the north (Cawelo 2021). Figure 5 shows the current Cawelo service area. Cawelo was formed in 1965 under the provisions of Division 13 of the Water Code of the State of California for the purpose of obtaining water supplies to supplement the pumping of groundwater for irrigation. Cawelo provided a public entity for entering a contract for the importation of supplemental surface water from the State Water Project (SWP) through the Kern County Water Agency (KCWA). In addition to SWP supplies, other water sources include the Kern River, the Friant Division of the Central Valley Project (CVP), Poso Creek, and water recycled from local oil extraction operations. These sources of supply have been used to supplement groundwater pumped in Cawelo. (Cawelo 2021)

1.4.2 North Kern WSD

North Kern WSD is located west of U.S. Highway 99, southwest of the City of McFarland, northwest of the City of Bakersfield, and east of the cities of Shafter and Wasco. Most of the service area lies north of Seventh Standard Road, with the RRID areas lying south of Seventh Standard Road. (North Kern WSD 2021). Figure 6 shows the current North Kern WSD service area.

The North Kern WSD service area comprises two service areas totaling approximately 60,000 acres – a surface water service area (Class 1) and a groundwater service area (Class 2), each comprising about one-half of the North Kern WSD's area. North Kern WSD delivers surface water and/or pumped groundwater to satisfy all of the irrigation water requirements of the surface water service area. The remaining one-half of the North Kern WSD principally relies on groundwater pumped through the use of on-farm wells. North Kern WSD owns and operates about 100 wells, and approximately 200 privately-owned wells in the Class 2 service area are used to meet irrigation demands in this part of the service area. Delivery of surface water and groundwater in North Kern WSD is accomplished through a network of largely unlined canals; however, the system also includes some pipelines and lined canals. North Kern WSD's principal supply artery, and the most upstream of its two points of diversion from the Kern River, is the Beardsley-Lerdo system. (North Kern WSD 2021).

The irrigated acreage within North Kern WSD is approximately 55,000 acres, consisting largely of deciduous fruits and nut crops, with some lands containing field crops, pasture, and grain and hay crops. The irrigated acreage for North Kern WSD also includes approximately 9,500 acres of the Rosedale Ranch Improvement District (RRID) to supply surface water to lands under cultivation. North Kern WSD also services those portions of the City of Shafter that are still classified as agricultural, while the land that has been converted to urban use is serviced by OMWC. (North Kern WSD & SWID 2022)

1.4.3 Oildale Mutual Water Company

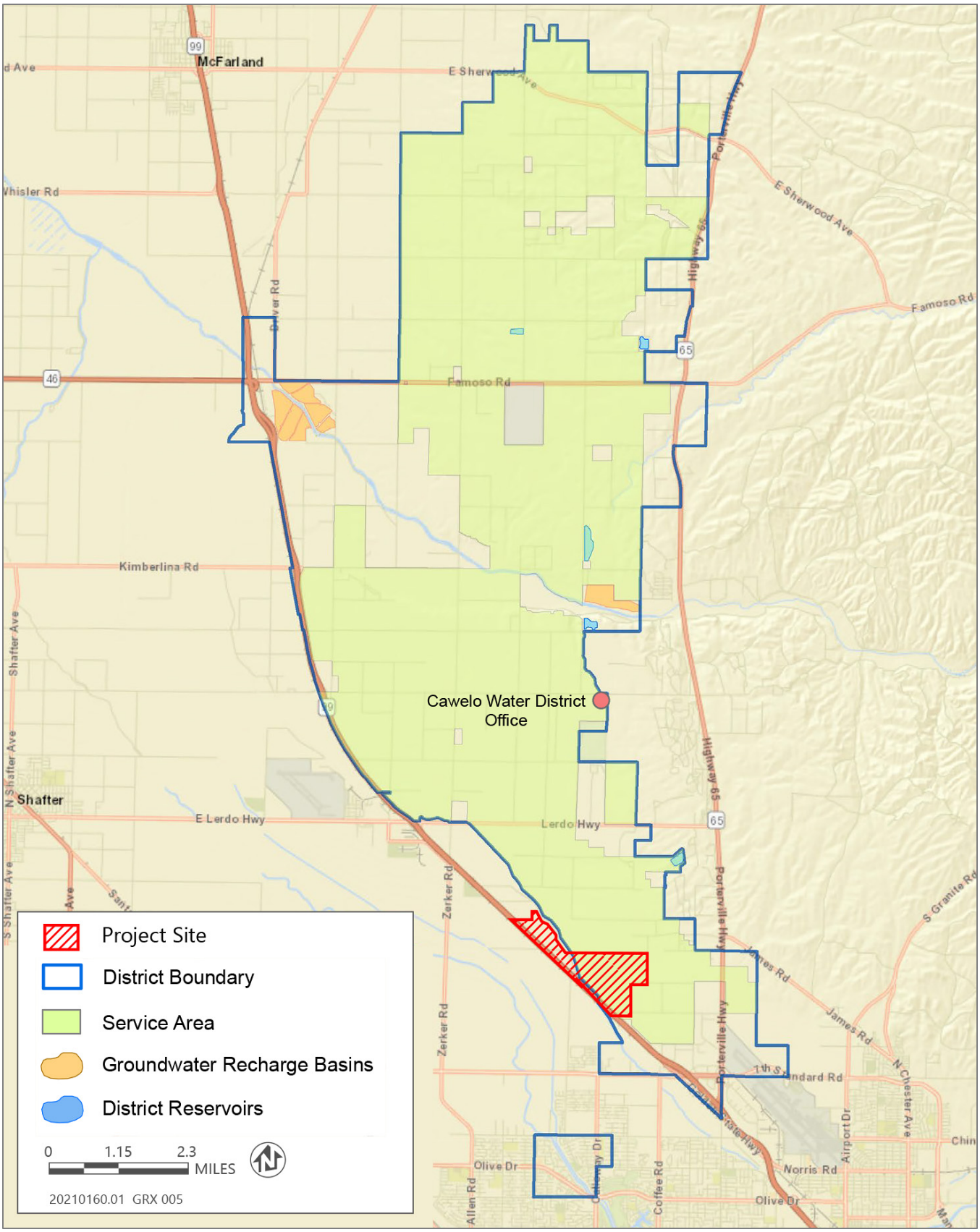
The OMWC service area encompasses approximately 16,851 acres (approximately 26.3 square miles) north of the City of Bakersfield in Kern County at the south end of the San Joaquin Valley. The Kern River is the southern boundary. The west boundary generally follows CA 99 and its frontage road north of the Kern River to Merle Haggard Drive (previously Seventh Standard Road) where it turns westerly to follow Merle Haggard Drive approximately five miles to Rudd Road. It then turns northerly approximately 1.5 miles. There it turns easterly and intersects the Kern River

Oilfield, then turns southward to return to the Kern River generally parallel to and easterly of Manor Street. (OMWC 2022) Figure 7 shows a map of the current OMWC water system service area boundary.

OMWC was incorporated in October 1919 for the purpose of providing domestic water to its customers/stockholders at cost. The water service is primarily domestic with some commercial, industrial, and landscape irrigation customers. OMWC supplies potable water to a population of approximately 37,726 residents in North Bakersfield. The sources of potable water for the system are from pumped groundwater wells that are owned and operated by OMWC and also from the wholesale water supplier, North of the River Municipal Water District (NORMWD). All water customers are considered urban, and the Company does not supply water to any commercial agricultural operations. Cawelo and North Kern WSD provide water for irrigation and crops in OMWC's service area and in the surrounding area. (OMWC 2022)

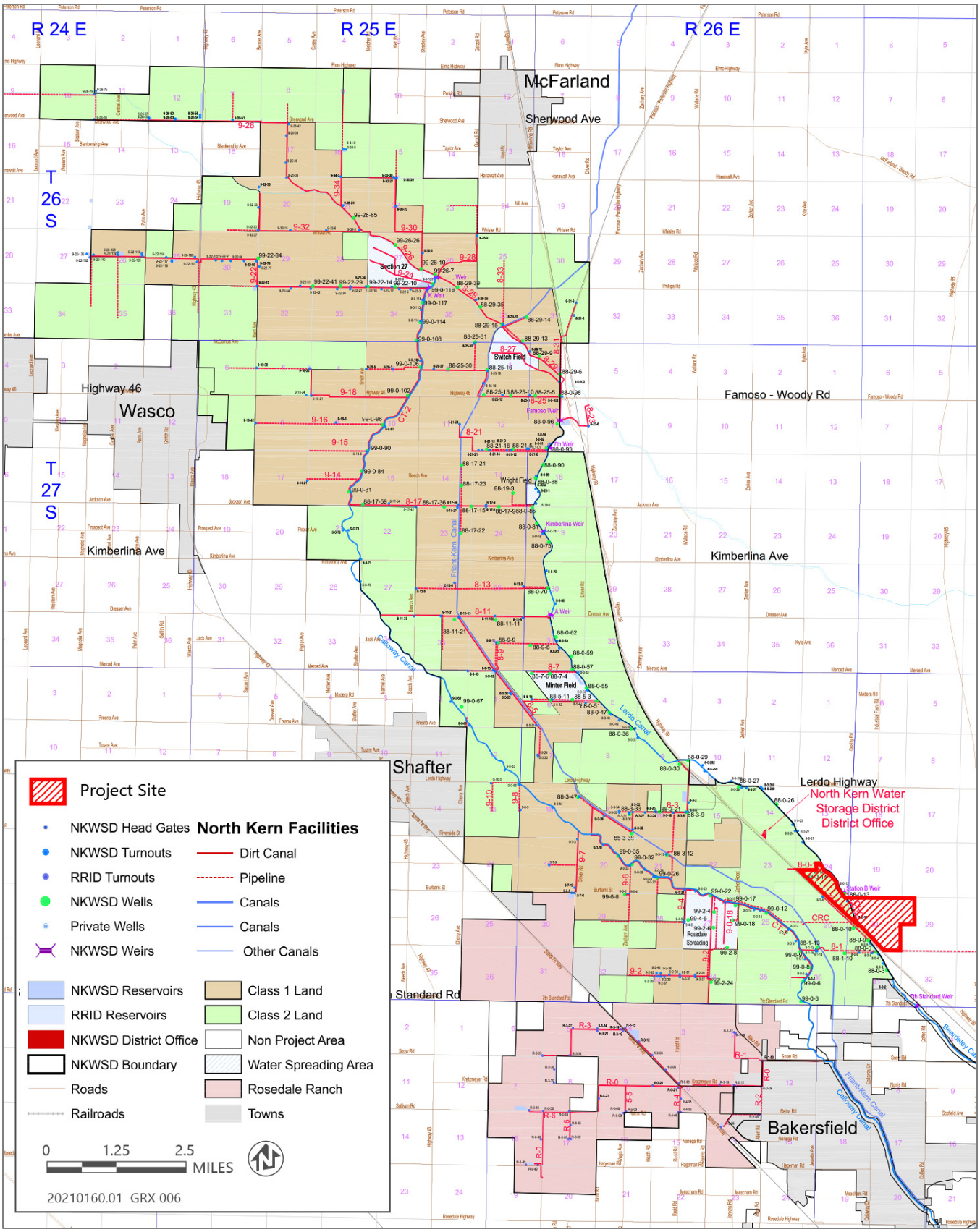
In 2006 OMWC expanded its service area boundary to include Southeast Shafter. This area includes approximately 5,226 acres of agricultural land that is being developed over the next twenty years and is currently in the process of rapid development. OMWC currently serves approximately 1,000 single family residential homes in Southeast Shafter, and it is anticipated that the number of services will continue to increase over the course of the next 5 to 10 years as the demand for new housing continues to remain strong. (OMWC 2022)

In 2014, OMWC merged the retail portion of NORMWD's service area into OMWC's service area. This resulted in an increase of 2,095 single family residential units. The number of connections reported in the 2010 UWMP was 8,110. The addition of the above areas together with residential infill, brings the total number of services to 11,693 (OMWC 2022).



Source: Cawelo 2022.

Figure 5 Cawelo Water System Service Area



Source: North Kern WSD 2022a.

Figure 6 North Kern WSD Service Area

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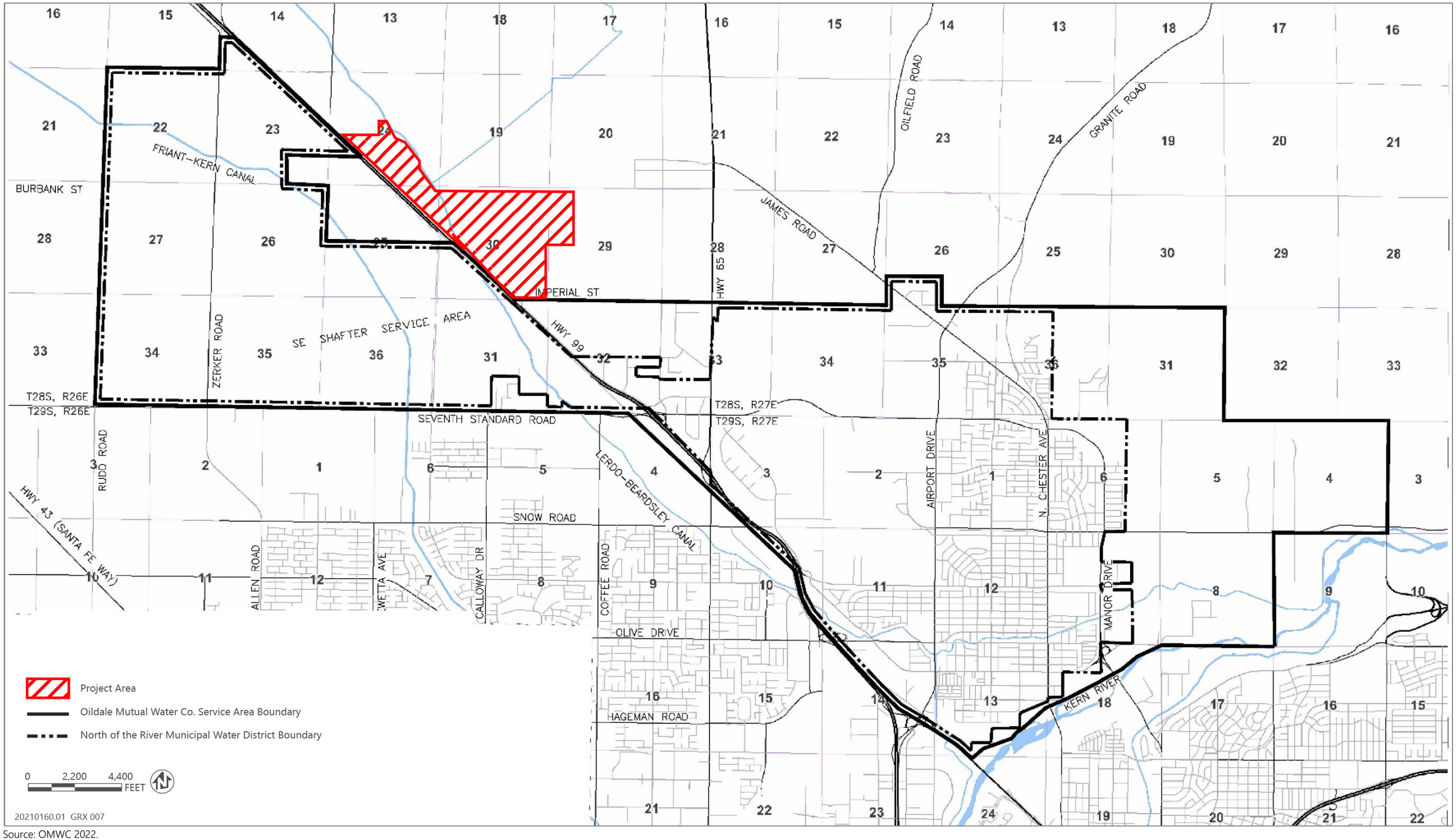


Source: OMWC 2022.

Figure 7 OMWC Water System Service Area

2 WATER SUPPLY ASSESSMENT

Water Code Sections 10910 – 10912 require land use lead agencies: 1) to identify the responsible public water purveyor ("public water system"), if any, for a proposed development project, and 2) to request from the responsible purveyor a WSA. The code states that where a city or county supplies water to its own constituents, the city or county must prepare its own WSA. As noted earlier, the purpose of the WSA is to assess the sufficiency of the purveyors' water supplies to satisfy the water demands of the proposed development project, while still meeting the current and projected water demands of existing customers. Water Code Sections 10910 – 10915 delineate the specific information that must be included in the WSA.

2.1 SCOPE OF WATER SUPPLY ASSESSMENT

This WSA discusses historic water supplies, current water supplies, and additional sources of supply that will be available to serve planned future growth. This information is presented consistent with the requirements of Senate Bill (SB) 610 and as detailed in the Water Code Section 10910 – 10912, and includes:

- Description of existing and projected water demand.
- Description of existing and projected water supply sources including:
  - Groundwater basins, surface water and other sources.
  - Opportunities for exchange or transfers of water on a short-term and long-term basis.
  - Any plans to acquire additional water supplies.
- Assessment of the availability of existing and projected water supply sources during normal, single-dry, and multiple-dry years within a 20-year projection.

This WSA is structured in way that clearly shows which portion of the Water Code Section is being satisfied by stating the section number and title. Additional information is provided where it is useful in the understanding of the proposed Project, its water demands, and its water supplies. This WSA contains information derived from several sources, including those listed in Chapter 4, "References".

2.2 EXISTING WATER ALLOCATION

The project site is currently agricultural land. Estimates of existing water allocations for the agricultural use are shown in Table 1 which were provided by Cawelo and North Kern WSD for Phases 1 and 2 of the project areas, respectively. As shown in the table, the Phase 1 site is allocated approximately 641 acre-feet per year (AFY) and the Phase 2 site is allocated approximately 615 AFY under current agricultural conditions.

Table 1 Summary of Existing Water Allocation

Project Phase	Site Area (acres)	Water Demand Factor (Agriculture)	Estimated Existing Water Allocation (AFY)
Phase 1	534	1.2 af/ac[1]	641
Phase 2	205	3.0 af/ac[2]	615
Total			**1,256**

Notes:

[1] Water demand factor of 1.2 acre-feet per acre for agricultural uses in Cawelo (Ansolabehere, pers. com., 2021).
[2] Water demand factor of 3 acre-feet per acre for agricultural uses in North Kern WSD (Hampton, pers. com., 2021).

2.3 PROPOSED PROJECT WATER DEMAND

To calculate projected water demands of the project, water use assumptions were used for each land use type based on the Final Water Demand Factor Study, prepared for the City of Ventura (City of Ventura 2020). Absent specific demand factors backed by evidence in the project area, this study serves as a reasonable reference point because it looked at water demand for many different land use types across a wide range of California water agencies, including the Cities of Ventura, Santa Barbara, San Luis Obispo, Thousand Oaks, and Oxnard, and Santa Margarita Water District, Irvine Ranch Water District, and Ventura County Waterworks District Number 8 (Simi Valley) (City of Ventura 2020). Table 2 provides a summary of the comparable land use and water demand factor. Based on these water demand factors, the project would use approximately 526,895 gallons per day, or approximately 591 AFY. This is a reduction of 665 AFY, which is less than half of the 1,256 AFY that is allocated for current agricultural operations. The Phase 1 demand equates to 0.91 acre-feet per acre (AF/ac) and Phase 2 demand equates to 0.52 AF/ac.

Table 2 Summary of Projected Water Demand

Project Component	Square Footage	Comparative Land Use Type (Water Demand Factor)	Estimated Water Demand
Phase 1			
Warehousing/Mini-Warehouses	7,169,686	Industrial Light[1] (60 gpd/ksf)	430,181
Office Space	65,952	Office (38 gpd/ksf)	2,506
		Phase 1 gpd	432,687
		Phase 1 AFY	485
		Phase 1 AF/ac	0.91
		Net Difference (Proposed – Existing Allocation)	-156 AFY
Phase 2			
Warehousing/Mini-Warehouses	1,559,588	Industrial Light[1] (60 gpd/ksf)	93,575
Office Space	16,653	Office (38 gpd/ksf)	633
		Phase 2 gpd	94,208
		Phase 2 AFY	106
		Phase 2 AF/ac	0.52
		Net Difference (Proposed – Existing Allocation)	-509 AFY
Total			
		Total gpd	**526,895**
		Total AFY	**591**
		Net Difference (Proposed – Existing Allocation)	**-665 AFY**

Notes: gpd=gallons per day; ksf=thousand square feet

[1] Due to the extreme variability in water use between industrial customers and the uncertainty of which kind of industrial activities may be proposed in the future, a recommended demand factor for industrial use is not included in the source report (City of Ventura 2020). The demand factor provided is consistent with values used by Irvine Ranch Water District, which were compiled in the City of Ventura Water Demand Factor Study (City of Ventura 2020).

Source: City of Ventura 2020.

2.4 SECTION 10910(A)

Determine if a proposed project is subject to California Environmental Quality Act (CEQA)

Kern County, the CEQA Lead Agency, has made the determination that the proposed Malibu Vineyards Parkway Project is subject to CEQA, and that an environmental impact report is the appropriate level of review to consider approval of the project.

2.5 SECTION 10910(B)

Identify responsible public water system that will or may supply water to the proposed project

OMWC intends to supply water to the proposed project. However, the sources of water would be allocated from Cawelo and North Kern WSD, for Phases I and II, respectively. The potable water would be from pumped groundwater wells that are owned and operated by OMWC and also from the wholesale water supplier, NORMWD. (OMWC 2022)

Off-site improvements would include extension of OMWC's six-inch domestic water line and 12-inch non-potable water line from Quinn Road along Imperial Avenue to the southeast corner of the proposed project. To facilitate water service, OMWC would need to annex the 739-acre project area into its service area. The proposed annexation would involve approximately 534 acres from Cawelo and approximately 205 acres from NKWSD for Phases 1 and 2 of the project, respectively. The annexation would need to be considered and approved by OMWC and the Kern County Local Agency Formation Commission (LAFCO). (Kern County 2022)

2.6 SECTION 10910(C)(1)

Determine if the most recent Urban Water Management Plan (UWMP) includes projected water demand associated with the project

The most recently adopted UWMP for OMWC is the 2020 OMWC UWMP, which was adopted by the OMWC Board of Directors on June 21, 2022. The UWMP does not include the proposed project's projected water demands.

2.7 SECTION 10910(C)(2)

If demands are included in most recent UWMP; incorporate information from the UWMP in the WSA

As noted above under Section 2.6, the most recent UWMP does not include the project.

2.8 SECTION 10910(C)(3)

If demands are NOT included in most recent UWMP, discuss *existing* system's water supplies available during normal, single dry, and multiple dry years during a 20-year projection to meet project demands, existing system and planned future uses; and Section 10910(c)(4) Discuss *projected* water supplies available during normal, single dry, and multiple dry years during a 20-year projection versus projected water demand including existing system, and planned future uses

2.8.1 Water Supply

OMWC WATER SUPPLIES

OMWC's sources of water supply include both groundwater wells and treated surface water supplied to its service area from the KCWA Improvement District No. 4 (ID4) Henry C. Garnett Water Purification Plant. OMWC currently operates five existing wells with a pumping capacity of about 7,500 gallons per minute (gpm) or about 4,033 AFY assuming the five wells are running for approximately 8 hours per day. Over the past five years of operation, groundwater extraction has averaged 584.9 AFY with a high of approximately 774 AFY. (OMWC 2022) The current groundwater supply available to OMWC is approximately 8,500 acre-feet per year, which is pumped from the Kern County Subbasin (DWR Basin No. 5-022.14) of the San Joaquin Valley Groundwater Basin (OMWC 2022). However, the project site is located outside of the boundaries of the ID4 service area and would not be served by existing OMWC groundwater allocations. Therefore, allocations of water supply to serve the proposed project site would need to be provided by Cawelo and North Kern WSD for phases 1 and 2, respectively.

CAWELO WATER SUPPLY

Water supply for the Cawelo GSA is from groundwater, local surface water from Poso Creek, imported water (State Water Project, Kern River, and Federal Central Valley Project), treated-produced water, and conjunctive use programs (Cawelo, 2022).

Groundwater

Groundwater in the Cawelo GSA is pumped from the underlying Kern County Subbasin, covering approximately 2,800 square miles and containing more than 40,000,000 acre-feet (AF) of groundwater in storage. The local aquifer system is replenished by percolation of overlying surface water and precipitation, groundwater inflow originating primarily from the uplands to the east, agricultural irrigation return flow, and CWD groundwater recharge and water banking programs. (Cawelo, 2022)

Most groundwater pumping within Cawelo is attributable to on-farm pumping. Cawelo maintains and operates 16 deep wells to supplement deliveries of surface water as needed. In years when the availability of imported surface water is limited, local landowners pump groundwater from privately-owned wells consistent with Cawelo's conjunctive management strategy. There are 10 small water systems in the Cawelo GSA that utilize groundwater supplies. In addition, rural domestic and commercial locations use privately-owned wells for groundwater supply. (Cawelo, 2022)

Imported Water

The primary source of surface supply for Cawelo is its allocation of State Water Project (SWP) water through the Kern County Water Agency (KCWA), the local SWP contractor. SWP water is diverted from the California Aqueduct and conveyed through the Cross Valley Canal and delivered to Cawelo via the Beardsley-Lerdo Canal. Cawelo has a contract for 38,200 AF per year (AFY) with KCWA but does not receive the full amount due to shortages in SWP supplies. Water supplies available from the SWP are governed by watershed precipitation, snow melt runoff, and other regulatory factors. Accordingly, CWD receives an annual allocation. SWP allocations are variable, with frequent shortages, and can be quite limited in a dry year such as 2014, 2021, and 2022. In a year when the SWP water supply is less than the total CWD contract amount, each water user is allocated a pro-rated share of the total. Historically, Cawelo has received an annual Article 21 allocation of approximately 6,800 AF; however, due to restrictions on pumping water from the Delta, Article 21 water has become less available to CWD and other districts over time. (Cawelo, 2022)

Water from the Central Valley Project (CVP), operated by the U.S. Bureau of Reclamation (USBR), used within the Cawelo GSA is Section 215 water, which is a temporary supply of CVP water made available in large water supply years. While Cawelo is not a long-term CVP contractor, the USBR at times has made annual contracts available to non-CVP contractors for purchase and diversion of Section 215 supplies. These are generally un-storable and unmanaged flood flows of short duration, and their availability depends on hydrologic conditions of the San Joaquin River and diversions from the Friant-Kern Canal. (Cawelo, 2022)

Given recent completion of the Calloway-to-Lerdo Intertie and the Friant-Kern Canal connection, Cawelo is now capable of receiving CVP Section 215 deliveries and other exchanges directly from the Friant-Kern Canal. In previous years, Cawelo purchased, on average, about 27,000 AFY of Kern River water from the City of Bakersfield that was delivered to Cawelo via the Lerdo Canal. The basic delivery schedule under this contract, which is no longer a reliable supply, called for 2,700 AF per month to be delivered during March and April, and 5,400 AF per month during May through August. The contract also made available for sale "miscellaneous water" which occasionally was available in addition to the contract amount. Cawelo has been in discussions with the City of Bakersfield to reach a new agreement for the diversion of Kern River water. (Cawelo, 2022)

Surface Water

Poso Creek traverses the Cawelo GSA about midway between the District's northern and southern boundaries. Poso Creek originates in the Southern Sierra Nevada and flows westward across Cawelo. Cawelo currently monitors Poso Creek at Trenton Weir near State Highway 65. The annual flow at this site has exceeded 120,000 AF, but many years it

has little to no flow. While flows are variable, some Cawelo landowners do occasionally exercise their riparian rights to divert water from Poso Creek. (Cawelo, 2022)

In 2000, Cawelo was issued a permit to divert water from Poso Creek for beneficial use at a rate of approximately 110 cubic feet per second (cfs), with the volume limited to 30,000 AF between November 1 and June 14 of the following year. An agreement between Cawelo, North Kern WSD, and Semitropic Water Storage District allocated the first 135 cfs of Poso Creek flow (as measured at the State Highway 65 gaging station) to Cawelo. (Cawelo, 2022)

The Kern River flows within and along the southern boundary of the Eastern Extension Areas of the Cawelo GSA. The Kern River originates in the Southern Sierra Nevada and flows westward across the southern portion of the Eastern Extension Area. Several stream flow gages are located on the Kern River; the United States Geological Survey (USGS) operates several gages upstream of the City of Bakersfield and flow data on the River has been collected since the 1890s. (Cawelo, 2022)

Treated Produced Water

"Produced Water" refers to water entrained in oil as oil is extracted from the ground. "Treated Produced Water" refers to water removed from the extracted oil, which is subsequently treated for beneficial reuse or reinjection. Cawelo purchases up to 36,000 AFY of treated produced water from local oil extraction operations including Chevron USA Inc. (Chevron) and California Resources Corporation (CRC) (formerly Valley Water Management Company). The treated produced water is pumped to Cawelo Reservoir B through separate pipelines from the Kern River and Kern Front Oilfields. This water is treated to conform with the Central Valley Regional Water Quality Control Board's

(CVRWQCB) waste discharge requirements and is blended with water from other sources before delivery to the Cawelo's water users where it is used for both irrigation and groundwater recharge in banking projects. Supplies from this source are dependent on local oil production because the water is entrained in oil as it is produced. In recent years, the total delivery of treated produced water has ranged between 20,000 and 37,000 AF. The volume of treated produced water will fluctuate with oil production and long-term availability cannot be predicted. (Cawelo, 2022)

NORTH KERN WATER SUPPLY

North Kern WSD primarily receives water through supplemental or imported surface water sources using their contract for Kern River water. The surface water brought in through contracts is used to meet agricultural crop demands. Non-contract water is predominately banked in the Subbasin but is also used for meeting agricultural crop demands (i.e., in-lieu recharge). Native sources such as streambed infiltration are considered minimal. Supplemental water sources for North Kern WSD include water received from the Kern River, Poso Creek, Oilfield-Produced Water, CVP water and Water Banking Leave-Behind Water. Other sources of water include wastewater recycled from the cities. (North Kern WSD & SWID 2022)

Kern River

The Kern River is approximately 164 miles long and is fed by annual snowmelt from the Southern Sierra Nevada, including Mount Whitney. The Kern River originates high in the Sierra Nevada and drains approximately 2,100 square miles of watershed area above Lake Isabella, another 300 square miles of the foothills below Lake Isabella, and about 600 square miles of alluvial fan in the Kern River Canyon. The Kern River had an unregulated flow until 1954, when the Isabella Dam and Reservoir were constructed by the U.S. Army Corps of Engineers. The primary purpose of the dam is flood control. Lake Isabella was designed to store approximately 570,000 acre-feet of water; water storage in the Lake has been limited to approximately 60 percent of capacity since 2006 due to seepage and earthquake concerns, at 340,860 total af. The U.S. Army Corps of Engineers and Kern River Watermaster operate the Isabella Dam and Reservoir, which regulates the flow of the Kern River. (KCWA 2021a).

The Kern River is the primary source of water to North Kern WSD and the metropolitan Bakersfield area and is conveyed from the River into the North Kern WSD through the Calloway Canal and the Beardsley Canal. North Kern WSD receives Kern River water through several contracts: the 1952 Agreement, the Kern Delta Settlement Agreement, and the City of Bakersfield Extension Contract (including the Kern River Canal and Irrigating Company supplies) (North Kern WSD & SWID 2022). The 1952 Agreement was established on January 1, 1952, between North Kern WSD

and the Kern County Land Company (KCLC), which provided North Kern WSD with rights in perpetuity to use all water accruing under certain Kern River water rights for the purposes of irrigation, stock watering, and underground replenishment. The City of Bakersfield (City) is the successor in interest to the KCLC with respect to the 1952 Agreement. On August 20, 2008, the North Kern WSD and City entered into Amendment No. 1 to the 1952 Agreement. This Amendment provides that the North Kern WSD may use waters diverted from the Kern River pursuant to the Agreement, whether by surface delivery or recharged as underground water replenishment for M&I purposes, otherwise known as nonagricultural water demands, provided the North Kern WSD pay the City annually for each acre-foot of Kern River water delivered for M&I uses $311 (as indexed) per gross acre-foot of all M&I water delivered or retailed. (North Kern WSD 2022b)

CVP Water

North Kern WSD occasionally diverts water from the Friant-Kern Canal during wetter years, either through temporary contracts with the USBR (e.g., Section 215), or more frequently through water banking and exchange programs with CVP contractors. Historically Section 215 water has been available infrequently and for short durations to non-long-term contractors such as North Kern WSD. (North Kern WSD & SWID 2022)

Exchange and Transfer Program

North Kern WSD participates in a water transfer and exchange program.

Poso Creek

Historically, Poso Creek flows have reached California Highway 99 in about two of every five years. Starting in 1997, the use of Poso Creek water has been governed by an agreement between North Kern WSD, Cawelo, and Semitropic Water Storage District, who collectively share the runoff of Poso Creek. Under this agreement, North Kern WSD receives flows between 135 cfs and 300 cfs and when Poso Creek is flowing at greater than 685 cfs. (North Kern WSD & SWID 2022)

Oilfield-Produced Water

In 2015, NKWSD entered into an agreement with the California Resources Corporation (CRC) for the delivery of oilfield-produced water from their Kern Front Oilfield operations. The agreement defined a minimum annual quantity of 11,700 AF and a maximum annual quantity of 21,200 AF. While the term of the agreement extends through 2035, it only provides for delivering the minimum quantity through 2025. In the first (partial) year of the agreement in 2015 North Kern WSD received approximately 2.2 TAF of oilfield-produced water. (North Kern WSD & SWID 2022)

Water Banking Leave Behind

North Kern WSD imports water for other districts as banked water. Of the banked water the district keeps a portion of "leave-behind" water, typically of 10 percent, whereas the rest is returned to the participating agency at a later another period. (North Kern WSD & SWID 2022)

Precipitation

Precipitation is a source of inflow into the North Kern WSD. Through the coordination with all the member agencies of Kern Groundwater Authority (KGA), it was estimated that the average precipitation for the area is 0.42 AF/acre per year. (North Kern WSD & SWID 2022)

Inflow to the Groundwater System

Inflow to the groundwater system occurs, but is not quantified in water budgets due to the absence of reliable data. (North Kern WSD & SWID 2022)

Urban Recovery

The City of McFarland has a wastewater treatment (WWTP) located in North Kern WSD. The effluent from the WWTP is applied to agricultural land for beneficial reuse as irrigation water for permanent tree crops in proximity to the WWTP. The annual WWTP influent volume ranges from approximately 1,600 AF to 2,200 AF, for an average WWTP influent volume of 1,700 AF. The McFarland WWTP has an average recycling rate of 64 percent, with the annual recycled water volume ranging from 1,100 AF to 1,200 AF. (North Kern WSD & SWID 2022)

CITY OF BAKERSFIELD WATER SUPPLY

As discussed above, North Kern WSD receives supplies of Kern River Water from the City pursuant to the 1952 Agreement, as amended. The City's water supply includes a Domestic Water System and a Wholesale Water System. The Domestic Water System is a retail water supplier managed by the City's Water Resources Department and operated under a service contract with California Water Service (Cal Water). The City's Wholesale Water System is operated by the City's Water Resources Department, which oversees the City's Kern River water rights and water supplies.

The Wholesale Water System provides groundwater recharge of Kern River water supplies both by transportation through the Kern River and unlined portions of the Carrier Canal and within groundwater replenishment areas such as the City's 2800 Acres recharge facility, Truxtun Lakes, Aera Park, and the Park at Riverwalk. The City's Kern River water supplies for both urban use and agricultural use average about 135,000 AFY. Approximately 100,000 AF of the 135,000 AF is designated for urban use. The City has storage rights in Lake Isabella that allows for flexibility in the management of its Kern River supplies. (City of Bakersfield, 2021)

Kern River water supplies are either delivered to surface water treatment plants for subsequent use by retail water suppliers within the City area or are replenished to the groundwater basin for the benefit of the City and other retail water suppliers through their respective groundwater wells. These supplies are pumped by the overlying retail water suppliers for use within their respective service areas. A volume of 77,528 AF of Kern River surface water was delivered through the Wholesale Water System during 2020, which is summarized in Table 3 below.

Table 3 Wholesale Actual Supply for Potable and Non-Potable Water (2020)[1]

Use Type	Additional Description	Volume (AFY)
Sales to other agencies	Cal Water Northeast Treatment Plant	11,124
Sales to other agencies	Cal Water Northeast Treatment Plant	5,918
Other potable	KCWA ID4 Henry C. Garnett Water Purification Plant	7,380
Groundwater recharge	River and Carrier Canal Recharge	53,106
	Total	**77,528**

Source: City of Bakersfield, 2021, Table 4-1

Notes:
[1] Represents actual deliveries of water to the various agencies in 2020 and may not represent overall demands within the Wholesale Water System.

Water demands are anticipated to increase in proportion to population growth. Water demands in the Wholesale Water System for delivery to surface water treatment plants and groundwater recharge are projected to total 100,000 AFY. Water demand projections for the City's Wholesale Water Service for the years 2025 through 2040 area are provided in Table 4 below. The City's projected water usage estimates are expected to adequately address climate change impacts through 2040. (City of Bakersfield, 2021)

Table 4 Projected Wholesale Demands for Potable and Raw Water (2025 – 2040)

		Volume (AFY)			
Use Type	Additional Description	2025	2030	2025	2040
Sales to other agencies	Cal Water Northeast Treatment Plant	22,400	44,800	44,800	44,800
Sales to other agencies	Cal Water Northwest Treatment Plant	9,000	9,000	9,000	9,000
Other potable	KCWA ID4 Henry C. Garnett Water Purification Plant	6,500	6,500	6,500	6,500
Groundwater recharge	River and Carrier Canal Recharge	62,100	39,700	39,700	39,700
	Total	**100,000**	**100,000**	**100,000**	**100,000**

Source: City of Bakersfield, 2021, Table 4-2

Optimization of the City's Kern River supplies is identified as a Phase One project in the Kern River Groundwater Sustainability Agency (KRGSA) Groundwater Sustainability Plan (GSP) (KRGSA, 2022). The project involves the full use of the City's available Kern River entitlement and is proposed to be implemented over time so that it can be adjusted

as needed to meet changing conditions. The City's Kern River supplies will be delivered as a first priority to meet demands of the surface water treatment plants with the remaining supplies being recharged to the groundwater basin through the Kern River channel, the 2800 Acres recharge facility, and other City facilities. (City of Bakersfield, 2021)

Additional Kern River supplies may become available to the City through an Application to Appropriate Water filed with the California State Water Resources Control Board (SWRCB). The Kern River was designated with Fully Appropriated Status (FAS) by the SWRCB in 1964. However, in February 2010, SWRCB issued an order revising the status of the Kern River, finding that the river was no longer fully appropriated. In anticipation of this action, the City filed an application with the SWRCB to obtain rights to the surplus, unappropriated, and available water in the Kern River. (City of Bakersfield, 2021)

The City's intended use of unappropriated water is to have it remain in the Kern River watercourse to support multiple reasonable and beneficial uses, including domestic purposes, municipal and industrial uses, protection of the public interest, environmental purposes, streamflow restoration, constructed wetlands, recreational uses, fish and wildlife restoration, underground aquifer supply, aquifer water quality enhancement, and underground water banking for drought and other emergencies. The SWRCB has not taken action regarding the allocation of surplus, unappropriated Kern River supplies. It is anticipated that this water may be allocated in about 10 to 15 years. If additional Kern River supplies are allocated to the City, they would become a part of the conjunctive use optimization project. (City of Bakersfield, 2021)

2.8.2 Water Supply Reliability

SUSTAINABLE GROUNDWATER BUDGET

Groundwater budgets are developed to quantify historical changes in the amount of groundwater in storage and to identify the amount of sustainable groundwater available for future use. In particular, reductions of groundwater in storage are estimated to assess the potential for undesirable results. The water budget analysis allows the response of the physical groundwater system to be correlated to current and historical groundwater use. This analysis also provides the foundation for identifying potential future deficits of groundwater based on future projections of surface water supplies and demands. A primary objective of the groundwater budget analysis is to quantify historical, current, and projected groundwater deficits so that management actions can be identified to mitigate undesirable results attributable to potential groundwater deficits. Groundwater budgets quantify inflows and outflows to the groundwater system and illustrate how these flows change over time. The annual difference between inflows and outflows represents the annual change of groundwater in storage beneath the Plan Area.

Current Baseline Water Budgets

All GSAs in the Subbasin coordinated and collaborated on the development of water modeling budgets (historical, baseline and projected). The Subbasin is estimated to have a total storage deficit of 324,326 AFY over the baseline period. (KGA 2022)

The Kern County Subbasin consists of many entities with land use or water management authority. While a majority of these entities are members of the KGA who have water management authority, they retain their local responsibility for compliance with SGMA. Cawelo GSA and North Kern WSD have their own management areas under the KGA GSP umbrella. Ultimately the members of the KGA have the responsibility to implement projects and management actions in the individual management area plans to achieve sustainability within their management areas. (KGA 2022)

The KGA has satisfied the requirements of a GSP through the commitment of each of its Member Agencies to the following actions (KGA 2022):

- Manage their respective management areas at or above their measurable objectives,
- Manage each management area to a water budget that will collectively eliminate the KGA Member Agencies' deficit by 2040, and
- Implement projects and management actions to address the deficit.

The KGA members developed a coordinated water accounting methodology. The result of that effort indicates a current baseline shortage/deficit for KGA members of -239,346 AFY. This reflects the difference between a total demand for KGA members of 1,489,171 AFY, and a total supply of 1,249,825 AFY. Each KGA member agency management area plan reflects their consistent management area water budget in their individual water budget sections. (KGA 2022)

Of the shortage/deficit of the KGA, Cawelo GSA's portion of the KGA shortage/deficit is 12,101 AFY – a difference in demand of 106,952 AFY and a water supply of 94,851 AFY (Cawelo GSA 2022). The North Kern WSD contributes a surplus of 20,389 AFY to the KGA's overall implied change in groundwater storage, which represents the difference between the demand of 174,930 AFY and a supply of 195,319 AFY. Accordingly, North Kern WSD would not be expected to have to reduce demand under "current" conditions. (North Kern WSD & SWID 2022)

Cawelo Water Budget

The Cawelo GSP identified an average hydrologic Study Period for purposes of the groundwater analyses in the basin-wide water budgets, which covers the period water year[1] (WY) 1995 through WY 2014 as the historical study period. This is coordinated and consistent with other GSPs in the Kern County Subbasin. This period covers, among other things, 10 years characterized as above normal or wet years and 10 years of below normal or dry years, including 4 critically-dry years. The recent period from WY 2015 through WY 2017 was used to represent current groundwater and surface water conditions in the GSP. (Cawelo 2022)

The water budget analysis is based on the local management operations that either recharge (inflow) or extract (outflow) groundwater. During the twenty-year historic period, Cawelo received almost two thirds on average of imported water from the Kern River and the SWP. Other sources of imported water include the Central Valley Project water and treated produced water, among other sources of water banked in the Cawelo GSA. (Cawelo 2022)

Because the proposed project would be served by groundwater, the information presented in this WSA focuses on Cawelo's groundwater budget. Groundwater extraction within the Cawelo GSA is predominantly for agricultural use. Private (unmetered) pumping for agriculture is about 78 percent of groundwater extraction occurring within the Cawelo Groundwater Sustainability Basin. During dry years, CWD pumps banked groundwater to supplement water deliveries for agriculture. Groundwater is also used at municipal and industrial facilities and domestic sites. (Cawelo 2022)

Groundwater inflows and outflows for the historic and current periods are summarized in Table 5. Irrigation return flow, part of percolation from the surface, is a consistent source of inflow to the Cawelo groundwater basin regardless of the water year type. Crop water requirements are met through precipitation and irrigation regardless of the water year type. Crops grown in Cawelo are predominantly permanent crops where the distribution change from year to year is small resulting in return flows that are similar each year. Natural recharge through stream and precipitation percolation, managed aquifer recharge, and groundwater banking are dependent on the amount of precipitation which influences surface water availability for natural or managed recharge. (Cawelo 2022)

[1] Water Year, October 1 through September 30

Table 5 Cawelo Groundwater Budget Summary

Inflows/Outflows	Historical Period (1995-2014)		Current Period (2015-2017)	
	Total (AFY)	Average (AFY)	Total (AFY)	Average (AFY)
Inflows				
Percolation from the Surface	318,332	15,917	45,094	15,031
Managed Aquifer Recharge	122,120	6,106	43,107	14,369
Stream Natural Recharge	140,994	7,050	40,468	13,489
Precipitation Percolation	37,259	1,863	4,498	1,485
Total Inflows	**618,994**	**30,950**	**133,167**	**44,389**
Outflows				
Agricultural Pumping	797,552	39,878	166,355	55,452
Urban Pumping	21,243	1.062	3,116	1,039
Groundwater Discharge to Streams	0	0	0	0
Total Outflows	**818,795**	**40,940**	**169,472**	**56,491**
Difference (Inflows - Outflows)	**-199,801**	**-9,990**	**-33,304**	**-12,101**

Source: Cawelo, 2022; Table 4-11

Inflows and outflows from the Cawelo GSA groundwater system are influence by surface water availability, which is influenced by the water year type, locally, regionally, and at the sources of imported water supplies. The largest inflow of surface water in most years is imported water which is dependent on the hydrologic conditions at the water sources. The largest most consistent outflow is evapotranspiration which is dependent on crop distribution, irrigation efficiency, and local hydrologic conditions. (Cawelo 2022)

During the 20-year historic period outflow from the Cawelo groundwater basin exceeded inflow during 14 water years. The average annual change in storage during the historic period was -9,990 acre-feet. Significant positive increase in groundwater storage only occurred in 1998 and 2011 with minor increases in four other years. 1998 and 2011 were exceptionally wet years. During the historic period, 199,801 acre-feet of groundwater has been removed from storage in the aquifer. (Cawelo 2022)

North Kern WSD Water Budget

The North Kern WSD water budget reflects the historical base period, but also captures "current" conditions following management actions and changes in water supply contracts since 2015. The current water budget represents long-term average annual inflow and outflow under the "current" conditions and is shown in Table 6 below. As shown in the table, the implied average annual change in groundwater storage is positive under "current" conditions with approximately 27,210 AFY. Accordingly, North Kern WSD would not be expected to have to reduce demand under "current" conditions. (North Kern WSD & SWID 2022)

Table 6 North Kern WSD Water Budget Summary

Inflows/Outflows	"Current" Conditions (AFY)
Inflows	
Kern River	151,900
Poso Creek	4,000
Oilfield Produced Water	4,000
Recycled	1,500
Other	5,000
OMWC	110
Rainfall	21,600
Total Inflows	**188,110**

Outflows	
Irrigated Area Evapotranspiration	155,600
Evaporation from Canals and Spreading Ponds	3,200
M&I Pumping	2,100
Total Outflows	**160,900**
Difference (Inflows - Outflows)	**27,210**

Source: North Kern WSD & SWID 2022; Table 2-26

Projected Future Water Budgets

Projected future water budgets for the Subbasin were developed for future baseline conditions and 2030 and 2070 Climate Conditions over a 50-year planning and implementation horizon. These scenario models provide a basis of comparison for evaluating proposed sustainability management actions and projects over the Sustainable Groundwater Management Act (SGMA) planning and implementation horizon.

Kern Groundwater Authority Future Water Budget

The Baseline Scenario under the KGA GSP simulates how the Subbasin aquifer would respond if the recent hydrology were repeated with current expected surface water availability and current land use. The primary difference between historical conditions and the projected future baseline is a nearly 20 percent decrease in imported surface water deliveries primarily from the SWP due to the long-term Operational Criteria and Plan (OCAP) Biological Opinion and is replaced with additional groundwater pumping. As a result, total net aquifer outflows increase by approximately 35,600 AFY, total net aquifer inflows decrease by approximately 11,600 AFY with the average groundwater pumping of 1,625,000 AFY, which includes agricultural pumping, urban pumping and exported water. This results in an additional loss of groundwater storage of about 47,200 AFY over the 50-year projected future baseline. Baseline simulation results indicate that the Subbasin has an average annual overdraft of 324,326 AFY, however, with the implementation and completion of projects and management actions as stated in the individual management area plans and GSPs from the other GSAs in the Subbasin, the baseline simulation results show that the Subbasin has an average surplus of 85,578 AFY. (KGA 2022)

The 2030 Scenario under the KGA GSP simulates how the Subbasin aquifer would respond assuming hydrologic conditions representing a potentially drier climate (no or limited amount of snowpack) and are based on the DWR Climate Change Guidance. The 2030 DWR climate change factors were applied to the Baseline Scenario Conditions. Additional adjustments were made to the imported surface water supplies from the SWP, CVP and Kern River, accounting for about an additional two percent decrease from the Baseline Conditions. The results show a net increase in aquifer inflows of about 44,700 AFY along with an increase in aquifer net outflows of about 101,200 AFY. This is mostly attributed to the climate shift to earlier rainfall making more surface water available for managed aquifer recharge during the winter but less available for irrigation in the summer resulting in higher groundwater pumping. The net change in groundwater storage is an additional decline of about 56,600 AFY due to the climate change impacts. 2030 Climate Change simulation results indicate that the Subbasin has an average annual overdraft of 372,120 AFY with the net change in groundwater storage showing an additional decline of about 47,794 AFY, compared to the Baseline, due to the climate change impacts. However, with the implementation and completion of management actions/projects as stated in the individual management area plans and GSPs from the other GSAs in the Kern Subbasin, 2030 Climate Change simulation results indicate that the Subbasin has an average deficit of approximately 46,829 AFY. (KGA 2022)

The 2070 Scenario under the KGA GSP represents how the Subbasin aquifer would respond assuming hydrologic conditions representing a potentially very dry climate and are based on the DWR Climate Change Guidance. The 2070 DWR climate change factors were applied to the Baseline Scenario Conditions. Additional adjustments were made to the imported surface water supplies from the SWP, CVP and Kern River, but these accounted for an additional six percent decrease from the Baseline Conditions. The 2070 Climate Change Scenarios were run both with and without SGMA Projects. The results show a net increase in aquifer inflows of about 66,100 AFY along with an increase in aquifer net outflows of about 231,600 AFY. This is mostly attributed to an even greater climate shift to earlier rainfall making more surface water available for managed aquifer recharge during the winter but less available

for irrigation in the summer resulting in higher groundwater pumping. 2070 Climate Change simulation results indicate that the Kern County Subbasin has an average annual overdraft of 472,336 AFY with the net change in groundwater storage showing an additional decline of about 148,010 AFY due to the climate change assumptions. With the implementation and completion of management actions/projects as stated in the individual management area plans and GSPs from the other GSAs in the Kern Subbasin, the 2070 Climate Change model results indicate an average deficit of 45,969 AFY. (KGA 2022)

Cawelo Future Water Budget

Percolation to groundwater results from precipitation and land application of water, which occurs through irrigation, water conveyance, municipal and industrial uses, and urban uses. The inflows and outflows projects for future baseline, and 2030 and 2070 climate conditions are shown in Table 7 below.

Table 7 Projected Future Groundwater Budget Summary for Baseline, 2030 Climate Change and 2070 Climate Change Conditions

Inflows/Outflows	Baseline	2030 Climate Change Conditions	2070 Climate Change Conditions
Inflows	**Total (AFY)**	**Average (AFY)**	**Average (AFY)**
Percolation from the Surface	14,888	15,573	14,888
Managed Aquifer Recharge	6,506	6,099	8,044
Stream Natural Recharge	7,050	7,100	7,050
Precipitation Percolation	1,863	1,692	1,863
Total Inflows	**30,306**	**30,464**	**33,071**
Outflows			
Agricultural Pumping	46,131	49,740	46,131
Urban Pumping	1,118	1,118	1,118
Groundwater Discharge to Streams	0	0	0
Total Outflows	**47,249**	**50,858**	**58,610**
Difference (Inflows - Outflows)	**-16,943**	**-20,394**	**-25,539**

Source: Cawelo, 2022, Table 4-19.

The projected changes in storage for the baseline and 2030 and 2070 central tendency climatic conditions decline between 2021 and 2070 and are summarized in Table 8. The volume of water added to storage during wet years does not offset the reduction in storage that is the general trend. For the baseline projection, a total of 936,358 acre-feet of water is removed from storage over the 50-year period. An additional 19 percent is removed from storage during the 50-year period under 2030 central tendency climatic conditions. Under 2070 central tendency climatic conditions, 46 percent additional water is removed from storage during the projected 50-year period.

Table 8 Future Baseline Groundwater Budget Summary Comparison

	Implementation Period (2021-2040)		Sustainability Period (2041-2070	
Inflows/Outflows	Total (AFY)	Average (AFY)	Total (AFY)	Average (AFY)
Baseline Condition				
Total Inflows	60,6124	30,306	919,633	30,654
Total Outflows	944,987	47,249	1,517,128	50,571
Inflows – Outflows	**-33,8863**	**-16,943**	**-597,495**	**-19,916**
2030 Climate Condition				
Total Inflows	609,289	30,464	915,408	30,514
Total Outflows	1,017,168	50,858	1,619,364	53,979
Inflows – Outflows	**-407,879**	**-20,394**	**70,3956**	**-23,465**
2070 Climate Condition				
Total Inflows	661,430	33,071	995,906	33,179

Total Outflows	1,172,206	5,810	1,853,945	61,798
Inflows – Outflows	**-510,776**	**-25,539**	**-858,040**	**-28,601**

Source: Cawelo, 2022, Table 4-20.

North Kern WSD Future Water Budget

Table 9 below shows the projected water budget for North Kern WSD for 2030 and 2070 climate conditions. As shown in the table, a positive implied change in storage is expected of 23,900 AFY and 15,200 AFY for 2030 and 2070 conditions, respectively. The decrease in positive storage from 2030 in 2070 indicates that it is expected that North Kern WSD will have a lesser amount of supply than was available historically or "current" conditions. (North Kern WSD & SWID 2022)

Table 9 North Kern WSD Water Budget Summary

Inflows/Outflows	2030 Conditions (AFY)	2070 Conditions (AFY)
Inflows		
Kern River	149,700	147,500
Poso Creek	3,900	3,900
Oilfield Produced Water	4,000	0
Recycled	1,500	3,000
Other	5,000	5,000
OMWC	2,000	4,100
Rainfall	20,700	20,000
Total Inflows	**186,800**	**183,500**
Outflows		
Irrigated Area Evapotranspiration	155,200	155,300
Evaporation from Canals and Spreading Ponds	3,200	3,200
M&I Pumping	4,500	9,800
Total Outflows	**162,900**	**168,300**
Difference (Inflows - Outflows)	**23,900**	**15,200**

Source: North Kern WSD & SWID 2022; Table 2-26

SGMA PROJECTS AND MANAGEMENT ACTIONS

Kern Groundwater Authority Projects and Actions

Projects and management actions for the KGA have been developed at the management area level. Table 4-1 in the KGA GSP provides a summary list of all projects and management actions (approximately 140) being considered for implementation by each member agency. This includes management projects ranging from expansion of local and regional conveyance and recharge facilities to take advantage of surplus supplies; new conveyance and recharge projects; and participation in the Delta Conveyance Project or other thru-Delta improvement projects. Management actions range from implementing district level fee structures to incentive reduced groundwater pumping; participation in local, regional, and state-wide water markets; and setting allocation for groundwater use by landowner, based on the sustainable yield of the management area. In addition to the projects and management actions that are proposed by the KGA members, the KGA has identified projects and management actions that it will implemented to further the coordination of groundwater management in the Subbasin. Table 10 list these proposed projects and management actions. (KGA 2022)

Table 10 KGA Projects and Management Actions

Project	Project Description
Subsidence Monitoring (basin-wide)	Improve the understanding of the causes and impacts of subsidence in the Subbasin. Installation of subsidence monitoring stations in 2023 with funding from the Budget Act of 2021 Sustainable Groundwater Management (SGM) Grant Program SGM Act Implementation – Round 1 Grant. Work with the DWR CA Aqueduct staff and Friant staff to continue the studies and exchange of data to improve the sustainable management criteria for each critical regional infrastructure Implementation Period: 2020 to 2025
Groundwater Modeling (basin-wide)	Improve the understanding of groundwater reactions to the implementation of projects and management actions, relationship to minimum thresholds and measurable objectives, determination of the native yield of the Subbasin, and subsurface flow within and out of the Subbasin. Continue the development of the Kern subbasin data management system that will assist in improving the understanding as well as provide access to the data to stakeholders and beneficial users. Enhancing the transparency of the data as well as addressing any minimum threshold exceedances. Implementation Period: 2020 to 2025. Funding provided through the Budget Act of 2021 Sustainable Groundwater Management (SGM) Grant Program SGM Act Implementation – Round 1 Grant.
Study of Native Yield of the Subbasin	Studies to refine the understanding and allocation of the available native groundwater yield within the Subbasin. Implementation Period: 2020 to 2025. Funding provided through the Budget Act of 2021 Sustainable Groundwater Management (SGM) Grant Program SGM Act Implementation – Round 1 Grant.
Kern County Subbasin, Basin-wide Study	▶ Basin Study: Basin Study to develop a systematic technical analysis to better represent and understand the flow of groundwater and surface water into, through and out of the Kern Subbasin. ▶ Evapotranspiration Analysis & Study: Field by Field Project compliments the Basin Study by groundwater truthing the water demand part of SGMA. The Component will provide data on the soil types and farming methods to further investigate the different crops planted and best way to meet water demands, providing a more accurate account of water usage. ▶ Subsidence Investigation and Study: Priority Area #1 Data collection: Data to set the SMC for Kern subsidence. Strategically placed extensometers would provide the data necessary to set SMC as well as considering the other activity of extractions occurring in the basin, oil extractions. ▶ New or Converted Monitoring Wells: Improve existing monitoring network throughout the Kern subbasin. Implementation Period: 2022 to 2005. Funding provided through the Budget Act of 2021 Sustainable Groundwater Management (SGM) Grant Program SGM Act Implementation – Round 1 Grant.
Subbasin Wide Consumptive Use Monitoring	Development of basin-wide consumptive use data to support water budget analyses, basin-wide modeling, groundwater native yield analysis and allocation, and annual reporting requirements Implemented in 2023. Funding provided through the Budget Act of 2021 Sustainable Groundwater Management (SGM) Grant Program SGM Act Implementation – Round 1 Grant.
Managing to Measurable Objectives	KGA members manage to checkbook water budgets as well as implement projects and management actions within their respective management areas to sustain water levels at or above the established measurable objectives. Implementation: 2020 to ongoing
Domestic Well Mitigation Program	A Domestic Well Mitigation Program will be developed and implemented by all KGA members. The purpose of this program is to mitigation the potential impact of declining groundwater elevations resulting from groundwater management actions. Implementation Period: 2020 to ongoing. Funding will be determined by individual members within their respective management areas.
KGA Monitoring Network Improvement Program	The KGA will work with its member entities, and other Subbasin GSAs, to continue to improve and reach SGMA compliance for identified representative monitoring sites. The KGA will work to identify joint projects and programs to ensure efficient installation and/or rehabilitation of monitoring wells and data collection and reporting efforts. Implementation Period: 2020 to 2025.
Basin-wide Coordination	Continuation of the Kern Subbasin Managers Group to coordinate water management activities in the Subbasin, including technical analysis, project management and coordination, identification of joint management opportunities and coordination of SGMA reporting requirements to DWR. Implementation Period: 2020 to ongoing

Project	Project Description
Annual Reporting	Coordination and facilitation of annual SGMA reporting requirements. The Kern subbasin to continue to address minimum threshold exceedances in the annual report. Implementation Period: 2020 to ongoing

Source KGA 2022: Table 4-2

With implementation of the SGMA projects and actions, change in groundwater storage in the Subbasin is expected to stabilize or slightly increase from 2041 to 2070. The change in groundwater storage for projected future baseline with SGMA Projects under the KGA GSP improves by about 409,904 AFY. This change results in a net gain in groundwater in aquifer storage over the 2041 to 2070 sustainability period of about 85,578 AFY. Over this period, the average groundwater pumping of 1,354,000 AFY for the Baseline Scenario with SGMA Projects (which includes agricultural pumping, urban pumping and exported water) is over 270,000 AFY less than the Baseline Scenario. (KGA 2022)

The change in groundwater storage for projected 2030 Climate Scenarios condition with SGMA Projects under the KGA GSP improves by about 418,949 AFY. This change results in a net deficit in groundwater in aquifer storage over the 2041 to 2070 sustainability period of about 46,829 AFY. Over this period, the average groundwater pumping of 1,444,300 AFY for the 2030 Climate Scenario with SGMA Projects, which includes agricultural pumping, urban pumping and exported water, is over 290,000 AFY less than the 2030 Climate Scenario without SGMA Projects. (KGA 2022)

The change in groundwater storage for projected 2070 Climate Scenarios condition with SGMA Projects under the KGA GSP improves by about 426,367 AFY. This change results in a net deficit in groundwater in aquifer storage over the 2041 to 2070 sustainability period of about 45,969 AFY. Over this period, the average groundwater pumping of 1,559,000 AFY for the 2070 Climate Scenario with SGMA Projects, which includes agricultural pumping, urban pumping and exported water, is over 307,000 AFY less than the 2070 Climate Scenario without SGMA Projects. (KGA 2022)

Cawelo Projects and Management Actions

The Cawelo GSA has developed a number of potential project and management actions to help address overdraft and move the Basin toward sustainability. Table 11 lists these proposed activities, along with their current status and benefits. The proposed projects and management actions would support maintenance of groundwater levels above minimum thresholds through increased recharge or through reductions in pumping. Improving the water balance in the Basin will help to mitigate overdraft. During drought, groundwater becomes more important due to limited precipitation. Projects that support groundwater levels through increased recharge help to protect groundwater resources for use during future drought, as well as help protect the Basin from the impacts of drought on groundwater storage. Projects that reduce pumping will help manage the Basin for drought preparedness by reducing demands on the Basin both before and during drought, supporting groundwater levels in non-drought years, and decreasing the impacts of drought on users, reducing the need to increase pumping when precipitation levels are low. These projects and management actions are expected to result in an average annual benefit of 31,780 AFY. (Cawelo 2022)

Table 11 Proposed SGMA Projects and Management Actions for the Cawelo GSA

Project or Management Action	Average Annual Benefit in 2040 (AFY)	Estimated Timeline
Programs		
P1. New Water Supply Purchases	5,800	Begin program in 2020
P2. Increase Recharge and Banking Capacity	400	Target 2030 implementation
P3. New Cawelo GSA Banking Partners	100	Begin program in 2020
P4. Water Treatment Facilities	15,000	Begin program in 2020
P5. Friant Pipeline Project	500	Construction in 2019

Project or Management Action	Average Annual Benefit in 2040 (AFY)	Estimated Timeline
P6. Poso Creek Flood Water Capture	40	Target 2030 implementation
P7. Surface Water Storage	500	Target 2030 implementation
P8. Out of Cawelo GSA Banking	1,250	Begin program in 2020
Management Actions		
MA1. KGA Action Plan	0	Begin in 2022
MA2. Domestic Well Mitigation Policy	0	Begin in 2022
MA3. Voluntary Land Conversion	2,000	2020 to 2040 implementation
MA4. Crop Conversion and Irrigation Efficiency	3,800	2020 to 2040 implementation
MA5. Land Acquisition	2,400	2020 to 2040 implementation
Total	**31,780**	

Source Cawelo 2022: Table 8-1

North Kern WSD Projects and Management Actions

The sustainability goal of North Kern WSD is to balance the average annual inflow and outflow of water in the district and to manage groundwater levels to the measurable objective. The projects and management actions are presented in Table 12 below.

Table 12 Proposed SGMA Projects and Management Actions for North Kern WSD GSA

Project or Management Action	Water Supply Augmentation (AFY)	Estimated Timeline
Calloway Canal Improvements: lining Snow Rd to 7th Standard Rd	1,650	2019-2021
Expand Water Banking Program	5,000	Initiated in 2020
Groundwater Banking Conveyance Improvements to North Kern WSD Recharge and Recovery	4,000	2019-2021
Beneficial Reuse of Oilfield Produced Water	11,000	Ongoing
SCADA Automation and Evapotranspiration Measurement Improvements	3,400	2020-2021
Poso Creek Weir	TBD	Initiated in 2020
Expanded Recharge (RRID)	6,000	2020
Allocation of Available North Kern WSD Supplies (RRID)	TBD	Initiated in 2020
In-Lieu Recharge Program	TBD	2020
On-Farm Efficiency/Deficit Irrigation Practices Incentive Program	0	2020-2025
On-Farm Recharge Activities Incentive Program	TBD	2020-2025
Subsurface Recharge Feasibility Study	TBD	2020-2022
Refinement of Water Budget Components	TBD	Ongoing
Conversion of Agricultural Land to Urban Use	TBD	Ongoing
Urban Water Conservation Program	0	2020-2030
Mitigation Program for Potential Impacts to Domestic Wells	TBD	2020-TBD
In-District Allocation Structure	TBD	TBD
Voluntary Land Fallowing	0	TBD
Pumping Restrictions	TBD	TBD
MT Exceedance Action Plan	N/A	Ongoing
Domestic Well Study	N/A	Ongoing

Project or Management Action	Water Supply Augmentation (AFY)	Estimated Timeline
Coordinate with ILRP, CV-SALTS, and SAFER Programs	N/A	Ongoing
Ongoing Evaluation of Groundwater Levels and Water Quality Trends	N/A	Ongoing
Total	31,780	

Source: North Kern WSD & SWID 2022; Table 5-1

Summary

As discussed above, the results demonstrate the ability of the GSP projects to achieve sustainability within the Cawelo GSA and North Kern WSD GSA and to maintain sustainability throughout the planning horizon. Because potential future overdraft conditions would be avoided, improved, and stabilized through implementation of the KGA GSP, Cawelo GSP, and North Kern WSD GSP, it can be inferred that groundwater would be available through 2070.

CITY OF BAKERSFIELD WATER RELIABILITY

The City anticipates that its sources of supplies will be available to meet demands on a consistent basis for all year types through 2040. The City's Wholesale Water System replenishes its Kern River supplies to the groundwater basin for the benefit of retail water suppliers providing service to City areas through their respective groundwater wells. The KRGSA GSP includes implementation or projects and management actions including the City's conjunctive use optimization project and proposed expansion of its recycled water use, which are anticipated to provide additional water supplies for the benefit of the groundwater basin. The City and other retail water suppliers within the Wholesale Water System service area are able to increase use of their groundwater wells during years of reduced Kern River supplies. (City of Bakersfield 2021)

The recent dry period of 2012 through 2016 is the basis of water year data for the multiple dry year scenarios with 2015 as the basis of water year data for the single dry year. The actual Kern River deliveries for the Wholesale Water System for the single dry year and multiple dry year scenarios are provided in Table 13 below. (City of Bakersfield 2021)

Table 13 Basis of Wholesale Water Year Data

Year Type	Base Year	Available Supplies if year type repeats	
		Volume Available (AFY)	% of Average Supply
Average Year	Average	100,000	100%
Single-Dry Year	2015	14,079	14%
Multiple-Dry Years 1st Year	2012	32,092	32%
Multiple-Dry Years 2nd Year	2013	22,245	22%
Multiple-Dry Years 3rd Year	2014	18,061	18%
Multiple-Dry Years 4th Year	2015	14,079	14%
Multiple-Dry Years 5th Year	2016	32,001	32%

Source: City of Bakersfield, 2021, Table 7-1

Notes:
[1] Based on the average historic City water yield per the EIR for the Kern River Flow and Municipal Water Program less agricultural deliveries and evaporation losses.

The Wholesale Water System replenishes its Kern River supplies to the groundwater basin for the benefit of retail water suppliers providing service to City areas through their respective groundwater wells. Water supplies are stored within the groundwater basin in wet years and extracted by the various retail water agencies to meet their demands when surface water supplies are reduced. The comparison of projected demands within the Wholesale Water System service area and available surface water supplies for the single dry year and multiple dry years scenarios between 2025 and 2040 are provided in Table 14 below. (City of Bakersfield 2021)

Table 14 Wholesale Single and Multiple Dry Years Supply and Demand Comparison

Description		2025	2030	2035	2040
Single Dry Year	Supply Totals	14,079	14,079	14,079	14,079
	Demand Totals	100,000	100,000	100,000	100,000
	Difference[1]	-85,921	-85,921	-85,921	-85,921
First Year	Supply Totals	32,092	32,092	32,092	32,092
	Demand Totals	100,000	100,000	100,000	100,000
	Difference[1]	-67,908	-67,908	-67,908	-67,908
Second Year	Supply Totals	22,245	22,245	22,245	22,245
	Demand Totals	100,000	100,000	100,000	100,000
	Difference[1]	-77,755	-77,755	-77,755	-77,755
Third Year	Supply Totals	18,061	18,061	18,061	18,061
	Demand Totals	100,000	100,000	100,000	100,000
	Difference[1]	-81,939	-81,939	-81,939	-81,939
Fourth Year	Supply Totals	14,079	14,079	14,079	14,079
	Demand Totals	100,000	100,000	100,000	100,000
	Difference[1]	-85,921	-85,921	-85,921	-85,921
Fifth Year	Supply Totals	32,001	32,001	32,001	32,001
	Demand Totals	100,000	100,000	100,000	100,000
	Difference[1]	-67,999	-67,999	-67,999	-67,999

Source: City of Bakersfield, 2021, Table 7-4

Notes:
[1] Kern River water supplies are replenished in wet years and stored within the groundwater basin for extraction by the various retail water suppliers during periods of reduced surface water supplies.

The Five-Year Drought Risk Assessment for the Wholesale Water System is presented in Table 15 below. The Wholesale Water System demand of 100,000 AF annually includes water supplies used for groundwater recharge. Total water use in Table 15 is shown to be equal to total supplies in each year since the Wholesale Water System replenishes its Kern River supplies to the groundwater basin for the benefit of retail water suppliers providing service to City areas through their respective groundwater wells. Water supplies are stored within the groundwater basin in wet years and extracted by the various retail water agencies to meet their demands when surface water supplies are reduced. Wholesale Water System groundwater recharge in future drought years will be reduced to match available supplies. (City of Bakersfield 2021)

Table 15 Five-Year Drought Risk Assessment

Year	Description	Total
2021	Total Water Use	32,092
	Total Supplies	32,092
	Shortfall/Surplus	0
2022	Total Water Use	22,245
	Total Supplies	22,245
	Shortfall/Surplus	0
2023	Total Water Use	18,061
	Total Supplies	18,061
	Shortfall/Surplus	0

Year	Description	Total
2024	Total Water Use	14,079
	Total Supplies	14,079
	Shortfall/Surplus	0
2025	Total Water Use	32,001
	Total Supplies	32,001
	Shortfall/Surplus	0

Source City of Bakersfield, 2021: Table 7-5

The Wholesale Water System will communicate with its retail water system customers regarding the anticipated shortage level and corresponding reductions in available water supplies. The Wholesale Water System will participate in public awareness campaigns and may implement measures to increase available supplies such as short-term water purchases or exchanges depending on the anticipated shortage gap. Additional tools and options used by the City to maximize resources and minimize the need to import water from other regions include implementation of the Kern River Conjunctive Use Optimization project and continuing efforts regarding water conservation and demand management, each of which are described further below. (City of Bakersfield 2021)

Kern River Conjunctive Use Optimization

Optimization of the City's Kern River supplies is identified as a Phase One project in the KRGSA GSP, which involves the full use of the City's available Kern River entitlement. This project is proposed to be implemented over time so that it can be adjusted as needed to meet changing conditions. The City's Kern River supplies will be delivered as a first priority to meet demands of the surface water treatment plants with the remaining supplies being recharged to the groundwater basin through the Kern River channel, the 2800 Acres recharge facility, and other City facilities. (City of Bakersfield 2021)

Water Conservation and Demand Management

The City is currently implementing several water conservation and demand management actions that will increase reliability of the water supply, including, but not limited to:

- Adopting water waste prevention ordinances
- Metering
- Conservation pricing
- Public education and outreach
- Programs to assess and manage distribution system real loss
- Water conservation program coordination and staffing support
- Asset management
- Using recycled water for irrigation
- Installing "smart" irrigation controllers in all City parks
- Closing City spray parks during drought conditions
- Reducing the time and frequency of irrigation for City parks and landscape areas during drought conditions
- Installing artificial turf at various City facilities and within street medians throughout the City
- Prohibiting natural lawn within newly constructed City medians
- Replaced bathroom fixtures with water efficient fixtures
- Reducing the frequency and duration of fire apparatus testing operations

- Update of landscape standards to reflect the current State Model Water Efficient Landscape Ordinance
- Adopting, by reference, the California Green Code sections relating to installation of low water use plumbing fixtures in new construction.

2.9 SECTION 10910(D)(1)

Identify existing water supplies for the proposed project

Existing water supplies for the project are described under Sections 2.2 and 2.8, above.

2.10 SECTION 10910(D)(2)(A)

Demonstrate existing water supply entitlements, water rights or water service contracts through written contracts or other proof

As mentioned previously, OMWC would provide potable water service to the Proposed Project pursuant to Malibu Vineyards securing allocation of water sources from Cawelo and North Kern WSD.

Malibu Vineyards has indicated the intent to supply the proposed project with the projected water demand for Phase I of the project (estimated at 485 AFY or 0.91 AF/ac) via agreements secured with Cawelo to provide up to 1.2 AF/ac. This is equivalent to the amount currently allocated to the project site for agricultural uses and represents a reduction of 156 AFY and 0.9 AF/ac compared to existing water allocations. These agreements are currently in negotiations.

North Kern WSD has indicated that it does not typically allocate supply for non-agricultural uses. However, occasionally, special purpose water could be made available for municipal and industrial (M&I) use on a limited and inconsistent basis. Alternatively, landowners have the option to secure a sufficient water resource and establish a water transfer to North Kern WSD to meet their water demand needs. (Hampton pers. com.)

Pursuant to the 1952 Agreement and Amendment No. 1, North Kern WSD may use waters diverted from the Kern River for M&I purposes provided the North Kern WSD pay the City annually for each acre-foot of Kern River water delivered for M&I uses $311 (as indexed) per gross acre-foot of all M&I water delivered or retailed (North Kern WSD 2022b). Malibu Vineyards has indicated the intent to supply the proposed project with the projected water demand for Phase II of the project (estimated at 106 AFY or 0.52 AF/ac) through Kern River water via North Kern WSD pursuant to Amendment 1 of the 1952 Agreement. This represents a reduction of 509 AFY (2.48 AF/ac) that is currently allocated to the project site for agricultural uses.

2.11 SECTION 10910(D)(2)(B)

Provide copy of capital outlay program for financing of a water supply that has been adopted by the public water system; Section 10910(d)(2)(C) Identify any federal, state, and local permits required for construction of the facilities identified for delivering the water supply to the proposed project; AND Section 10910(d)(2)(D) Identify any necessary regulatory approvals required to convey or deliver the water supply to the proposed project

A copy of the capital outlay program is available upon request at the OMWC offices located at 2836 McCray Street, Bakersfield, CA 93308, 661.399.5516. The proposed Malibu Vineyards project would require extension of OMWC's 6-inch domestic water line and 12-inch non-potable water line from Quinn Road along Imperial Avenue to the southeast corner of the proposed project. Before OMWC could provide water service to the project site, OMWC would need to annex the project area into its service area. The proposed annexation would involve the entirety of the approximately 739-acre project site and would need to be considered and approved by OMWC and the Kern County Local Agency Formation Commission.

2.12 SECTION 10910(E)

Identify other public water system or water contract holders that receive a water supply or have existing water supply entitlements, water rights, or water service contracts, to the same source of water as the public water system for the proposed project

Nearly all groundwater districts in Kern County have banking projects within their district's boundaries and those districts that do not overlie the groundwater basin participate in banking projects. Kern County groundwater banking includes (KCWA 2021):

- Arvin-Edison Water Storage District Water Management Program
- Berrenda Mesa Property Joint Water Banking Project
- Buena Vista Water Storage District Water Management Program
- Buena Vista Water Storage District/West Kern Water District Water Supply Project
- Cawelo Water District/Dudley Ridge Water District Conjunctive Use Program
- Cawelo Water District's Modified Famoso Water Banking Project
- City of Bakersfield 2800 Acre Groundwater Recharge Facility
- Kern Delta Water District's Groundwater Banking Program
- Kern Water Bank
- North Kern WSD Groundwater Storage Project
- Pioneer Groundwater Recharge and Recovery Project
- Rosedale-Rio Bravo Water Storage District and Improvement District No. 4 Joint Use Groundwater Recovery Project
- Rosedale-Rio Bravo Water Storage District's Groundwater Banking Program
- Semitropic Groundwater Banking Project
- West Kern Water District's Groundwater Banking Program

2.13 SECTION 10910(F)(1)

Review any information contained in the UWMP relevant to the identified groundwater supply for the proposed project

The most recently adopted UWMP for OMWC is the 2020 OMWC UWMP, which was adopted by the OMWC Board of Directors on June 21, 2022. The UWMP does not include the proposed project's projected water demand. Groundwater supplies are discussed as a portion of the total OMWC potable water supply in Section 2.8 above. Additional discussion of groundwater is provided in Sections 2.14 through 2.17 below.

2.14 SECTION 10910(F)(2)

Describe any groundwater basin from which the proposed project will be supplied. Include information as to whether the Department of Water Resources has identified the basin as over drafted or has projected that the basin will become over drafted

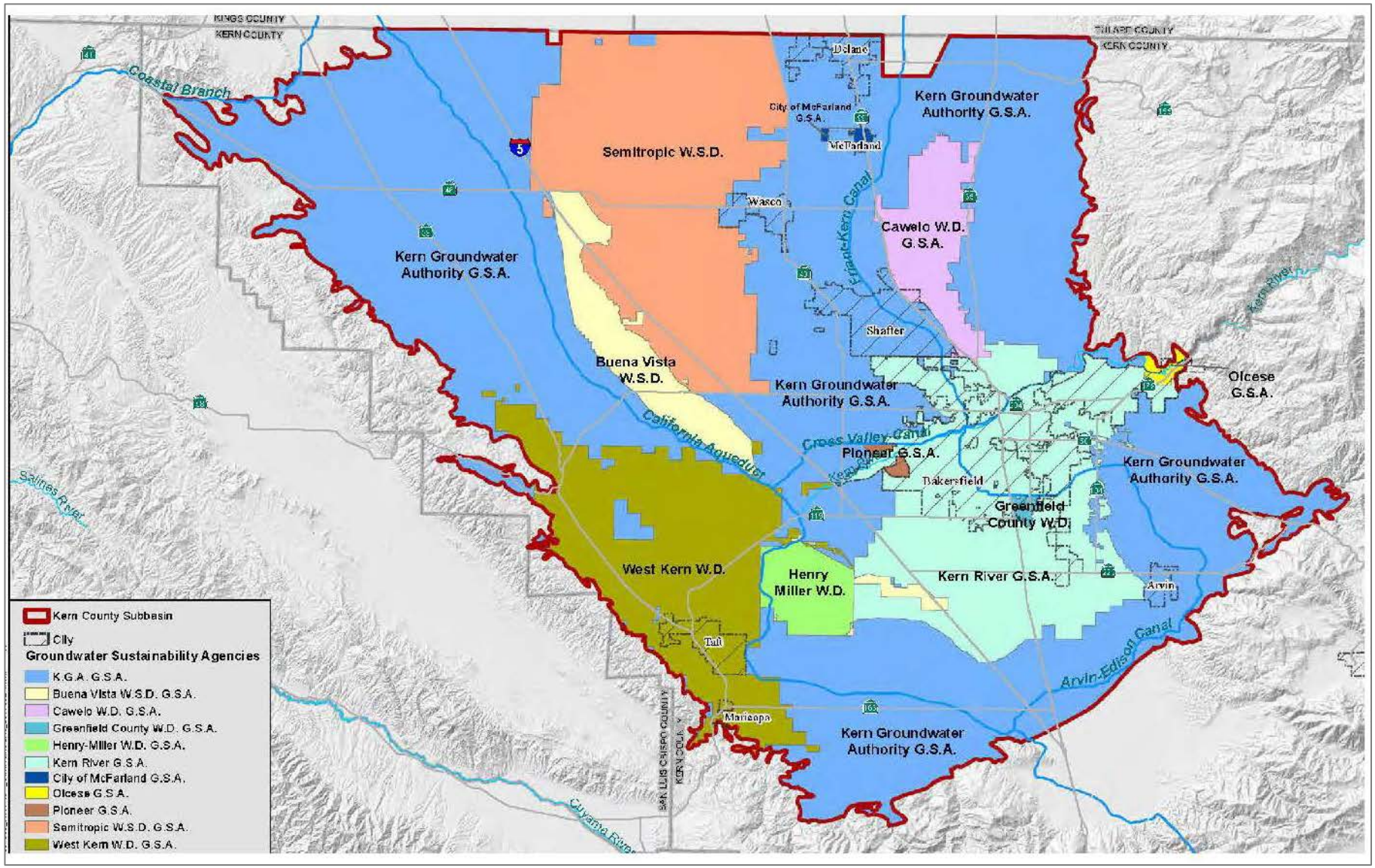
2.14.1 Groundwater Basin Description

The Kern County Subbasin (DWR Basin No. 5-022.14) is within the Tulare Lake Hydrologic Region of the San Joaquin Valley Basin and comprises an area of approximately 1,945,000 acres (3,040 square miles) in Kern County. The

subbasin is bounded to the north by the Tulare Lake and Tule Subbasin, to the east and south by crystalline bedrock of the Sierra Nevada and San Emigdio Mountains, and to the west by the marine sediments of the San Emigdio Mountains and Coast Ranges. The Kern County Water Agency estimates the total water in storage to be 40,000,000 acre-feet and dewatered aquifer storage to be 10,000,000 af. A map of the Kern County Subbasin is shown on Figure 8. (OMWC 2022)

The Kern County Subbasin consists of the upper portion of a deep structural trough between the crystalline basement rocks of the Sierra Nevada and the Coast Ranges. The deeper portions of the trough contain mostly Miocene and older marine sedimentary units. The upper trough has been infilled over time with Upper Miocene/Pliocene and younger continental sediments, which contain most of the Subbasin groundwater (Kern River GSA 2022).

The Kern County Subbasin is not adjudicated; however, in its recent evaluation of California groundwater basins, DWR determined that the subbasin is in a condition of critical overdraft. The subbasin has been prioritized by DWR as "high" and 11 different GSAs formed within the subbasins and have since adopted GSPs in accordance with the SGMA. Groundwater levels are managed within a safe basin operating range to protect the long-term sustainability of the Kern County Subbasin and to protect against land subsidence by the KGA GSA, Kern River GSA, and the Cawelo GSA. (OMWC 2022)



Source: Cawelo 2022.

Figure 8 Kern County Groundwater Subbasin and Associated Groundwater Sustainability Agencies

OMWC's service area lies within areas managed by the KGA GSA, Kern River GSA, and the Cawelo GSA (OMWC 2022). The proposed project areas overlie areas managed by the Cawelo GSA (phase 1) and the KGA GSA (phase 2); groundwater within the North Kern WSD area is managed by the KGA GSP. The Cawelo GSA makes up 3.5 percent of the Subbasin and North Kern WSD (old district excluding Rosedale Ranch Irrigation District) accounts for 3.4 percent of the Subbasin (KGA 2022). The current groundwater supply available to OMWC is approximately 8,500 acre-feet per year from the Kern County Subbasin (OMWC 2022).

On the east side of the Subbasin, the base of fresh groundwater trends parallel to nearby faulting, which provides a northwest-trending trough of fresh groundwater between Bakersfield and Wasco. This trough lies between the concealed Poso Creek fault to the northeast and the pre-Quaternary Greeley Fault on the southwest that extends from the Kern River to the Kern National Wildlife Refuge. (KGA 2022)

The groundwater aquifers of the Subbasin are geologically diverse with differing zones of confined, semiconfined, and unconfined groundwater conditions. The primary aquifer system occurs in the central-northern, central, and central southern portions of the Subbasin. It consists of the Tulare formation, Kern River formation, and overlying alluvium. On the eastern side of the Subbasin are the confined Santa Margarita, Olcese, Pyramid Hills, and Vedder Sands. Groundwater wells extract water where these aquifers are not exempted and where they are feasible for groundwater supply use without hydrocarbons. On the western side of the Subbasin, very little usable groundwater occurs. In the northwest, groundwater supply production is likely limited and may occur in alluvium and/or the Tulare Formation. (KGA 2022)

The primary aquifer system of the Subbasin is within the Tulare and Kern River formations and overlying alluvium. It includes differing zones of confined, semiconfined, and unconfined groundwater conditions, due to the presence of clays that act as local aquitards. The Corcoran Clay and other equivalent clays occur within the Tulare Formation in the central and southern parts of the Subbasin. Where extensive clays are present, some areas of the aquifer system may consist of a deeper confined zone and a shallower unconfined to semi-confined zone. Within the eastern portion of the Subbasin and in the vicinity of the Kern River Alluvial Fan, the aquifer system is made up of an unconfined to semi-confined zone. The project area overlies an area within the unconfined zone of the Eastside Alluvium and Kern River Formation in the east side main production zone, which characterizes the water quality as "good" (KGA 2022, Table 2-3).

The Kern River GSA GSP Plan Area covers 361 square miles of the Subbasin. Local surface water from the Kern River, imported water from the SWP, recycled water, and other surface water sources provide about one-half of the total water supply to the Plan Area (about 327,786 AFY on an average annual basis) to support beneficial uses. These surface water sources are supplemented by groundwater (average of about 321,871 AFY) and managed conjunctively throughout the Plan Area. (Kern River GSA 2022)

The primary land uses in the KRGSA Plan Area are estimated as follows (Kern River GSA 2022):

- 41 percent agricultural,
- 33 percent urban/residential/industrial, and
- 26 percent undeveloped.

The northern Kern River GSA Plan Area includes most of the Bakersfield city limits with primarily urban land uses. Sparsely populated or undeveloped areas cover most of the northeast Kern River GSA Plan Area. The west-central Kern River GSA Plan Area is dominated by recharge basins and groundwater banking projects, mostly along the Kern River (Kern River GSA 2022).

Groundwater within the Kern River GSA Plan Area occurs under unconfined to semi-confined conditions in the continental sediments of the Kern River Formation and overlying alluvium, collectively forming the Principal Aquifer. The Principal Aquifer consists largely of interbedded gravels, sands, silts, and clays. Although clay content generally increases with depth, clay layers are often discontinuous and most wells are screened over a large interval, making it difficult to clearly define more than one Principal Aquifer. The Subbasin extends several thousand feet beneath the Kern River GSA Plan Area with the bottom defined by either the base of the Underground Source of Drinking Water

(USDW, defined by EPA), oilfield-exempted aquifers, or oil-producing zones, whichever is shallowest (Kern River GSA 2022).

In the Cawelo GSA, the groundwater supply is derived from the unconsolidated alluvium and underlying semi-consolidated Kern River Formation. These two geologic formations appear to be hydraulically connected without an intervening, regionally extensive aquitard. Therefore, these formations are collectively considered the principal aquifer for groundwater management purposes. Groundwater levels in the alluvial aquifer fluctuates seasonally with local recharge and in response to climatic variations of droughts and wet conditions. Water levels have been measured within the Cawelo GSA since the 1930s; however, the availability of increased of water level data since the 1970s provides a more complete record of water level trends and fluctuations. In general, groundwater levels decline during periods of drought when recharge is reduced and groundwater pumping increases in response to declines in imported water. During the intervening wet periods, groundwater level trends have generally recovered to near pre-drought conditions. The development of managed aquifer recharge operations in the 1980s also helped groundwater level recovery. At the time of the preparation of the 2022 GSP, the significant statewide drought of 2012 to 2016 led to historic low groundwater levels in many parts of the Cawelo GSA. (Cawelo GSA 2022)

Groundwater in the area is generally deep, usually between 300-500 feet below ground surface (bgs). As a result, water wells are typically completed at depths well below this depth. Groundwater pumping in the Cawelo GSA primarily occurs within the upper 1,500 feet of the principal aquifer system. A review of well completion records indicates that agricultural supply wells have average well depths from 900 to 1,500 feet bgs. Public and domestic supply wells have average well depth from 600 to 1,150 feet bgs. Wells tend to be deeper in the north and eastern parts of the GSA, and shallower in the southeastern part of the GSA. (Cawelo GSA 2022)

2.14.2 Potential Undesirable Results from Groundwater Extraction

Groundwater extraction could potentially result in undesirable impacts, such as chronic lowering of groundwater levels, reduction of groundwater storage, degraded groundwater quality, and land subsidence. Each of these is discussed further in this section.

CHRONIC LOWERING OF GROUNDWATER LEVELS

Water level declines within the Kern River GSA have occurred primarily during drought cycles, which are also associated with low flows on the Kern River, less precipitation, and decreases in imported water supplies. This decrease in surface water supply is typically coupled with an increase in groundwater pumping. Collectively, these changes also result in decreases in recharge from banking activities, surface water conveyance, and surface water infiltration associated with irrigation and other outdoor water use. In addition, these drought periods are typically associated with increased recovery pumping at groundwater banking projects, which can result in significant local declines. Groundwater levels within the Kern River GSA have demonstrated the ability to recover following drought conditions. The impacts of groundwater level declines are fundamental to many of the sustainability indicators (i.e., reduction in groundwater storage, land subsidence, and degraded water quality). (Kern River GSA 2022)

Lowering of groundwater levels has the potential to impact the ability of wells to access groundwater for beneficial uses. Chronic lowering of water levels can adversely impact pumping wells and, in some cases, prevent practical or economical access to groundwater supply. With more than 1,200 active wells estimated in the Kern River GSA Plan Area, these impacts can be widespread and represent a significant economic impact on Kern River GSA groundwater users. As water levels decline, well owners face an increase in energy costs due to the extra distance that the well pump must lift the water from the aquifer to the ground surface. Well capacity can also decline and may not produce sufficient water to meet the beneficial use. (Kern River GSA 2022)

If water levels decline below the pump intake, the well will no longer produce. In this case, the pump must be lowered to depths sufficient to accommodate pumping water levels, sometimes at considerable cost. For some wells, this modification may not be feasible, and the well may need to be replaced. If water levels fall below the tops of screens, water will cascade downward to the pumping water level, entraining air during the fall. This can cause cavitation at the

pump as the mixture of air and water passes the pump impellor, resulting in vibration, potential pump damage, and a reduction in well efficiency. The introduction of oxygen can also create an environment for naturally-occurring iron bacteria to proliferate, potentially leading to biofouling and clogging. Well rehabilitation may be able to address some of the damage, but long-term well operation with water levels below the top of screens can ultimately result in inefficient wells, higher operating costs, increases in corrosion, and shorter well life. (Kern River GSA 2022)

If water levels continue to decline, the well may become dry and lose its ability to produce groundwater. Dry wells will occur first in the shallowest wells, such as is more common for a domestic well. If the dry well is the sole source of water for the well owner, drilling a deeper replacement well may be the only option for water supply – an option that may not be economically viable for the water user. (Kern River GSA 2022)

REDUCTION OF GROUNDWATER STORAGE

Reduction of groundwater storage may result from the potential depletion of groundwater supply, or overdraft. Overdraft refers to conditions when the average annual amount of groundwater outflow (e.g., groundwater extraction) are significantly more than the long-term average groundwater inflow, causing a continual depletion of groundwater supplies over time. (Kern River GSA 2022)

Overdraft conditions result from a wide variety of groundwater mismanagement (or an absence of management) involving either a net increase in outflows or a net decrease in inflows, or both. Such activities may include over-pumping, changes in land use (e.g., paving recharge areas or other reduction in reduce surface infiltration), reduction in surface water (reducing recharge), or an absence of other water supplies to meet demands. Conditions of critical overdraft have the potential to cause a chronic lowering of water levels, inelastic land subsidence, and/or reduction of surface water supply (as a reduction in baseflow to streams or an increase in induced surface water recharge). (Kern River GSA 2022)

DEGRADED GROUNDWATER QUALITY

GSAs intend to avoid management actions that would contribute to water quality degradation or unnecessarily spread groundwater contamination through pumping or other means. Degraded water quality can impair water supply, impact human health and the environment, and create the need for alternative water sources. Accordingly, degraded water quality has the potential to affect beneficial uses of groundwater including drinking water, agricultural or industrial supply, and environmental uses. Impacts to drinking water supply wells can cause expensive response actions including contaminant investigations, well modifications, increased sampling and monitoring, increased treatment costs, loss of wells, and/or a loss of water supply. Impacts to agricultural supply can cause poor yields, loss of crops, changes in irrigation methods/sources, impacts to property values, and other economic effects. Impacts to industrial supply can cause product damage, inadequate process water, increased treatment costs, degraded wastewater, and other problems. Discharge of degraded groundwater can cause harm to surface water, wetlands, and other habitats/ecosystems. (Kern River GSA 2022)

Both naturally occurring and human-related (anthropogenic) constituents of concern have been identified in the Kern River GSA. Naturally occurring constituents can be difficult to predict and control. Anthropogenic impacts can create plumes that migrate and spread contaminants downgradient (horizontally and vertically). Non-point sources can create widespread impacts that can be difficult to contain and manage. Impacts associated with releases of constituents at the surface may remain undetected for years or decades before migration through the vadose zone allows detection in underlying groundwater. Degraded water quality can be spread or exacerbated by pumping wells. (Kern River GSA 2022)

The water chemistry of Kern River GSA groundwater is similar to local surface water and contains relatively low total dissolved solids levels resulting, in part, from decades of actively managed recharge of both local and imported surface water supplies in the Kern River GSA Plan Area. In general, groundwater quality in the Kern River GSA Plan Area has been sufficient to meet its designated beneficial uses including municipal, industrial, and agricultural water supply and recreational/ environmental uses (Kern River GSA 2022).

LAND SUBSIDENCE

Historical land subsidence has been documented in the Kern River GSA Plan Area and is likely being exacerbated by water levels lowered during the recent drought. As water levels decline in the subsurface, dewatering and compaction of aquifer materials, predominantly fine-grained materials such as clay, can cause the overlying ground surface to subside. The general area of the largest historical subsidence occurs primarily in the southern and southeastern portions of the Agricultural Management Area. (Kern River GSA 2022)

Inelastic compaction is initiated when the magnitude of the greatest pressure that has acted on the clay layer since its deposition, or pre-consolidation stress, is exceeded. With respect to the effects of groundwater pumping, the pre-consolidation stress is exceeded when groundwater levels in the aquifer reach a new historically low water level. The volumetric compaction of the clay layers in the subsurface is transmitted to the land surface where it is manifested as land subsidence. (Kern River GSA 2022)

Land subsidence can impact land use and damage critical infrastructure. Adverse impacts would be more pronounced if subsidence occurred unevenly through the area (referred to as differential subsidence). The following potential impacts have been associated with land subsidence due to groundwater withdrawals (Kern River GSA 2022):

- damage to infrastructure including foundations, roads, bridges, or pipelines;
- loss of conveyance in canals, streams, or channels;
- diminished effectiveness of levees;
- collapsed or damaged water well casings; and
- land fissures.

Undesirable results for land subsidence would clearly include loss of capacity in major water conveyance infrastructure such as the Friant-Kern Canal or California Aqueduct. The California Aqueduct and the Friant-Kern Canal have been defined as regional critical infrastructure and will be managed cooperatively by all of the GSAs in the Subbasin. Subsidence damage along the Friant-Kern Canal has resulted in loss of capacity and the need for expensive repairs. The Friant-Kern Canal terminates at the Kern River in the northern KRGSA, where little to no land subsidence has been documented. The California Aqueduct is more than four miles from the closest portion of the Kern River GSA and current levels of subsidence in the Kern River GSA are unlikely to affect it. (Kern River GSA 2022)

Undesirable results could also occur if the functionality of critical infrastructure was impacted. Canals and pipelines for water conveyance and management, major roadways such as I-5 and Highway 99, municipal wells, water treatment plants, water and other utility pipelines, roads, buildings, airports, industrial pipelines, associated appurtenances and numerous other facilities that may be at risk from inelastic subsidence. Damage to any of the critical infrastructure could result in expensive repairs, loss of capacity, interruption of utility service, loss of damage to transportation corridors, impacts to the economy, and, in the event of catastrophic damage, possible risks to human health and the environment. (Kern River GSA 2022).

2.15 SECTION 10910(F)(3)

Describe the amount and location of groundwater pumped by the public water system for the past five (5) years

The following describes recent past groundwater pumping associated with OMWC, Cawelo, and North Kern WSD.

2.15.1 OMWC Groundwater Pumping

Groundwater levels are managed within a safe basin operating range to protect the long-term sustainability of the Kern County Subbasin and to protect against land subsidence by the Kern Groundwater Authority GSA, Kern River GSA, and the Cawelo GSA. Annually, water extracted from the groundwater basin averaged approximately 6,500 AFY. Reliance on groundwater as a primary water source contributed to a progressive decline in the regional water table.

Expansion of water service to the northern most part of the Service Area was restricted due to the lack of high-quality groundwater in the area. Recognizing the need for supplemental water supplies, OMWC contracted for imported water from the State Water Project via KCWA and NORMWD. In 1977 OMWC began receiving imported treated water from KCWA ID4 through NORMWD. OMWC has relied on imported water to supply over 95 percent of its total system requirements to a maximum of 7,377 AFY (2009). In the period from 1977 to 2010, groundwater extractions ranged from 6 AFY to 2,285 AFY, averaging 284 AFY. In 1991, groundwater extractions increased to 2,285 AFY due to reductions in the amount of imported SWP water delivered to OMWC. (OMWC 2022)

OMWC currently operates eight groundwater production wells as follows: Well 3, Well 12A, Well 14, Well 17, Well 23, Well 25, and Well 27. The wells have a combined production capacity of approximately 50 percent of current average daily water demand. Recent groundwater production quantities from OMWC are provided in Table 16. (OMWC 2022).

Table 16 OMWC Retail Groundwater Production from Kern County Subbasin (2016 – 2020)

Basin	Groundwater Volume Pumped (AF)				
	2016	2017	2018	2019	2020
Kern County Subbasin of San Joaquin Valley Groundwater Basin	345.12	500.61	593.47	711.36	774.02

Source: OMWC 2022: Table 6-3.

2.15.2 Cawelo Groundwater Pumping

Groundwater in the Cawelo GSA is pumped from the underlying Kern County Subbasin. Most groundwater pumping within Cawelo is attributable to on-farm pumping. Cawelo maintains and operates wells to supplement deliveries of surface water as needed. In years when the availability of imported surface water is limited, local landowners pump groundwater from privately-owned wells consistent with Cawelo's conjunctive management strategy. Private (unmetered) pumping for agriculture is about 78 percent of groundwater extraction occurring within the Cawelo Groundwater Sustainability Basin. (Cawelo GSA 2022)

There are 10 small water systems in the Cawelo GSA that utilize groundwater supplies, the largest of these being the Kern County Sheriff's Lerdo Detention Facility. Other small water systems are for industrial and commercial facilities that do not serve a permanent population. In addition, rural domestic and commercial locations use privately-owned wells for groundwater supply. (Cawelo GSA 2022)

Cawelo operates 18 wells and pumping for these wells has been tabulated monthly since initiation of pumping for each well since 1990. Estimates of pumping from privately-owned wells are not reported to Cawelo unless the water is pumped into the Cawelo system for conveyance and delivery. Although infrequent, water pumped from certain private wells is used for Cawelo purposes through an agreement with the private well owner. Table 17 summarizes the groundwater pumped by Cawelo between 2016 and 2020 and Table 18 shows and estimate of the groundwater pumped by landowners within the district. (Cawelo GSA 2022)

Table 17 Groundwater (AFY) Pumped by Cawelo (2016 – 2020)

Well Type	2016	2017	2018	2019	2020
District Wells	14,016	837	13,261	5,277	18,880
Private Wells Pumped Into Cawelo	1,835	262	10,857	564	6,587
Total	*15,851*	*1,099*	*24,118*	*5,791*	*25,467*

Source: Cawelo 2021: Table 4-5

Table 18 Groundwater (AFY) Pumped by Landowners (2016 – 2020)

	2016	2017	2018	2019	2020	Period Average
Total groundwater pumped by landowners	24,038	26,504	38,329	10,066	35,196	26,827

Source: Cawelo 2021: Table 4-6

2.15.3 North Kern WSD Groundwater Pumping

Owing to the highly variable Kern River supply, North Kern WSD supplements available surface water supplies with pumped groundwater in "dry" years and recharges the underlying groundwater using spreading ponds in "wet" years. In years of deficient surface water supply, continuity of delivery to the surface water service area is maintained by the operation of approximately 100 wells which are owned and operated by the North Kern WSD, while on-farm wells are used to meet irrigation demands in the remainder of North Kern WSD. (North Kern WSD 2021)

The average depth to groundwater in the North Kern WSD has been around 200 feet at the end of a "wet" period (1986) and around 270 feet at the end of a "dry" period (1993). Over the last 20 years, the annual (average) spring water levels have fluctuated within a band of about 50 feet. Seasonal fluctuations can be significant and are a function of the amount of groundwater pumping in a given year and the location within the North Kern WSD. In general, seasonal fluctuations are greatest in the northern portion of the North Kern WSD and are less pronounced in the south. (North Kern WSD 2021)

During the drier years, the North Kern WSD's well field is principally operated during the nine-month period extending from February through October and is operated at or near capacity from May into August. Annual pumpage from North Kern WSD's wells has ranged up to 140,000 AF. Conversely, there are years where available surface water supplies are adequate and the well field is not used at all. In fact, there have been instances where North Kern WSD wells have not been operated for several consecutive years. The volume of measured groundwater pumped within the boundaries of North Kern WSD from 2016 to 2020 for discharge into the North Kern WSD distribution system is shown in Table 19. (North Kern WSD 2021)

Table 19 North Kern WSD Agricultural Groundwater (AFY) Use (2016 – 2020)

Well Type	2016	2017	2018	2019	2020
North Kern WSD Deep Wells	92,609	0	67,023	1,462	109,178
Non-North Kern WSD Deep Wells	12,958	1,680	0	0	1,107
Total	*105,576*	*1,680*	*67,023*	*1,462*	*110,285*

Source: North Kern WSD 2021: Table IV-5

2.15.4 Kern River GSA Plan Area Groundwater Pumping

The GSP includes historical (1995 – 2014), current (2015), and projected (2020-2070) water budgets for the Kern County Groundwater Subbasin. The water budgets are determined to provide an understanding of average annual change in groundwater in storage associated with past and current inflows and outflows, and the projected changes in these flows under specified future conditions, including climate change. Consideration of the water budgets associated with Kern County Groundwater Subbasin, is inclusive of all water managed by the Kern River GSA (Kern River GSA 2022).

Average annual outflows for Kern River GSA Plan Area are summarized in in Table 20 below the periods 1995 – 2014 and 2015. As shown in the table, the average annual outflows (pumping) for the Kern River GSA Plan Area were approximately 321,871 AFY. Outflows during the critically dry year of 2015 totaled 401,177 AFY - about 25 percent higher than the average – reflecting an overall increase in agricultural and recovery pumping to supplement a decrease in surface water supplies. Agricultural pumping was estimated at an average of 175,668 AFY from 1995-2014, which represents approximately 55 percent of the total groundwater production. Municipal pumping of approximately 109,966 AFY in the same period was approximately 34 percent of the total average outflows. An additional 8 percent of pumping was conducted to recover banked groundwater. Remaining outflows included pumping from small water systems and private industrial and domestic wells. (Kern River GSA 2022)

Table 20 Groundwater Outflows within the Kern River GSA Plan Area 1995 – 2015

Outflow Component	Average Outflows 1995-2014 (AFY)	Annual Outflows 2015 (AFY)
Agricultural Pumping	175,668	196,859

Municipal Pumping	109,966	96,390
Small Water System/Private Pumping	9,038	7,201
Banking Recovery	27,199	100,727
Total Average Outflows	*321,871*	*401,177*

Source: Kern River GSA 2022: Table 4-2

2.16 SECTION 10910(F)(4)

Describe the amount and location of groundwater projected to be pumped by the public water system from any basin from which the proposed project will be supplied

2.16.1 Kern County Subbasin-Wide Projected Groundwater Pumping

As stated previously, the Kern County Subbasin is in a condition of critical overdraft. Despite the reduction in SWP deliveries, the groundwater overdraft in the entire Subbasin declined from 600,000 acre-feet per year in 1980 to an estimate of 324,300 acre-feet in 2015. This decrease in amount of overdraft per year was achieved through change in crop patterns; increase in agriculture efficiency; and increase in conjunctive use and banking projects throughout the Subbasin. With proposed projects and management actions slated for development and implementation in the Subbasin, it is forecasted that the Subbasin will achieve sustainability by 2040 with an estimated 42,144 AF of annual surplus (KGA 2022). See additional discussions in Sections 2.8 and 2.17 regarding sustainable groundwater budgets.

2.16.2 OMWC Projected Groundwater Pumping

The proposed project is expected to be supplied from groundwater allocations from Cawelo and North Kern WSD that would be pumped by OMWC. The highest annual volume of groundwater pumped by OMWC in the last five years was approximately 774 af, which equates to a continuous average production rate of approximately 480 gpm. The total pumping capacity of OMWC's five active groundwater wells is about 7,500 gpm or about 4,033 AFY assuming the five wells are running for approximately 8 hours per day. Table 21 shows the current and projected groundwater supply and demand. (OMWC 2022)

Table 21 Projected Groundwater Production Capacity and Demand (2020-2040)

Year	Annual Groundwater Production/Demand (AF)	Available Groundwater Supply Volume (AFY)	Available Groundwater Supply Capacity (gpm)	Average Pumping Time to Meet Demand Volume (hours/day)	Estimated Peak Hour Demand (gpm)
2020	774	8,500	7,500	1.5	17,201
2025	1,989	10,651	11,500	2.6	19,157
2030	4,058	11,726	13,500	4.5	20,217
2035	7,026	12,802	15,500	6.7	23,242
2040	9,734	12,802	15,500	9.3	24,743

Source: OMWC 2022: Table 6-5.

OMWC is expecting groundwater pumping to increase by about 1,000 percent by 2040. To accommodate the projected growth, OMWC is planning on increasing the utilization of its current groundwater wells and is currently in the process of drilling and equipping an additional five irrigation groundwater wells in the Southeast Shafter area. This will further increase the available system groundwater pumping capacity from 7,500 gpm to approximately 15,500 gpm to meet the estimated annual groundwater demand. Table 22 shows the additional capacity expected from the five additional groundwater wells. (OMWC 2022)

Table 22 Future OMWC Groundwater Supply Projects

Name of Future Project/ Program	Planned Implementation Year	Planned for Use in Year Type	Expected Increase in Water Supply to Supplier (AF)
IW #1	2023	All Year Types	1,075
IW #2	2025	All Year Types	1,075
IW #3	2030	All Year Types	1,075
IW #4	2035	All Year Types	1,075
IW #5	2045	All Year Types	1,075

Source: OMWC 2022: Table 6-6.

The expansion of water service within the OMWC's service area is possible by utilizing a combination of existing groundwater production facilities and increased imported supplies. This expansion of water service will result in a greater reliance on both imported and groundwater supplies. According to a 1996 hydrogeologic analysis of the Oildale Groundwater Sub-basin, an increase in groundwater withdrawal of 8,500 acre-feet per year would still result in a subsurface outflow, although diminished, along the peripheral boundaries of the Oildale service area. The study supports OMWC's reliance upon groundwater as a supplemental water supply source for backup as well as future water demands in the Southeast Shafter region. (OMWC 2022)

Water demands in the SE Shafter service area are being met with groundwater. This area is located within the North Kern WSD, which has been responsible for delivery and storage of water for the benefit of the landowners within North Kern WSD's boundaries for many years. The proposed SE Shafter development is located in the southern portion of the North Kern WSD, and present land use (other than the new residential development) is agriculture. (OMWC 2022)

2.17 SECTION 10910(F)(5)

Analyze the sufficiency of the groundwater from the basin from which the proposed project will be supplied to meet the projected water demand associated with the proposed project

The sufficiency of groundwater supplies to meet projected demands is discussed in Section 2.8 above. Additionally, as described in Section 2.3, the proposed project is expected to result in a demand of approximately 591 AFY, which is less than half of the 1,256 AFY of groundwater that is used for current agricultural operations.

3 CONCLUSION

As discussed above, the projected water demand for the proposed project is approximately 591 AFY, which is less than half of the 1,256 AFY that is allocated for current agricultural operations. OMWC would pump and deliver groundwater from existing allocations from Cawelo and North Kern WSD.

Projected water demand for Phase 1 of the project (estimated at 485 AFY [i.e., 0.91 AF/ac]) would be supplied via agreements secured with Cawelo to provide up to 1.2 AF/ac, which would reduce existing water allocations for agricultural use by 156 AFY (i.e., 0.9 AF/ac). Additionally, projected water demand for Phase 2 of the project (estimated at 106 AFY [i.e., 0.52 AF/ac]) would be supplied through Kern River water via North Kern WSD pursuant to Amendment 1 of the 1952 Agreement, which would reduce existing water allocations for agricultural use by 509 AFY (2.48 AF/ac).

As indicated above in Section 2.8, implementation of the GSPs will substantially increase the quantity of groundwater stored in the Subbasin and the KGA GSA (inclusive of its member agencies') and Cawelo GSA areas in future climate change conditions; thus, sufficient groundwater supplies will continue to be available during future normal, dry, and multiple dry years. Moreover, groundwater used within Phase 2 of the project would be replenished with water from the City (via the Kern River) in accordance with Amendment 1 of the 1952 Agreement. As discussed in Section 2.8, the City has adequate water during future, normal, dry, and multiple dry years. The City anticipates that its sources of supplies will be available to meet demands on a consistent basis for all year types through 2040. The City's Wholesale Water System supplies would meet the demands of retail water suppliers by providing Kern River water or groundwater which has been replenished to the groundwater basin for the benefit of retail water suppliers during wet years. Therefore, adequate water supplies are available to meet the demands of the project and project implementation would not cause undesirable results within the KGA GSA or Cawelo GSA Plan Areas due to groundwater pumping.

4 REFERENCES

Ansolabehere, David R. General Manager. Cawelo Water District, Bakersfield, CA. October 11, 2021. Letter to Mr. Doug Nunneley regarding Malibu Vineyards WSA.

Cawelo Groundwater Sustainability Agency. 2022 (July 14). Cawelo GSA Revised Groundwater Sustainability Plan Final. Available: https://www.cawelowd.org/wp-content/uploads/2020/03/cawelo_mngareaplan-gsp_complete_jan20_2020.pdf. Accessed: September 2022.

Cawelo Water District. 2021 (August). *2020 Agricultural Water Management Plan*. Available: https://www.cawelowd.org/wp-content/uploads/2021/09/cawelo_awmp_2020_adopted.pdf. Accessed: September 2022.

———. 2022. Water District Map. Available: https://www.cawelowd.org/wp-content/uploads/2018/06/basic-map-web-reva.pdf. Accessed: September 2022.

City of Bakersfield. 2021 (December). 2020 Urban Water Management Plan. Bakersfield, CA

City of Ventura. 2020 (April 8). *City of Ventura Water Demand Factor Study*. Available: https://www.cityofventura.ca.gov/DocumentCenter/View/21211/Water-Demand-Factor-Study. Accessed; January 2020.

Hampton, David. General Manager. North Kern Water Storage District, Bakersfield, CA. August 6, 2021. Letter to Mr. Doug Nunneley regarding Malibu Vineyards Industrial Parkway Properties.

KCWA. *See* Kern County Water Agency.

Kern County. *See* Kern County Planning and Natural Resources Department.

Kern County Planning and Natural Resources Department. 2022. *Notice of Preparation of a Draft Environmental Impact Report for the Malibu Vineyards Industrial Parkway Project, By Malibu Vineyards, L.P. (PP21116)*. August 3. Available: https://psbweb.co.kern.ca.us/planning/pdfs/notices/malibu_vineyards_nop.pdf. Accessed: September 2022.

Kern County Water Agency. 2021. Member Units. http://www.kcwa.com/memberunits/. Accessed: September 2022.

Kern Groundwater Authority. 2022 (Amended July). Groundwater Sustainability Plan. Available: https://kerngwa.files.wordpress.com/2022/07/kga-amended-gsp-submitted-july-2022.pdf. Accessed: September 2022

Kern River Groundwater Sustainability Agency. 2022 (July). *Final Amended Groundwater Sustainability Plan*. Available: http://www.kernrivergsa.org/?page_id=966. Accessed: September 2022.

North Kern Water Storage District. 2021. *Draft 2020 Agricultural Water Management Plan*. October. Available: https://www.northkernwsd.com/wp-content/uploads/2021/10/North-Kern-2021-AWMP_Board-_working_vfinal.pdf. Accessed: September 2022.

———. 2022a. North Kern Water Storage District Map. Available: https://www.northkernwsd.com/wp-content/uploads/2018/08/North-Kern-Map.pdf. Accessed: September 2022.

———. 2022b. North Kern Water Storage District 2021 Municipal and Industrial Water Use Report. March. Bakersfield, CA.

North Kern Water Storage District and Shafter-Wasco Irrigation District. 2022. *North Kern WSD and Shafter-Wasco ID Management Area Plan*. July (Amended). Available: https://kerngwa.files.wordpress.com/2022/07/nkwsd-swid-mgmt-area-plan_amended-clean.pdf. Accessed: September 2022.

North Kern WSD. *See* North Kern Water Storage District.

Oildale Mutual Water Company. 2022. *2020 Urban Water Management Plan*. Available: https://wuedata.water.ca.gov/public/uwmp_attachments/7520627677/FINAL-2020%20Urban%20Water%20Management%20Plan%20-%20JUNE%202022%20%28Rev1%29.pdf. Accessed: September 2022.