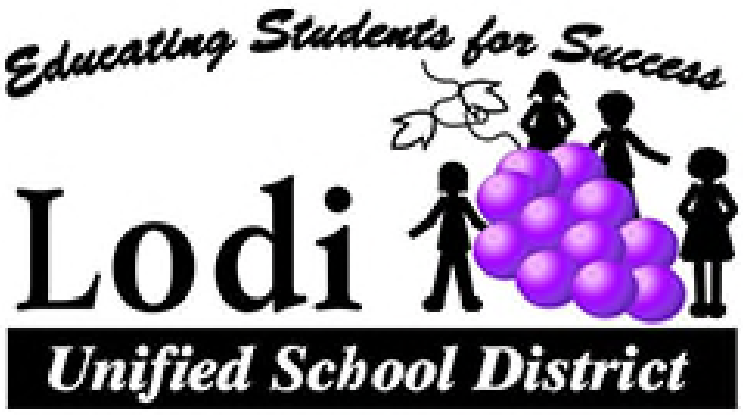

Public Review Draft

Initial Study/ Mitigated Negative Declaration

For the

Proposed School Site – Stockton Site I Project

FEBRUARY 2021

PUBLIC REVIEW DRAFT

INITIAL STUDY/ PROPOSED MITIGATED NEGATIVE DECLARATION

FOR THE

Proposed School Site – Stockton Site I Project

Lodi Unified School District
Educating Students for Success

Prepared by
Lodi Unified School District
1305 E Vine Street
Lodi, CA 95240

February 2021

NOTICE OF AVAILABILITY AND NOTICE TO OF INTENT
TO ADOPT A MITIGATED NEGATIVE DECLARATION FOR THE
LODI UNIFIED SCHOOL DISTRICT
PROPOSED SCHOOL SITE – STOCKTON SITE I PROJECT

The Lodi Unified School District has prepared an Initial Study pursuant to California Environmental Quality Act (CEQA) and the CEQA Guidelines (Public Resources Code, Division 13 and California Code of Regulations, Title 14, Chapter 3) evaluating the potential environmental impacts of the Proposed School Site – Stockton Site I Project. The Lodi Unified School District proposes to adopt a Mitigated Negative Declaration ("MND") because the Project construction and operation would not have a significant effect on the environment. This MND and the Initial Study describe the reasons that this project will not have a significant effect on the environment and, therefore, does not require the preparation of an environmental impact report under CEQA.

FILE NUMBER: 2021-01-MND

PROJECT TITLE: PROPOSED SCHOOL SITE – STOCKTON SITE I PROJECT

PROJECT LOCATION: The subject property has no site address; the subject property is located at the corner of Westlake Drive & Regatta Lane, Stockton, San Joaquin County, California (APNs: 066-050-070, -080 portion of). The site consists of vacant land. The overall parcel, pending a proposed property line adjustment, is approximately 18.5 acres in size. Eight Mile Road is located approximately 0.75 miles north and Interstate 5 is located approximately 1 mile east of the site. The proposed campus is located adjacent to a suburban housing tract to the west and agriculture land to the west, with Pixley Slough/Bear Creek adjacent south. The City of Stockton General Plan Land Use Map designates the proposed campus as “Mixed Use”. A regional and project location map are included as Figures 1 and 2, respectively.

PROJECT DESCRIPTION: The Lodi Unified School District (LUSD) is proposing to construct a new school site that will be approximately 18.5 acres in size after property line adjustments. The proposed school site – Stockton Site I – is still in the design concept phase, however, LUSD anticipates the proposed school site would serve approximately 800 students with approximately 35 (K-8) classrooms to accommodate the ongoing West Lakes Development in Stockton, California. The proposed project site is within the footprint of the Westlake at Spanos Park West Master Development Plan (2004), Development Agreement, and Environmental Impact Report (State Clearinghouse No. 2004052105) which created a framework for future development, including the development of a future school. The City of Stockton approved the Westlake Master Development Plan which included a 10-acre school site listed to be developed by LUSD and was tentatively located in the proposed Site “I” Area. Water and sewer services for the school would be provided by the City of Stockton Municipal Utilities District.

PUBLIC REVIEW PERIOD: As mandated by State law, the minimum public review period for this document is 30 days. The proposed Mitigated Negative Declaration will be circulated for a 30-day public review period, beginning on **Tuesday, February 2, 2021** and ending on **Thursday, March 4, 2021**.

Copies of the Draft Negative Declaration are available for review at the following locations:

- **Lodi Unified School District**, 1305 E. Vine Street, Lodi, CA 95240; and
- **Online at** www.lodiusd.net

Any person wishing to comment in writing on the Initial Study and proposed Negative Declaration must have submitted such comments in writing **no later than 5:00 pm on Thursday, March 4, 2021** to the following address:

Daniel E. Kramer
Petralogix Engineering, Inc.
26675 Bruella Road
Galt, CA 95632

For further information, contact Daniel Kramer, Professional Geologist, at (209) 400-5729.

A public hearing to receive comments will be held. This meeting is scheduled for Tuesday, March 2, 2021 at 7:00 p.m.

The Governor has declared a State of Emergency to exist in California as a result of the threat of COVID-19 (aka the "Coronavirus"). The Governor issued Executive Order N-25-20, which directs Californians to follow public health directives including canceling large gatherings. The Executive Order also allows local legislative bodies to hold meetings via conference calls while still satisfying state transparency requirements. The Governor has also issued Executive Order N-33-20, prohibiting people from leaving their homes or places of residence except to access necessary supplies and services or to engage in specified critical infrastructure employment.

The public's health and well-being are the top priority for the Board of Education of Lodi Unified School District ("District") and you are urged to take all appropriate health and safety precautions. To facilitate this process, meetings of the Board will be available through GoToWebinar.

Please follow these instructions to comment on any item on this agenda; if you have a comment regarding a topic that is not listed on this Regular Meeting agenda, please sign up to speak under “Comments From The Public”:

1. Go to the Google survey titled "Board Meeting Comments" located at https://bit.ly/3bJBs7R and sign up. (Google survey will open at 5:30 p.m.)

2. Speakers will fill in name and select item they would like to comment on.

3. Register for the meeting on the GoToWebinar invitation link located at the top and bottom of the agenda.

4. Speakers should rename their GoToWebinar profile names to their real names to expedite the process.

5. When it is time for the speakers to address the Board, their name will be called and the microphone on their GoToWebinar account will be activated.

6. After the comment has been given, the microphone for the speaker's GoToWebinar profile will be muted.

Leonard Kahn, Chief Business Officer

2/02/2024
Date

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APPENDIX A – Westlake Villages Environmental Impact Report
APPENDIX B – CalEEMod Air Emissions Analysis
APPENDIX C – Geotechnical Engineering Report
APPENDIX D – Proposed School Site – Stockton Site I – Phase I ESA Report
APPENDIX E – Preliminary Environmental Assessment
APPENDIX F – Native American Outreach Documentation

1. PROJECT TITLE

Proposed School Site – Stockton Site I Project

2. LEAD AGENCY NAME AND ADDRESS

Lodi Unified School District
1305 E Vine Street
Lodi, CA 95240

3. CONTACT PERSONS

Leonard Kahn: 209-331-7121

4. PROJECT LOCATION

The subject property has no site address; the subject property is located at the corner of Westlake Drive & Regatta Lane, Stockton, San Joaquin County, California (APNs: 066-050-070, -080 portion of). The site consists of vacant land. The overall parcel, pending a proposed property line adjustment, is approximately 18.5 acres in size. Eight Mile Road is located approximately 0.75 miles north and Interstate 5 is located approximately 1 mile east of the site. The proposed campus is located adjacent to a suburban housing tract to the west and agriculture land to the west, with Pixley Slough/Bear Creek adjacent south. The City of Stockton General Plan Land Use Map designates the proposed campus as "Mixed Use". A regional and project location map are included as Figures 1 and 2, respectively.

5. PROJECT SPONSOR'S NAME AND ADDRESS

Lodi Unified School District
1305 E Vine Street
Lodi, CA 95240

6. PROJECT DESCRIPTION

The Lodi Unified School District (LUSD) is proposing to construct a new school site that will be approximately 18.5 acres in size after property line adjustments. The proposed school site – Stockton Site I – is still in the design concept phase, however, LUSD anticipates the proposed school site would serve approximately 800 students with approximately 35 (K-8) classrooms to accommodate the ongoing West Lakes Development in Stockton, California. Water and sewer services for the school would be provided by the City of Stockton Municipal Utilities District.

The proposed project site is within the footprint of the Westlake at Spanos Park West Master Development Plan (2004), Development Agreement, and Environmental Impact Report (State Clearinghouse No. 2004052105) which created a framework for future development, including the development of a future school. The City of Stockton approved the Westlake Master Development Plan which included a 10-acre school site listed to be developed by LUSD and was tentatively located in the proposed Site "I" Area. The Environmental Impact Report and Master Development Plan are available for review in Appendix A.

7. SURROUNDING LAND USES AND SETTING

The proposed project is located within the Westlake Villages development near the western portion of the City of Stockton. The project site is bound by Pixley Slough to the south followed by agricultural land. To the north of the project site is undeveloped land, followed by Eight Mile Road. East of the site is currently undeveloped land followed by Bishop Cut and Rio Blanco Road. To the east is the Spanos Park West development consisting of single-family residential subdivision. The surrounding area is designated primarily as residential estate and low-density residential housing General Plan (2040). Suburban neighborhoods and agriculture make up the majority of use in the surrounding area.

8. NECESSARY PUBLIC AGENCY APPROVALS

It is anticipated that the following "typical" permits and compliance may be needed for this Project:

- Lodi Unified School District: Lead agency with responsibility for approving the proposed school repair and improvement project. Preparation of a Stormwater Pollution Prevention Plan (SWPPP) to City of Lodi standards. Pollutant Discharge Elimination Permit (Stormwater/Erosion Control) issued by the City of Lodi.
- Department of Toxic Substances Control (DTSC): DTSC oversees the environmental review process used to establish if a release or threatened release of hazardous material and/or presence of naturally occurring hazardous material exists at new or expanding school sites and if it presents a risk to the environment and/or human health.
- United States Fish and Wildlife Service – Compliance with the Federal Endangered Species Act: Construction activities would not directly or indirectly adversely affect a federally listed species or its habitat (see Biological Resources section of this document for additional information). Therefore, the proposed project would not be required to obtain Section 7 clearance from the U.S. Fish and Wildlife Service prior to SRF loan commitment.
- State Historic Preservation Office – Compliance with the National Historic Preservation Act: There are no prehistoric or historic archaeological resources, historic properties, or resources of value to local cultural groups within the project area. Therefore, the proposed project would not be required to demonstrate to the satisfaction of the State Historic Preservation Office that the project complies with Section 106 of the National Historic Preservation Act (see Cultural Resources section of this document for additional information).
- Native American Heritage Commission: Compliance with Assembly Bill 52 (AB 52). Lead agencies consult with Native American tribes who have previously contacted the Lead Agency early in the CEQA planning process.
- San Joaquin Valley Air Pollution Control District (SJVAPCD): Air Quality mitigation permit for grading work.
- City of Stockton: Preparation of a SWPPP to County of San Joaquin (and City of Lodi) standards. Pollutant Discharge Elimination Permit issued by the County of San Joaquin (and the City of Stockton).

9. PROJECT CONSTRUCTION

The project is in the feasibility stage. Therefore, construction details are currently unavailable.

Construction activity will first include vegetation clearing as needed. Onsite soil is considered suitable to be used as engineered fill so long as recommended sub-excavation and recompaction of loose sands below the bottoms of foundations are followed (MPE, 2019). Roadways will be swept clean as needed. Water will be applied to any potential dust-generating materials during construction.

The Project has been designed to eliminate environmental impacts by requiring the following measures:

- Project design to meet applicable City of Stockton design standards.
- Air Quality Mitigation and Permitting through San Joaquin Valley Air Pollution Control District (SJVAPCD).
- Preparation of a Stormwater Pollution Prevention Plan (SWPPP) to City of Stockton standards.
- Pollutant Discharge Elimination Permit (Stormwater/Erosion Control) issued by the City of Stockton.

A Stormwater Pollution Prevention Plan (SWPPP) and an Erosion and Sediment Control Plan will be prepared and implemented to avoid and minimize impacts on water quality during construction and operations. Best management practices (BMPs) for erosion control will be implemented to avoid and minimize impacts on the environment during construction.

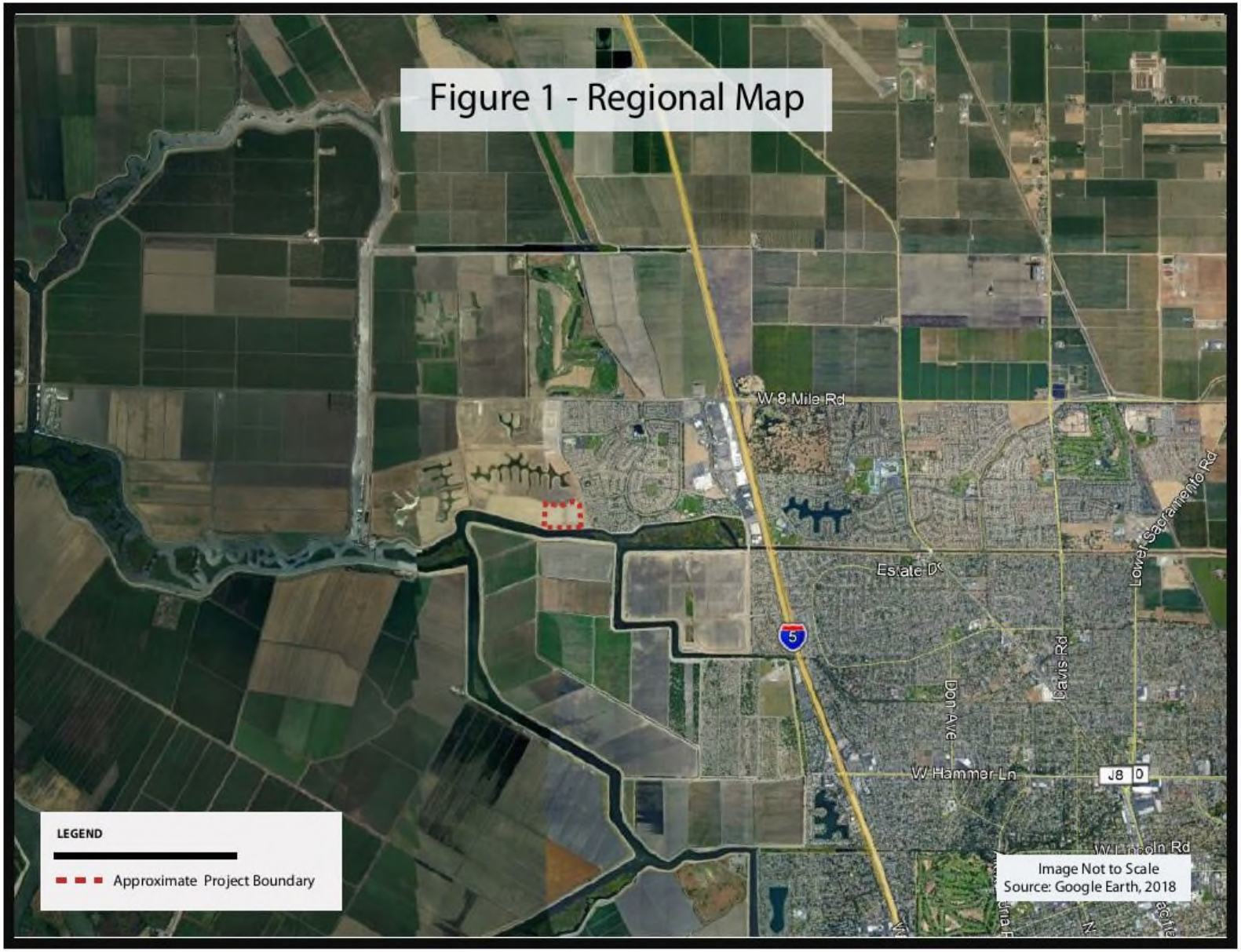

Figure 1 - Regional Map

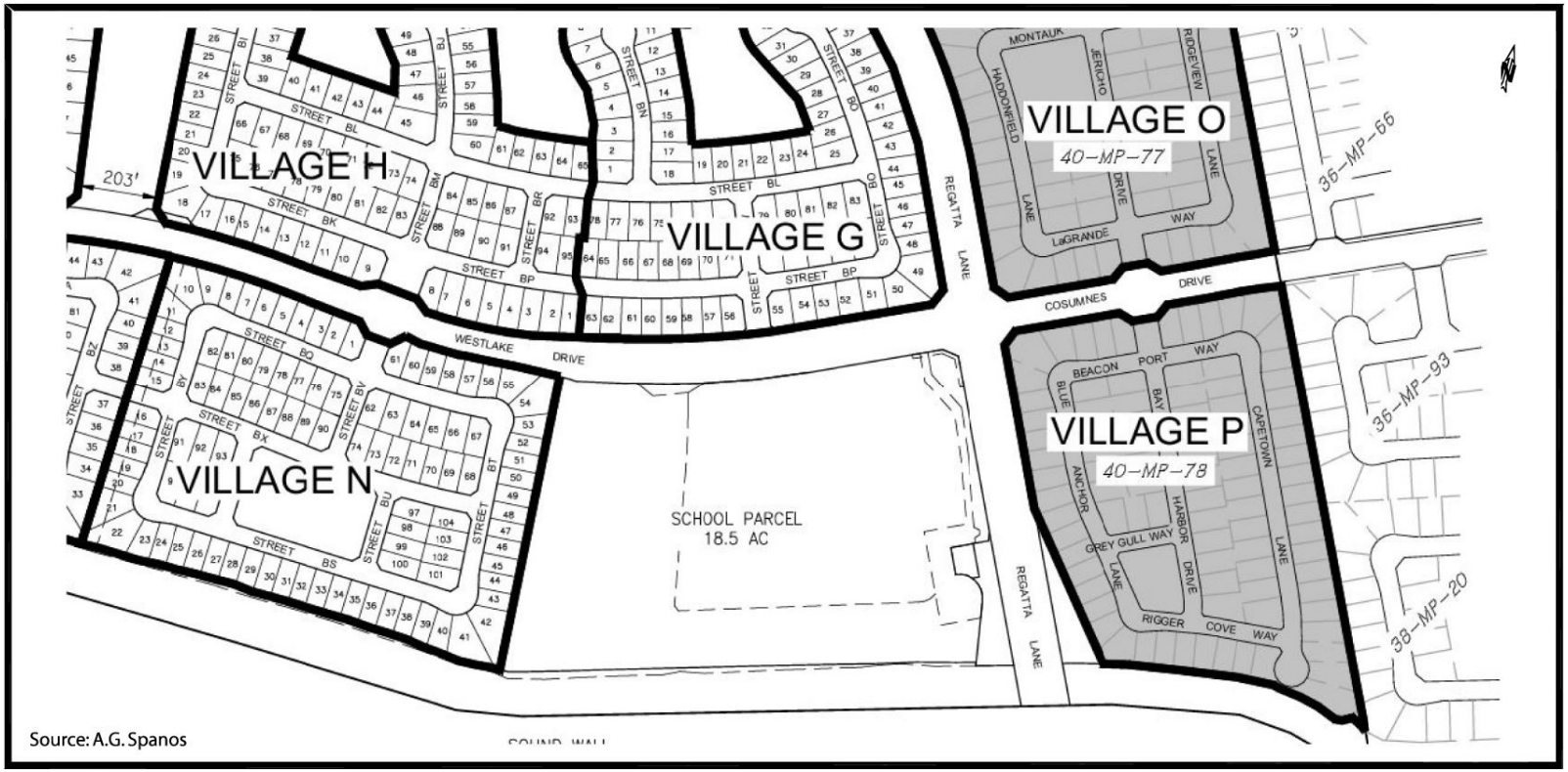

Figure 2 – Proposed Project Site Parcel – Stockton Site I

10. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project as indicated by the checklist on the following pages.

Environmental Factors Potentially Affected		
☐ Aesthetics	☐ Agriculture and Forestry Resources	☒ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Energy
☐ Geology / Soils	☒ Greenhouse Gas Emissions	☒ Hazards & Hazardous Materials
☒ Hydrology / Water Quality	☐ Land Use / Planning	☐ Mineral Resources
☐ Noise	☐ Population / Housing	☐ Public Services
☐ Recreation	☐ Transportation	☒ Tribal Cultural Resources
☐ Utilities / Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

11. ENVIRONMENTAL DETERMINATION

☐ I find that the proposed project could not have a significant effect on the environment, and a Negative Declaration will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A Mitigated Negative Declaration will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an Environmental Impact Report is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measure based on the earlier analysis as described on attached sheets. An Environmental Impact Report is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or Negative Declaration pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or Negative Declaration, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Leonard Kahn, Chief Business Officer

2/01/2021
Date

12. ENVIRONMENTAL CHECKLIST

I. Aesthetics

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:					
a.	Have a substantial adverse effect on a scenic vista?	☐	☐	☐	■
b.	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	■
c.	In non-urbanized areas, substantially degrade the existing visual character or quality public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	■	☐
d.	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	■	☐

a) **No Impact**. The City of Stockton General Plan does not identify any scenic vistas within the Project area. Therefore, there is no significant impact.

b) **Less than Significant Impact.** No State “designated scenic highways” or “eligible scenic highways” are located within the vicinity of the project site (California Scenic Highway Program). There are no rock outcroppings located on the project site; the project description does not include significant demolition to any existing buildings. This is a less than significant impact.

c) **Less Than Significant Impact.** The project would not degrade the visual character or quality public views; the project would be visible from the public viewpoint of Manlio Silva Elementary School. The project would not conflict with applicable zoning or other regulations governing scenic quality with the City of Stockton. Therefore, this is a less than significant impact.

d) **Less Than Significant Impact.** The proposed school site would have the appropriate level of outdoor lighting for the convenience and security of the public and Lodi Unified School District employees during any nighttime activities. Any additional exterior lighting will be appropriately directed to the immediate campus property, and not toward adjacent properties, roadways, or future land uses. The light and glare associated with the proposed project would remain within the project environment; this impact is therefore considered less than significant.

II. Agricultural Resources

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the Project:					
a.	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program in the California Resources Agency, to non-agricultural use?	☐	☐	☐	■
b.	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	■
c.	Conflict with existing zoning for, or cause rezoning of forest land (as defined in PRC Sec. 4526), or timberland zoned Timberland Production (as defined in PRC Sec. 51104 (g)?	☐	☐	☐	■
d.	Result in loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	■
e.	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	■

a-e) **No Impact.** According to the California Department of Conservation's (DOC) Important Farmland Map accessed online, the project site is identified as "Farmland of Local Importance". The project is not in conflict with a zoning for agricultural use or Williamson Act contract, or conflict with existing forest land zoned for Timberland Production. The Development Master Plan Westlake at Spanos Park West (2004) adopted by the City of Stockton re-designated the area to "Mixed Land Use". The project changed from existing agricultural land use to Mixed Use designations. The project will therefore not involve the conversion of prime designated Farmland to non-agricultural use or result in the loss of forest land; therefore, the project will have **no impact**.

III. Air Quality

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:					
a.	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	■	☐
b.	Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	■	☐	☐
c.	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	■	☐
d.	Result in emissions (such as those leading to odors adversely affecting a substantial number of people?	☐	☐	☐	■

The proposed Project site is located within the City of Stockton, in San Joaquin County, which is within the jurisdictional boundaries of the San Joaquin Valley Air Pollution Control District (SJVAPCD). The San Joaquin Valley's relatively flat topography surrounded by elevated terrain and its meteorology provide ideal conditions for trapping air pollution and producing harmful levels of air pollutants, such as ozone and particulate matter. Elevated temperatures, cloudless days, low precipitation levels, and light winds during the summer in the Valley are favorable to high ozone levels. Inversion layers in the atmosphere during the winter months can also trap emissions of directly emitted $PM_{2.5}$ (particulate matter that is 2.5 microns or less in diameter) and $PM_{2.5}$ precursors (such as NOx and sulfur dioxide (SO2)) within the Valley for several days, accumulating to unhealthy levels.

At the federal level, the jurisdictional area of the SJVAPCD is designated as extreme nonattainment for the 8-hour ozone standard, nonattainment for $PM_{2.5}$, and attainment or unclassified for all other criteria pollutants. At the State level, the area is designated as severe nonattainment for the one-hour ozone standard, and nonattainment for the 8-hour ozone, PM_{10}, and $PM_{2.5}$ standards. The area is designated attainment or unclassified for all other State standards. Due to the nonattainment designations, the SJVAPCD has developed plans to attain the State and federal standards for ozone and particulate matter. The plans include the *2013 Plan for the Revoked 1-Hour Ozone Standard*, the *2007 Ozone Plan*, the *2007 PM_{10} Maintenance Plan and Request for Redesignation*, the *2008 $PM_{2.5}$ Plan*, and the *2012 $PM_{2.5}$ Plan*.

Standards of Significance

The SJVAPCD's recommended thresholds of significant impact are a major component of the SJVAPCD's air quality plans. According to the SJVAPCD, projects with emissions should be compared to the thresholds of significance (Table A-1) for criteria pollutants in order to determine potential conflict with or obstruction of the applicable air quality plan.

Table A-1. SJVAPCD Thresholds of Significance

Pollutant	Construction Emissions (tons/yr)	Operational Emissions (tons/yr)
ROG	10	10
NO_X	10	10
CO	100	100
SO_X	27	27
PM_{10}	15	15
$PM_{2.5}$	15	15
Source: SJVAPCD, March 2015.		

a-b) **Less Than Significant Impact.**

The proposed Project site is located within the jurisdictional boundaries of the SJVAPCD. According to SJVAPCD, the procedure for assessing construction and operation emission impacts must be analyzed using the newer CalEEMod 2016 impact calculator. A CalEEMod analysis was conducted by Petralogix Engineering, Inc (Petralogix, 2020) using the following project characteristics: Elementary School Land Use, 800 students, 18.5 acres; Climate Zone 2, 2.7 m/s Wind Speed, 45 days Precipitation Frequency, and Pacific Gas & Electric Utility Company. The project is currently in the feasibility phase with minimal details available. Where project-specific parameters are unknown, the default values in CalEEMod are used as they provide a conservative estimate of emissions.

Typically, construction and operation of a project generates emissions of various air pollutants, including criteria pollutants such as carbon monoxide (CO), ozone precursors such as nitrous oxides (NO_X), reactive organic gases (ROG) or Volatile Organic Compounds (VOC), particulate matter 10 (PM_{10}) and particulate matter 2.5 ($PM_{2.5}$), as well as sulfur oxides (SO_X). For example, typical emission sources during construction include equipment exhaust, dust from wind erosion, earth moving, demolition, excavation and other earthmoving activities, and vehicle movements.

To assist in evaluating impacts of project-specific air quality emissions, the SJVAPCD has adopted thresholds of significance for criteria pollutant emissions, expressed in units of tons per year (tons/yr), as presented in **Table A-1**.

ASSESSMENTS AND FINDINGS

Long Term Operational Emissions. Long-term operational impacts to air quality are greatly determined by land uses and vehicle travel associated with these uses. The amount of long-term emissions that generally result from a project such as a school is largely based on the number of new vehicle trips to the school site as a result of the project. As discussed in the Westlake Villages Environmental Impact Report (EIR), the school is anticipated to accommodate approximately 650 elementary school students residing within the Westlake Villages housing tract, with a commute radius of approximately 1-mile, and the remaining 150 students to come from other neighborhoods within the Lodi Unified School District. The number of students expected to come from within Westlake Villages are anticipated to

bicycle or walk to school or be dropped off by a parent on an already planned trip (i.e., commute trip to work). The California Emissions Estimator Model (CalEEMod) was used to estimate the projects long-term operational emissions using the estimate of 800 students. Detailed CalEEMod results are shown in **Appendix B**, while a summary of the long-term operation project emissions is presented in the table below:

Table A-2. Estimated Operational Air Pollutant Emissions

Pollutant	SJVAPCD Significance Threshold (tons/yr)	Unmitigated Emissions		Mitigated Emissions	
		Total (tons/yr)	Total (lbs/day)	Total (tons/yr)	Total (lbs/day)
ROG	10	0.5367	2.9408	0.5274	2.8898
NO_X	10	2.2246	12.1896	2.1401	11.7265
CO	100	2.4877	13.6312	2.2965	12.5835
SO_X	27	0.0134	0.0734	0.0123	0.0673
PM_{10}	15	0.8518	4.6674	0.7667	4.2011
$PM_{2.5}$	15	0.236	1.2932	0.2126	1.1649
Source: SJVAPCD, March 2015.					

The proposed Project is in the feasibility stage, therefore the planned for operation beginning in 2023 is an estimate. The first full operational year for CalEEMod is 2023. All of the operational emissions (Table A-2) are well below the SJVAPCD Thresholds of Significance. Based on the results, we do not expect a cumulative significant impact for CO. A cumulative impact does not already exist in this region and both the unmitigated and mitigated CO emissions (Table A-2) would not result in localized CO concentration above the SJVAPCD thresholds. Mitigation measures include LUSD incorporating low flow faucets and toilets and instituting a recycling program. Although the site is not likely to utilize a bussing service, this mitigation was modeled based to account for the decrease in emissions associated with the estimated percentage (80 percent) of very local (within 1 mile) students anticipated to bicycle and walk to school or be dropped off by a parent on an already planned commute trip (e.g., commute to work trip). The operational period emissions for the project (Appendix B) are all below the thresholds of significance and are considered less than significant.

Project emissions would be short-term, (approximately 1.5 years), as a result of construction activities, as discussed below.

Short Term, Construction Phase Emissions. Short-term construction impacts to air include the emissions related to construction workers accessing the site, emissions from construction equipment, and grading, as well as emissions related to the application of architectural coatings.

CalEEMod accounted for these construction project characteristics (Appendix B) during the analysis. Short-term emissions for this project are considered to be related to the construction phase of the project. The construction phase of the project is estimated to begin around June 1, 2021 and continue through December 2022, or approximately 1.5 years. Of the many emissions generated during this type of construction, however, PM_{10} is the pollutant of greatest concern. PM_{10} emitted throughout the duration of a construction project

can vary greatly, contingent on the level of activity, the specific operations, the equipment utilized, local soil, weather conditions and other factors, making quantification difficult. The SJVAPCD has adopted a set of PM_{10} Fugitive Dust Rules, collectively called Regulation VIII. Several components of Regulation VIII specifically address fugitive dust generated by construction related activities. Detailed CalEEMod results are shown in Appendix A of this document, while a summary of the proposed Projects results for construction emissions are presented in the table below.

Table A-3. Estimated Construction Air Pollutant Emissions

Pollutant	SJVAPCD Significance Threshold (tons/yr)	Unmitigated Emissions		Mitigated Emissions	
		Total (tons/yr)	Total (lbs/day)	Total (tons/yr)	Total (lbs/day)
ROG	10	0.6726	3.6855	0.6726	3.6855
NO_X	10	2.0941	11.4745	2.0941	11.4745
CO	100	1.9778	10.8373	1.9778	10.8373
SO_X	27	0.00368	0.0202	0.00368	0.0202
PM_{10}	15	0.3475	1.9041	0.2262	1.2395
$PM_{2.5}$	15	0.2045	1.1205	0.1475	0.8082
Source: SJVAPCD, March 2015.					

The mitigated and unmitigated emissions are all well below the SJVAPCD Thresholds of Significance (Table A-3). Based on the highest estimated emissions, evaluated per the SJVAPCD Thresholds of Significance, and the implementation of the following **Mitigation Measure Air 1**, which requires appropriate permitting with the SJVAPCD prior to construction and **Mitigation Measure Air 2**, which incorporates Regulation VIII measures, the project construction impacts to air quality will be **less than significant with mitigation**.

Air Quality Mitigation 1

The Lodi Unified School District shall not begin construction activities until first securing appropriate permits from the San Joaquin Valley Air Control District.

Air Quality Mitigation 2: Construction of the proposed Project shall comply with all the applicable regulations specified in the San Joaquin Valley Air Pollution Control District Regulation VIII (Fugitive Dust Rules). The following procedures will be adhered to by the construction contractor(s) in accordance with Regulation VIII practices:

- Visible Dust Emissions (VDE) from construction, demolition, excavation, or other earthmoving activities related to the Project shall be limited to 20% opacity or less, as defined in Rule 8011.
- Pre-water all land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and phase earthmoving.
- Apply water, chemical/organic stabilizer/suppressant, or vegetative ground cover to all disturbed areas, including unpaved roads.
- Restrict vehicular access to the disturbance area during periods of inactivity.
- Apply water or chemical/organic stabilizers/suppressants, construct wind barriers and/or cover exposed potentially dust-generating materials.

  - When materials are transported off-site, stabilize, and cover all materials to be transported and maintain six inches of freeboard (i.e., minimum vertical distance between the top of the load and the top of the trailer) space from the top of the container.
  - Remove carryout and track out of soil materials on a daily basis unless it extends more than 50 feet from site; carryout and track out extending more than 50 feet from the site shall be removed immediately. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden. If the Project would involve more than 150 construction vehicle trips per day onto the public street, additional restrictions specified in Section 5.8 of Rule 8041 shall apply.
  - Traffic speeds on unpaved roads shall be limited to 15 mph.

- During construction, all earth moving activities shall cease during periods of high winds (i.e., greater than 30 mph). To assure compliance with this measure, grading activities are subject to periodic inspections by LUSD staff.
- Construction equipment shall be kept in proper operating condition, including proper engine tuning and exhaust control systems.
- Areas following clearing, grubbing and/or grading shall receive appropriate BMP treatments (e.g., re-vegetation, mulching, covering with tarps, etc.) to prevent fugitive dust generation.
- All exposed soil or material stockpiles that will not be used within 3 days shall be enclosed, covered, or watered twice daily, or shall be stabilized with approved nontoxic chemical soil binders at a rate to be determined by the on-site construction supervisor.
- Unpaved access roads shall be stabilized via frequent watering, non-toxic chemical stabilization, temporary paving, or equivalent measures at a rate to be determined by the on-site construction supervisor.
- Trucks transporting materials to and from the site shall allow for at least two feet of freeboard. Alternatively, trucks transporting materials shall be covered.
- Where visible soil material is tracked onto adjacent public paved roads, the paved roads shall be swept, and debris shall be returned to the construction site or transported off site for disposal.
- Wheel washers, dirt knock-off grates/mats, or equivalent measures shall be installed within the construction site where vehicles exit unpaved roads onto paved roads.
- Diesel powered construction equipment shall be maintained in accordance with manufacturer's requirements and shall be retrofitted with diesel particulate filters where available and practicable.
- Heavy duty diesel trucks and gasoline powered equipment shall be turned off if idling is anticipated to last for more than 5 minutes.
- Where feasible, the construction contractor shall use alternatively fueled construction equipment, such as electric or natural gas-powered equipment or biofuel.
- Heavy construction equipment shall use low NOx diesel fuel to the extent that it is readily available at the time of construction.

- The construction contractor shall maintain signage along the construction perimeter with the name and telephone number of the individual in charge of implementing the construction emissions mitigation plan, and with the telephone number of the SJVAPCD's complaint line. The contractor's representative shall maintain a log of any public complaints and corrective actions taken to resolve complaints.
- During grading and site preparation activities, exposed soil areas shall be stabilized via frequent watering, non-toxic chemical stabilization, or equivalent measures at a rate to be determined by the on-site construction supervisor.
- During windy days when fugitive dust can be observed leaving the construction site, additional applications of water shall be required at a rate to be determined by the onsite construction supervisor.

c) **Less Than Significant Impact.** Sensitive receptors in the vicinity include the residential housing east of the proposed campus. Since the proposed project does not exceed any of the threshold criteria established by SJVAPCD, it is not anticipated there would be a change in substantial pollutant concentrations.

d) **No Impact.** The proposed project does not include any activities that would result in objectionable odors. Therefore, this is no impact.

IV. Greenhouse Gas Emissions

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
	Would the Project:				
a.	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	■	☐	☐
b.	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	■	☐

Climate change is a global problem. Pollutants with localized air quality effects have generally short atmospheric lifetimes (approximately 1 day), greenhouse gas (GHG) emissions persist in the atmosphere for long enough periods of time (1 year to several thousand years) to be dispersed around the globe. The amount of GHGs required to ultimately result in climate change is not precisely known. What is known is that the amount is enormous, and no single project would measurably contribute to noticeable incremental change in the average global temperature. Therefore, from the standpoint of CEQA, GHG impacts to global climate change are inherently cumulative.

Prominent GHGs of primary concern from land use development projects include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). There are other GHGs, such as chlorofluorocarbons, hydrofluorocarbons, and sulfur hexafluoride, however, these are less of a concern since construction and operational activities associated with land use development projects are not likely to generate these in substantial quantities. To quantify GHG, a standard of "CO_2-Equivalent" or CO_2E is used. Carbon dioxide equivalency (CO_2E) refers to the amount of mixed GHGs that would have the same global warming potential when measured over a specified timescale (generally 100 years).

California has adopted a wide variety of regulations aimed at reducing the State's greenhouse gas (GHG) emissions. These regulations include, but are not limited, to the following:

- **Assembly Bill (AB) 32**. The California Global Warming Solutions Act of 2006, requires California to reduce statewide GHG emissions to 1990 levels by 2020 – which is a reduction of approximately 15 percent below emissions from "business as usual" scenarios. AB 32 directs ARB to develop and implement regulations that reduce statewide GHG emissions.
- **Senate Bill (SB) 32.** The Senate Bill expands upon AB-32 to reduce greenhouse gas emissions. SB-32 codified the 2030 state goal to reduce greenhouse gas emissions to 40 percent below the 1990 level by the year 2030.
- **Executive Order S-3-05.** This order establishes GHG emission reduction targets for California and directs the CAL-EPA to coordinate oversight efforts. The targets, which were established by Governor Schwarzenegger, call for a reduction of GHG emissions to 2000 levels by 2010; a reduction of GHG emissions to 1990 levels by 2020; and a reduction of GHG emissions to 80% below 1990 levels by 2050.
- **Senate Bill 375.** Senate Bill (SB) 375 was enacted in order to align regional transportation planning efforts, regional GHG reduction targets, and land use and house

allocation. SB 75 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS), which will prescribe land use allocation in the MPOs Regional Transportation Plan.

- **Executive Order B-30-15.** This order requires that greenhouse gas emissions in California are reduced by 40 percent below 1990 levels by 2030, and below 1990 levels by 2050.

The San Joaquin Valley Air Pollution Control District has adopted **Rule 9510 – Indirect Source Review (ISR)** in order to:

- Fulfill the District's emission reduction commitments in the PM10 and Ozone Attainment Plans;
- To achieve emission reductions from the construction and use of development projects through design features and on-site measures; and
- To provide a mechanism for reducing emissions from the construction of and use of development projects through off-site measures.

Rule 9510 – Indirect Source Review applies to any applicant that seeks to gain a final discretionary approval for a development project, or any portion thereof, which upon full build-out will include any of the following:

- 50 residential units;
- 2,000 square feet of commercial space;
- 25,000 square feet of light industrial space;
- 100,000 square feet of heavy industrial space;
- 20,000 square feet of medical office space;
- 39,000 square feet of general office space;
- 9,000 square feet of educational space;
- 10,000 square feet of government space;
- 20,000 square feet of recreational space; or
- 9,000 square feet of space not identified above.

a) **Less Than Significant Impact with Mitigation.** The construction of the proposed school Site I would create short-term, small impacts on GHG emissions from construction trips and equipment. Based on the CalEEMod Air Quality Model results (Appendix B), the proposed project construction GHG emissions will generate approximately 322.5949 metric tons per year of CO_2 equivalent. This is considered less than significant.

The long-term operations of the Stockton Site I proposed school site project would create long-term, impacts on GHG emissions. Based on the CalEEMod Air Quality Model results (Appendix B), the proposed project, once operational, will generate approximately 1,457.28 metric tons per year of CO_2 equivalent unmitigated and 1,333.69 metric tons of CO_2 equivalent mitigated. In terms of operational emissions, ARB staff allows small projects to be considered insignificant if a project consists of a quantitative threshold of 7,000 metric tons of carbon dioxide equivalent per year for operational emissions. This is well below the proposed threshold of significance of 7,000 MT/Year of CO_2E for operations proposed by ARB. In addition, it should be noted that the proposed Project is designed to accommodate students who live within 1-mile of the Site, therefore there would not be a significant increase in the regional vehicle miles traveled (VMT). This is a less than significant impact.

According to San Joaquin Valley Air Pollution Control District (District), if a proposed Project exceeds 9,000 square feet of educational space, the District concludes that the proposed Project would be subject to District Rule 9510 (Indirect Source Review). As the District notes, in general, new development contributes to the air pollution problem by increasing the number of vehicles and the amount of vehicle miles traveled; the District states that Rule 9510 ISR is in response to reduce vehicle miles traveled. It is worth noting then, that the need for the proposed Stockton Site I school site is in response to the projected need of local students to access education. Therefore, upon completion of the Stockton Site I school site, the project would prevent an increase in local VMT by providing a school in close proximity which is in a neighborhood designed to promote walking and bicycle commuting to school. Although the District may consider Rule 9510 ISR applicable to the proposed Project due to its overall footprint of approximately 18.5 acres, the trip generation anticipated for the school (within 1 mile by approximately 80 percent of students) is considered a more reasonable assessment given the nature of the proposed Project discussed above. Furthermore, there will be a slight reduction of GHG impacts with implementation **Mitigation Measure GHG – 1 and Mitigation Measure GHG – 2.** This is considered **less than significant**.

Mitigation Measure GHG – 1

- **A minimum of twenty new trees will be planted post construction.**

Mitigation Measure GHG – 2

- **A minimum of five bike racks will be installed post construction, and in accordance with the City of Stockton and California Department of Education Standards.**

b) **Less Than Significant Impact.** ARB staff allows small projects to be considered insignificant if a project consists of a quantitative threshold of 7,000 metric tons of CO_2 equivalent per year for operational emissions. As discussed above, the CO_2 equivalent for the project operation emissions is 1,457.28 MT/Year unmitigated and 1,333.69 MT/Year mitigated. According to San Joaquin Valley Air Pollution Control District (District), if a proposed Project exceeds 9,000 square feet of educational space, the district concludes that the proposed Project would be subject to District Rule 9510 (Indirect Source Review). However, the proposed Project will accommodate a predominantly very local (within 1-mile) student base; therefore, Rule 9510 should be considered non-applicable to the project. The project would be subject to all applicable permit and planning requirements in place or adopted by the District, San Joaquin County, and the City of Stockton. No significant conflict with GHG reduction policies is anticipated, therefore, there is a **less than significant impact**.

V. Biological Resources

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the proposal:					
a.	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	■	☐	☐
b.	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	■
c.	Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	■	☐
d.	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?	☐	☐	■	☐
e.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	■
f.	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	■

Monk & Associates prepared a Biological Constraints Analysis for the Westlake Villages Environmental Impact Report (SCH #2004052105) which encompasses the proposed project site. Their report includes biological assessment for potentially regulated Waters of the U.S. and wetlands, Federal and State special-status species, or potentially suitable habitat for species within the project site, in accordance with the Federal Endangered Species Act (FESA), the Clean Water Act (CWA), the Rivers and Harbors Act, the Migratory Bird Species Act (MBTA), the California Endangered Species Act (CESA), the California Environmental Quality Act (CEQA), the Fish and Game Code of California, the Porter-Cologne Water Quality Control Act, and the California Native Plant Protection Act. They also conducted a field survey of the proposed project site, which included an assessment of potentially jurisdictional waters of the U.S., special-status species, and suitable habitat for special-status species. The results of their assessment are hereby incorporated by reference (Monk & Associates, 2003) and available for review in Appendix A.

Monk & Associates utilized the California National Diversity Database (CNDDB) to identify wildlife and plant species that have been previously documented in the project vicinity or that have the potential to occur based on suitable habitat and geographical distribution. The proposed project site area was dominated by cultivated crops and associated weedy species at the time the EIR was drafted; the project site has since been further modified by intensive grading associated with the surrounding construction projects.
The Proposed School Site – Stockton Site I Project mitigated potential impacts to special-status species by participating in the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan in 2005, therefore, no additional fees are required from LUSD, however, SCCOG recommends LUSD contact them at least 30 days prior to ground disturbance activities for a biological site visit.

a) **Less Than Significant Impact with Mitigation Incorporated.** The project site is former agricultural cropland / ruderal habitat that a has been recently graded. Development of the proposed project would not result in the removal of any large trees or shrubs, and therefore from a wildlife habitat perspective is a less than significant impact. Based on the past and present agricultural and grading disturbances, it is unlikely that special-status plants and animal species occur in the site due to a lack of habitat. The Project site was mitigated through San Joaquin County Multi-species Habitat Conservation and Open Space Plan in 2005 and covers any potential impacts, with the exception of nesting and migratory birds (discussed further below). The Project, therefore, would not significantly modify, either directly or indirectly, habitats of any species identified as candidate, sensitive, or special status. Special-status species are plants and animals that are legally protected under the CESA, FESA, or other regulations.

   The Federal Endangered Species Act (FESA) of 1973 (16 U.S.C. 1531-1543) and subsequent amendments provide guidance for the conservation of endangered and threatened species and the ecosystems upon which they depend. Section 7 of FESA requires Federal agencies to ensure that the actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat for these species. Critical habitat is areas mapped by United States Fish and Wildlife Service (USFWS) as being critical to maintain and/or manage in a relatively natural state for the recovery of a listed species.

   The California Endangered Species Act (CESA) (Fish and Game Code 2050 et seq.) establishes the policy of the State to conserve, protect, restore, and enhance threatened or endangered species and their habitats. CESA mandates that State agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species, if reasonable and prudent alternatives are available that would avoid jeopardy. The CDFW is required to issue a written finding indicating if a project would jeopardize threatened or endangered species and specifying reasonable and prudent alternatives that would avoid jeopardy.

   CEQA Guidelines Section 15380 provides that a species not listed under the FESA or CESA may be considered rare or endangered under specific criteria. These criteria have been modeled after the definitions in FESA and CESA.

   As discussed above, the potential for intensive use of habitat by special status plant and animal species within the project site is low due to the agricultural use and recent grading

activities. The potential use of habitats within the project site is considered low with the exception of Swainson's hawk, burrowing owl, white-tailed kite, northern harrier, loggerhead shrike, and tricolored blackbird, therefore, nesting surveys will be required to demonstrate that there are no direct take of these species. The Swainson's hawk is a migratory hawk listed by the State of California as a Threatened species. The Migratory Bird Treaty Act and fish and Game Code of California protect Swainson's hawk year-round as well as their nests during nesting season (March 1 through September 15). Swainson's hawk could be disturbed by noise if they nested in or near the project site during construction.

Implementation of the following mitigation measures would reduce the above-identified impacts to biological resources to a less-than-significant level.

Biological Resources Mitigation Measure 1 - Preconstruction Survey Requirements
A qualified biologist shall conduct a preconstruction survey for nesting Swainson's hawks within 0.25 miles of the project site if construction commences between March 1 and September 15. If active nests are found, a qualified biologist should determine the need (if any) for temporal restrictions on construction. This determination should be pursuant to criteria set forth by CDFW.

Removal of trees, shrubs, and grasslands may affect nesting birds protected by the federal Migratory Bird Treaty. In order to reduce any potential impacts to nesting migratory birds to a less than significant level, Biological Resources Mitigation Measure 2 is required:

Biological Resources Mitigation Measure 2 - Preconstruction Nesting Bird Survey
On-site trees, shrubs, and grasslands may be used by nesting birds protected by the Migratory Bird Treaty Act of 1918 and Fish and Game Code of California. A qualified biologist shall conduct a preconstruction nesting bird survey if vegetation removal and/or project construction occurs between February 1 and August 31. If active nests are found within the survey area, vegetation removal and/or project construction should be delayed until a qualified biologist determines nesting is complete.

Based on the previous mitigation through SJMSCP and implementation of the aforementioned mitigation measures would reduce the above-identified impacts to biological resources to a less-than-significant level.

b) **No Impact.** The proposed project will have no adverse impacts on sensitive or regulated habitat because the Project site itself is devoid of native riparian vegetation or other sensitive natural community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS. Therefore, there is no impact.

c) **Less than Significant Impact.** There are no potentially jurisdictional Waters of the U.S. or wetlands in the site. The site consists entirely of former agricultural land that had been recently graded and highly disturbed. The proposed Project will be subject to the Construction General Permit and the implementation of a Storm Water Pollution Prevention Plan (SWPPP) to reduce impacts to waterways and sources. Therefore, this is a less than significant impact.

d) **Less than Significant Impact.** The project site is located adjacent north of the Pixley Slough and separated by a levee. The proposed project will not interfere with the movement of any other native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors or impede the use of native wildlife nursery sites. The

proposed Project will be subject to the Construction General Permit and the implementation of a Storm Water Pollution Prevention Plan (SWPPP) to reduce impacts to waterways and sources. Therefore, this is a less than significant impact.

e) **No Impact.** The proposed project Site is historic agricultural land that has been graded; the Site is primarily ruderal vegetation. This is considered no impact.

f) **Less than Significant Impact.** The project Site was mitigated through the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan as part of mitigation drafted in the Westlake Villages Environmental Impact Report (SCH #2004052105). LUSD will notify the San Joaquin Council of Governments at least 30 days prior to ground disturbance for a biological site visit at no cost to LUSD. Therefore, this is a less than significant impact.

Biological Resources Mitigation Measure 3

The Project was mitigated through the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan. The Project shall coordinate with San Joaquin Council of Governments (555 E. Weber Avenue, Stockton, CA 95202), prior to any site disturbance activities. The project site was addressed in the previous Westlake Villages project and biological impacts associated with development of the project site have been mitigated through the SJMSCP. Standard Incidental Take Minimization Measures (ITMMs) of the SJMSCP will apply to the project.

VI. Cultural Resources

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:					
a.	Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☐	■
b.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	■	☐	☐
c.	Disturb any human remains, including those interred outside of formal cemeteries.	☐	■	☐	☐

Project Setting:

A technical cultural resources study was prepared by LSA Associates, Inc. titles *A Cultural and Paleontological Resource Study for the Paradise Village Development Project*, dated September 2003 and incorporated into the Westlake Villages Environmental Impact Report (SCH #2004052105) available for review in Appendix A. For confidentiality purposes, the Study was not included as an appendix in the EIR.

According to a non-confidential records search provided by the North Central Information Center (NCIC) of the California Historical Resources Information System (CHRIS) maps for cultural resource site records and survey reporting in San Joaquin County within 1/4-mile radius of the proposed project area, is located within the boundaries of the former Southern Bishop Tract Farm, a 1910-1960 era agricultural operations, however," All the buildings have been removed, the land graded, and filled in anticipation of subdivision construction".

a) **Less than Significant.** On May 20, 2020, Petralogix Engineering, Inc. (Petralogix) sent a letter describing the project with maps depicting the project area to the San Joaquin Historical Society. The letter requested any information or concerns about cultural resources in the project area. No response to consultation from attempt the Historical Society has been received to date. Petralogix submitted a record search at the Northern Central Information Center (NCIC) on May 7, 2020 for the project area with a quarter-mile search radius. The NCIC, of the California Historical Resources Information System, California State University, Stanislaus, an affiliate of the Office of Historic Preservation (OHP), is the official state repository of cultural resource records and reports for San Joaquin County. As part of the records search, Petralogix reviewed the California Inventory of Historic Resources, California Points of Historical Interest, California Historical Landmarks, and the Directory of Properties in the Historic Property Data File available on the OHP online records search. No cultural resources were identified within the project area, or within a quarter mile of the project area. This is a less than significant impact.

   NCIC File No.: 11394L indicates zero (0) prehistoric-period resource(s) and zero (0) historic-period cultural resource(s) on file within the immediate project area, however, the project

area is located within the boundaries of the former Southern Bishop Tract Farm, where a 1910-1960 era agricultural operation was identified. However, “All the buildings have been removed, the land graded and filled in anticipation of subdivision construction” and according to the Office of Historic Preservation Built Environment Resource Directory (BERD) (dated December 19, 2019) the historical resource has been given a rating of 6Y: Determined ineligible for the National Register of Historic Places by consensus through Section 106 process, not evaluated for the California Register of Historical Resources of for Local Listing The NCIC records search conducted outside the project area, but within ¼-mile of the proposed project area, recognized zero (0) prehistoric-period resource(s) and zero (0) historic-period cultural resource(s). Per NCIC, the project area has been subject to cultural resources investigations and no recommendations for further study are made at this time.

Given the extent of known cultural resources and patterns of local history, NCIC reports there is low potential for locating historic period cultural resources in the immediate vicinity of the proposed project area, however, NCIC does caution if archaeological resources are encountered during project related activities, work should be temporarily halted in the vicinity of the discovered materials and workers should avoid altering the materials and their context until a qualified professional archaeologist has evaluated the situation and provided appropriate recommendations. This recommendation has been incorporated at **Cultural Resource Mitigation Measure CR-1**, described below.

b) **Less than Significant with Mitigation Incorporated.** A significant impact will occur if the project causes a substantial adverse change to an archaeological resource through demolition, construction, conversion, rehabilitation, relocation, or alteration. Based on the technical cultural resources study prepared for the Environmental Impact Report by LSA Associated, Inc. entitled *A Cultural and Paleontological Resource Study for the Paradise Village Development Project*, September 2003, and the recent (May 2020) records request with Northern Central Information Center (NCIC), no archaeological resources were identified within the project area. However, archaeological resources may exist within the project area. In the event that archaeological resources are observed during project construction-related activities, **Mitigation Measure CR-1** is in place to reduce impacts to a less than significant level. Therefore, the impact on archaeological resources is considered less than significant with mitigation incorporated.

Cultural Resources Mitigation Measure 1

If prehistoric or historic-period archaeological deposits are discovered during Project activities, all work within 25 feet of the discovery should be redirected and the archaeologist should assess the situation, consult with agencies as appropriate, and make recommendations regarding the treatment of the discovery. Impacts to archaeological deposits should be avoided by project activities, but if such impacts cannot be avoided, the deposits should be evaluated for their California Register eligibility. If the deposits are not California Register–eligible, no further protection of the finds is necessary. If the deposits are California Register–eligible, they should be protected from Project-related impacts, or such impacts should be mitigated. Mitigation may consist of, but is not necessarily limited to, systematic recovery and analysis of archaeological deposits, recording the resource, preparation of a report of findings, and accessioning recovered archaeological materials at an appropriate curation facility. Public educational outreach may also be appropriate.

c) **Less than Significant with Mitigation Incorporated.** A significant impact may occur if grading or excavation activities associated with the proposed Project would disturb

previously interred human remains. Implementation of **Mitigation Measure CR-2** would ensure that human remains encountered during Project activities are treated in a manner consistent with state law and reduce impacts to human remains to a less than significant level as required by CEQA. This would occur through the respectful coordination with descendant communities to ensure that the traditional and cultural values of said community are incorporated in the decision-making process concerning the disposition of human remains that cannot be avoided. The implementation of these mitigation measures would reduce this potential impact to a less than significant level.

Cultural Resources Mitigation Measure 2

Any human remains encountered during Project ground-disturbing activities should be treated in accordance with California Health and Safety Code Section 7050.5. The lead agency should inform its contractor(s) of the sensitivity of the Direct Area of Potential Effect for human remains and verify that the following directive has been included in the appropriate contract documents:

> If human remains are encountered during Project activities, the Project shall comply with the requirements of California Health and Safety Code Section 7050.5. There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the county coroner has determined the manner and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation or to his or her authorized representative. At the same time, an archaeologist shall be contacted to assess the situation and consult with agencies as appropriate. Project personnel/ construction workers shall not collect or move any human remains and associated materials. If the human remains are of Native American origin, the coroner must notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission will identify a Native American Most Likely Descendant to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods.

VII. Energy

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a.	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project or construction operation?	☐	☐	■	☐
b.	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	■

Energy resources in California include electricity from renewable and non-renewable forms, natural gas, and petroleum.

a,b) **Less than Significant Impact**. The proposed school site will accommodate growth in the Westlake Villages; the campus is still in the concept phase; however, new buildings will be efficient. The project will be required to comply with Title 24 of the California Code of Regulations. This is a less than significant impact.

Construction energy consumption is associated with the construction equipment and vehicles. The proposed project will require construction equipment and vehicles to limit idling time to 5 minutes or less. Therefore, fuel consumption associated with the proposed project would not result in an inefficient, wasteful, or unnecessary consumption of energy resources during project construction. This is considered a **less than significant impact.**

VIII. Geology and Soils

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:					
a.	Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
	i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	■	☐
	ii. Strong seismic ground shaking?	☐	☐	■	☐
	iii. Seismic-related ground failure, including liquefaction?	☐	■	☐	☐
	iv. Landslides?	☐	☐	☐	■
b.	Result in substantial soil erosion, or the loss of topsoil?	☐	☐	■	☐
c.	Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	■	☐

Mid Pacific Engineering, Inc. (MPE) completed a *Preliminary Geologic Hazards and Geotechnical Engineering Report* (included in **Appendix C**) *for the proposed LUSD Stockton - School Project*, dated August 15, 2019. The Project proposed Lodi Unified School District education facility to be located south of the intersection of Regatta lane and Cosumnes Drive in Stockton, California. The purpose of the MPE study have been to investigate the site, soil, geologic, and groundwater conditions. MPE's report presents the results of subsurface exploration, including findings on faulting and seismic hazard and soil conditions. The number of buildings, their locations, and sizes, as well as site grading concepts have not been developed at the time of this study.

a) **Less than Significant Impact.**

i. **Less than Significant Impact.** The subject site is located in the California Central Valley Area, which is a relatively low to moderate seismically active area. The Project area is not listed within a State designated Alquist-Priolo Earthquake Fault Zone. There are no mapped surface or subsurface faults that traverse the Project area per review of Fault-Rupture Hazard Zones in California, Special Publication 42. No indication of surface rupture or fault-related surface disturbance was observed at the site during site reconnaissance, geotechnical investigation, or review of aerial photographs (MPE, 2019). Therefore, MPE concludes that ground rupture at the site resulting from seismic activity is unlikely. Construction will be required to meet the design standards set forth in the 2016/2019 editions of the California Building Code (Title 24 of the California Code of Regulations, Chapter 16A) which should be sufficient to prevent significant damage

from ground shaking events. Therefore, this is considered a **less than significant impact**.

ii. **Less than Significant.** In general, strong ground shaking from an earthquake is the cause of most seismic ground shaking damage. The California Building Code Site Classification for the proposed project site is D, corresponding to a stiff soil profile. As stated above, the proposed project is not located within an Alquist-Priolo Earthquake Fault Zone. Construction will be required to meet the seismic design criteria in accordance with the 2016/2019 California Building Code Seismic Design Parameters. Based on the design standards required, the project being located outside an Alquist-Priolo Earthquake Fault Zone, ground shaking is considered **less than significant.**

iii. **Less than Significant Impact.** Liquefaction is a mode of ground failure that results from the generation of excess pore-water pressures during earthquake ground shaking, causing loss of shear strength. This phenomenon generally occurs in areas of high seismicity, where groundwater is shallow, and soils are loose and granular. Strong seismic shaking can also cause cyclic softening of saturated relatively non-plastic fine-grained soils. The California Geologic Survey (CGS) has designated certain areas within California as potential liquefaction hazard zones. These are areas considered at risk of liquefaction-related ground failure during a seismic event, based upon mapped surficial deposits and the likely presence of a relatively shallow water table. The California Department of Conservation has not identified any liquefaction hazard zones within San Joaquin County (CGS, 2017).

A liquefaction analysis was performed by MPE as part of their geotechnical evaluation. Per MPE, the site is not shown on liquefaction susceptibility maps published by the USGS in cooperation with the California Geologic Survey (CGS). Based on observed site geologic and seismic conditions, the upper approximately 50 feet contain soils that may be potentially liquefiable and susceptible to seismic settlements. The Liquefaction Potential Index (LPI) values estimate for the site falls within the moderate risk range; based on the observed soils profile and the depths at which liquefaction settlement is estimated to occur, MPE considers the estimated settlements to be a worst-case scenario. The site will be developed with liquefaction potential mitigation as needed. This is a **less than significant with mitigation incorporated.**

iv). **No Impact**. The Project area is located on geographically level terrain (average grade less than five degrees) considered insufficient to produce a landslide. There are no slopes in the immediate or general area. As a result, no impacts related to landslides are anticipated.

b) **Less than Significant Impact**. According to MPE, a majority of the Site contains stockpiles from 3 to 6 feet in vertical height which will require complete removal to expose undisturbed native soils prior to further earthwork operations. As a normal and standard requirement, the Project would be required to prepare and have approved individual Stormwater Pollution Prevention Plans (SWPPPs) that mandate construction and post-construction water quality provisions, including but not limited to erosion control plans during construction, installation of biofilters and/or mechanical cleansing of stormwater run-off, and similar elements. As a result of these standard engineering measures, the Project would have a less than significant impact on substantial soil erosion and issues resulting from the removal of topsoil during and after the construction process.

c) **Less than Significant Impact**. The Geotechnical Engineering Report performed by MPE for the proposed Project consisted of four borings drilled to maximum depths of approximately 26.5 feet below ground surface (bgs), eight test pits, and two Cone Penetration Test (CPT) soundings to a maximum depth of 50 feet below ground surface. Groundwater was encountered at depths ranging from 7.5 to 10 feet below existing grade during the boring portion of the Geotechnical Investigation by MPE. Subsidence occurs when a large land area settles due to extensive withdrawal of groundwater, oil, natural goas, or oxidation of peat. Based on the soil stockpiles (approximately three to six feet in height) subsurface sampling and the mapped geology, the near-subsurface stockpile soil conditions encountered generally consisted of clayey sand, clayey silt/silty clay, and silty sands to approximately 2.5 feet below existing grades. The native surface and near-surface soil conditions were underlain by medium dense to dense silty and clayey sand, medium dense cohesionless sand, very stiff to hard silty clay and very stiff clayey silt (MPE, 2019). Based on the Department of Water Resources (DWR) subsidence map of the Central Valley of California indicating future land subsidence is low for the area, in addition to subsurface conditions encountered at the site, settlement at the site due to subsidence is considered very unlikely (MPE, 2019).

Based on their observations during subsurface exploration, laboratory testing, and analysis, MPE's opinion is that the proposed school site Project native and stockpiled soils will be suitable for use as engineered fill if the materials are at a workable moisture content and free of rubbish, rubble, debris, root, and concentrations of organics, and have a maximum particle size of three inches or less (MPE, 2019). As discussed above, liquefaction at the site is considered very moderately likely. Additionally, landslide potential in the area is negligible due to the flat topography at the site; this is a **less than significant impact**.

IX. Hazards and Hazardous Materials

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:					
a.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	■	☐	☐
b.	Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	■	☐	☐
c.	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	■
d.	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	■	☐
e.	For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard for people residing or working in the Project area?	☐	☐	☐	■
f.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	■	☐
g.	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	■

The Lodi Unified School District is proposing to construct a new school site to accommodate growth associated with the Westlake Villages Development.

Petralogix Engineering, Inc. performed a *Phase I Environmental Site Assessment – Proposed School Site – Stockton Site I* report dated June 6, 2019 for the proposed school site (APNs: 066-050-07, portion of -08). The Phase I engaged the services of Environmental Data Resources, Inc. (EDR) of Milford, Connecticut; EDR provided Petralogix a list and profile of recorded sites within the project area that have been identified by regulatory agencies of significance. As part of the Phase I, Petralogix performed a search of publicly available databased including the CalEPA Regulated Site Portal and the State Water Resources Control Board (SWRCB) information management system for groundwater, the Geotracker Database. Results of the Phase I investigation are discussed below in section IX(d). The Phase I ESA is available for review as **Appendix D**.

The Phase I ESA performed by Petralogix (2019) recommended soil sampling for organochlorine pesticides, arsenic, and lead be conducted in the former agricultural field and

filled in basin. The original Phase I also recommended sampling for the same constituents of concern in an area with two historic structures which had been demolished prior to the 1970's, however, based on a lot line adjustment, the former structures were no longer within the proposed school site footprint. The Department of Toxic Substances (DTSC) issued an approval letter for a Preliminary Environmental Assessment Workplan dated May 15, 2020. The results of the Preliminary Environmental Assessment (PEA) for the Stockton Proposed School Site – Stockton Site I (Petralogix, 2020) is discussed below and available for review in Appendix E.

a,b) **Less than Significant Impact with Mitigation Incorporated.** There is the potential accidental release of hazardous material through possible spills associated with the construction phase equipment, such as oil and/or hydraulic fluid, during the construction phase of the project. With the implementation of Mitigation Measure Hazards and Hazardous Materials 1, which requires standard spill prevention measures and a procedure for spill response if one does occur, the projects potential to create a significant hazard to the public or the environment involving transport, use, disposal, or accidental release of hazardous materials, the impact is less than significant with mitigation incorporated.

Hazards and Hazardous Materials Mitigation 1

Spill Prevention and Control Measures will be implemented and include the following:

- Any fuel products, lubricating fluids, grease, or other products and/or waste released from the Contractor(s) vehicles, equipment, or operations, shall be collected, and disposed of immediately, and in accordance with State, Federal, and local laws.
- Spill clean-up materials will be stored near potential spill areas (such as vehicle and equipment staging areas).
- Spill kits will include sorbent material (such as pads designed for oil and gas), socks and/or pads to prevent spread of hazardous material, and containers for storing and proper disposal.
- Employees and contractor(s) will be trained on proper hazardous spill clean-up practices.

c) **Less Than Significant Impact**. **Air Emission Facilities** —California Department of Education Code Section 17213(b); Public Resources Code Section 21151.8(a)(2); and the California Code of Regulations, Title 5, Section 14011(i) requires a school district, in consultation with the local air pollution control district, to identify facilities within one-quarter mile of the proposed site that might reasonably be anticipated to emit hazardous air emissions or handle hazardous or acutely hazardous materials and substances of waste. The San Joaquin Valley Air Pollution Control District (SJVAPCD) is responsible for providing written notification of any findings to the school district.

A public records request form was submitted to the SJVAPCD requesting the identification and review of all sites potentially emitting hazardous air emissions within one-quarter mile of the proposed project site. The request form additionally requests any permit applications, permits to operate, health risk assessments, asbestos notification reports, and site inspection reports, if applicable. A response dated May 9, 2019, by Noemi Calderon, public records request coordinator, via email indicated the no records on file for this location, Public Records Request File Number C-2019-4-90. Therefore, **no impact**.

d) **Less Than Significant Impact**. The project takes place within the boundary of the Westlake Villages parcels designated for the proposed school site (APNs: 066-050-07, portion of -08). The project is not included in any hazardous materials sites compiled

pursuant to Government Code Section 65962.5. In addition, a Phase I Environmental Site Assessment report was conducted by Petralogix Engineering, Inc., dated June 6, 2019. Petralogix engaged the services of Environmental Data Resources, Inc. (EDR) of Milford, Connecticut; EDR provided Petralogix a list and profile of the recorded sites within the project area that have been identified by regulatory agencies of significance. The Phase I was performed in accordance with ASTM Standards E-1527, and as such, a thorough data review including local sources such as the San Joaquin County Environmental Health Department and a site reconnaissance was performed. The Department of Toxic Substances Control ENVIROSTOR website and the State Water Resources Control Board GeoTracker website were additionally reviewed for the site and adjacent parcels, in an attempt to identify hazardous materials that would create a significant hazard to the public or the environment.

According to the Phase I ESA (Petralogix, 2019) the proposed school site was historically agricultural land use, therefore, a Preliminary Environmental Assessment (PEA) with Department of Toxic Substance Control (DTSC) oversight was initiated to determine if past agricultural practices have resulted in the release of hazardous substances which pose a threat to public health or the environment. The PEA, which was published for public comment on October 6, 2020, indicated soil samples collected to evaluate historical agricultural use did not reveal concentrations of arsenic, lead, or organochlorine pesticides that exceed the unrestricted land use environmental screening criteria used by Department of Toxic Substances Control. Based on the analytical data, the Site does not pose a significant risk to human health and the environment and appears suitable to accommodate plans to develop the proposed school site. In addition, records were reviewed for adjacent parcels; no hazardous materials impact was identified from any surrounding parcels.

Pipelines

According to Pacific Gas & Electric online interactive natural gas transmission pipeline map, no hazardous pipelines have been identified within 1,500 feet of the project site. A request for any gas distribution maps or Kinder Morgan pipeline/transmission line location information was sent to Kinder Morgan via email on June 8, 2020 (email inquiry PPLINQSYS-635). An email response from Kinder Morgan representative Joe Vargas received June 9, 2020 indicates the nearest facility is a pipeline over five miles south of the project site and is therefore “no conflict”. The contractor(s) responsible for construction phases of the project will call 811 prior to digging or excavation in order to assure no smaller pipelines that may be within the project site are damaged. This is a **less than significant impact** from gas transmission pipelines or hazardous materials pipelines.

High Voltage Transmission Lines

A records request was sent to Pacific Gas & Electric Company on June 5, 2020 and requesting information regarding any potential transmission lines or transmission easements in the project site area. An email response was received on June 10, 2020 indicating there are no electric transmission facilities in the area. Existing electric distribution facilities that are adjacent to the proposed project are discussed in the Utilities Section. There is a **less than significant impact** from high voltage transmission lines.

Railroad Tracks

Based on review of Google Earth Maps, the proposed project site is located over 3.5 miles west from the nearest railroad tracks. There is **no impact** to the site from railroad tracks.

Asbestos

Asbestos is a generic term for the naturally occurring fibrous (asbestiform) variety of any of several minerals (crocidolite, tremolite, actinolite, anthophyllite, amosite and chrysotile) which separate into long flexible fibers and occur naturally in ultramafic rock formations. These igneous ultramafic rocks (pyroxenite, peridotite, dunite, and hornblendite) form below the earth's surface at very high temperatures and are exposed by uplift and erosion. During high-pressure processes involving tectonic deformation and burial, they may be altered to the metamorphic rock serpentinite. Chrysotile, the most common asbestos mineral in California, forms fibrous crystals in small veins in serpentinite rock. According to the California Department of Conservation, Division of Mines and Geology Open File Report 2011-1188, *Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California*, the subject property is not located in an area more likely to contain naturally occurring asbestos. Based on this information and given the geological conditions in the site area, the issue of naturally occurring asbestos from rock/soil is not expected to be a concern at the site. This is considered a **less than significant impact**.

Radon Potential

Radon is a gas that is produced by the decay of uranium and radium. This naturally occurring, colorless, odorless, and tasteless gas is produced in most soil or rock. Consequently, all buildings have some radon, as well as the outdoor air. Radon can move with ease through any porous material through which a gas can move. Void spaces and pores are found in the soil underlying any building. Radon is a known carcinogen which the Surgeon General has warned is the second leading cause of lung cancer in the United States.

The National Radon Database has been developed by the United States Environmental Protection Agency and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years of 1986 through 1992.

According to EPA publication 402-R-93-025, titled EPA's Map of Radon Zones, California, dated September 1993, San Joaquin County is reportedly in Zone 3. Zone 3 has a predicted average radon screening level of less than 2 pCi/l. This is considered to be the lowest value of geologic radon potential. Therefore, the impact to the site from radon is considered **less than significant**.

e) **No Impact.** The California Department of Education requires, per Education Code Section 17215, that all airport runways and helipads (public or private) located within two miles of a proposed school site be identified. However, the Education Code pertains to the proposed acquisition or lease of a site and per Section 17215(f).

Based on review of aerial photographs provided by Google Earth, along with the most recent topographic map (Terminous, 2018), the nearest runway is the Kingdon Airpark, located approximately 3.74 miles northeast of the project site. Therefore, this has **no impact** on the site.

f) **Less than Significant Impact.** The proposed project is not expected to interfere with road access, adopted emergency response plan or emergency evacuation plans for safety vehicles or personnel. The construction of the project is not expected to generate excessive traffic for the area but will temporarily increase traffic on the surface roads traveled to and from the site. A path of travel (POT) plan will be drafted which will be compliant with the current applicable California building code accessibility provisions for path of travel requirements. During construction, if POT items within the scope of the project represented as code compliant are found to be non-conforming beyond reasonable construction tolerances, they shall be brought into compliance. Therefore, a **less than significant impact is expected.**

g) **No Impact.** The Project is located within a region that consists of residential houses developed on former agricultural land within the San Joaquin Delta. The Project will not expose people or structures to a significant risk of loss, injury or death involving wild land fires. Therefore, **no impact** is expected.

X. Hydrology and Water Quality

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
	Would the Project:				
a.	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	■	☐
b.	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	■	☐
c.	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces in a manner which would:	☐	☐	■	☐
	i. result in substantial erosion or siltation on- or off-site;	☐	☐	■	☐
	ii. substantially increase the rate of amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	■	☐
	iii. create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	■	☐
	iv. impede or redirect flows?	☐	☐	■	☐
d.	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	■	☐
e.	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	■

The project site is located within the Secondary Delta Zone within the Bishop Tract with Bear Creek and Pixley Slough less than 100 feet south. The project site is located in the lower reaches of the San Joaquin River basin north of Stockton which is influenced by tidal fluctuations.

The site is not located within a Special Flood Hazard Area (SFHA) as designated by the Federal Emergency Management Agency (FEMA). The risk of flooding at the site is considered low to moderate since the flood risks have been significantly reduced through the Locally Constructed Flood Control Project initiated in 1998 by the San Joaquin Area Flood Control Agency in 1998, which includes flood protection facilities on Bear Creek and Pixley Slough located just south of the site.

The proposed construction will take place on approximately 20 acres of land located north of Bear Creek/Pixley Slough, and not within county road ditches or waterways. Construction

impacts will be temporary and best management practices will be in place. The Project is subject to Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as excavation. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). As such, the construction activities will include the preparation and implementation of a SWPPP to reduce construction impacts to waterways and sources.

a) **Less Than Significant Impact**. The State Water Resources Control Board (SWRCB) has adopted a National Pollutant Discharge Elimination System (NPDES) general permit for Storm Discharges Associated with Construction Activity (state permit) which requires every construction project greater than one acre to submit a Notice of Intent (NOI) for coverage, and to prepare a Storm Water Pollution Prevention Plan (SWPPP). The ground disturbance for the project is estimated at approximately 20 acres, therefore, the project is subject to the NOI and SWPPP requirement. The project will comply with the terms and conditions of the NPDES, as approved by the State Water Resources Control Board under Section 402 of the Clean Water Act.

   Compliance with the terms and conditions of the NPDES, development and implementation of a SWPPP, and compliance with the Regional Water Quality Control Board discharge requirements will ensure a **less than significant impact**.

b) **No Impact**. The project would connect into existing Stockton East Water District (SEWD) and receive SEWD water supply. The Westlake Environmental Impact Report performed a Water Supply Assessment which indicated there was a sufficient supply of water to serve the proposed development project, which included a school. The City of Stockton indicated that water would be provided on a first come, first-serve basis and the long-term reliable supplies of SEWD surface and groundwater supplies could deliver reliable water supply without impacting the groundwater basin. Impacts to groundwater supplies will be **less than significant**.

c) **Less Than Significant Impact**. No streams are located within the project site, and there will be no alterations of stream courses. The proposed Project site location is currently former agricultural land which has been significantly graded. The proposed project would be developed with new instructional buildings and associated concrete flatwork and asphalt. However, the proposed Project would be within the City of Stockton Storm Drain Area and would tie into the municipal storm drain lines and would not create or contribute runoff water which would exceed the capacity of the planned stormwater drainage systems, therefore, there will be no significant additional impervious surfaces associated with the project. This is considered a **less than significant impact**.

   i. Less than Significant Impact. The Central Valley Regional Water Quality Control Board (CVRWQCB) requires that projects that include source and/or treatment control measures on selected new development and redevelopment projects. Source control Best Management Practices (BMPs) would keep pollutants from contacting runoff while treatment control measures would remove pollutants that come into contact with runoff. Erosion would be controlled by the Districts implementation of a SWPPP with BMP's. Therefore, this is a **less than significant impact**.

ii. Less than Significant Impact. The proposed Project site is former agricultural land that has been significantly graded. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Map, number 06077C0295F, dated August 16, 2009, prepared for San Joaquin County, California (FEMA, 2009), The proposed school campus is within a segment of Zone X that is defined as areas of 0.2 percent annual chance flood; areas of one-percent annual-chance flood with averaged depths of less than one foot or with drainage areas less than one square mile; and areas protected by levees from one percent annual chance flood. There would be a substantial drainage system installed to serve the proposed campus which would help reduce the rate and volume of stormwater runoff. This is considered a **less than significant impact**.

iii. Less than Significant Impact. The proposed project is currently in the concept design phase and therefore details regarding the storm drain system and new lines are not available. However, the new Stockton Site I campus would have sufficient planned stormwater drainage conveyance as well as appropriate BMP's/Treatment Control of runoff. With the implementation of appropriate BMPs and treatment control(s), the proposed Project would not create or contribute runoff water which would exceed the capacity of the planned stormwater drainage systems or provide substantial additional sources of polluted runoff. This is a **less than significant impact**.

iv. Less than Significant Impact. The proposed Project does not require any significant changes to topography and would not redirect or impede flows significantly. This is a **less than significant impact**.

d) **Less than Significant Impact**. The proposed Project is not located in a tsunami or seiche zone, therefore this would be no impact.

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Map, number 06077C0295F, dated August 16, 2009, prepared for San Joaquin County, California (FEMA, 2009), The proposed school campus is within a segment of Zone X that is defined as areas of 0.2 percent annual chance flood; areas of one-percent annual-chance flood with averaged depths of less than one foot or with drainage areas less than one square mile; and areas protected by levees from one percent annual chance flood.

According to the City of Stockton General Plan, 2040 (Adopted December 4, 2018), since 1998 flood risks have been reduced significantly through the Locally Constructed Flood Control Project by the San Joaquin Area Flood Control Agency, which includes flood protection facilities on Bear Creek and Pixley Slough located just south of the site. Therefore, the risk of flooding at the site is considered **less than significant**.

e) **No Impact**. As discussed in a) and b) above, the proposed Project would not obstruct implementation of a water quality control plan or sustainable groundwater management plan. Thus, there would be **no impact**.

XI. Land Use and Planning

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the Project:					
a.	Physically divide an established community?	☐	☐	☐	■
b.	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating on environmental effect?	☐	☐	☐	■

a) **No Impact**. The proposed would not result in the physical division of a community. Therefore, there is no impact related to physical division of an established community.

b) **No Impact**. The Westlake EIR (2004) effectively changed the land use for the Westlake Villages Development from existing agricultural land use to Mixed Use designation. The Project involves the proposed of a new school site, which is consistent with the City of Stockton approved Westlake Master Development Plan (2004). The Project also does not propose to change any existing zoning. Thus, there is **no impact**.

XII. Mineral Resources

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a.	Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?	☐	☐	☐	■
b.	Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	■

a,b) **No Impact**. According to the State Aggregate Resource Areas Map, the proposed Project site is not located within an area of primary extractive resources. Therefore, there is **no impact.**

XIII. Noise

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a.	Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	■	☐
b.	Generation of excessive ground borne vibration or ground borne noise levels?	☐	☐	■	☐
c.	For a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?	☐	☐	☐	■

The proposed project is located in the residential community of Westlake Village in the City of Stockton, San Joaquin County. The project site is currently a bare lot near residential land use to the east, the Pixley Slough/Bear Creek to the south, and land west and north planned for residential development land use. Existing noise sources in the vicinity include the residential development construction north of the proposed site, and traffic noise from the Manlio Silva school north as well as residential traffic utilizing Regatta Lane.

Noise is defined as unwanted sound. Sound levels are generally measured in decibels (dB) with 0 being the threshold of hearing. Typical examples of noise decibel levels often used would be low decibel level of 50 dB for light traffic to high decibel level of 120 dB for a jet taking off at approximately 200 feet distance (FTA, 2006). There are different methods for assessing noise levels. CNEL refers to Community Noise Equivalent Level which is defined as the 24-hour average noise level, with noise occurring during evening hours (7 to 10 p.m.) weighted by a factor of three and noise occurring during nighttime hours weighted by a factor of 10 prior to averaging. Ldn, or Day Night Average Level, is similar to CNEL except the weighted measure of noise includes a 10-dB penalty added to noise occurring between 10 p.m. and 7 a.m. when people are generally more sensitive to noise. Equivalent Energy Noise Level (L_{eq}) is a constant noise level that would deliver the same acoustic energy to the listener as the actual time-varying noise would deliver over the same exposure time – no "penalties" are added, so L_{eq} would be the same regardless of time of day. dBA is a measurement unit for "a-weighted decibels," which are commonly used for measuring environmental and industrial noise and the potential for hearing damage associated with noise health effects.

The City of Stockton Code Noise Control Ordinance has performance standards in order to prevent unnecessary, offensive, or excessive noise levels within the City. For example, Section 8.20.030(A) of the City of Stockton Code establishes that General Noise Regulations stating the standards which shall be considered in determining whether a violation of noise regulations consists of (but is not limited to) considerations such as the nature of the noise (usual or unusual), the proximity of the noise to residential sleeping facilities, the duration, the intensity, and the time of day or night the noise occurs. Noise associated with proposed school site construction, paving, or grading is considered usual, provided these activities do not occur

between the hours of 8:00 p.m. and 6:00 a.m. on weekdays and Friday commencing at 8:00 p.m. through and including 7:00 a.m. on Saturday.

a) **Less Than Significant Impact**. The project would construct a school site; therefore, it is anticipated the only significant noise impacts will be associated with the construction phases. The construction and development of the proposed school site would occur during designated hours and will not be out of the ordinary nor excess noise; therefore, it is not anticipated the new proposed school site would generate unacceptable levels of ambient noise.

Short-term Project-Generated Construction Noise

There would be a temporary increase in localized noise during project construction, however, as discussed above, noise associated with proposed school site construction, paving, or grading is considered usual, provided these activities do not occur between the hours of 8:00 p.m. and 6:00 a.m. on weekdays and Friday commencing at 8:00 p.m. through and including 7:00 a.m. on Saturday.

The short-term construction-related noise impacts would be reduced further with the following Mitigation Measure Noise-1:

Mitigation Measure Noise-1

The Lodi Unified School District shall ensure the construction contractor implements the following noise reduction measures:

- All equipment shall have sound-controlled devices no less effective than those provided by the manufacturer.
- Where practical, all equipment shall have muffled exhaust pipes.
- Stationary noise sources shall be located as far from sensitive receptors as possible.

The project will have a **less than significant impact** with mitigation incorporated due to the above stated Mitigation Measure Noise-1, as well as compliance with the City of Stockton Ordinance designated daytime hours for construction activities. Thus, no additional noise reduction measures are considered warranted. The impact from noise is expected to be **less than significant.**

b) **Less Than Significant Impact.** There are several factors that could vary the degree of ground-borne vibrations, such as construction equipment types and operations, soil and subsurface conditions, and the receiving buildings characteristics (such as foundation type or building size. Any ground-borne vibrations associated with the project are due to the construction activities, which are anticipated to last approximately 1 to 1.5 years. Therefore, any noise associated with the Project will be short-term. The distance to the residential receptors are east following the City of Stockton utilities (sewer lift station and water supply well) and Regatta Lane; the distance dividing the project site from the residential receptors further east reduces potential ground-borne vibration impact. This is considered a **less than significant impact**.

c) **No Impact.** The nearest runway is the Kingdon Airpark, located approximately 3.75 miles northeast of the project site and does not expose people reworking in the Project Area to excessive noise levels.

XIV. Population and Housing

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
	Would the Project:				
a.	Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	☐	■
b.	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■

a-b) **No Impact**. The Project would not include the creation of new housing nor displace any existing housing or people. Any workers needed for project construction and operation are anticipated to be drawn from the regional employment base; therefore, the Project would not result in local area population growth or lead to the creation of or necessity for new housing. Similarly, the Project would not indirectly induce substantial population growth through the extension of major infrastructure. Consequently, no impacts related to population and housing would occur.

XV. Public Services

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:					
a.	Fire protection?	☐	☐	☐	■
b.	Police protection?	☐	☐	☐	■
c.	Schools?	☐	☐	☐	■
d.	Parks?	☐	☐	☐	■
e.	Other public facilities?	☐	☐	☐	■

a-e) **No Impact**. The Westlake Villages subdivision receives fire protection from the City of Stockton Fire District, Station 14, located at 3019 McNabb Street, under 3.0 miles from the proposed Site I campus. The campus security is provided by City of Stockton Police Department, which is responsible for serving any property owned or controlled by Lodi Unified School District. The proposed school site will have fire alarms, interior sprinkler systems, and fire hydrants. Construction and long-term operation of the proposed Project would not place any substantial adverse impacts on fire protection, police protection, schools, or parks because the project is being implemented is a part of the Westlake at Spanos Park Master Development Plan approved by City of Stockton in 2004. Therefore, the project will have **no impact**.

XVI. Recreation

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a.	Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	■
b.	Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	■

a,b) No **Impact**. The proposed project will have no impact on the physical deterioration of any recreational facilities in the existing neighborhood. The proposed project is not intended to have recreational facilities and would not increase the need for new recreational facilities. There is **no impact**.

XVII. Transportation

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a.	Conflict with a program plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	■	☐
b.	Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	■	☐
c.	Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	■
d.	Result in inadequate emergency access?	☐	☐	☐	■

a) **Less than Significant Impact.** The proposed project is currently located within the Westlake Villages EIR which incorporated the pedestrian and bicycle circulation system to be compatible with the City of Stockton's 'Existing and Future Bikeways Plan' with pedestrian and bicycle trails incorporated into residential neighborhoods to provide connections to major circulation roads, public transportation facilities and with other pedestrian and bicycle connections within Westlake. The proposed school site was is consistent with the land use incorporated in the Westlake at Spanos Park Master Development Plan (Appendix A) and Westlake Villages EIR (Appendix A) which was approved in 2004. Therefore, the project will not conflict with a program plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. This is a less than significant impact. This is a **less than significant impact**.

b) **Less than Significant Impact.** Section 15064.3 of the CEQA Guidelines establishes the specific Vehicle Miles Traveled (VMT) metric to support three statutory goals: "the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses". While the proposed project does facilitate growth (approved during the EIR process), the site is located adjacent the levee trail system and it is anticipated a substantial portion of students will have the option of pedestrian and bicycle access. Based on the maximum allowable single-family units per the Westlake Villages Master Development Plan and LUSD generation rates, the estimated student generation from Westlake Villages for grade level K-8 is approximately 800 students. As noted above, the student body anticipated is based on the Westlake Villages single-family unit density and will be commuting from within an approximately 1-mile radius; approximately 80 percent of school traffic would originate from within the Westlake Villages subdivision. The trip generation for the proposed elementary school is expected to be low, since it is projected at least 80 percent of the student body would come from within Westlake Villages where students are anticipated to bicycle and walk to school or be dropped off by a parent on an already planned commute trip (e.g., commute to work trip). This is a reasonable expectation given the overall Westlake Villages development project committed to design streets and a circulation system to promote pedestrian and bicycle travel and the proposed school site is additionally located adjacent to a multi-use pedestrian/bike path along the Pixley Slough levy. This is a **less than significant impact.**

Temporary construction worker commuter trips will be from the greater Stockton area. The volume of trips for construction trucks delivering materials and equipment would be limited to the volume of services necessary to accommodate project needs. Upon project completion, the construction traffic will cease. This is considered a **less than significant impact.**

c) **No Impact**. The proposed project would not increase hazards due to a design feature, such as a sharp curve or dangerous intersection, incompatible uses, such as farming equipment, or inadequate emergency access. Therefore, the project would have **no impact**.

d) **No Impact**. The proposed project will not result in inadequate emergency access to the project area. During on-site construction, vehicles will not block emergency access routes. A path of travel (POT) for construction operations will be identified prior to the start of construction activities. During construction, if POT items within the scope of the project represented as code compliant are found to be non-conforming beyond reasonable construction tolerances, they shall be brought into compliance. Therefore, the project would have **no impact** to emergency access.

XVIII. Tribal Cultural Resources

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a.	Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American Tribe, and that is				
	i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	■	☐	☐
	ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.	☐	■	☐	☐

Tribal Cultural Resources are defined in CEQA as sites, features, places, cultural landscapes, sacred places, and objects of cultural value to a California Native American tribe listed or eligible for listing on the California Register of Historical Resources or included in a local register of historical resources.

Assembly Bill 52 Native American Consultation

Assembly Bill requires the lead agency to begin consultation with any California Native American tribe that is culturally and traditionally affiliated with the geographic area of the proposed project if the California Native American tribe requested to the lead agency, in writing, to be informed by the lead agency through formal notification within 14 days of determining application complete or public agency's decision to undertake the project. Upon formal notification, each California Native American tribe has 30 days to request consultation whereby the lead agency must initiate consultation within 30 days of the consultation request. Assembly Bill (AB) 52 applies to the project, however, no tribes have requested notification at this time.

Sacred Lands File Search

On August 15, 2019 Petralogix emailed the Native American Heritage Commission (NAHC) a Local Government Tribal Consultation List Request and map requesting a search of the NAHC Sacred Lands File database for cultural resources within the project area, and a list of Native American tribal representatives who might have an interest in, or concerns with, the proposed project. On August 22, 2019, NAHC responded with via email stating the results of the Sacred Lands File check conducted was negative. The NAHC also provided contact information for the following tribal organizations and representatives:

- Ms. Rhonda Morningstar Pope, Chair – Buena Vista Rancheria of Me-Wuk Indians

- Ms. Sara Setchwaelo, Chair – Ione Band of Miwok Indians
- Ms. Katherine Erolinda Perez, Chair – North Valley Yokuts Tribe
- Mr. Gene Whitehouse, Chair – United Auburn Indian Community of the Auburn Rancheria
- Mr. Raymond Hitchcock, Chair – Wilton Rancheria
- Mr. Antonio Ruiz, Cultural Resources Officer – Wilton Rancheria

On May 20, 2020, Petralogix sent contact letters to each of the individuals and associated tribes listed above to inquire about any knowledge of sensitive properties or cultural resources in or near the project site, and if they had any questions or concerns with the proposed project. The letters contact letters are provided for review in **Appendix F.** As of the date of the report, a response from two tribes have been received. These responses are discussed further below.

Buena Vista Rancheria:

An email response from Mr. Richard Hawkins, THPO Coordinator for the Buena Vista Rancheria was received on July 8, 2020. Per Mr. Hawkins, the Buena Vista Rancheria is not aware of cultural resources present at the project location and do not object to commencement of the project. Buena Vista Rancheria request a copy of the Public Draft - Initial Study/Mitigated Negative Declaration (IS/MND) when it is published so it may be determined if any necessary action should be taken by the Buena Vista Rancheria to request formal consultation. LUSD will provide a copy of the Public Draft – IS/MND for review as requested.

Wilton Rancheria:

Lodi Unified School District received one response from Mariah Mayberry, Chairman, Wilton Rancheria, via email on June 15, 2020. Wilton Rancheria thanked Lodi Unified School District for invitation to consult under SB18 and for initiating formal consultations with Wilton Rancheria concerning the General Plan Amendment for Lodi Unified School District – Proposed School Site – Stockton Site I. The initial letter sent to the tribes, including Wilton Rancheria, specifically informed LUSD was contacting tribes to see if there were any unrecorded pre-contact resources they would like to be considered in the Initial Study, and was for informational purposes only and not part of SB18 or AB52 review. Although Wilton Rancheria mentions a General Plan Amendment, the reviewing letter only included a reference to the Westlake at Spanos Park West Master Plan (2004) and Environmental Impact Report (SCH #2004052105).

Wilton Rancheria included several proposed mitigation measures discussed below (section XVII subsection a(ii)). In addition to proposed mitigation measures, Wilton Rancheria requested to arrange a meeting with LUSD to discuss how potential impacts to cultural resources of importance to Wilton Rancheria can be addressed in any future environmental documents, as well as request the Cultural Report for the project to review. Because the project is within the footprint of the Environmental Impact Report which included a study of the cultural / tribal resources in 2004, a new Cultural Report was not considered necessary for the IS/MND. A copy of the Public Review Draft IS/MND will be sent to Wilton Rancheria; LUSD will arrange a meeting to discuss cultural resources and document the meeting in the Final IS/MND.

Records Search

On September 20, 2019, Petralogix Engineering, Inc. (Petralogix) sent a letter describing the project with maps depicting the project area to the Native American Heritage Commission. The letter requested any information or concerns about cultural resources in the project area. No

response to consultation attempt has been received to date. Petralogix submitted a record search at the Northern Central Information Center (NCIC) on May 7, 2020 for the project area with a quarter-mile search radius. The NCIC, of the California Historical Resources Information System, California State University, Stanislaus, an affiliate of the Office of Historic Preservation (OHP), is the official state repository of cultural resource records and reports for Sacramento County. As part of the records search, Petralogix reviewed the California Inventory of Historic Resources, California Points of Historical Interest, California Historical Landmarks, and the Directory of Properties in the Historic Property Data File available on the OHP online records search. No cultural resources were identified within the project area, or within a quarter mile of the project area. A response from CHRIS on May 18, 2020 indicates no prehistoric archaeological resources or ethnographic village sites were identified during the records search at the project site or within ¼-mile of the project site.

a) **Less than Significant with Mitigation Incorporated.**

i. Less than Significant with Mitigation Incorporated. As discussed in Section 6, *Cultural Resources* no tribal cultural resources that are listed or eligible for listing in the NCIC, NAHC were identified during the historical resources research; CHRIS records results (11394L) indicate no resources or ethnographic village sites were identified within the project site. Records maintained by these agencies are not considered exhaustive, therefore impacts of the proposed Project construction relating to ground disturbance may potentially impact tribal cultural resources, therefore, in the event that archaeological resources are observed during Project construction-related activities, **Mitigation Measure CR-1** is in place to reduce impacts to a less than significant level.

ii. Less than Significant with Mitigation Incorporated. On behalf of Lodi Unified School District, Petralogix requested a search of SLF and Native American contact list for the project site from the NAHC on August 15, 2019. Native American request for input letters were sent to all the tribes listed. Results of the Sacred Lands File were negative received to date. As discussed above, Wilton Rancheria has requested to arrange a meeting with LUSD to discuss any future environmental documents, as well as request the Cultural Project for review. LUSD will contact Wilton Rancheria during the Public Draft IS/MND review process. In addition to requesting a copy of any Cultural Project and future consultation with LUSD, Wilton Rancheria included several proposed mitigation measures via e-mail dated June 15, 2020.

Proposed Mitigation Measures from Wilton Rancheria:

Proposed Wilton Rancheria Tribal Cultural Resource Avoidance Mitigation Measure:

- Planning construction to avoid tribal cultural resources, archaeological sites and/ or other resources; incorporating sites within parks, green-space, or other open space; covering archaeological sites; deeding a site to a permanent conservation easement; or other preservation and protection methods agreeable to consulting parties and regulatory authorities with jurisdiction over the activity. Recommendations for avoidance of cultural resources will be reviewed by the CEQA lead agency representative, interested Native American Tribes and the appropriate agencies, in light of factors such as costs, logistics, feasibility, design, technology and social, cultural, and environmental considerations, and the extent to which avoidance is consistent with project objectives. Avoidance and design alternatives may include realignment within the project area to avoid cultural resources, modification of the design to eliminate or reduce impacts to

cultural resources or modification or realignment to avoid highly significant features within a cultural resource. Native American Representatives from interested Native American Tribes will be allowed to review and comment on these analyses and shall have the opportunity to meet with the CEQA lead agency representative and its representatives who have technical expertise to identify and recommend feasible avoidance and design alternatives, so that appropriate and feasible avoidance and design alternatives can be identified.

- If the resource can be avoided, the construction contractor(s), with paid Native American monitors from culturally affiliated Native American Tribes present, will install protective fencing outside the site boundary, including a buffer area, before construction restarts. The construction contractor(s) will maintain the protective fencing throughout construction to avoid the site during all remaining phases of construction. The area will be demarcated as an "Environmentally Sensitive Area". Native American representatives from interested Native American Tribes and the CEQA lead agency representative will also consult to develop measures for long term management of the resource and routine operation and maintenance within culturally sensitive areas that retain resource integrity, including tribal cultural integrity, and including archaeological material, Traditional Cultural Properties and cultural landscapes, in accordance with state and federal guidance including National Register Bulletin 30 (Guidelines for Evaluating and Documenting Rural Historic Landscapes), Bulletin 36 (Guidelines for Evaluating and Registering Archaeological Properties), and Bulletin 38 (Guidelines for Evaluating and Documenting Traditional Cultural Properties); National Park Service Preservation Brief 36 (Protecting Cultural Landscapes: Planning, Treatment and Management of Historic Landscapes) and using the Advisory Council on Historic Preservation (ACHP) Native American Traditional Cultural Landscapes Action Plan for further guidance. Use of temporary and permanent forms of protective fencing will be determined in consultation with Native American representatives from interested Native American Tribes.

As discussed in Section 6, no known cultural resources are noted in the project area and previous ground disturbance work has occurred in the proposed project area for agriculture. The avoidance mitigation measures proposed by Wilton Rancheria are noted for the record. However, Mitigation Measures CR-1 and CR-2 are considered sufficient mitigation for the potential for impact to unidentified cultural resources, in the event that archaeological or paleontological resources are observed during Project construction-related activities, **Mitigation Measure CR-1** is in place to reduce impacts to a less than significant level.

Proposed Wilton Rancheria Native American Monitoring Mitigation Measure:

To minimize the potential for destruction of or damage to existing or previously undiscovered burials, archaeological and tribal cultural resources and to identify any such resources at the earliest possible time during project-related earthmoving activities, THE PROJECT PROPONENT and its construction contractor(s) will implement the following procedures:

- Paid Native American monitors from culturally affiliated Native American Tribes will be invited to monitor the vegetation grubbing, stripping, grading or other ground-disturbing activities in the project area to determine the presence or absence of any cultural

resources. Native American representatives from cultural affiliated Native American Tribes act as a representative of their Tribal government and shall be consulted before any cultural studies or ground-disturbing activities begin.

- Native American representatives and Native American monitors have the authority to identify sites or objects of significance to Native Americans and to request that work be stopped, diverted, or slowed if such sites or objects are identified within the direct impact area. Only a Native American representative can recommend appropriate treatment of such sites or objects.

- If buried cultural resources, such as chipped or ground stone, historic debris, building foundations, or bone, are discovered during ground-disturbing activities, work will stop in that area and within 100 feet of the find until an archaeologist who meets the Secretary of the Interior's qualification standards can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with the Caltrans, the SHPO, and other appropriate agencies. Appropriate treatment measures may include development of avoidance or protection methods, archaeological excavations to recover important information about the resource, research, or other actions determined during consultation.

- In accordance with the California Health and Safety Code, if human remains are uncovered during ground disturbing activities, the construction contractor, or the County, or both, shall immediately halt potentially damaging excavation in the area of the burial and notify the County coroner and a qualified professional archaeologist to determine the nature of the remains. The coroner shall examine all discoveries of human remains within 48 hours of receiving notice of a discovery on private or state lands, in accordance with Section 7050(b) of the Health and Safety Code. If the coroner determines that the remains are those of a Native American, he or she shall contact the NAHC by phone within 24 hours of making that determination (Health and Safety Code Section 7050[c]). After the coroner's findings are presented, the County, the archaeologist, and the NAHC-designated Most Likely Descendant (MLD) shall determine the ultimate treatment and disposition of the remains and take appropriate steps to ensure that additional human interments are not disturbed.

As discussed in Section 6, no known cultural resources are noted in the project area. However, a significant impact may occur if grading or excavation activities associated with the proposed Project would disturb previously interred human remains. Implementation of **Mitigation Measure CR-3** would ensure that human remains encountered during Project activities are treated in a manner consistent with state law and reduce impacts to human remains to a less than significant level as required by CEQA. This would occur through the respectful coordination with descendant communities to ensure that the traditional and cultural values of said community are incorporated in the decision-making process concerning the disposition of human remains that cannot be avoided. The implementation of these mitigation measures would reduce this potential impact to a less than significant level.

Proposed Wilton Rancheria Tribal Cultural Inadvertent Discoveries Mitigation Measure:

Develop a standard operating procedure, points of contact, timeline, and schedule for the project so all possible damages can be avoided, or alternatives and cumulative impacts properly accessed.

If potential tribal cultural resources, archaeological resources, other cultural resources, articulated, or disarticulated human remains are discovered by Native American Representatives or Monitors from interested Native American Tribes, qualified cultural resources specialists or other Project personnel during construction activities, work will cease in the immediate vicinity of the find (based on the apparent distribution of cultural resources), whether or not a Native American Monitor from an interested Native American Tribe is present. A qualified cultural resources specialist and Native American Rrepresentatives and Monitors from culturally affiliated Native American Tribes will assess the significance of the find and make recommendations for further evaluation and treatment as necessary. These recommendations will be documented in the project record. For any recommendations made by interested Native American Tribes which are not implemented, a justification for why the recommendation was not followed will be provided in the project record.

As discussed in Section 6, no known cultural resources are noted in the project area. However, a significant impact may occur if potential tribal cultural resources, archaeological resources, other cultural resources, articulated, or disarticulated human remains are discovered. Implementation of **Mitigation Measure CR-1, CR-2, and CR-3** would ensure that potential tribal cultural resources, archaeological resources, other cultural resources, articulated, or disarticulated human remains are treated in a manner consistent with state law and reduce impacts to human remains to a less than significant level as required by CEQA. This would occur through the respectful coordination with descendant communities. If adverse impacts to cultural resources, unique archeology, or other cultural resources occurs, then consultation with descendant communities, including consultation with Wilton Rancheria, regarding mitigation contained in the Public Resources Code sections 21084.3(a) and (b) and CEQA Guidelines section 15370 will occur. The implementation of these mitigation measures would reduce this potential impact to a less than significant level.

Proposed Wilton Rancheria Awareness Training Mitigation Measure:

Wilton Rancheria proposes to have a consultant and construction worker tribal cultural resources awareness brochure and training program for all personnel involved in project implementation will be developed in coordination with interested Native American Tribes. The brochure will be distributed, and the training will be conducted in coordination with qualified cultural resources specialists and Native American Representatives and Monitors from culturally affiliated Native American Tribes before any stages of project implementation and construction activities begin on the project site. The program will include relevant information regarding sensitive tribal cultural resources, including applicable regulations, protocols for avoidance, and consequences of violating State laws and regulations. The worker cultural resources awareness program will also describe appropriate avoidance and minimization measures for resources that have the potential to be located on the project site and will outline what to do and whom to contact if any potential archaeological resources or artifacts are encountered. The program will also underscore the requirement for confidentiality and culturally appropriate treatment of any findings of significance to Native Americans and behaviors, consistent with Native American Tribal values.

As discussed in Section 6, no known cultural resources are noted in the project area. However, a significant impact may occur if potential tribal cultural resources, archaeological resources,

other cultural resources, articulated, or disarticulated human remains are discovered. Implementation of **Mitigation Measure CR-1, CR-2, and CR-3** will be incorporated into the project's and Lodi Unified School District will have a Monitoring and Reporting Plan to ensure the mitigation measures are outlined and followed.

XIX. Utilities and Service Systems

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a.	Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	■	☐
b.	Have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	■	☐
c.	Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's Projected demand in addition to the provider's existing commitments?	☐	☐	■	☐
d.	Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	■	☐
e.	Comply with federal, state, and local management and reduction statutes, and regulations related to solid waste?	☐	☐	■	☐

a,b,c) **Less Than Significant Impact**. Utilities and Service Systems were evaluated as part of the Westlake Development Environmental Impact Report (2004) which concluded the implementation of the proposed project would not have a significant impact on utilities and service systems and that potential impacts would be mitigated through the collection of connection and/or development fees or through implementation of conservation and monitoring programs. The proposed project site is within the service area of the Pacific Gas and Electric Company which currently serves the development in Westlake Village, and according to planning staff at PG&E there was/is adequate capacity to the serve the development project. The sewer utility provider will be the City of Stockton Municipal Utility District who provided the sanitary map indicating the Westlake Sewer Pump station located adjacent southeast of the proposed school site which will serve the proposed school and residential tract homes currently being built north and west of the project. The proposed Project does not result in an increased demand that would exceed wastewater treatment requirements, as each project is served on a first come first serve basis prior to the issuance of a Sewer Connection Permit. The water system infrastructure is planned to run parallel to Westlake Drive, just north of the proposed project location, and the existing water lines within Spanos Park West have been sized to accommodate future demand. The EIR indicated water demands will be met with surface and groundwater, and in dry years ground water would be relied on to meet shortages in surface water supply as needed. The larger Westlake Villages project area was designed with the lakes to provide storm water retention; the storm water infrastructure will be located adjacent north of the proposed project, parallel to Westlake Drive. Extension of telephone and cable television services would occur in conjunction with the installation of other private utility facilities and public improvements. A Stormwater Pollution Prevention Plan (SWPPP) and an Erosion and Sediment Control Plan

will be prepared and implemented to avoid and minimize impacts on water quality during construction and operations. Best management practices (BMPs) for erosion control will be implemented to avoid and minimize impacts on the environment during construction. This is considered a **less than significant impact**.

d,e) **Less Than Significant Impact.** The City of Stockton is responsible for solid waste management plans for the City. The Westlake Village Environmental Impact Report indicates the development at large could increase solid waste sufficient to exceed landfill capacity, however, the long-term outlook for fill capacity was favorable. It is also noted that the solid waste service is a competitive business that benefits from an increase in serve. There is no conflict with federal, state, or local regulations. This is a **less than significant impact**.

XX. Wildfire

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a.	Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	■
b.	Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire?	☐	☐	☐	■
c.	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	■
d.	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	■

a-d) **No Impact**. The proposed project will have no impact on impairment of an emergency or evacuation plan and would not impact project occupants to exacerbated wildfire risks. There is **no impact**.

XXI. Mandatory Findings of Significance

Issues		Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
a.	Does the Project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	■	☐	☐
b.	Does the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a Project are considerable when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects)?	☐	☐	■	☐
c.	Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	■	☐

a) **Less than Significant with Mitigation Incorporated.** As discussed in Section 5, *Biological Resources* and Section 6, *Cultural Resources*, with the incorporation of the Mitigations Measures outlined, the project does not have the potential to substantially reduce habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self- sustaining levels, eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory. Mitigation Measures included to address potential impacts to Swainson's hawk, nesting migratory birds, and potential impacts to cultural resources are reduced to less than significant levels.

b) **Less than Significant Impact.** The Westlake Environmental Impact Report (SCH #2004052105) indicated the overall Westlake Villages project, which the proposed school site is a part of, would result in a number of potentially significant cumulative impacts on the environment, specifically pertaining to land use change (including loss of agricultural land), population growth (associated with the new housing development), cumulative impact to air quality due to calculated exceedance of ROG and NOx from the long-term operation related to the residential subdivision, as well as traffic related impacts. The cumulative impacts associated with the Westlake Villages EIR were approved with a Statement of Overriding Considerations, and the City of Stockton approved the Westlake Master Development Plan deemed consistent with the City's General Plan. The proposed school site project is generally consistent with the Westlake Villages EIR and the Master Development Plan, therefore, potential cumulative impacts have been addressed. This is a **less than significant impact**.

c) **Less than Significant Impact.** The proposed project site is not located within an Airport Community Planning Area, or within a Special Flood Hazard Zone. The proposed project site is not located on or near a hazardous materials site, or a known fault zone. The

proposed project site The project does not have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly.

13. SUMMARY OF MITIGATION MEASURES

This section represents the required mitigation measures identified in Section 12.0 Environmental Checklist. Implementation of these mitigation measures would reduce all impacts of the proposed project to a less than significant level. The Lodi Unified School District has committed to implementing all required mitigation measures.

AIR QUALITY

Air Quality Mitigation 1

The Lodi Unified School District shall not begin construction activities until first securing appropriate permits from the San Joaquin Valley Air Control District.

Air Quality Mitigation 2: Construction of the proposed Project shall comply with all the applicable regulations specified in the San Joaquin Valley Air Pollution Control District Regulation VIII (Fugitive Dust Rules). The following procedures will be adhered to by the construction contractor(s) in accordance with Regulation VIII practices:

- Visible Dust Emissions (VDE) from construction, demolition, excavation, or other earthmoving activities related to the Project shall be limited to 20% opacity or less, as defined in Rule 8011.
- Pre-water all land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and phase earthmoving.
- Apply water, chemical/organic stabilizer/suppressant, or vegetative ground cover to all disturbed areas, including unpaved roads.
- Restrict vehicular access to the disturbance area during periods of inactivity.
- Apply water or chemical/organic stabilizers/suppressants, construct wind barriers and/or cover exposed potentially dust-generating materials.
- When materials are transported off-site, stabilize, and cover all materials to be transported and maintain six inches of freeboard (i.e., minimum vertical distance between the top of the load and the top of the trailer) space from the top of the container.
- Remove carryout and track out of soil materials on a daily basis unless it extends more than 50 feet from site; carryout and track out extending more than 50 feet from the site shall be removed immediately. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden. If the Project would involve more than 150 construction vehicle trips per day onto the public street, additional restrictions specified in Section 5.8 of Rule 8041 shall apply.
- Traffic speeds on unpaved roads shall be limited to 15 mph.

- During construction, all earth moving activities shall cease during periods of high winds (i.e., greater than 30 mph). To assure compliance with this measure, grading activities are subject to periodic inspections by LUSD staff.
- Construction equipment shall be kept in proper operating condition, including proper engine tuning and exhaust control systems.
- Areas following clearing, grubbing and/or grading shall receive appropriate BMP treatments (e.g., re-vegetation, mulching, covering with tarps, etc.) to prevent fugitive dust generation.
- All exposed soil or material stockpiles that will not be used within 3 days shall be enclosed, covered, or watered twice daily, or shall be stabilized with approved nontoxic chemical soil binders at a rate to be determined by the on-site construction supervisor.
- Unpaved access roads shall be stabilized via frequent watering, non-toxic chemical stabilization, temporary paving, or equivalent measures at a rate to be determined by the on-site construction supervisor.
- Trucks transporting materials to and from the site shall allow for at least two feet of freeboard. Alternatively, trucks transporting materials shall be covered.
- Where visible soil material is tracked onto adjacent public paved roads, the paved roads shall be swept, and debris shall be returned to the construction site or transported off site for disposal.
- Wheel washers, dirt knock-off grates/mats, or equivalent measures shall be installed within the construction site where vehicles exit unpaved roads onto paved roads.
- Diesel powered construction equipment shall be maintained in accordance with manufacturer's requirements and shall be retrofitted with diesel particulate filters where available and practicable.
- Heavy duty diesel trucks and gasoline powered equipment shall be turned off if idling is anticipated to last for more than 5 minutes.
- Where feasible, the construction contractor shall use alternatively fueled construction equipment, such as electric or natural gas-powered equipment or biofuel.
- Heavy construction equipment shall use low NOx diesel fuel to the extent that it is readily available at the time of construction.
- The construction contractor shall maintain signage along the construction perimeter with the name and telephone number of the individual in charge of implementing the construction emissions mitigation plan, and with the telephone number of the SJVAPCD's complaint line. The contractor's representative shall maintain a log of any public complaints and corrective actions taken to resolve complaints.
- During grading and site preparation activities, exposed soil areas shall be stabilized via frequent watering, non-toxic chemical stabilization, or equivalent measures at a rate to be determined by the on-site construction supervisor.
- During windy days when fugitive dust can be observed leaving the construction site, additional applications of water shall be required at a rate to be determined by the onsite construction supervisor.

GREENHOUSE GAS EMISSIONS

Mitigation Measure GHG – 1

- A minimum of twenty trees will be planted post construction.

Mitigation Measure GHG – 2

- A minimum of five bike racks will be installed post construction, and in accordance with the City of Stockton and California Department of Education Standards.

BIOLOGICAL RESOURCES

Biological Resources Mitigation Measure 1 - Preconstruction Survey Requirements
A qualified biologist shall conduct a preconstruction survey for nesting Swainson's hawks within 0.25 miles of the project site if construction commences between March 1 and September 15. If active nests are found, a qualified biologist should determine the need (if any) for temporal restrictions on construction. This determination should be pursuant to criteria set forth by CDFW.

Biological Resources Mitigation Measure 2 - Preconstruction Nesting Bird Survey
On-site trees, shrubs, and grasslands may be used by nesting birds protected by the Migratory Bird Treaty Act of 1918 and Fish and Game Code of California. A qualified biologist shall conduct a preconstruction nesting bird survey if vegetation removal and/or project construction occurs between February 1 and August 31. If active nests are found within the survey area, vegetation removal and/or project construction should be delayed until a qualified biologist determines nesting is complete.

Biological Resources Mitigation Measure 3
The Project was mitigated through the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan. The Project shall coordinate with San Joaquin Council of Governments (555 E. Weber Avenue, Stockton, CA 95202), prior to any site disturbance activities. The project site was addressed in the previous Westlake Villages project and biological impacts associated with development of the project site have been mitigated through the SJMSCP. Standard Incidental Take Minimization Measures (ITMMs) of the SJMSCP will apply to the project.

CULTURAL RESOURCES

Cultural Resources Mitigation Measure 1
If prehistoric or historic-period archaeological deposits are discovered during Project activities, all work within 25 feet of the discovery should be redirected and the archaeologist should assess the situation, consult with agencies as appropriate, and make recommendations regarding the treatment of the discovery. Impacts to archaeological deposits should be avoided by Project activities, but if such impacts cannot be avoided, the deposits should be evaluated for their California Register eligibility. If the deposits are not

California Register–eligible, no further protection of the finds is necessary. If the deposits are California Register–eligible, they should be protected from Project-related impacts, or such impacts should be mitigated. Mitigation may consist of, but is not necessarily limited to, systematic recovery and analysis of archaeological deposits, recording the resource, preparation of a report of findings, and accessioning recovered archaeological materials at an appropriate curation facility. Public educational outreach may also be appropriate.

Cultural Resources Mitigation Measure 2

Any human remains encountered during Project ground-disturbing activities should be treated in accordance with California Health and Safety Co de Section 7050.5. The lead agency should inform its contractor(s) of the sensitivity of the Direct Area of Potential Effect for human remains and verify that the following directive has been included in the appropriate contract documents:

> If human remains are encountered during Project activities, the Project shall comply with the requirements of California Health and Safety Code Section 7050.5. There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the county coroner has determined the manner and cause of any death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation or to his or her authorized representative. At the same time, an archaeologist shall be contacted to assess the situation and consult with agencies as appropriate. Project personnel/ construction workers shall not collect or move any human remains and associated materials. If the human remains are of Native American origin, the coroner must notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission will identify a Native American Most Likely Descendant to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods.

HAZARDS AND HAZARDOUS MATERIALS

Hazards and Hazardous Materials Mitigation 1

Spill Prevention and Control Measures will be implemented and include the following:

- Any fuel products, lubricating fluids, grease, or other products and/or waste released from the Contractor(s) vehicles, equipment, or operations, shall be collected, and disposed of immediately, and in accordance with State, Federal, and local laws.
- Spill clean-up materials will be stored near potential spill areas (such as vehicle and equipment staging areas).
- Spill kits will include sorbent material (such as pads designed for oil and gas), socks and/or pads to prevent spread of hazardous material, and containers for storing and proper disposal.
- Employees and contractor(s) will be trained on proper hazardous spill clean-up practices.

NOISE

Mitigation Measure Noise-1

The Lodi Unified School District shall ensure the construction contractor implements the following noise reduction measures:

- All equipment shall have sound-controlled devices no less effective than those provided by the manufacturer.
- All equipment shall have muffled exhaust pipes.
- Stationary noise sources shall be located as far from sensitive receptors as possible.

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APPENDIX A

Draft

WESTLAKE VILLAGES

ENVIRONMENTAL IMPACT REPORT

EIR FILE #1-04
SCH #2004052105

June 25, 2004

LSA

Draft

WESTLAKE VILLAGES

ENVIRONMENTAL IMPACT REPORT

EIR FILE #1-04
SCH #2004052105

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ACRONYM LIST

ACOE	Army Corps of Engineers
ADT	average daily traffic
AG	General Agriculture
APN	Assessor's Parcel Number
AQAP	Air Quality Attainment Plan
AWS	all-way stop controlled intersection
C3	row and field crops
CAA	Clean Air Act
California Register	California Register of Historic Places
Caltrans	California Department of Transportation
Cal Water	California Water Services Company
CARB	California Air Resources Board
CCAA	California Clean Air Act
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
cfs	Cubic feet per second
City	City of Stockton
CNDDB	California Natural Diversity Data Base
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide
COSMA	City of Stockton Metropolitan Area
County	County of San Joaquin
C-R	Commercial Recreation
CVPIA	Central Valley Project Improvement Act
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DEIR	Draft Environmental Impact Report
DHS	California Department of Health Services
DOF	California Department of Finance
DWR	California Department of Water Resources
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
EVA	emergency vehicle access
FAR	floor-to-area ratio
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Maps
fps	Feet per second
GAMAQI	Guide for Assessing and Mitigating Air Quality Impacts
GPA	General Plan Amendment
gpd	gallons per day
HAP	hazardous air pollutants
HCM	Highway Capacity Manual
hr(s)	hour(s)
I-5	Interstate 5
LAFCO	Local Agency Formation Commission

L_{dn}	day-night average noise
L_{eq}	day-night average noise level
L_{max}	maximum noise level
L_N	percentile noise exceedance levels
LOMR	Letter of Map Revision
LOS	level of service
LTS	less than significant
LUSD	Lodi Unified School District
MBTA	Migratory Bird Treaty Act
MEI	maximally exposed individual
mgd	million gallons per day
mg/L	milligrams per liter
MOU	Memorandum of Understanding
mph	miles per hour
MUD	Municipal Utilities District
M-X	Mixed Use
NA	not available
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
National Register	National Register of Historic Places
ND	not detectable
NMFS	National Marine Fisheries Service
NOI	Notice of Intent
NOP	Notice of Preparation
NO_2	nitrogen dioxide
NOx	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
O_3	ozone
ODS	owner, developer, or successor-in-interest
OHWM	ordinary high water mark
PACE	Pacific Advanced Civil Engineering, Inc.
Pb	Lead
PG&E	Pacific Gas and Electric
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
ppm	parts per million
PS	potentially significant
RD 20-42	Local Reclamation District 20-42
ROG	reactive organic gases
ROW	right-of-way
RWCF	Regional Wastewater Control Facility
RWQCB	Regional Water Quality Control Board
SAAQS	State Ambient Air Quality Standards
sec	seconds
SEWD	Stockton East Water District
sf	square feet
SIP	State Improvement Plan
SJAFCA	San Joaquin Area Flood Control Agency
SJCOG	San Joaquin County Council of Governments

SJMSCP	San Joaquin County Multi-Species Habitat Conservation and Open Space Plan
SJVAB	San Joaquin Valley Air Basin
SJVUAPCD	San Joaquin Valley Air Pollution Control District
SO_2	sulfur dioxide
SPAS	Special Planning Area Study
SPS	sewer pump station
SPW	Spanos Park West
SR	State Route
SSSC	side street stop controlled intersection
STC	sound transmission class
stds	standards
STIP	Statewide Transportation Implementation Plan
SU	significant and unavoidable
SWPPP	Storm Water Pollution Prevention Plan
SWQCCP	Storm Water Quality Control Criteria Plan
TDS	Total dissolved solids
U	urban
U2	Scraped and paved
UBC	Uniform Building Code
UCMP	University of California Museum of Paleontology
Φg/L	micrograms per liter
Φg/m	micrograms per meter
$\Phi g/m^3$	micrograms per cubic meter
USBR	U.S. Bureau of Reclamation
USFWS	U.S. Fish and Wildlife Service
V/C	volume to capacity ratio

CHAPTER 1.0 EXECUTIVE SUMMARY

1.1 OVERALL PROJECT SUMMARY

Summary Project Description

The project proposes a General Plan Amendment, prezoning, Master Development Plan, Development Agreement, Eight Mile Road Specific Plan Amendment, annexation/sphere of influence change, urban service boundary expansion and tentative map for two parcels: the 671.5-acre "development" parcel and the 11.2-acre marina parcel. Three additional parcels totaling 170 acre (collectively called the Spanos Parcel) will be included in the sphere of influence/urban service area change, General Plan Amendment and Development Agreement, but will not include annexation or prezoning applications. Development of Westlake Villages will include the rezoning and master planning of approximately 683 acres, consisting of the development parcel and marina parcel. The project proposes to change the existing agricultural land use to Mixed Use designations. The Mixed Use designations allow for a variety of land uses, however, the Westlake Villages project proposes only residential uses at a variety of densities on the development parcel. The development plan consists of an Active Adult community and a conventional detached single-family residential development. The Active Adult community would range from 649 to 847 units. The conventional residential development will include between 1,573 to 2,047 units and will consist of gated and non-gated communities. Project amenities include public and semi-private lakes, bike and pedestrian trails, public and private recreational facilities, community center, public and village parks, school, and day care centers. The proposed lakes would provide storm water retention and recreational opportunities for non-motorized boating. Bike and pedestrian trails would be provided on existing levees. Future improvements would be planned for the existing marina, with options to develop and active adult project or conventional housing adjacent to the marina. These future developments are not part of this proposed development project. Development of the marina area is dependent on future market forces. The 170-acres of the Spanos Parcel will be included as part of the sphere of influence/urban service area change but will not be developed as part of this project. The Spanos Parcel will seek a General Plan Amendment to Low-Medium Density Residential land uses and will rely on the Development Agreement to establish a limit for the number of units, and to specify that additional environmental review will be required to address the ultimate development plan.

Project Location

The Master Development Plan Area contains approximately 682.7 acres, located within San Joaquin County (County), near the western portion of the City of Stockton, California. The Spanos Parcel consists of approximately 170 acres, located at the northwest corner of the Master Development Plan Area. The project site is bounded to the north by Eight Mile Road, to the south by Disappointment Slough, to the west by Bishop Cut and Rio Blanco Road, and to the east by Spanos Park West (SPW).

1.2 SUMMARY OF IMPACTS, MITIGATION MEASURES AND ALTERNATIVES

This Environmental Impact Report (EIR) is intended to address the potential environmental impacts associated with the implementation of the Westlake Villages project.

This summary of the potential impacts, mitigation measures, and level of significance generally describes the effects of the proposed project and mitigation measures required to reduce the impacts (a more detailed analysis of impacts is provided in the Chapter 4.0 Environmental Analysis). This summary also includes a discussion of potential areas of controversy, significant impacts that can be reduced to acceptable levels, unavoidable adverse impacts, and project alternatives.

1.3 POTENTIAL AREAS OF CONTROVERSY

Through the Notice of Preparation (NOP), a number of issues have been identified as potentially controversial. The NOP and comments are provided in Appendix A. Issues identified through the NOP process include:

X Monitoring of cultural resource sites

X Mosquito-related health risks

X Issues relating to development of land uses adjacent to the San Joaquin Delta

X Traffic

X Air quality (construction and long-term emissions)

1.4 SIGNIFICANT IMPACTS THAT CAN BE REDUCED TO ACCEPTABLE LEVELS

Through the environmental review process, potentially significant impacts were noted and additional mitigation measures were added to assist in reducing the potential effects of the project. These environmental topics include: geophysical resources, water resources, biological resources, noise, aesthetics/light and glare, water supply assessment, hazardous materials/wastes, and utilities and service systems.

1.5 UNAVOIDABLE ADVERSE IMPACTS

Six environmental topics— air quality, public services (parks), land use (including agricultural-related issues), traffic, and population—were identified as being significantly impacted by the proposed project, and these could not be mitigated to a level of insignificance, even with the application of mitigation measures.

A Statement of Overriding Considerations is needed prior to project approval, in light of the adverse impacts identified above.

It is not expected that adjacent or surrounding lands would be subject to growth inducement due to development occurring at the edge of the City of Stockton (City). Numerous obstacles complicate future adjacent development opportunities, including expanding the Urban Service Boundaries and developing north of Eight Mile Road, extending into County jurisdiction, and confronting the agricultural designations in the County's General Plan and zoning classifications.

1.6 PROJECT ALTERNATIVES

The Proposed Project, No Project, Minimum Density, and All Conventional alternatives were evaluated to determine if potentially significant impacts could be reduced or eliminated.

Alternative 1: No Project Alternative

The No Project alternative would maintain the status quo on the project site. Current marina and agricultural uses would persist. Potential impacts to water quality and wind erosion would continue unabated under this alternative. The No Project alternative would avoid a majority of the impacts associated with the Proposed Project and is an environmentally superior alternative.

Alternative 2: Minimum Residential Density Alternative

The Minimum Residential Density alternative would create impacts similar to the proposed project. With the Minimum Density Residential Alternative, however, impacts to public services and air quality would be reduced. This is due to the decreased number of individuals generated by this alternative.

Alternative 3: All Conventional Housing Alternative

The All Conventional Housing alternative would create impacts similar to the proposed project, however, impacts associated with air quality, population, public services, and land use would be significantly greater under this alternative due the increased number of individuals, including school-aged children.

1.7 SUMMARY TABLE

Information in the following table (Table 1.1.A), Summary of Impacts, presents the potential effects from the proposed project, mitigation measures, and level of significance before and after mitigation measures are implemented.

Insert Table 1.1.A: Summary of Impacts
Check following page numbers

CHAPTER 2.0 INTRODUCTION

2.1 PURPOSE OF THE ENVIRONMENTAL IMPACT REPORT

The purpose of this Draft EIR (DEIR) is to address the potential environmental impacts associated with implementation of the proposed Westlake Villages project (formerly referred to as Paradise Villages). Encompassing approximately 682.7 acres, the Master Development Plan Area proposes to prepare the project site for the construction of Active Adult and single family residential homes on lands that are currently used for agricultural purposes. Also included in the development concept is the modernization and upgrading of the Paradise Point Marina, however this development is dependent on future market forces. The project applicant has requested a General Plan Amendment and Rezoning designation of Mixed Use, M-X, for the entire Master Development Plan Area (682.7 acres). The 170-acre Spanos Parcel (formerly referred to as the Thompson Parcel) will be included in the General Plan Amendment and sphere of influence/urban service area change. The proposed General Plan designation for the Spanos Parcel is Low-Medium Density Residential.

This EIR has been prepared in accordance with the California Environmental Quality Act (CEQA) of 1970, as amended (Public Resources Code, Section 21000 et seq.); the State Guidelines for Implementation of the California Environmental Quality Act, 1970, as amended (Title 14, California Code of Regulations, Section 15000 et seq.); and Environmental Review Guidelines adopted for the City of Stockton.

The City has the responsibility, as Lead Agency, to conduct an evaluation of potential project impacts prior to making a decision to approve or deny the requested actions. The data and descriptions contained herein are intended to provide the decision makers with the information necessary to determine the effects of the project. Mitigation measures have been identified throughout the document, with the goal of reducing potentially significant impacts to levels below significance.

2.2 ENVIRONMENTAL PROCEDURES

Notice of Preparation

A NOP/Initial Study (City File #EIR 1-04, dated May 20, 2004) for the DEIR was distributed to the State Clearinghouse, responsible agencies, and other interested parties. By distributing the NOP, the City sought to obtain public and agency input and determine the full range and scope of environmental issues related to the project so that they could be adequately addressed in the DEIR. The NOP and Initial Study are contained in Appendix A. The NOP comment period ended June 21, 2004. Responses to comments generated by circulating the NOP/Initial Study have been addressed, as appropriate, throughout the document.

Environmental Procedures

Prior to acting on the applicant's request, the Stockton Planning Commission and City Council must certify the EIR for completeness and adequacy. Subsequent actions subject to the discretionary authority of the City of Stockton may also be covered, more or less, by the evaluations and findings contained in this document including, but not necessarily limited to, grading permits, construction permits, encroachment permits,

building permits, and certificates of occupancy. Other agencies, including Responsible Agencies, may also utilize this environmental document for subsequent approvals within their specific jurisdiction and authority.

Type of Environmental Review

This document is being prepared as a DEIR in accordance with Section 15161 of the State CEQA Guidelines. This type of EIR focuses primarily on the environmental impacts from a specific development project. The EIR shall examine all phases of the project including planning, construction, and operation.

This DEIR presents a comprehensive analysis of the potential environmental impacts created by the proposal of The Spanos Family Partnership to develop a master planned community with residential, marina, recreational, and open space uses. The analysis is based upon a review and evaluation of the General Plan Amendment and zone change, Master Development Plan, Development Agreement, annexation processes into the City of Stockton jurisdiction, consultation with the applicant and interested agencies and individuals, review of responses to the Notice of Preparation for the project, consideration of appropriate technical information, and field surveys of the project site and surrounding area.

The project proposes to bring the land under the jurisdiction of the City of Stockton. The General Plan and zoning would be amended to designate the site for Mixed Use (M-X). As a requirement for the M-X designation, a Master Development Plan has been prepared and describes the project concepts and character. It is important to note that the Master Development Plan proposes a range of densities within the project parcels in order to respond to market conditions and the developer's expectations at a specific point. With this strategy, the M-X designation provides the flexibility to focus on a primary development concept, as well as various other uses and intensities. The various density options comply with the criteria established by the M-X zone. Taking the range of densities into consideration, the worst case combination of densities was used as a basis for determining project impacts. This scenario was needed to assess project impacts on traffic, air quality, noise, and sewer and water. From this strategy, limits have been imposed on the project, where necessary, to restrict the density combinations to those analyzed in this DEIR. Other density combinations may also be available, provided the potential effects are no greater than those presented in this document.

As noted in the Development Agreement, the owner shall have the right, and the obligation to develop Westlake Villages in accordance with the Master Development Plan subject to the standards specified in the Development Agreement and the Master Development Plan. Except as noted in the Development Agreement, Master Development Plan and applicable existing City Laws will control the overall design, development, and construction of Westlake Villages, and all improvements and appurtenances in connection therewith, including, without limitation, the permitted uses within Westlake Villages, the density and intensity of use and all mitigation measures required in order to minimize or eliminate adverse environmental impacts and other adverse impacts of Westlake Villages.

The owner agrees to develop Westlake Villages as follows: Six years after the Effective Date, Owner shall have developed a minimum of fifty percent (50%) of West Lake based on acreage available for development; twelve years after Effective Date, Owner shall have developed a minimum of seventy-five (75%) of West Lake based on net acreage available for development.

Also as noted in the Development Agreement, the owner shall have the right to modernize and upgrade the existing Paradise Point Marina in accordance with the Master Development Plan subject to the standards specified in the Development Agreement and the Master Development Plan. The Master Development Plan and Development Agreement are presented in Appendix B and C, respectively.

As a result of the relationship of the proposed Westlake Villages project with the adjacent Spanos Park West project, the environmental document prepared for that project serves as a major reference for this DEIR and is, therefore, incorporated by reference in the DEIR. This document is available for review at the City of

Stockton, Department of Community Development, Planning Division, 345 N. El Dorado Street, Stockton, California 95202, phone (209) 937-8266. The document is referred to as follows:

LSA Associates, Inc. Final Supplemental Environmental Impact Report Spanos Park West (SEIR 3-87/IS 13-00) (December 6, 2001). SCH #87032415. Certified by the City of Stockton on December 18, 2001.

2.3 ISSUES OF CONCERN

Based on input received by the City of Stockton in response to the NOP/Initial Study, the City has determined a number of issues of concern. The following is a list of project issues from commentors:

X Monitoring of cultural resource sites

X Mosquito-related health risks

X Issues relating to development of land uses adjacent to the San Joaquin Delta

X Traffic

$ Air quality (construction and long-term emissions)

2.4 ORGANIZATION OF DOCUMENT

Chapter 1.0 provides a Summary of Impacts, Mitigation Measures, and Level of Significance. From the Summary, the reader can become familiar with the project issues, the environmental topics that are potentially significant, the measures proposed to reduce impacts, and the level of significance after mitigation measures are considered.

Chapter 2.0 describes the overall environmental review process, previous documentation, and potential areas of controversy.

Chapter 3.0 presents detailed information on the proposed project and development concepts. This chapter describes the number and intensity of uses, project objectives, development intensity options, development standards, open space characteristics, supporting uses, operational characteristics and phasing sequences. This chapter also describes the regional setting and project history, project objectives and discretionary actions being considered, as well as other governmental approvals needed prior to construction.
Chapter 4.0 includes the comprehensive environmental analysis based on project implementation. Under the Existing Setting, those elements associated with the current site and potential constraints to the project are identified, including local sensitivities and controversies. These include all the detailed environmental issue areas comprising the DEIR document. At the beginning of each impact section, Significance Criteria are used to evaluate the project impacts to assess the level of significance prior to mitigation.

Mitigation for each potentially significant impact is presented and conclusions reached prior to discussing other project impacts. Each mitigation measure corresponds to a specific project impact. A final statement concludes the impact significance under Level of Significance after Mitigation.
In addition to these topics, the DEIR includes several sections required by CEQA, including cumulative impacts, growth inducing impacts, irreversible and irretrievable commitment of resources, unavoidable adverse impacts, and project alternatives.

2.5 CONTACT PERSONS

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City Staff:	Planning **David Stagnaro** Senior Planner 345 North El Dorado Street Stockton, CA 95202-1997 (209) 937-8627
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Project Representative:	**Jim Panagopoulos** A.G. Spanos Construction, Inc. 1341 W. Robinhood Drive, Stockton, CA 95207 (209) 478-2200
Environmental Consultant:	**Bill Mayer** Principal LSA Associates, Inc. 4200 Rocklin Road, Suite 11B, Rocklin, CA 95677 (916) 630-4600
Engineering:	**Troy Wright** David Evans and Associates 5311 Pirrone Road Suite B, Salida, CA 95368 (209) 543-3660
Master Development Plan:	**Jeff Berberich/Steve Goins** David Evans and Associates 5000 Executive Parkway, Suite 125, San Ramon, CA (925) 867-3380
Economic:	**Aaron Gruen** Gruen Gruen + Associates 564 Howard Street, San Francisco, CA 94105 (415) 433-7598
Traffic:	**Matt Henry, P.E.** Fehr & Peers 3685 Mt. Diablo Boulevard, Suite 301, Lafayette, CA 94549 (925) 284-3200

CHAPTER 3.0 PROJECT DESCRIPTION

3.1 OVERVIEW

The project proposes a General Plan Amendment, prezoning, Master Development Plan, Development Agreement, Eight Mile Road Specific Plan Amendment, and annexation/sphere of influence change for two parcels: the 671.5-acre "development" parcel and the 11.2-acre marina parcel. Three additional parcels totaling 170 acres (collectively called the Spanos Parcel) will be included in the sphere of influence/urban service area change, General Plan Amendment and Development Agreement, but will not include annexation or prezoning applications. Development of Westlake Villages will include the rezoning and master planning of approximately 683 acres, consisting of the development parcel and marina parcel. The development plan consists of an Active Adult community and a conventional detached single-family residential development. The Active Adult community would range from 649 to 847 units. The conventional residential development will include between 1,573 to 2,047 units and will consist of gated and non-gated communities. Project amenities include public and semi-private lakes, bike and pedestrian trails, public and private recreational facilities, community center, public and village parks, school, and day care centers. The proposed lakes would provide storm water retention and recreational opportunities for non-motorized boating. Bike and pedestrian trails would be provided on existing levees. Future improvements would be planned for the existing marina, adjacent to the proposed active adult community in Westlake Villages. These future marina developments are not part of this proposed development project. Development of the marina area is dependent on future market forces. The 170-acres of the Spanos Parcel will be included as part of the sphere of influence/urban service area change but will not be developed as part of this project. The Spanos Parcel will seek a General Plan Amendment to Low-Medium Density Residential land uses and will rely on the Development Agreement to establish a limit for the number of units, and to specify that additional environmental review will be required to address the ultimate development plan.

Local and Regional Setting

The proposed Westlake Villages project is located to the west of the new SPW development, and south of Eight Mile Road. Interstate 5 (I-5) is located approximately 1.5 miles to the east and provide regional access via the Eight Mile Road interchange. The western and southern project boundaries are Bishop Cut and Disappointment Slough, respectively (Figure 3.1.1). Local roadways from Westlake Villages will connect to SPW.

Existing land uses on the development parcel reflect agricultural uses. Adjacent land uses include: SPW to the east, agricultural uses to the west and south (beyond Bishop Cut and Disappointment Slough), and agricultural uses to the north (beyond Eight Mile Road). The Reserve at Spanos Park golf course is also located on the north side of Eight Mile Road across from the project site. The project site is located adjacent to the City, in an area that has recently experienced growth and will likely continue to receive growth pressure. Several small- to large-scale development projects in the vicinity are in various stages of development.

Figure 3.1.1: Project Location and Surrounding Features

The topography of the project site is generally described as level or flat. Very little topographical differences occur over the region. Minor topographical changes are noted from levee structures and drainage improvements. The site gradually slopes towards the west towards Bishop Cut. Drainage canals transect the project site and collect runoff to discharge into Bishop Cut through an upgraded pump station. Disappointment Slough forms the southern boundary of the project site.

Surrounding Projects

Planned Development

Several major developments have been approved in the vicinity of the project, and more are being proposed. Table 3.1.A (Surrounding Planned and Approved Development Projects) presents the development activity within the project vicinity. As shown, overall, approximately 63 percent of development potential for identified projects has been completed, with a remaining potential of 37 percent to be developed.

The City of Stockton periodically monitors the projected buildout of available land within the City boundary. Excluding the proposed subdivision identified in Table 3.1.A, approximately 1,675 acres of residentially zoned vacant land were available for residential development. Of that amount, approximately 1,526 acres were zoned for single family development. Based on average densities for low-medium density residential zoning, this land could produce approximately 7,497 single family units. In areas zoned for higher density residential units, only 285 acres are available for projected buildout. Based on average densities for these zoning districts, approximately 3,871 units could be developed for high density residential housing.

3.2 PROJECT OBJECTIVES

X Satisfy housing demands by providing single family residential housing offering a wide range of product types to attract individuals and families from a broad economic spectrum, as well as providing public recreational facilities, parks, lakes and open space areas designed to meet the needs of future Stockton residents.

X Create a community designed to enhance social interaction. To facilitate the design and development of a community at a human scale, with neighborhoods diverse in use and population. To introduce ample common ground into the development; parks, trails, lakes, and large community centers functioning as gathering places for the future residents and enhancing project livability.

X Provide an opportunity to develop residential uses within walking distance of Paradise Point Marina with a mix of upscale commercial and service-oriented businesses, promoting the highest quality development. The project would place a significant number of potential customers within walking distance of these businesses to help ensure in their long-term viability.

X Build a unique community combining the best of modern suburban development practices with the building types and styles of traditional neighborhoods. To create a safe, secure environment with walkable neighborhoods that meet the lifestyle goals of families with children and elderly alike. To design streets and a circulation system resulting in neighborhoods that balance the pedestrian and car, to promote and enhance the pedestrian experience.

X To create a safe, secure environment with walkable neighborhoods that meet the lifestyle goals of families with children and elderly alike.

X To design streets and a circulation system resulting in neighborhoods that balance the pedestrian and car, to promote and enhance the pedestrian experience.

X Promote open space within neighborhoods to provide a convenient and safe destination for children to play and families to congregate. To develop a system of lakes that provide scenic vistas, recreation opportunities, that would also be utilized for enhancing the environment, improving water quality, and reducing water demand. Open space would also include a system of trails that would be available to the

public, providing accessibility, recreation opportunities, and a visual amenity enjoyed by the entire community.

Table 3.1.A: Surrounding Planned and Approved Development Projects

NAME	TM #	TOTAL ACREAGE	PROPOSED UNITS	BUILT	REMAINING	PERCENTAGE COMPLETE
Blossom Ranch	16-90 4-00	98.5	339	307	32	91
Bridgeport Trails		54.1	321	321	0	100
Brookside Estates		1,309.3	3,023	2,840	183	94
La Morada	18-88	381.1	1,042	851	191	82
LeBaron Estates		35.6	162	162	0	100
Little John Creek	13-90	85.3	506	449	57	89
Manhattan Plaza		19.98	119	119	0	100
Morada Ranch	3-92	227	515	476	39	92
North Stockton Projects	See below	166.9	688	347	341	50
Spanos Park East		418.2	1,794	1,794	0	100
Weber Sperry Ranch		231	1,092	1,006	86	92
Weston Ranch		1,177.2	5,056	4,675	381	92
Spanos Park West		240.2	1,099	474	593	43
Hatch Ranch	05-01	139	590	0	590	0
Villa Theresa		4.9	39	39	0	100
Villa Antinori	13-02	86.19	357	0	357	0
Camera Community	12-01	83.4	121	40	81	33
Seabreeze I	5-03	9.57	52	0	52	0
Calaveras Estates #2	2-01	6.1	38	0	38	0
Montezuma Estates		2.85	15	0	15	0
		4,776.39	**16,968**	**13,900**	**3,036**	**63**

Source: City of Stockton, 2003.

3.3 SPECIFIC PROJECT DESCRIPTION/OPERATIONAL CHARACTERISTICS

Proposed Project

The proposed Westlake Villages project is a residential development that includes single-family residential housing offering a wide range of product types to attract individuals and families from a broad economic spectrum, as well as providing public recreational facilities, commercial and recreational uses within the marina, and parks, lakes and open space areas designed to meet the needs of future Stockton residents. A special aspect of the proposed project focuses on the needs of seniors (i.e., elderly persons) by providing an adult-oriented community adjacent to the existing Paradise Point Marina. The adult-oriented component will be separated from the conventional residential uses that creates a unique setting specifically designed to meet their special needs and lifestyle requirements.

Maintaining flexibility to accommodate future market changes while considering the widest range of development options for all portions of the project site is the fundamental basis for the Master Development Plan. The Master Development Plan, Figure 3.3.1, outlines a potential pattern of development and indicates density ranges within each neighborhood to reflect current market conditions. Because of the inherent flexibility of the M-X zoning designation, several configurations that comply with the criteria established by

the M-X Zone are feasible. These concept plans are intended to illustrate one development scenario for these areas that meets the objectives of this Master Development Plan. The project proposes to change the existing agricultural land use to Mixed Use designations. The Mixed Use designations allow for a variety of land uses, however, the Westlake Villages project proposes only residential uses at a variety of densities on the development parcel.

Table 3.3.A, Land Use Summary, indicates the recommended primary land use and range of land uses considered for each conceptual parcel in the project area.

The proposed Westlake Villages project shares a common boundary with the adjacent Spanos Park West project. Upon full implementation of the proposed Spanos Park West project, a new circulation network will be constructed to serve the proposed project, as well as, the adjacent Spanos Park West development. The internal circulation system consists of a main entrance via Eight Mile Road (Street F). Street F would run south through the project site. Street F would connect to three existing roadways within Spanos Park West. Street F would also connect to internal streets within Westlake Villages that would serve the residential neighborhoods. Figure 3.3.2 provides a design of the circulation system.

Characteristics associated with each project component are presented below.

Residential Land Use. The residential development program for Westlake consists of 24 "Villages" of detached residential units. Seventeen (17) of the villages (A through Q) would be conventional market-rate housing units developed within the range of densities described in Table 3.3.A. Of these residential villages, six (6) villages (G through L) would be designed and constructed as gated, private developments. The other eleven villages (A through F, and M through Q) would be planned and built as open communities with public streets maintained by the City. The remaining seven villages (R through X), located in the southwest quadrant of the project site, would comprise the proposed active senior adult community.

The area dedicated for conventional housing includes approximately 337 acres, with approximately 129 acres set aside for a potential Active Adult Development. Of the combined 466 acres designated for residential use, a minimum of 12 acres shall be developed as village parks, ranging in size from approximately 0.5 to 1.5 acres. As stated in Table 3.3.A, the residential density within any Village would range between 3.5 and 8.0 units/acre. The higher and lower density development has been intermixed throughout the project, permitting the entire range of development within the project similar proximity and equal use of the many project amenities. In addition to residential uses, other permitted uses within the villages would include Public and Private Recreational Facilities, Day Care/Pre-school, Public School Facilities, Parks and Open Space. Each Village would represent individual neighborhoods, with a variety of architectural character.

Figure 3.3.1: Conceptual Master Development Plan

Table 3.3.A: Land Use Summary

TITLE	GROSS AREA (ACRES)	PRIMARY USE	SECONDARY USES	RANGE OF DENSITIES (DWELLING UNITS/ACRE)
Village A	14.6	67-88 residential units	See Notes	4.6-6.0
B	19.5	119-156 residential units		6.1-8.0
C	33.5	154-201 residential units		4.6-6.0
D	12.8	78-102 residential units		6.1-8.0
E	16.2	75-97 residential units		4.6-6.0

F	21.8	133-174 residential units		6.1-8.0
G	30.9	108-139 residential units		3.5-4.5
H	17.0	78-102 residential units		4.6-6.0
I	10.8	66-86 residential units		6.1-8.0
J	22.2	78-100 residential units		3.5-4.5
K	23.3	82-105 residential units		3.5-4.5
L	20.6	72-93 residential units		3.5-4.5

M	17.2	79-103 residential units		4.6-6.0
N	26.1	120-157 residential units		4.6-6.0
O	13.7	63-82 residential units		4.6-6.0
P	15.2	70-91 residential units		4.6-6.0
Q	21.4	131-171 residential units		6.1-8.0
R	17.4	80-104 residential units		4.6-6.0
S	19.6	69-88 residential units		3.5-4.5

T	20.5	94-123 residential units		4.6-6.0
U	11.2	68-90 residential units		6.1-8.0
V	15.2	93-122 residential units		6.1-8.0
W	25.0	153-200 residential units		6.1-8.0
X	20.0	92-120 residential units		4.6-6.0
Park Site	12.8	Public Park		
Open Space/Common Landscaping	2.1	Open Space/Recreation		

Eastern Recreation Area	3.2	Open Space/Recreation		
Western Recreation Area	4.7	Open Space/Recreation		
Lake 1 (at Main Entry)	7.9	Open Space/Recreation		
Lake 2 (East of Main Road)	33.5	Open Space/Recreation		
Lake 3 (Active Adult North)	10.1	Open Space/Recreation		
Lake 4 (Active Adult South)	9.1	Open Space/Recreation		
Lake 5 (Community Center)	10.0	Open Space/Recreation		

Sewer Lift Station Parcel	0.3-0.5	Public Facilities		
Storm Water Pump Station Parcel	0.3-0.5	Public Facilities		
Future Fire Station	2.2	Public Facilities		
Future School Site	10.9	Public Facilities		
Marina Parcel	17.1	Commercial/Recreation		Maximum 0.25 Floor Area Ratio
Levee	28.1	Open Space/Recreation		

Spine Roads ROW Dedications	60.5	Public Use		Includes Melones, Consumnes, and Scott Creek
Eight Mile Road ROW Dedication	2.8	Public Use		
TOTALS	**∀ 681.7**	**2,222-2,894 residential units**		

Notes:
Permitted uses on within Villages A-Q include day care/pre-school of up to 3 acres in size. Up to two day care/pre-school facilities shall be permitted within the entire Westlake project area. Residential development for the remaining village acreage shall be based on the density of that specific parcel indicated on Table 3.3.A.
The marina parcel acreage includes 3 acres of parcel 071-120-13 that would be added to the marina parcel upon the processing of a Vesting Tentative Map.
School site may be relocated based on Lodi Unified School District projected demand if Villages R-X are developed as conventional housing and not as an Active Adult community.
The acreage indicated for each Village is the gross area. A minimum of 12 acres within Village A-X shall be set aside for village parks, ranging in size from approximately 0.5 to 1.5 acres.
Range of conventional housing proposed in Villages A-Q is 1,573 - 2,047 units, and proposed Active Adult housing range in Villages R-X is 649 - 847 units.

Figure 3.3.2: Conceptual Circulation Plan

Marina Commercial. The development program for Westlake recognizes and embraces the existing Paradise Point Marina, located on 13.96 acres adjacent to Bishop Cut along the Plan Area western boundary. The Master Development Plan permits the continued commercial and recreational operations of the marina parcel and a small portion of the larger parcel currently used for marina-related purposes, and provides the framework for the future expansion and redevelopment of the marina, including retail shops and restaurant uses. Timing for the future expansion and redevelopment of the marina would be subject to the prevailing market characteristics at the time.

Onsite Storm Water Management and Flood Protection. The facilities that comprise the onsite storm water management program include the man-made lake system, pump station, and underground storm drains, surface inlets and roadway section. All surface runoff will ultimately be conveyed to a man-made lake or aquascape system that extends throughout the project. This system will provide storm water quality treatment, storm water runoff storage and peak attenuation, and storm water conveyance. Specifically, the stormwater management solution focused on (1) an internal underground drainage system within the Westlake community that conveys the 100-year runoff to the outfalls into the proposed manmade lake system, (2) manmade lake system to provide sufficient storage volume for the entire 24-hour 100-year storm event without pumping, (3) stormwater pump station sized to discharge the entire 100-year runoff volume within the lake within a 24-hour period to the normal lake operating level and force main outfall to the river, (4) relocating and maintaining the size of the existing earthen drainage channels on the exterior of the project boundary in order to provide the original storage volume for the offsite watershed, (5) elevate the edge condition of the development along the project boundary to prevent flooding within the development from temporary offsite runoff storage during larger storm events, (6) different levels of stormwater treatment facilities within the manmade lake system that include aeration, biofilters circulation system, aeration, and several different type of constructed wetlands for nuisance flows and wetland planters, and (7) nuisance/dry-weather flow pumps located in each outfall with specially designed lake/storm drain outfall structures preventing lake water into the storm drain.

A. Lake System. The 68-acre manmade Westlake manmade lake system has three primary functions within the Westlake residential development which include: (1) focal aesthetic feature for the community, (2) serves as a primary drainage conveyance facility for the project site, and (3) acts as a lake water quality and urban stormwater runoff treatment facility. The proposed system employs the use of multiple layers of treatment to facilitate water quality improvement through: (1) lake water quality measures (biofilters and aeration), (2) urban stormwater runoff controls (water quality filters and wetland planter areas), and (3) lake retention of runoff. These three elements work either through management of urban stormwater runoff or through lake water quality maintenance to ensure that the water within the lake and any discharge from the Westlake development to the Disappointment Slough is of the same or better quality than that discharged prior to development.

The resulting 68-acre lake receives runoff from the initial tributary residential 566-acre watershed area and the combined estimated normal operating volume of 525 acre-feet for the two interconnected lakes. The lakes are design so they can accommodate temporary storage through surcharging or rise in the lake level for the 100-year 24-hour storm runoff volume from the initial tributary development watershed which is approximately 85 acre-feet. The two lakes have a total estimated storage volume of 88 acre-feet with 1.0 foot of surcharge above the normal operating water surface. The lake will be lined with 30-mil PVC and will have a constructed lake edge system designed specifically to provide a more natural appearance.

B. Underground Storm Drain Systems. The storm drain and street surface drainage directs stormwater runoff to the manmade lakes located along the center of the project. The streets located directly adjacent to the manmade lake will be drained directly to the lake at the low points using curb depressions and conveyed through grassy greenbelt that also provide pretreatment.

The sizes of the main line storm drain trunk pipe diameters at the lake outfalls range from 18-inches to 42-inches, with the average about 33-inches. Maximum 100-year peak design discharges for the storm drain systems at the outfalls range from 5 to 50 cubic feet per second (cfs) depending on the size of tributary area. The average 100-year velocities within the storm drain pipes generally range from 2 to 5 feet per second (fps) for most of the pipes, however, some are in the 8 to 9 fps range.

A specialty outfall structure has been developed for the storm drain connection to the lake in order to prevent the normal lake water surface from entering the storm drain pipe since all the storm drain pipes are located at elevations well below the normal lake water surface. The outfall consists of a large covered concrete weir box located at the edge of the lake which the storm drain pipe will outlet. The weir elevation is located at a height near the top of the box and is the only outlet. All nuisance flows will be forced to drain to one end of the interior of the box where a small submersible pump will be located and will pump the flows to a specially designed vegetated water quality filter at the edge of the lake. The length of the weir is situated to discharge all the overflows also into the water quality filter before entering the lake. The system is designed so that the lake and the storm drain are isolated except during storm periods in order to prevent vector problems or additional water quality issues, however, nuisance flows are captured and treated for lake reuse at all locations.

A permanent groundwater dewatering and collection system will be installed around the entire perimeter of the lake and within the development area, in order to eliminate impacts of existing high groundwater elevations to residential structures. The dewatering system will generally consist of permanent wells located in the public right-of-way and adjacent to the streets. The wells will be connected through a series of collection and pumping systems. The dewatering system will also provide positive operational benefits to the lake liner. The groundwater quality will be monitored and when the water quality reaches the appropriate limits then it will be reused in the lake for "makeup" water.

The following storm water quality treatment features are incorporated into the system design:

Biofilters. The biofilter ponds are typically 3 to 4 feet deep, filled with gravel and submerged 18 to 24 inches below the lake water surface. Water is distributed through the biofilter gravel bed via a herringbone slotted pipe system. A naturally occurring biological mass (microorganisms) will coat the gravel and serve to strip the water passing through the filter of nutrients (nitrogen, phosphorous, etc.) that would otherwise promote algae growth within the lake. A denitrification process will occur in which nitrogen occurring a free ammonia will combine with oxygen to form nitrite then nitrate. In addition, pumping reintroduces oxygen into the lake system, thereby increasing the overall dissolved oxygen levels and promoting a healthy natural environment. The combination of a limited food supply and aerobic conditions within the lake creates an inhospitable environment for undesirable organisms and reduces the potential for lake eutrophication.

Aeration. Aeration for Westlake Lake is provided via a fine bubble diffusion system placed at the bottom of the lake. Fine bubble, bottom-laid aeration serves a dual purpose: first, it introduces air and oxygen throughout the lake, and second, it enhances the natural convection movement of water (i.e., vertical recirculation of the water column) within the lake itself. The subsequent increases in both the dissolved oxygen levels in the lake water and in destratification of the lake's vertical water column serve to reduce water surface temperature, a primary condition leading to undesirable thermal stratification and potential algae bloom.

Vegetated Stormwater Quality Filters and Wetland Planters. Lake water quality is further enhanced and supported by vegetated first flush basins (water quality filters) and submerged wetland planter areas placed along the lake edge. These measures are unique and desirable in that they promote and enhance water quality through naturally occurring biological processes, as opposed to costly and potentially environmentally harmful chemical treatment systems. All nuisance and dry-weather flows will be discharged into these vegetated water quality filters through small sump pumps in each storm drain outfall so this water can be treated before entering the lake and allows complete reuse of water within the development.

C. Storm Water Pump Station. A stormwater pump station facility is considered an integral element necessary to accomplish the flood protection goals since the project is in a levee condition relative to the outfall into the Disappointment Slough. The proposed pump station is not a "peak flow" stormwater pump system since the lake has sufficient storage to attenuate the peak flow and has been designed to allow fluctuation in the operating lake water level. The pumps have been sized to discharge the entire 100-year 24-hour runoff volume within a 24-hour period at a maximum pumping rate of either 42 or 53 cfs depending on the development tributary area. The pump station is designed with a total of four submersible pumps. The station will pump a maximum of 55 cfs with 3-90 horsepower pumps and one standby pump. The lake storage volume can be considered an integral part of the pump station forebay since it is interconnected.

A force main from the stormwater pump station located at the lower lake will discharge through a new adjacent outfall structure into Disappointment Slough. The outfall and force main is designed based on meeting the requirements for the Reclamation District since the force passes through/over the existing earthen levee. The force main will either consist of single 30 inch diameter steel line or double smaller diameter pipes that outlet to a concrete headwall on the river side of the levee. The outlet pipes will be outfitted with tideflex® valves for backflow prevention and rock rip-rap will extend from the headwall to below the river minimum elevation (PACE, 2004).

Urban Design / Landscape Plan. The guiding concept for Westlake Villages is the creation of a high quality development made up of a variety of uses that are complimentary to each other while exemplifying superior design.

Westlake is intended to become a vital part of the City of Stockton while defining the northwestern edge of the urban area. Westlake would be predominately residential in nature, with a generous amount of recreational facilities, parks, open space, and ancillary commercial (daycare) integrated into the overall pattern of the development. The Master Development Plan integrates the existing Spanos Park West residential development to the east, addresses the residential interface with the Paradise Point Marina, includes a circulation network that would logically serve future development to the west on Assessors Parcel Numbers 171-120- 04, 05, and 06 (the Spanos Parcel), and could accommodate additional traffic generated by future development of the Shima Tract to the south. The development program reflects land uses that are responsive to the demands of the known market while complying with the policies and programs of the General Plan of the City.

The City's General Plan provides the primary guidance for the Master Development Plan. The policies and programs included in the General Plan establish the parameters for commercial use intensity and residential density to be included in the various phases of the project.
The Landscape Plan and Landscape Guidelines creates the structure for Westlake by establishing a hierarchy of use areas defined by specific design elements. The Landscape Guidelines, which supports the components of the Circulation Plan, serves to unite all the parcels and land uses to illustrate a conceptual design theme that establishes Westlake as a mixed use development of the highest quality.

The Landscape Concept for Westlake is a combination of design quality, materials, and consistency that unifies the overall development with the roots of the Stockton community and the rich heritage of the Delta.

Consistent and common design elements should be used throughout the Project. These elements of the overall development should be features that stem from the landscape guidelines contained in this Master Development Plan. All landscape design elements shall be subject to review by the Design Review Board. The landscape elements have been carefully selected to provide a unified design fabric for Westlake. Figure 3.3.3, Proposed Landscape Plan, illustrates the overall landscape framework that will unite all the parcels and eventual land uses envisioned for the project.

The proposed project is designed to comply with the City of Stockton Mixed Use General Plan designation and zoning district (Stockton Municipal Code Section 16-075) and Master Development Plan guidelines and

standards (Stockton Municipal Code Section 16-200). These designations are intended to provide a range of land uses on large parcels. The Mixed Use designation is intended to encourage the development of a mixture of compatible land uses including low to low-medium density family residential, commercial uses associated with the modernization of the Paradise Point Marina , and public and quasi-public facilities. Supporting this Mixed Use concept is a Master Development Plan (Appendix B) that describes the proposed uses, development concepts, design and development standards, and intensities for each proposed use. The circulation system concepts, infrastructure requirements, and other key development features are included in the Master Development Plan, as shown in Figure 3.3.1.

Specifically, the Master Development Plan includes detailed information in the form of text and diagram(s), organized in compliance with the Stockton Municipal Code Section 16-200 regarding Master Development Plans. The following information is provided at a minimum:

A. Proposed land uses. The distribution, location, and extent (e.g., density, intensity, etc.) of land uses proposed within the area covered by the Master Development Plan, including open space areas.

B. Infrastructure. A description of the major components of public and private facilities, including circulation/transportation, energy, sanitary sewage, solid waste disposal, water, storm water drainage, and other essential facilities proposed to be located within the Master Development Plan Area and needed to support the proposed land uses.

C. Land use and development standards. Criteria, guidelines, and standards by which development would proceed, and standards for the conservation, development, and utilization of natural resources, where applicable.

D. Implementation measures. A program of implementation measures and environmental mitigation measures, including regulations, programs, public works projects, and financing measures necessary to carry out the proposed land uses, infrastructure, and development and conservation standards and criteria.

Figure 3.3.3: Proposed Landscape Plan

E. Relationship to General Plan. A discussion of the relationship of the Master Development Plan to the objectives, policies, general land uses, and programs of the General Plan.

F. Additional information. The Master Development Plan shall contain any additional information determined to be necessary by the Community Development Director based on the characteristics of the area to be covered by the plan, applicable policies of the General Plan, or any other issue(s) determined by the Community Development Director to be significant. A Development Agreement to implement the Master Development Plan will be processed concurrently with the Master Development Plan.

The Master Development Plan, and this companion EIR, establish the criteria for evaluating and processing future specific proposals for development within Westlake Villages. The primary intent and purpose of the Master Development Plan are to create the framework of maximum flexibility for residential development, and provide effective design solutions where the residential uses interface with the proposed recreational, institutional and existing commercial uses within Westlake Villages, while remaining consistent with the policies, general land uses and programs of the City's General Plan. The Master Development Plan, and companion EIR, provide information that is required to establish the appropriateness of Westlake Villages for the intended uses, for the proposed intensity of those uses, for its consistency with the environment, and for the compatibility of those uses with public health, welfare, and safety. Any future development application within Westlake Villages must demonstrate that the proposed development is consistent with the goals, objectives and policies of the Master Development Plan and the City's General Plan. The City's General Plan, Zoning Ordinance, Master Development Plan, and companion EIR provide the criteria and process for considering and implementing development proposals.

The project is a mixed use project, and would consider a range of residential densities within the project site. Project applications would include plans and technical studies, including site plans, floor plans, exterior building elevations, and soils reports to allow the project to be evaluated for consistency with the Master Development Plan. The Community Development Director may require additional studies, determined on a case by case basis. Plans will be submitted to and reviewed by the Westlake Villages Design Review Board for architectural review. Once approved by the Design Review Board, plans would be submitted to the City for Site Plan Review, and for building permits.

Several findings are required before the Planning Commission and City Council may approve the Westlake Villages Master Development Plan. The reviewing body must be able to make all of the following findings in a positive manner to approve the Master Development Plan:

A. The Master Development Plan is consistent with the objectives, policies, general land uses, programs and actions of the City's General Plan;

B. The Master Development Plan adequately addresses the physical development characteristics of the Westlake Villages site;

C. The development standards identified in the Master Development Plan would serve to protect the public convenience, health, safety, and general welfare;

D. Development of the Westlake Villages site would ensure a compatible land use relationship with the surrounding neighborhood;

E. The Master Development Plan is in compliance with applicable requirements of the City's Planning and Zoning Code, other local ordinances, and State and Federal Law; and
F. The Master Development Plan is in compliance with the provisions of the CEQA and the City's environmental guidelines.

During the review of an application for development of a project within Westlake it could be determined that the proposed project would be inconsistent with the uses and development densities identified and allowed

within the Master Development Plan. In that event, the project or use may be approved, provided: (1) the Design Review Board for Westlake recommends to the City of Stockton that the City issue a Conditional Use Permit for the proposed project or use; and (2) that the City of Stockton Planning Commission approves and issues a Conditional Use Permit for the proposed project or use.

Once adopted by the City, the Master Development Plan would be subject to a review by the Community Development Director every five years to ensure that the applicant, or any successor-in-interest, is in compliance with the intent and purpose of the Plan.

Amendments to the Master Development Plan can be separated into two classes. (1) Minor Amendments, i.e. amendments that the Community Development Director finds are consistent with the intent and purpose of Westlake Master Development Plan; and (2) Major Amendments, i.e. a request for an alternative project or use that the Community Development Director finds is not presently included as an alternative project or use within the Master Development Plan and is a project or use which is inconsistent with and does not share the same or similar characteristics of an allowed use identified within the Master Development Plan.

Minor amendments shall not be subject to public hearings. Changes in development intensity or residential density that do not exceed the intensity or density established by the Master Development Plan and considered by the Master Development Plan EIR, such as lot line adjustments, a compatible land use change as provided in Section Three or adjustments to the roadway or street system, are examples of minor adjustments that shall not require an extensive amendment process and shall be subject to the approval of the Community Development Director based on an approval recommendation of the Design Review Board for Westlake.

Major amendments, such as a request for a project or use which is not consistent with and does not share the same or similar characteristics of an allowed use identified within the Master Development Plan, may be approved, provided: (1) the Design Review Board for Westlake recommends to the City of Stockton that the City issue a Conditional Use Permit for the proposed project or use; and (2) that the City of Stockton Planning Commission approves the proposed project or use and issue a Conditional Use Permit. Issuance of a Conditional Use Permit by the Planning Commission, or by the City Council if the decision of the Planning Commission is appealed to the City Council, shall be subject to the following findings based upon substantial evidence presented at the public hearing:

X That the proposed project is in conformance with the City's General Plan;

X That the proposed project or use would not create internal inconsistencies within the Master Development Plan Area;

X That the proposed project of use would not adversely impact the environment, or in the alternative, all significant adverse impacts of the proposed project or use can and will be mitigated to less than significant, and;

X That such proposed project or use is compatible with adjacent land uses.

Key Design Elements

The primary design concept for the project is to create a high quality community, integrating a range of development densities and styles, that is compatible with the surrounding development while creating the northern gateway to the City of Stockton. The private development plans that follow this Master Development Plan should respect the functional relationships between the uses proposed for the project area in order to establish a high quality living environment. The following guidelines apply to the Westlake Villages project:

A. All buildings, structures and site improvements should be carefully integrated with the landscape.

B. Development plans that are intended to implement this Master Development Plan shall treat common features throughout the overall project area, such as the road and street landscaping or signage programs, in a manner consistent with the development standards and design guidelines included in this Master Development Plan.

C. Private development within any portion of the project area should emphasize pedestrian and bicycle connections with other portions of the project area.

D. Project-specific development plans should emphasize the treatment of the roads and streets, particularly the spine roads, lakes, and entry gateways, as important public use areas.

Vehicular Circulation System

The circulation network, both vehicular and pedestrian, establishes the skeletal framework for the project area. All of the land uses would be interrelated by the circulation network that would also determine the form of the individual parcels. The following general guidelines are intended to establish the character of the circulation network:

A. Project-specific development shall identify a clear hierarchy of roads and streets based on the projected volume of traffic and the functional relationship of the proposed land uses.

B. Roads and street widths, centerline curves, medians and landscaped treatments, may deviate from the City standards in order to improve the overall design quality and compatibility of the development with the surrounding area. Any deviations from City standards are subject to the approval of the Design Review Board and the City Engineer.

C. Entrances into neighborhoods from the collector streets should be limited in number and shared between adjacent neighborhoods, when feasible, to reduce curb cuts and potential conflicts along streets.

D. Public open space and park areas should front onto public streets and roads.

E. The primary intersections and neighborhood entries should incorporate decorative paving materials, monument signs, or other design patterns intended to celebrate key intersections and highlight pedestrian crossing areas. Special paving in public streets shall require issuance of a Revocable Permit, or shall be included in a Lighting and Landscaping District maintenance agreement. All such paving materials, patterns, signage, or other improvements shall be reviewed and approved by the Design Review Board, and shall be subject to the approval of the City Engineer.

F. Pedestrian and bicycle trails should be incorporated into residential neighborhoods to provide connections to major circulation roads, public transportation facilities and with other pedestrian and bicycle connections within Westlake.

G. The pedestrian circulation system should provide a link from residential development to the levee trail and ultimately the Marina, public recreational facilities, schools and parks within Westlake, and to trails within Spanos Park West leading to the retail/office development.

H. Pedestrian walkways within the public rights-of-way of local streets should be a minimum of five feet (5') in width and constructed according to Stockton City Standards.

I. Combination pedestrian and bicycle paths shall be a minimum 8 feet (8') in width. Such paths should be at designated locations to the compatible with the City of Stockton Existing and Future Bikeway Plan. The locations of these paths shall be shall be reviewed and approved by the Design Review Board and the City Engineer.

J. Where roads and streets include a bike lane, such bike lanes shall be no less than five feet (5') in width, per the City Engineer.

K. On collector streets, sidewalks and paths should be separated from streets by a parkway strip. The width of the parkway strip shall be a minimum of five feet (5'). The design of the walk and parkway areas shall be reviewed and approved by the Design Review Board and the City Engineer.

Pedestrian and Bicycle Circulation System

A system of paths for pedestrians and bicyclists would provide access to and between important destinations within the project area, such as the residential neighborhoods and the Community Centers and Parks. The pedestrian and bicycle circulation system would also provide links to areas outside Westlake, including the commercial power center site in Spanos Park West, and the Marina to the west. The basic components of the proposed circulation system include an eight-foot (8') wide pedestrian and bicycle path located within landscaped corridors adjacent to the arterial and major collector streets. A twelve-foot (12') wide path/maintenance road, located along the top of Reclamation District levee along Disappointment/Pixley Slough, will provide a connection to the paths within the proposed development and ultimately to the Class II bike path on the south side of Eight Mile Road. Pedestrian access would be provided within the villages by concrete sidewalks, typically separated from the roadway system and a minimum of five feet (5') wide.

The pedestrian and bicycle circulation system would be compatible with the City of Stockton Existing and Future Bikeways Plan. The exact locations of the elements of the pedestrian/ bikeway system would be subject to the review and approval of the Design Review Board. Bikeway Plan.

Additionally, traffic calming and pedestrian enhancement features would be incorporated as key elements of the roadway system. The roadway widths will be minimized, in part to reduce the amount of impervious surfaces, but also to promote slower vehicular speeds within the project area. Also included would be roundabouts, traffic circles, and high-visibility crosswalks to further reduce traffic speeds and increase pedestrian safety.

Building Requirements

Commercial: The development program for Westlake recognizes and embraces the existing Paradise Point Marina, located on 13.96 acres adjacent to Bishop Cut along the Plan Area western boundary. The Master Development Plan permits the continued commercial and recreational operations of the Marina Parcel and a small portion of the larger parcel currently used for marina-related purposes, and provides the framework for the future expansion and redevelopment of the marina, including retail shops and restaurant uses. Timing for the future expansion and redevelopment of the marina would be subject to the prevailing market characteristics at the time.

Residential: The residential development program for Westlake consists of 24 villages of detached residential units. Seventeen (17) of the villages (A through Q) would be conventional market-rate housing units developed within the range of densities described in Table 3.3.A. Of these residential villages, six (6) villages (G through L) would be designed and constructed as gated, private developments. The other eleven villages (A through F, and M through Q) would be planned and built as open communities with public streets maintained by the City. The remaining seven villages (R through X), located in the southwest quadrant of the project site, would comprise the proposed active senior adult community.

The area dedicated for conventional housing includes approximately 337 acres, with close to 129 acres set aside for a potential Active Adult Development. Of the combined 466 acres designated for residential use, a minimum of 12 acres shall be developed as village parks, ranging in size from approximately 0.5 to 1.5 acres. As stated in Table 3.3.A, the residential density within any Village would range between 3.5 and 8.0 units/acre. The higher and lower density development has been intermixed throughout the project, permitting the entire range of development within the project similar proximity and equal enjoyment of the many project amenities. In addition to residential uses, other permitted uses within the villages would include Public and Private Recreational Facilities, Day Care/Pre-school, Public School Facilities, Parks and Open Space. Each village would represent individual neighborhoods, with a variety of architectural character.

Phasing

Future development within Westlake Villages would occur in phases responding to market demand and other economic factors as determined by the Master Developer or subsequent project developer. Subsequent project phasing would only occur upon the condition that road improvements, wastewater collection, water supply, storm drainage, and other infrastructure improvements necessary to adequately serve the users of the subsequent project phases proposed within Westlake Villages are either fully constructed and operational, or would be constructed concurrently as part of the development which they would serve.

Development within Westlake Villages would commence under an initial phase consisting of: mass grading and dewatering of the project site; construction of the spine roads and lake facilities; installation of underground utilities within the spine road right-of-way including stub-outs serving future phases, and; dedication of right-of-way for widening Eight Mile Road along the project frontage in conformance with the Eight Mile Road Specific Plan; and construction of required improvements including pedestrian and vehicular access into the project site.

The following provides a more detailed description of the anticipated project phasing, based on the primary land uses included in the Master Development Plan.

Phase IA: Grading/Site preparation: Mass grading of the entire site will be performed as part of the initial phase of development. This includes delivery and operation of earth moving equipment, required demolition of on-site improvements, including site clearing and grubbing, installation of the necessary equipment for site dewatering, trucking construction materials off-site and on-site, excavation, shaping and installation of all associated piping and equipment for the various on-site lakes, and mass grading of the neighborhood villages into "superpads".

Major/Backbone Infrastructure: The first phase of the project infrastructure consists of: grading and installation of the main collector road, Street "1" from Eight Mile Road to the point which the road intersects with Street "2"; Street "2", the secondary collector road from Eight Mile Road to the intersection with Street "1"; the extension of Scott Creek Drive westerly from the western boundary of Spanos Park West to the end of the street return on the west side of Street "1"; Street "3", the entire segment from the intersection at Street "1" to the intersection at Street "4"; Street "4", the entire residential loop road within the proposed active adult community, as well as all the backbone systems and facilities, including the storm drainage, water, sewer, gas, electricity, cable, telephone, and fiber optics, or any other utility, that would ultimately be installed within the right-of-way of the named streets. Required grading, paving and landscaping for the necessary widening of Eight Mile Road along the project frontage in conformance with the Eight Mile Road

Specific Plan. Road improvements within the initial phase of development may only require paving of half of Street "2" until such time as the full pavement section is warranted by traffic volumes or construction traffic as determined by City's Director of Public Works. The extension of Consumnes Drive from the western boundary of Spanos Park West to the intersection of Street "2" shall be completed as part of the initial phase, chiefly due to infrastructure requirements. The first phase street landscaping improvements may be constructed on one or both sides of the completed roadway as agreed to by the City's Community Development Director, City Engineer and Public Works Director.

Construction of access streets, collector streets and service roads required to serve a particular project or parcel within the Master Development Plan Area may be constructed in the initial phase of development.

Phase IB: It is anticipated that final improvements would commence on villages A, B, C, E, F, K, R, V, W and X under this phase. This represents approximately 50 percent of the proposed residential development for the project. Phase I and subsequent phases of development may also include the construction of additional access streets, collector streets or service roads to specific projects or parcels.

Phase II: It is anticipated that final improvements would commence on villages L, N, S, and U under this phase.

Phase III: Within this phase it is anticipated that final improvements would commence on villages G, T, and P.

Phase IV: It is anticipated that final improvements would commence on villages H, I and M under this phase.

Phase V: Representing the final phase, it is anticipated that final improvements would commence on villages D, O, and Q. The extension of Melones Street from the western boundary of Spanos Park West to the intersection of Street "E" would need to be completed prior to final occupancy of any residential units in this neighborhood pod.

Phase X: Construction would begin on village O.

The Westlake Master Development Plan also permits phasing between and among the portions of Westlake. If the infrastructure necessary to serve a particular area within Westlake has been completed, the owner, developer, and/or successor-in-interest may construct all, or a portion, of an approved project before any other project developer has commenced construction. The owner, developer, and/or successor-in-interest may initiate construction on any given parcel prior to the build-out of another parcel, provided that the infrastructure necessary to serve such parcel would be completed prior to occupancy. The phasing schedule for the proposed development is meant to be a general guide for project sequencing and is not a fixed requirement for the project. Development phasing is expected to be a flexible and dynamic process that allows adjustments for fluctuations in market demand and changing economic conditions.
Circulation Phasing: The initial phase of the project infrastructure consists of constructing the entire system of minor arterial streets, including: the main collector Street "1" from Eight Mile Road to the point which the road connects with secondary collector Street "2"; minor arterial Street "2", from Eight Mile Road to the intersection with the minor arterial Street "1"; the extension of Scott Creek Drive from the western boundary of Spanos Park West to the intersection of street "1"; Street "3", the access road of the proosed active adult community; and residential loop Street "4" providing internal vehicular circulation within the proposed Active Adult community. Because construction of these streets will be completed prior to commencing final improvements within any Villages, primary access to the project for construction and ultimately for residents will be assured. Street "2" from Eight Mile Road will be used as the primary access point for construction-related trucks and equipment, delivery of materials, etc. Additional vehicular access will be provided into the project for subsequent phases when construction of the extension of Consumnes Drive from Spanos Park West to Street "2" is completed. The interior vehicular circulation within Villages will be addressed as part of the phase construction planning, based on the conditions inherit to the specific Villages.

Land Use Changes
Approval of the requested M-X General Plan and zoning designations will require a General Plan Amendment and rezoning. The existing County General Plan designations will be modified from General Agriculture (for the development and marina parcels) to Mixed Use in the City of Stockton General Plan. Similarly, existing County zoning designations of AG-40 (General Agriculture) will be changed to M-X in the City's zoning code. The Spanos Parcel will be redesignated as Low-Medium Density Residential within the City's General Plan.

3.4 REGULATORY REQUIREMENTS, PERMITS, AND APPROVALS

City of Stockton

The City of Stockton, as Lead Agency, will be responsible for the discretionary actions associated with the proposed project.

Environmental Impact Report (#1-04). In accordance with CEQA, prior to taking action on the proposed Mixed Use designation and Master Development Plan, the Stockton City Council must certify the Final Environmental Impact Report and adopt applicable CEQA Findings and the Mitigation Monitoring Program.

Mixed Use General Plan Designation. The request is for a General Plan Amendment (City File #GPA 3-04) from General Agriculture designations (for the development and marina parcels) to the Mixed Use General Plan designation (see Figure 3.4.1). This designation is based on the premise that the applicant develops a concept plan that is distinctly unique to the project site, establishes development objectives and design guidelines, and submits the Master Development Plan to the City for public review and consideration. The designation is meant to provide the applicant with development flexibility that is ordinarily not included in traditional General Plan categories. The designation is intended to apply to large properties that can accommodate a wide range of residential and non-residential land uses as determined on a case-by-case basis. The project proposes to change the existing agricultural land use to Mixed Use designations. The Mixed Use designations allow for a variety of land uses, however, the Westlake Villages project proposes only residential uses at a variety of densities on the development parcel. Development of the marina would depend on future market forces. The General Plan Amendment requires a Planning Commission recommendation and City Council approval.

Figure 3.4.1: Proposed General Plan Designations

Figure 3.4.2: Proposed Zoning

Low-Medium Density Residential. This designation is proposed for the Spanos Parcel (City File #GPA 3-04) from Commercial Recreation to Low-Medium Density Residential.

Mixed Use Zoning District. Complementing the Mixed Use General Plan designation is a request for a rezone (City File #Z-4-04) from County AG-40 district to the City of Stockton Mixed Use (M-X) zoning district of the City's zoning code (Figure 3.4.2). The M-X zoning district establishes the specific land uses and specific development standards. In order to implement the M-X zoning district, the applicant must submit a Master Development Plan for approval. The zone change/rezone requires a Planning Commission recommendation and City Council approval. Prezoning applications are not being requested for the Spanos Parcel.

Master Development Plan. This Conceptual Master Development Plan (City File #MDP 1-04) includes detailed information in the form of text and diagrams (See previous Figure 3.3.1). At a minimum, the Master Development Plan must provide information regarding proposed land uses, infrastructure, land use and development standards, implementation measures, relationship to the General Plan, and other information relevant to the specific proposal. The Master Development Plan requires a Planning Commission recommendation and City Council approval. The Master Development Plan (Appendix B) is hereby incorporated by reference.

Development Agreement. A Development Agreement (City File #DA 1-04) must be prepared ensuring that all subsequent landowners and tenants comply with the adopted Master Development Plan. The Development Agreement specifies terms and conditions for the development of the M-X project and will ensure that the applicant will develop the M-X project consistent with the Master Development Plan. In particular, the Development Agreement outlines both the applicant's and City's responsibilities for providing infrastructure, public facilities, phasing of development, etc. The Development Agreement requires a Planning Commission recommendation and City Council approval. The Development Agreement (Appendix C) is hereby incorporated by reference. The Development Agreement will establish the number of units and specify that additional environmental review will be required to address the ultimate development plan for the Spanos Parcel.

Site Plan Review. A Site Plan Review is required to implement all or any portion of an adopted Master Development Plan, unless subject to another type of discretionary permit identified in the adopted Master Development Plan. Site plan review requires a recommendation of the Site Plan Review Committee and approval of the City's Community Development Director.

Amend Eight Mile Road Specific Plan. The layout of the M-X project requires an adjustment to an access road location identified in the adopted Eight Mile Road Specific Plan and requires a Specific Plan Amendment (City File #SPA 3-04). The adopted Specific Plan does not specify an intersection or driveway location on Eight Mile Road that would serve the proposed project. A proposal to provide two new intersection locations has been included in the Circulation Plan (Figure 3.3.2) to accommodate the project site layout of uses and parcels. The request to amend the Eight Mile Road Specific Plan to adjust the roadway accesses is addressed in this DEIR document. The Specific Plan Amendment requires a Planning Commission recommendation and City Council approval.

Tentative Map. With approval of the applicant's request to amend the City's General Plan and zoning designation to M-X, and adoption of the Master Development Plan and approval of the Development Agreement, a tentative map (City File #18-04) has been filed that is consistent with the Master Development Plan layout. Tentative maps require City Planning Commission approval.

Following public review of the environmental document, the City will consider the various applications that have been submitted by the applicant. Each action has been previously described, including the responsibilities of the various City decision makers. Table 3.3.B summarizes the proposed permits and approvals required by the City and other regulatory agencies.

Table 3.3.B: Summary of Permits and Approvals

Decision Maker	Sphere of Influence	Annexation	Urban Services Area Boundary Change	General Plan Amendment (GPA #3-04)	Zone Change (Pre-Zoning) (Z-4-04)	Master Development Plan (MDP #1-04)	Development Agreement (DA #1-04)	Site Plan Review	Eight Mile Road Specific Plan Amendment (SPA #3-04)	Tentative Map (TM #18-04)	Storm-water Discharge Pump Station	Section 401* permit; NPDES Permitt	Stream-bed Alter-ation*	Habitat Conserva-tion Plan Amendment (MSCP)
City Council	A	A	A	A	A	A	A		A					
City Planning Commission				R	R	R	R		R	A				
Development Review Committee								R	R	R				
Community Development Director								A						
LAFCO	A	A												
Lodi Unified School District								A						
Regional Water Quality Control Board											A	A		
California Department of Fish and Game													A	
U.S. Army Corps of Engineers														
State Lands Commission											A			
State Reclamation Board/RD 20-42											A			
SJCOG														A

Notes:
A = Approval; R = Recommendation
** = to be determined*

CHAPTER 4.0 ENVIRONMENTAL ANALYSIS

INTRODUCTION

The following document serves as a major reference or as background studies for this DEIR and is, therefore, incorporated by reference in the DEIR. This document is available for review at the City of Stockton, Department of Community Development, Planning Division, 345 N. El Dorado Street, Stockton, California 95202, phone (209) 937-8266.

LSA Associates, Inc. Supplemental Final Environmental Impact Report Spanos Park West Project. SCH #87032415. Prepared for the City of Stockton. December 2001.

Format for Environmental Analyses

The purpose of this chapter is to present information on the various environmental topics that are relevant to the Westlake Villages project site and region. With this information, analyses of potential project impacts on the environment are provided, thus presenting the reader with information about the project and the potential effects of the project.

Several of these environmental topics are technically oriented and have been examined by experts on those topics. Where applicable, technical analyses have been conducted and are provided in the appendices of this document.

To effectively characterize the impacts of the proposed Westlake Villages on the environment, the DEIR document adheres to the following sequence:

X	Existing Setting
X	Impact Significance Criteria
X	Impacts and Mitigation Measures
X	Level of Significance After Mitigation

Under Existing Setting, those elements associated with the current site and area conditions have been documented. These conditions help to define constraints to the project, describe previous analyses and assumptions, and outline potential concerns and issue areas.

After documenting the concerns and issues in Existing Setting, the impacts associated with implementing the project are addressed. This includes a format for the Impacts, Mitigation Measures, and Level of Significance that facilitates the reader's understanding of project effects.

At the beginning of each impact section, Impact Significance Criteria are defined in accordance with general CEQA parameters, industry professional standards, and professional judgment. These criteria are evaluated against the project impacts to assess the level of significance prior to mitigation. Also included, where applicable, is a discussion of the potential effects that are not considered significant, followed by the potentially significant effects.

A summary of each impact is included at the beginning of the impact discussion and has been included in the overall Summary Impact Table.

After identifying the potentially significant impacts, the EIR identifies mitigation, as needed and where available, to reduce the impacts to a level below significance. Mitigation for each potentially significant impact is presented separately, and conclusions regarding significance are reached prior to discussing other project impacts. At the end of each environmental topic is a summary conclusion of significance.

4.1 GEOPHYSICAL RESOURCES

Kleinfelder, Inc. prepared a Geotechnical Services Report for the proposed project (Appendix D). The geotechnical report was used in preparation of this section.

4.1.1 Existing Setting

Landform

Topographical features associated with the project site are illustrated on Figure 4.1.1. The site is nearly flat except for levees, channels, and roadway embankments. The site drains towards the northwest from an elevation of -1 foot at the eastern boundary to -7 feet at the western boundary. A shallow borrow area exists within the project site; this site was used during reconstruction of the Bishop Tract levee.

Geological Conditions

The site lies within the western part of the Great Valley Geomorphic Province of California. The valley is about 400 miles long and averages about 50 miles wide, and comprises about 20,000 square miles. The valley has been filled with a thick sequence of marine and non-marine sediments from the late Jurassic to Holocene. The uppermost strata of the Great Valley represents, for the most part, the alluvial, flood, and delta plains of two major rivers (Sacramento and San Joaquin Rivers) and their tributaries.

The valley deposits are derived from the Coast Ranges to the west and Sierra Nevada Mountains to the east. Granitic and metamorphic rocks outcrop along the eastern and southeastern flanks of the valley. Marine sedimentary rocks outcrop along most of the western, southwestern, southern, and southeastern flanks; and volcanic rocks and deposits outcrop along the northeastern flanks of the valley. The valley geomorphology includes dissected uplands, low alluvial plains and fans, river flood plains and channels, and overflow lands and lake bottoms.

The site itself is located in the north central portion of the San Joaquin Valley in an area characterized by delta fluvial and alluvial fan deposits. The majority of the native sediments include continental rocks and deposits of a heterogeneous mix of poorly sorted clay, silt, sand, and gravel. Some beds of claystone, siltstone, sandstone, and conglomerate can also be present.

The project site is underlain by weakly consolidated Pleistocene-age clay, silt, sand, and gravel alluvium of the Modesto Formation. Within the project area, the Modesto Formation overlies Pleistocene alluvium of the Riverbank Formation. At the western portions of the site where elevations are lower, the Modesto Formation is overlain at the surface by Holocene-age alluvium. This alluvium consists of unconsolidated organic rich silt and clay which was most likely deposited by flooding caused by rising sea levels. The rising and falling of sea levels created tule marshes across the Delta. Peat and organic silt and clay eventually formed after repeated burial of the tules (Kleinfelder, 2003).

Regional Faulting

Stockton is located in an area that is characterized by low to moderate seismic activity. The project site is not located within or adjacent to any Alquist-Priolo Zones. Additionally, the project site is not located within an area with faults that displace valley alluvium. However, there are a number of active and potentially active faults located to the east and west of the project site. Table 4.1.A presents three significant regional faults in the project area.

Figure 4.1.1: Topographical Features

Table 4.1.A: Significant Regional Faults

FAULT	APPROXIMATE DISTANCE FROM SITE (MILES)	MAGNITUDE OF MAXIMUM EARTHQUAKE*	SLIP RATE
Great Valley	20	6.9	1.5
Clayton-Marsh Creek - Greenville	27	6.9	2.0
Vaca	27	6.7	1.5

Source: Kleindelder, Inc., 2003.
*Notes: * Moment Magnitude: the estimation of an earthquake magnitude by using the seismic moment which is a measure of an earthquake size utilizing rock rigidity, amount of slip, and area of rupture.*

Soils Data

Field investigations performed at and near the project site indicate that the site is underlain by low-organic silty and sandy clay to depths ranging from about 2 to 9 feet below existing site grade. The consistency of the clay ranged from medium stiff in the upper 2 feet increasing to stiff to hard. At 2 to 9 feet, the soil is composed of interbedded materials of medium dense to dense silty and clean sand and very-stiff to hard silt. Finally, below 9 feet, soils consist of highly-interbedded and discontinuous strata of silty clay, sandy clay, silty sand, clean sand, and silt.

Low organic soils in the western portion of the site are overlain by highly compressible and weak organic silt and clay. Small quantities of highly-organic and fibrous peat are expected to occur (Kleinfelder, 2003).

Based on the Soil Survey of San Joaquin County, California, the soils mapped on the project site are defined as follows (USDA-SCS, 1992):

Guard clay loam, drained, 0 to 2 percent slopes: these very deep, poorly drained, nearly level soils are found on basin rims. The soils are formed in alluvium derived from mixed rock sources. Depth to water table is usually more than 5 feet excepted in areas where water perches on weakly cemented substratum. This soil unit is suited to irrigated row and field crops.

Kingile muck, partially drained, 0 to 2 percent slopes: these very deep, very poorly drained, nearly level soils are found on deltas. The soils are formed from hydrophytic plant remains and underlying alluvium derived from mixed rock sources. This soil unit is suited to irrigated row and field crops.

Rindge muck, partially drained, 0 to 2 percent slopes: these very deep, very poorly drained, nearly level soils are found on deltas. The soils are formed from hydrophytic plant remains and underlying alluvium derived from mixed rock sources. This soil unit is suited to irrigated row and field crops.

Ryde clay loam, partially drained, 0 to 2 percent slopes: these very deep, very poorly drained, nearly level soils are found on floodplains and deltas. The soils are formed from hydrophytic plant remains and underlying alluvium derived from mixed rock sources. This soil unit is suited to irrigated row and field crops.

Ryde-Peltier complex, partially drained, 0 to 2 percent slopes: these very deep, poorly drained to very poorly drained, nearly level soils are found on floodplains and deltas. The soils are formed from hydrophytic plant remains and underlying alluvium derived from mixed rock sources. The shrink-swell potential is high. This soil unit is suited to irrigated row and field crops.

Groundwater

Generally, ground water depths range from 7 to 8.5 feet below existing grade in the eastern areas of the site to 3.5 to 5 feet in the remainder of the site. Lower groundwater levels in the eastern portions of the project site are attributed to the extensive dewatering that occurred for the adjacent Spanos Park West project. The general contractor for the SPW project has indicated a permanent drop in ground water levels within the SPW site (Kleinfelder, 2003).

4.1.2 Impact Significance Criteria

Potential significant impacts associated with soils, geology, and seismicity have been evaluated using the following criteria:

GEO-a Increased erosion during construction activities and following completion of the proposed project;

GEO-b Potential constraints to development as a result of seismic hazards within the study area; and,

GEO-c Potential constraint to development as a result of soils and geologic conditions in the area of the proposed project.

4.1.3 Impacts and Mitigation Measures

Potentially Significant Effects

Impact GEO-1: Development of the project site would include substantial grading activities that could result in soil erosion (Significance Criterion GEO-a).
Implementation of the proposed project would require grading for proposed roadways, infrastructure, and superpads. Exposed soils are considered erodible when subjected to concentrated surface flow. Within the site, increased erosion may occur on unprotected rough graded surfaces if they are exposed to rainfall and surface runoff.

Mitigation Measure GEO-1a: Prior to approval of the improvement plans for site development, the project applicant will submit an erosion control plan to the Director of Municipal Utilities Department (MUD). Erosion control measures will include techniques such as physical and vegetative stabilization measures and runoff diversion measures, retention of vegetation, hydroseeding, geotextiles and mats, and straw bale or sandbag barriers and avoidance of grading activities near water channels to the maximum extent feasible. The proposed project must also comply with applicable State and City codes and regulations and adopted standards.

Mitigation Measure GEO-1b: Prior to construction, the applicant shall provide evidence to the Director of MUD that a Notice of Intent (NOI) has been filed with the Regional Water Quality Control Board (RWCQB) regarding compliance with National Pollutant Discharge Elimination System (NPDES) General Construction permit requirements.

Implementation of the above listed mitigation measures would reduce impacts affecting soil erosion to less than significant levels. Consequently, the conditions included in Significance Criterion GEO-a will be avoided.

Impact GEO-2: Implementation of the proposed project would expose people and structures to major seismic hazards (Significance Criterion GEO-b).

A majority of the soils on the project site are high in clay content and dense. These soils are generally not susceptible to liquefaction. However, liquefaction tests performed on the project site indicate that strata of sand located between 5 and 32 feet may be susceptible to liquefaction during strong ground shaking along the Great Valley fault. Ten tests sites indicated this potential. The potential for liquefaction based on ground shaking from other faults is considered low (Kleinfelder, 2003).

Mitigation Measure GEO-2: Prior to approval of the building plans for site development, a seismicity report will be completed by an engineering geologist or equivalent professional regarding possible damage from seismic shaking and liquefaction. Plans for all structures shall be reviewed by the Director of Community Development prior to approval of the building plans and building permits. This report will include:

X		An analysis of seismic hazards anticipated at the project site from regional faults.
	X	A discussion and recommendations for seismic mitigation at the project site. Recommendations may include use of reinforced concrete foundations and avoidance of potentially unstable foundation materials.
X		The project applicant will incorporate the recommendations of the seismicity report into the design for all structures proposed at the project site. All structures will be designed to withstand the anticipated seismic hazards determined in the seismicity report.

Implementation of the above listed mitigation measure would reduce impacts due to major seismic hazards to a less than significant level. Consequently, the conditions included in Significance Criterion GEO-b will be avoided.

Impact GEO-3: Project implementation may encounter groundwater or soil conditions during grading that could affect structural support and suitability (Significance Criterion GEO-c).

The geotechnical study prepared for the project concludes that the site is suitable for development provided recommendations are incorporated into the project design. Three primary considerations in designing the proposed project include: 1) the shrink-swell (expansion) characteristics of the near surface clay and organic soil and the potential for post construction heave of concrete slabs and lightly loaded foundations; 2) the weak and highly compressible nature of the organic silt and clay encountered in the southwestern portion of the site; and, 3) the shallow groundwater levels on the site.

The near surface soils underlying the site consists predominantly of moderately plastic clay and organic soils. These soils can exhibit significant shrink-swell or expansion characteristics with variations in moisture content. This potentially expansive nature can lead to post-construction heave, and cracking in concrete slabs and lightly-loaded foundations and pavements.

The organic silt and clay located in the western portion of the project site is highly compressible and weak. These soils are unsuitable for the proposed structures, unless post-tensioned slab foundations are used.

Ground water occurs on the project site between 3.5 to 8.5 feet below site grade. The geotechnical study indicates that shallow ground water is potentially the most significant consideration in constructing the proposed project. These shallow ground water levels could lead to subgrade instability. These impacts could be greatest in winter months for residences located near levees due to "underseepage."

The geotechnical study indicates that clay soils on the project are suitable for constructing a clay liner for the onsite lakes, however, the study recommends further testing prior to and during construction of the liners. Measures are provided below to minimize any potential impacts (Kleinfelder, 2003).

Mitigation Measure GEO-3a: The site specific geotechnical study prepared for the proposed project site provides information on the suitability of excavated material as engineered fill. The study also provides recommendations for treating onsite soils and alternatives to using onsite soils as engineered fill. The geotechnical study should be amended to include the following:

X Specify measures for reuse or disposal of excavated material.

X The time between excavation and reuse of excavated material should be minimized. Provisions for adequate stockpile coverage and protection from wind and water erosion during the entire storage period.

X Include specific information regarding the eventual reuse or disposal site, transportation methods, disposal reuse management, and schedule.

Mitigation Measure GEO-3b: To mitigate potential impacts of expansive soils, construction of the proposed project should consider using post-tensioned slab foundations designed to resist and/or span the expansive soils. The geotechnical study provided in Appendix D provides specific information regarding various construction options for building on expansive soils and drainage considerations. Homeowners should be made aware of the risks associated with expansive soils and the importance of maintaining positive drainage to convey water away from structures.

Mitigation Measure GEO-3c: To mitigate potential impacts of highly-compressible and weak soils, construction of the proposed project should consider using post-tensioned slab foundations or replacing this soil material with engineered fill. The geotechnical study provided in Appendix D provides specific information regarding various construction options for building on highly-compressible and weak soils.

Mitigation Measure GEO-3d: The geotechnical study recommends the installation of permanent dewatering systems to mitigate the high ground water levels on the project site. Additionally, "toe" drains should be installed along levees to prevent "underseepage." Construction dewatering should also be implemented to ensure stable construction.

Mitigation Measure GEO-3e: Further testing should be performed prior to and during construction of the liners for the onsite lakes. The technical study presented in Appendix D provides additional recommendations for construction of the onsite lakes. The study also recommends hiring a lake construction consultant to provide the final lake design.

Mitigation Measure GEO-3f: The geotechnical study provides site specific recommendations and alternatives for mitigating potential impacts. Prior to the issuance of building permits for site development, the project applicant shall submit the geotechnical study to the Director of Community Development Department for approval. This consultation and approval process will ensure that the construction methods and alternatives provided within the study are viable for mitigating potential geophysical constraints of the site.

Implementation of the above listed mitigation measures would reduce impacts affecting structural support and suitability due to groundwater or soil conditions to a less than significant level. Consequently, the conditions included in Significance Criterion GEO-c will be avoided.

4.1.4 Level of Significant after Mitigation

The mitigation measures outlined above will reduce impacts associated with soils, geology, and seismicity to less than significant levels. Approval of the site specific geotechnical study should ensure that there will be no project impacts associated with soils and geology. The erosion control plan will ensure that erosion and sedimentation deposition will be minimized during and after construction.

4.2 AIR QUALITY

Air quality modeling data is provided in Appendix E.

4.2.1 Existing Setting

State CEQA Guidelines state that a project would normally have a significant adverse air quality impact if project-generated pollutant emissions would: cause a violation of an ambient air quality standard or worsen an existing violation; contribute substantially to an existing or projected air quality violation; expose sensitive receptors to substantial pollutant concentrations; or conflict with adopted environmental plans, policies, or regulations for air pollutants (CEQA Guidelines, 1998).

Air pollution in the project area is from a combination of natural and man-made sources. Natural and man-made sources of air pollution consist of windblown dust, agricultural operations, fires from prescribed burning and agricultural burning, hydrocarbons emitted from natural vegetation, and other pollutants from mobile and stationary sources.

Climate and Meteorology

A region's topographic features have a direct correlation with air pollution flow and therefore are used to determine the boundary of air basins. A local air district is then assigned to each air basin and is responsible for providing air quality strategies to bring the air basin into compliance with the National Ambient Air Quality Standards (NAAQS). The proposed project is located in the San Joaquin Valley Air Basin (SJVAB), which is comprise of approximately 25,000 square miles and covers all of seven counties including Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare, and the western portion of an eighth, Kern. San Joaquin Valley Air Pollution Control District (SJVAPCD) is the agency responsible for air quality in SJVAB.

The SJVAB is defined by the Sierra Nevada mountains in the east (8,000 to 14,000 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi mountains in the south (6,000 to 8,000 feet in elevation). The valley is basically flat with a slight downward gradient to the northwest. The valley opens to the sea at the Carquinez Straits where the San Joaquin-Sacramento Delta empties into San Francisco Bay. An aerial view of the SJVAB would simulate a ‘bowl' opening only to the north. These topographic features restrict air movement through and out of the basin.

Although marine air generally flows into the basin from the San Joaquin River Delta, the Coast Range hinders wind access into the SJVAB from the west, the Tehachapis mountains prevent southerly passage of air flow, and the high Sierra Nevada range is a significant barrier to the east. These topographic features result in weak air flow which becomes blocked vertically by high barometric pressure over the SJVAB. As a result, the SJVAB is highly susceptible to pollutant accumulation over time. Most of the surrounding mountains are above the normal height of summer inversion layers (1,500 to 3,000 feet).

Local climatological effects, including wind speed and direction, temperature, inversion layers, and precipitation and fog, can exacerbate the air quality in the SJVAB. Wind speed and direction play an important role in dispersion and transport of air pollutants. Wind at the surface and aloft can disperse pollution by mixing vertically and by transporting it to other locations. For example, in the summer, wind usually originates at the north end of the SJVAB and flows in a south-southeasterly direction through the SJVAB, through Tehachapi pass, into the Southeast Desert Air Basin. However, in the winter, wind

direction is reversed and flows in a north-northwesterly direction. In addition to the seasonal wind flow, a sea breeze flows into SJVAB during the day and a land breeze flowing out of the SJVAB at night. The diversified wind flow enhances the pollutant transport capability within SJVAB.

The climatological station monitoring temperature closest to the project site is the Stockton Airport station (Western Regional Climatic Center, 1999). Monthly average temperature recorded at the Stockton Airport station for the last forty years ranges from 45.0 F in January to 77.7 F in July. January is typically the coldest month in this area. The Stockton Airport monitoring station also records precipitation throughout the year. Average rainfall measured for the last forty years varied from 2.84 inches in January to 0.79 inch or less between May and October, with an average annual total of 13.95 inches. Patterns in monthly and yearly rainfall totals are unpredictable due to fluctuations in the weather. The locations of air quality monitoring stations are shown on Figure 4.2.1.

The vertical dispersion of air pollutants in the SJVAB is limited by the presence of persistent temperature inversions. Because of expansional cooling of the atmosphere, air temperature usually decreases with altitude. A reversal of this atmospheric state, where the air temperature increases with height, is termed an inversion. Inversions can exist at the surface, or at any height above the ground. The height of the base of the inversion is known as the "mixing height." This is the level within which pollutants can mix vertically. Air above and below the inversion base does not mix because of the differences in air density. Warm air above the inversion is less dense than below the base. The inversion base represents an abrupt density change where little exchange of air occurs. Semi-permanent systems of high barometric pressure fronts frequently establish themselves over the SJVAB, deflecting low pressure systems that might otherwise bring cleansing rain and winds.

Inversion layers are significant in determining ozone formation, and carbon monoxide (CO) and fine particulate matter (PM_{10}) concentrations. Ozone and its precursors will mix and react to produce higher ozone concentrations under an inversion. The inversion will also simultaneously trap and hold directly emitted pollutants such as carbon monoxide. PM_{10} is both directly emitted and created in the atmosphere as a chemical reaction. Concentration levels are directly related to inversion layers due to the limitation of mixing space.

Surface or radiation inversions are formed when the ground surface becomes cooler than the air above it during the night. The earth's surface goes through a radiative process on clear nights, where heat energy is transferred from the ground to a cooler night sky. As the earth's surface cools during the evening hours, the air directly above it also cools, while air higher up remains relatively warm. The inversion is destroyed when heat from the sun warms the ground, which in turn heats the lower layers of air; this heating stimulates the ground level air to float up through the inversion layer.

The combination of stagnant wind conditions and low inversions produces the greatest pollutant concentrations. On days of no inversion or high wind speeds, ambient air pollutant concentrations are lowest. Periods of low inversions and low wind speeds are conditions favorable to high concentrations of CO and PM_{10} . In the winter, the greatest pollution problems are carbon monoxide and oxides of nitrogen (NOx) because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and oxides of nitrogen to form photochemical smog.

The six criteria pollutants are ozone (O_3), carbon monoxide (CO), particulates less than ten microns (PM_{10}), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead (Pb). In 1997, the EPA promulgated a new national ambient air quality standard for $PM_{2.5}$, or particulate matter 2.5 microns or less in diameter. The $PM_{2.5}$ standard complements existing national and state ambient air quality standards that target the full range of

Figure 4.2.1: Air Quality Monitoring Stations

inhalable PM_{10}. The California Air Resource Board (CARB) and local air districts will be developing Air Quality Attainment Plans (AQAPs) for incorporation into State Implementation Plans (SIP) to reduce unhealthful levels of $PM_{2.5}$ in areas violating the new federal standards.

Table 4.2.A shows both federal and State standards for these criteria pollutants. Table 4.2.B lists the sources, primary health effects, and status of meeting the standards of these six criteria air pollutants. These health effects would not occur unless the standards are exceeded by a large margin or for a prolonged period of time. The State of California has also established standards (SAAQS) for criteria pollutants which are more stringent than the NAAQS.

Air quality monitoring stations are located throughout the nation and maintained by the local air pollution control district and state air quality regulating agencies. Ambient air data collected at permanent monitoring stations are used by the EPA to identify regions as "attainment" or "non-attainment" depending on whether the regions met the requirements stated in the primary NAAQS. Attainment areas are required to maintain their status through moderate, yet effective air quality maintenance plan. Non-attainment areas are imposed with additional restrictions as required by the EPA. In addition, different classifications of attainment such as marginal, moderate, serious, severe, and extreme are used to classify each air basin in the state on a pollutant-by-pollutant basis. Different classifications have different mandated attainment dates and are used as guidelines to create air quality management strategies to improve air quality and comply with the NAAQS by the attainment date.

A region is determined to be unclassified when the data collected from the air quality monitoring stations do not support a designation of attainment or non-attainment, due to lack of information, or a conclusion cannot be made with the available data.

Ozone

Ozone (smog) is formed by photochemical reactions between oxides of nitrogen and reactive organic gases, rather than being directly emitted. Ozone is a pungent, colorless gas. Elevated ozone concentrations result in reduced lung function, particularly during vigorous physical activity. This health problem is particularly acute in sensitive receptors such as the sick, elderly, and young children. Ozone levels peak during the summer and early fall months.

Carbon Monoxide

Carbon monoxide (CO) is formed by the incomplete combustion of fossil fuels, almost entirely from automobiles. It is a colorless, odorless gas that can cause dizziness, fatigue, and impairments to central nervous system functions. CO passes through the lungs into the bloodstream, where it interferes with the transfer of oxygen to body tissues.

Nitrogen Oxides

Nitrogen dioxide (NO_2), a reddish-brown gas, and nitric oxide (NO), a colorless, odorless gas, are formed from fuel combustion under high temperature or pressure. These compounds are referred to as nitrogen oxides, or NOx. NOx is a primary component of the photochemical smog reaction. Nitrogen oxides also contribute to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition. NO_2 decreases lung function and may reduce resistance to infection.

Table 4.2.A: Ambient Air Quality Standards

POLLUTANT	AVERAGING TIME	CALIFORNIA STANDARDS[1]		FEDERAL STANDARDS[2]		
		CONCENTRATION[3]	METHOD[4]	PRIMARY[2,5]	SECONDARY[2,6]	METHOD[7]
Ozone (O_3)	1-Hour	0.09 ppm (180 :g/m^3)	Ultraviolet Photometry	0.12 ppm (235 :g/m^3)[8]	Same as Primary Standard	Ultraviolet Photometry
	8-Hour	–		0.08 ppm (157 :g/m^3)		
Respirable Particulate Matter (PM_{10})	24-Hour	50 :g/m^3	Gravimetric or Beta Attenuation*	150 :g/m^3	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	Annual Arithmetic Mean	20 :g/m^3*		50 :g/m^3		
Fine Particulate Matter ($PM_{2.5}$)	24-Hour	No Separate State Standard		65 :g/m^3	Same as Primary Standard	Inertial Separation and Gravimetic Analysis
	Annual Arithmetic Mean	12 :g/m^3*	Gravimetric or Beta Attenuation*	15 :g/m^3		
Carbon Monoxide (CO)	8-Hour	9.0 ppm (10 mg/m^3)	Nondispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m^3)	None	Nondispersive Infrared Photometry (NDIR)
	1-Hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	8-Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		–		
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	–	Gas Phase Chemiluminescence	0.053 ppm (100 :g/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	1-Hour	0.25 ppm (470 :g/m^3)		–		
Lead	30-day average	1.5 :g/m^3	Atomic Absorption	–	–	High Volume Sampler and Atomic Absorption
	Calendar Quarter	–		1.5 :g/m^3	Same as Primary Standard	
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	–	Ultraviolet Fluorescence	0.030 ppm (80 :g/m^3)	–	Spectrophotometry (Pararosaniline Method)
	24-Hour	0.04 ppm (105 :g/m^3)		0.14 ppm (365 :g/m^3)	–	
	3-Hour	–		–	0.5 ppm (1300 :g/m^3)	
	1-Hour	0.25 ppm (655 :g/m^3)		–	–	
Visibility Reducing Particles	8-Hour	Extinction coefficient of 0.23 per kilometer - visibility of 10 miles or more (0.07–30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		**No Federal Standards**		
Sulfates	24-Hour	25 :g/m^3	Ion Chromatography*			
Hydrogen Sulfide	1-Hour	0.03 ppm (42 :g/m^3)	Ultraviolet Fluorescence			
Vinyl Cloride[9]	24-Hour	0.01 ppm (26 :g/m^3)	Gas Chromatography			

Source: CARB, 2003

Notes:[1] California standards for ozone; carbon monoxide (except Lake Tahoe); sulfur dioxide (1 and 24 hour); nitrogen dioxide; suspended particulate matter,PM_{10} and visibility reducing particles are values not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

[2] National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For the 24-hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. For $PM_{2.5}$ the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.

[3] Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25 C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25 C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

[4] Any equivalent procedure that can be shown to the satisfaction of the CARB to give equivalent results at or near the level of the air quality standard may be used.

[5] National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

[6] National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[7] Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

[8] New federal eight-hour ozone and fine particulate matter standards were promulgated by EPA on July 18, 1997. Contact EPA for further clarification and current federal policies.

[9] The CARB has identified lead and vinyl chloride as "toxic air contaminants" with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

Table 4.2.B: Health Effects Summary of the Major Criteria Air Pollutants

POLLUTANTS	SOURCES	PRIMARY EFFECTS
Ozone	Atmospheric reaction of organic gases with nitrogen oxides in sunlight.	Aggravation of respiratory and cardiovascular diseases. Irritation of eyes. Impairment of cardiopulmonary function. Plant leaf injury.
Nitrogen Dioxide (NO_2)	Motor vehicle exhaust. High temperature stationary combustion. Atmospheric reactions.	Aggravation of respiratory illness. Reduced visibility. Reduced plant growth. Formation of acid rain.
Carbon Monoxide (CO)	Incomplete combustion of fuels and other carbon containing substances, such as motor exhaust. Natural Events, such as decomposition of organic mater.	Reduced tolerance for exercise. Impairment of mental function. Impairment of fetal development. Death at high levels of exposure. Aggravation of some heart diseases (angina).
Suspended Particulate Mater (PM_{10} and $PM_{2.5}$)	Stationary combustion of solid fuels. Construction activities. Industrial processes. Atmospheric chemical reactions.	Reduced lung function. Aggravation of the effects of gaseous pollutants. Aggravation of respiratory and cardiorespiratory diseases. Increased cough and chest discomfort. Soiling. Reduced visibility.
Sulfur Dioxide (SO_2)	Combustion of sulfur containing fossil fuels. Smelting of sulfur bearing metal ores. Industrial processes.	Aggravation of respiratory diseases (asthma, emphysema). Reduced lung function. Irritation of eyes. Reduced visibility. Plant injury. Deterioration of metals, textiles, leather, finishes, coatings, etc.
Lead (Pb)	Contaminated soil.	Impairment of blood function and nerve construction. Behavioral and hearing problems in children.

Source: CARB, 2001

The attainment status in the San Joaquin County area of the SJVAB is shown in Table 4.2.C as follows:

Table 4.2.C: Attainment Status in San Joaquin County Area

POLLUTANT	STATE	FEDERAL
Ozone - 1 hour	Severe Non-attainment	Severe Non-attainment
Ozone - 8 hour	No State standard	Designation to be determined
PM_{10}	Non-attainment	Serious Non-attainment
$PM_{2.5}$	No State standard	Designation to be determined
CO	Attainment	Attainment/Unclassified
NO_2	Attainment	Attainment/Unclassified
All others	Attainment/Unclassified	Attainment/Unclassified

Source: CARB, 2003.

Sulfur Dioxide

Sulfur dioxide (SO_2) is a colorless irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO_2 levels in the region. SO_2 irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight.

Particulate Matter

Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles are those that are larger than 2.5 microns but smaller than 10 microns, or PM_{10}. $PM_{2.5}$ refers to fine suspended particulate matter with an aerodynamic diameter of 2.5 microns or less that is not readily filtered out by the lungs. Nitrates, sulfates, dust, and combustion particulates are major components of PM_{10} and $PM_{2.5}$. These small particles can be directly emitted into the atmosphere as by-products of fuel combustion, through abrasion, such as tire or brake lining wear, or through fugitive dust (wind or mechanical erosion of soil). They can also be formed in the atmosphere through chemical reactions. Particulates may transport carcinogens and other toxic compounds that adhere to the particle surfaces, and can enter the human body through the lungs.

Reactive Organic Gases

Reactive organic gases (ROG) are not a criteria pollutant, but are precursors to ozone formation. They are formed from combustion of fuels and evaporation of organic solvents. ROG is a prime component of the photochemical smog reaction. Consequently, ROG accumulates in the atmosphere much quicker during the winter when sunlight is limited and photochemical reactions are slower.

Local Air Quality

The project site is located in San Joaquin County under SJVAPCD jurisdiction. San Joaquin County's major air quality problems occur from late spring through early winter. From May to October, high ozone levels are a recurring problem due to the region's intense heat and sunlight. Pollution problems also occur from October through January due to frequent strong temperature inversions which trap pollutants. During these stagnant conditions, pollutants have a tendency to exceed the ambient air quality standards.
The CARB and SJVAPCD maintain ambient air quality monitoring stations throughout the region; the closest air quality monitoring station to the proposed project is the Stockton-Hazelton station with data for most criteria pollutants. Tables 4-2.D and 4-2.E illustrate the pollutants monitored at this air monitoring station.

The ambient air quality data in Tables 4-2.D and 4-2.E show that nitrogen dioxide and carbon monoxide levels are below the relevant State and federal standards at this station. The PM_{10} level exceeded the State standards in each of the past three years, but met the federal standard every year for the last three years. Ozone levels exceeded the State one hour standard in each of the past three years, ranging from 2 to 5 days a year; the federal one hour standard was not exceeded at the Stockton-Hazelton station. Federal eight hour ozone standard was exceeded once in 2001 in the past three years. Federal $PM_{2.5}$ standard was exceeded once in 2000, twice in 2001, and was not exceeded in 2002. Sulfur dioxide levels are not monitored in the SJVAB because no exceedance of sulfur dioxide standard has been recorded in the past ten years.

Historic ambient air quality data are used in an air quality model to determine the classification status for the region. As a result of the non-attainment status, the SJVAPCD is required to prepare an Air Quality Attainment Plan (AQAP), which consists of emission reductions strategies and implementation of these strategies. The implementation of the AQAP for the region is the responsibility of many agencies, including the County Air Pollution Control District, County Planning Division, San Joaquin County Council of Governments (SJCOG), California Department of Transportation (Caltrans), all the cities in the County, Stockton Metropolitan Transit District, and CARB.

An initial AQAP was prepared in 1991, by SJVAPCD, pursuant to federal and State clean air legislation, and addressed the 1988 California Clean Air Act (CCAA) requirements with respect to the ozone standards. In addition, a progress report is required to be submitted every three years that summarizes the progress made by the SJVAPCD in meeting the schedules for developing, adopting and implementing the air pollution control measures contained in the AQAP. The 1991 AQAP was updated in 1994 and it was shown that attainment of the federal ozone standard would be met in 1999. However, a conversation with a SJVAPCD employee, John Cadrett, revealed that ozone is being reclassified from serious to severe non-attainment status. The voluntary reclassification of ozone provide SJVAPCD with more time to promulgate effective and feasible control measures, instead of the stringent requirements stated in the CCAA. The stringent requirements and unreasonable control measures would cause economic hardship and unnecessary burdens on communities. The reclassification of the ozone status will allow SJVAPCD to promulgate all feasible control measures to reduce emissions by the new attainment deadline date, year 2005. The control measures developed are for stationary sources, mobile sources, and indirect sources.

Methodology

There are a number of air quality modeling tools available to assess air quality impacts of projects, however, certain air districts such as the SJVAPCD have created guidelines and requirements to conduct air quality analysis. SJVAPCD's document, Guide for Assessing and Mitigating Air Quality Impacts (1998) was adhered to in the assessment of air quality impacts for the proposed project. The air quality models of URBEMIS 2002 and CALINE4 are recommended by SJVAPCD and were used in this air quality assessment. A brief discussion of each model is described below.

Table 4.2.D: Ambient Air Quality at Stockton-Hazelton Street Air Monitoring Station

	One-Hour Carbon Monoxide		One-Hour Ozone		Coarse Suspended Particulate (PM_{10})		Nitrogen Dioxide	
	Max. 1-Hour Conc. (ppm)	Number of Days Exceeded	Max. 1-Hour Conc. (ppm)	Number of Days Exceeded	Max. 24-Hour Conc. ($\Phi G/M^3$)	Number of Days Exceeded	Max. 1-Hour Conc. (ppm)	Number of Days Exceeded
State Stds.	> 20 ppm/1 hr		> .09 ppm/1 hr		> 50 $\Phi g/m^3$, 24 hrs		> .25 ppm/1 hr	
2002	5.2	0	0.10	2	87	10	0.08	0
2001	8.4	0	0.10	5	140	10	0.08	0
2000	6.5	0	0.11	4	91	9	0.10	0
MAXIMUM	**8.4**		**0.11**		**140**		**0.10**	
Federal Stds.	> 35 ppm/1 hr		> .12 ppm/1 hr		> 150 $\Phi g/m$, 24 hrs		0.053 ppm, annual average	
2002	5.2	0	0.10	0	87	0	0.021	0
2001	8.4	0	0.10	0	140	0	0.019	0
2000	6.5	0	0.11	0	91	0	0.021	0
MAXIMUM	**8.4**		**0.11**		**140**		**0.021**	

Sources: CARB and EPA, 2000 to 2002

Table 4.2.E: Ambient Air Quality at Stockton Hazelton Street Air Monitoring Station

	Eight-Hour Carbon Monoxide		Eight-Hour Ozone		Fine Suspended Particulate ($PM_{2.5}$)		Sulfur Dioxide	
	Max. 8-Hour Conc. (ppm)	Number of Days Exceeded	Max. 8-Hour Conc. (ppm)	Number of Days Exceeded	Max. 24-Hour Conc. ($\Phi G/M^3$)	Number of Days Exceeded	Max. 24-Hour Conc. (ppm)	Number of Days Exceeded
State Stds.	$\exists$ 9.0 ppm/8 hr		No State Standard		No 24 hrs State Standard		> .04 ppm/24 hr	
2002	3.2	0	0.081	NA [1]	64	NA	ND [2]	ND
2001	6.0	0	0.088	NA	76	NA	ND	ND

2000	3.9	0	0.080	NA	78	NA	ND	ND
MAXIMUM	**6.0**		**0.088**		**78**		**ND**	
Federal Stds.	∃ 9.0 ppm/8 hr		> .08 ppm/8 hr		> 65 Φg/m^3, 24 hrs		0.14 ppm/24 hr	
2002	3.2	0	0.081	0	64	0	ND	ND
2001	6.0	0	0.088	1	76	2	ND	ND
2000	3.9	0	0.080	0	78	1	ND	ND
MAXIMUM	**6.0**		**0.088**		**78**		**ND**	

Sources: CARB 2000 to 2002
Notes: [1] No State standards
[2] No data. Not measured at this station

The air quality assessment includes estimating emissions associated with short-term construction and long-term operation of the proposed project. Criteria pollutants with regional impacts would be emitted by stationary or area (direct) sources and mobile (indirect) sources associated with the proposed project. Long-term stationary or area sources emissions include electricity and natural gas usage. Long-term mobile sources emissions include vehicle trips associated with the proposed project. In addition, localized air quality impacts, i.e., higher carbon monoxide concentrations (CO hot spots) near intersections or roadway segments in the project vicinity would potentially occur due to project generated vehicle trips. A project description will generally provide most of the required input parameters into a model, however, default values representative of the project will be used when project-specific data are not available.

The URBEMIS 2002 (Urban Emission Model) computer program is the most current air quality model available for estimating emissions associated with land use development projects such as residential development, shopping centers, office buildings, and hotels. URBEMIS 2002 calculates long-term stationary or area sources emissions and long-term mobile sources emissions associated with these land uses.

The CALINE4 model is widely used by Caltrans to predict CO concentrations near roadways. Caltrans also developed a document, Transportation Project-Level Carbon Monoxide Protocol (Caltrans, 1997) to provide guidance and consistency for air quality analysis conducted in the State of California. The CALINE4 model estimates CO concentrations at designated receptor locations near intersections or roadway segments based on traffic volume, roadway geometry, topography, and meteorological data. Receptor locations are placed at areas accessible by the public such as sidewalk, school, residential property, and any other locations deemed sensitive to bad air quality. The purpose is to determine the impact of the proposed project on the general public in the local vicinity. CALINE4 estimates the CO concentration at these receptor locations and the results are used to determine the significance of the project's impact on local air quality.

The results from the air quality models, URBEMIS 2002 and CALINE4, were used to determine the net changes in ambient air pollutants concentrations between the baseline (future with approved projects) scenario, and the horizon (future with proposed project) scenario. Because the baseline emissions would occur if the proposed project is not approved and implemented, the net changes of pollutant concentrations determine the significance and impact on regional and local air quality as a result of the proposed project. The results also allow the local government to determine whether the proposed project will deter the region from achieving the goal of reducing pollutants in accordance with the AQAP in order to comply with federal and State ambient air quality standards.

4.2.2 Impact Significance Criteria

Air pollutant emissions associated with the project would occur over the short term from construction, such as fugitive dust from grading, site preparation, and equipment exhaust. Long-term emissions would result from the occupation and use of the proposed land uses. There would be long-term emissions with regional effects associated with project related vehicular trips and long-term emissions with local impacts associated with congested intersections or roadway segments. In addition, long-term stationary or area source emissions would occur due to energy consumption such as natural gas and electricity usage by the proposed land uses. Feasible mitigation measures are required whenever a significant impact is identified to minimize the amount of pollutants emitted.

Thresholds for Construction Emissions

Specific criteria for determining the potential air quality impacts of a project are set forth in the SJVAPCD's Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI, 1998). A project's construction phase produces many types of emissions, but is the pollutant of greatest concern. The SJVAPCD's approach to CEQA analyses of construction impacts is to require implementation of effective and comprehensive control measures rather than to require detailed quantification of emissions. The SJVAPCD has determined that compliance with Regulation VIII for all sites and implementation of all other control measures indicated in Tables 4.2.F and 4.2.G below (as appropriate, depending on the size and location of the project site) will constitute sufficient mitigation to reduce PM_{10} impacts to a level considered less than significant.

The control measures listed in Table 4.2.F (Regulation VIII Control Measures) are required for all construction sites by regulation. Table 4.2.G lists additional measures that may be required due to sheer project size or proximity of the project to sensitive receptors. Table 4.2.G also lists additional control measures (Optional Measures) that may be implemented if further emission reductions are deemed necessary by the Lead Agency.

The SJVAPCD recognizes that the measures listed in Tables 4.2.F and 4.2.G focus on PM_{10} emissions from fugitive dust sources. It indicates that Lead Agencies seeking to reduce emissions from construction equipment exhaust should also consider the mitigation measures listed in Table 4.2.H. The SJVAPCD recognizes that these measures are difficult to implement due to poor availability of alternative fueled equipment and the challenge of monitoring these activities.

Table 4.2.F: Regulation VIII Control Measures for Construction Emissions of PM_{10}

	REGULATION VIII CONTROL MEASURES. - THE FOLLOWING CONTROLS ARE REQUIRED TO BE IMPLEMENTED AT ALL CONSTRUCTION SITES (INCLUDES CHANGES EFFECTIVE MAY 15, 2002).
X	All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.
X	All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
X	All land clearing, grubbing, scraping, excavation, land leveling, grading, cut&fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
X	With the demolition of buildings up to six stories in height, all exterior surfaces of the building shall be wetted during demolition.
X	When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.
X	All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.)
X	Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.
X	Within urban areas, trackouts shall be immediately removed when they extend 50 or more feet from the site, and at the end of each workday.
X	Any site with 150 or more vehicle trips per day shall prevent carryout and trackout.

Source: SJVAPCD, 2002.

Table 4.2.G: Enhanced and Additional Control Measures for Construction Emissions of PM_{10}

ENHANCED CONTROL MEASURES - THE FOLLOWING MEASURES SHOULD BE IMPLEMENTED AT CONSTRUCTION SITES WHEN REQUIRED TO MITIGATE SIGNIFICANT PM_{10} IMPACTS (NOTE, THESE MEASURES ARE TO BE IMPLEMENTED IN ADDITION TO REGULATION VIII REQUIREMENTS):	
X	Limit traffic speeds on unpaved roads to 15 mph; and
X	Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent.
ADDITIONAL CONTROL MEASURES - THE FOLLOWING CONTROL MEASURES ARE STRONGLY ENCOURAGED AT CONSTRUCTION SITES THAT ARE LARGE IN AREA, LOCATED NEAR SENSITIVE RECEPTORS, OR WHICH FOR OTHER REASON WARRANT ADDITIONAL EMISSIONS REDUCTIONS:	
X	Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site;
X	Install wind breaks at windward side(s) of construction areas;
X	Suspend excavation and grading activity when winds exceed 20 mph; and*
X	Limit area subject to excavation, grading, and other construction activity at any one time.

Source: SJVAPCD, 2002.
*Notes: *Regardless of windspeed, an owner/operator must comply with Regulation VIII's 20 percent opacity limitation.*

Table 4.2.H: Construction Equipment Mitigation Measures

EMISSION SOURCE	MITIGATION MEASURES

Heavy duty equipment (scrapers, graders, trenchers, earth movers, etc.)	X Use of alternative fueled equipment or catalyst equipped diesel construction equipment. X Minimize idling time (e.g., 10 minutes maximum) X Limit the hours of operation of heavy duty equipment and/or the amount of equipment in use X Replace fossil-fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set) X Curtail construction during periods of high ambient pollutant concentrations; this may include ceasing of construction activity during the peak-hour of vehicular traffic on adjacent roadways X Implement activity management (e.g., rescheduling activities to reduce short-term impacts)

Source: SJVAPCD, 2002.

Thresholds for Operational Emissions

Project operational emissions refer to the pollutants generated by the stationary area (direct) sources and mobile (indirect) sources. Stationary sources include electricity and natural gas consumption; mobile sources are the motor vehicles traveling to and from the development. These sources contribute to the deterioration of air quality and potentially prevent the region from compliance with the Clean Air Act. Hence, pollutant thresholds are created to determine the significance of a project's impact on air quality. The thresholds of significance from operation are as follows:

Emissions Thresholds for Pollutants with Regional Effects

X 10 tons per year of ROG

X 10 tons per year of NO_X

Projects in the region with operation-related emissions that exceed any of the emission thresholds are considered significant by the SJVAPCD.

Emission Standards for Pollutants with Local Impacts

X California State one hour CO standard of 20.0 ppm

X California State eight hour CO standard of 9.0 ppm

The significance of localized project impacts depends on whether ambient CO levels in the vicinity of the project are above or below State and federal CO standards. If ambient levels are below the standards, a project is considered to have significant impacts if project emissions result in an exceedance of one or more of these standards.

Threshold for Odor

Offensive odors rarely cause any physical harm, but they can be unpleasant. Any project with the potential to frequently expose members of the public to objectionable odors will be deemed to have a significant impact.

Threshold for Hazardous Air Pollutants

Any project with the potential to expose sensitive receptors (including residential areas) or the general public to substantial levels of hazardous air pollutants (HAP) would be deemed to have a potentially significant impact. The significance of localized project impact depends on the following criteria:

X Probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds ten in one million.

X Ground-level concentrations of non-carcinogenic hazardous air pollutants would result in a Hazard Index greater than 1 for the MEI.

4.2.3 Impacts and Mitigation Measures

Effects Determined to Be Less Than Significant

Impact AIR-1: The project could create short-term fugitive dust impacts.

Construction activities such as grading, excavation and travel on unpaved surfaces can generate substantial amounts of dust, and can lead to elevated concentrations of PM_{10}. Fugitive dust control measures are required of all construction projects within SJVAPCD jurisdiction. However, if the amount of fugitive dust generated is substantial, enhanced and additional control measures may be required by SJVAPCD to reduce PM_{10} emissions.

Mitigation Measure AIR-1: The SJVAPCD Regulation VIII, Control Measures for Construction Emissions of PM_{10}, as shown in Tables 4.2.F and 4.2.G, are required to be implemented at all construction sites. Compliance with the above Regulation VIII requirements would lessen the fugitive dust impact during construction to a level considered less than significant.

Impact AIR-2: The project could create short-term impact from architectural coatings and asphalt paving.

Mitigation Measure AIR-2: Architectural coatings and asphalt paving conducted on the project site shall adhere to rules and regulations stated in the SJVAPCD Rulebook. Compliance with Rule 4601, Architectural Coatings, and Rule 4641, Asphalt Paving, would lessen impacts from architectural coatings and asphalt paving to a level considered less than significant.

Impact AIR-3: Long-term air quality impacts with localized effects.

Vehicular trips associated with the proposed project would contribute to the congestion at intersections and along roadway segments in the project vicinity. As indicated in the traffic analysis, the proposed project would generate a total of 25,210 daily vehicular trips.

The primary mobile source pollutant of local concern is CO. Carbon monoxide concentration is a direct

function of vehicle idling time and, thus, traffic flow conditions. Carbon monoxide disperses rapidly with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations proximate to a congested roadway or intersection may reach unhealthful levels, affecting local sensitive receptors (residents, school children, elderly, hospital patients, etc.). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service or with extremely high traffic volumes. In areas with high ambient background CO concentration, modeling of CO concentrations is recommended in determining a project's effect on local CO levels.

Existing CO concentrations in the immediate project vicinity are not available. The EPA has recommended that in areas without available CO levels, the higher of the second highest monitored CO levels in the last two years should be used as the existing or future baseline ambient CO levels for the project area. These second highest CO concentrations are 8.0 ppm and 6.3 ppm, respectively, for the one hour and eight hour concentrations. These CO concentrations were used as baseline ambient air level to determine the significance of impact as a result of the proposed project.

The highest CO concentrations typically occur during peak traffic hours, which would best represent a worst case analysis for the calculation of CO impacts. Modeling of the CO hot spot analysis was based on the traffic volumes generated by Fehr & Peers Associates (2003). This traffic study identified existing (year 2003), near-term (year 2008), and cumulative (year 2025) conditions without and with project traffic volumes during the morning and afternoon peak hours. The CO hot spot analysis was conducted using the afternoon peak hour period because the project and ambient traffic volumes are slightly higher than the morning peak hour period and would provide for a worst case analysis. CO concentrations were calculated for the one hour averaging period and compared to the State one hour CO standard of 20 ppm. Carbon monoxide eight hour averages were calculated from the one hour CO calculations, using techniques outlined in the Caltrans Carbon Monoxide Protocol and compared to the State eight hour CO standard of 9.0 ppm. Concentrations are expressed in parts per million (ppm) at each receptor location.

The impact on local CO levels was assessed using methodology outlined in the SJVAPCD guideline, GAMAQI. The guideline recommended using the protocol, Transportation Project-Level Carbon Monoxide Protocol (Caltrans, 1997), to conduct the CO analysis. The protocol provides guidance, screening methodology, and modeling data requirements for estimation of CO concentrations along roadway corridors or near intersections. The protocol was adhered to for the air quality analysis conducted for this project.

Data in Tables 4.2.I, 4.2.J, and 4.2.K show that there would be no exceedance of either the State or federal CO standards for the one hour or eight hour durations. The one hour CO concentration near all nine intersections analyzed ranges from 8.0 to 11.7 ppm, much lower than the 20 ppm State standard. The eight hour CO concentration ranges from 6.3 to 8.9 ppm, lower than the 9.0 ppm State standard. In addition, the proposed project would result in increases in CO concentrations for both the one hour and the eight hour CO periods that are considered small and less than significant. Therefore, the project would not have an adverse impact on local air quality. Because no CO hot spots were identified, no sensitive receptors would be affected by project related local air quality impacts.

Impact AIR-4: The project could create objectionable odors.

The onsite lakes have the potential to create objectionable odors. However, the design of the lake system has integrated measures to prevent eutrophication or stagnation which may create these objectionable odors. The aquascape will be recreated to mimic a natural ecosystem that utilizes biologic processes to treat urban pollutants in runoff and maintain the normal health of the aquascape system. The elements of the aquascape system include wetlands planters, lake biofilter beds, pretreatment wetland filters, aeration, and storm water retention volume/capacity.

Based on the measures integrated as part to of the lake system design, objectionable odors emanating from the onsite lakes are not expected. No other sources of objectionable odors have been identified for the proposed project.

Impact AIR-5: The project could create Hazardous Air Pollutants Impacts.

The proposed project is not expected to generate any Hazardous Air Pollutant (HAP). In addition, any future proposal to implement plans that have the potential to emit HAPs will be subject to applicable regulations and guidelines set forth in the SJVAPCD Rulebook. No significant impacts from HAPs are anticipated.

Table 4.2.I: Existing (Year 2003) CO Concentrations

INTERSECTION	RECEPTOR DISTANCE TO ROAD CENTERLINE (METERS)	ONE-HOUR CO CONCENTRATION (PPM) [1]	EIGHT-HOUR CO CONCENTRATION (PPM) [2]	EXCEEDS STATE STANDARDS	
				1-HR	8-HR
Mokelumne Cir. & Eight Mile Rd.	12	8.6	6.7	No	No
	8	8.5	6.7	No	No
	7	8.5	6.7	No	No
	7	8.5	6.7	No	No
Trinity Parkway & Eight Mile Rd.	12	8.4	6.6	No	No
	10	8.4	6.6	No	No
	7	8.4	6.6	No	No
	7	8.4	6.6	No	No
I-5 SB Ramp & Eight Mile Rd.	8	9.6	7.4	No	No
	8	9.4	7.3	No	No
	7	9.3	7.2	No	No
	7	9.3	7.2	No	No
I-5 NB Ramp & Eight Mile Rd.	8	9.8	7.6	No	No
	8	9.6	7.4	No	No
	7	9.6	7.4	No	No
	7	9.5	7.4	No	No
Oak Grove & Eight Mile Rd.	7	9.4	7.3	No	No
	7	9.4	7.3	No	No
	7	9.3	7.2	No	No
	7	9.3	7.2	No	No
Mokelumne Cir. & Scott Creek Dr.	12	8.3	6.5	No	No
	12	8.3	6.5	No	No
	12	8.3	6.5	No	No
	12	8.3	6.5	No	No
Mokelumne Cir. & Consumnes Dr.	12	8.1	6.4	No	No
	12	8.1	6.4	No	No
	12	8.1	6.4	No	No
	12	8.1	6.4	No	No
Trinity Parkway & Cosumnes Dr.	12	8.0	6.3	No	No
	12	8.0	6.3	No	No
	10	8.0	6.3	No	No
	10	8.0	6.3	No	No
Trinity Parkway & McAuliffe Dr.	12	8.0	6.3	No	No
	8	8.0	6.3	No	No
	7	8.0	6.3	No	No
	7	8.0	6.3	No	No

Source: LSA Associates, Inc., October 2003
Notes: [1] Includes ambient one hour CO concentration of 8.0 ppm. The State's one hour CO standard is 20 ppm. The project would have no measurable changes on CO concentrations at all receptor locations analyzed. [2] Includes ambient eight hour CO concentration of 6.3 ppm. The State's eight hour CO standard is 9.0 ppm. The project would have no measurable changes on CO concentrations at all receptor locations analyzed.

Table 4.2.J: Near-Term (Year 2008) CO Concentrations without/with Project

Intersection	Receptor Distance to Road Centerline (Meters)	Project Related Increase 1-hr/8-hr (ppm)	One-Hour CO Concentration (ppm) [1]	Eight-Hour CO Concentration (ppm) [2]	Exceeds State Standards	
					1-Hr	8-Hr
Mokelumne Cir. & Eight Mile Rd.	12	0.9/0.7	8.9/9.8	6.9/7.6	No	No
	10	1.0/0.7	8.7/9.7	6.8/7.5	No	No
	7	1.0/0.7	8.6/9.6	6.7/7.4	No	No
	7	1.0/0.7	8.6/9.6	6.7/7.4	No	No
Trinity Parkway & Eight Mile Rd.	12	1.2/0.8	10.5/11.7	8.1/8.9	No	No
	12	1.1/0.8	10.3/11.4	7.9/8.7	No	No
	7	1.2/0.9	10.2/11.4	7.8/8.7	No	No
	7	1.4/1.0	10.0/11.4	7.7/8.7	No	No
I-5 SB Ramp & Eight Mile Rd.	14	1.5/1.0	9.5/11.0	7.4/8.4	No	No
	14	1.5/1.0	9.4/10.9	7.3/8.3	No	No
	7	1.3/0.9	9.4/10.7	7.3/8.2	No	No
	7	1.4/1.0	9.3/10.7	7.2/8.2	No	No
I-5 NB Ramp & Eight Mile Rd.	17	0.5/0.4	9.6/10.1	7.4/7.8	No	No
	14	0.5/0.3	9.5/10.0	7.4/7.7	No	No
	7	0.5/0.3	9.4/9.9	7.3/7.6	No	No
	7	0.4/0.3	9.3/9.7	7.2/7.5	No	No
Oak Grove & Eight Mile Rd.	7	0.2/0.1	9.5/9.7	7.4/7.5	No	No
	7	0.1/0.0	9.5/9.6	7.4/7.4	No	No
	7	0.1/0.0	9.5/9.6	7.4/7.4	No	No
	7	0.1/0.0	9.5/9.6	7.4/7.4	No	No
Mokelumne Cir. & Scott Creek Dr.	12	0.1/0.1	8.6/8.7	6.7/6.8	No	No
	12	0.1/0.1	8.6/8.7	6.7/6.8	No	No
	12	0.0/0.0	8.6/8.6	6.7/6.7	No	No
	12	0.1/0.0	8.5/8.6	6.7/6.7	No	No
Mokelumne Cir. & Consumnes Dr.	12	0.2/0.2	8.3/8.5	6.5/6.7	No	No
	12	0.2/0.2	8.3/8.5	6.5/6.7	No	No
	12	0.2/0.2	8.3/8.5	6.5/6.7	No	No
	12	0.2/0.2	8.3/8.5	6.5/6.7	No	No
Trinity Parkway & Cosumnes Dr.	12	0.4/0.3	9.4/9.8	7.3/7.6	No	No
	12	0.3/0.2	9.3/9.6	7.2/7.4	No	No
	10	0.2/0.2	9.3/9.5	7.2/7.4	No	No
	10	0.3/0.3	9.2/9.5	7.1/7.4	No	No
Trinity Parkway & McAuliffe Dr.	12	0.2/0.2	9.2/9.4	7.1/7.3	No	No
	10	0.2/0.1	9.1/9.3	7.1/7.2	No	No
	7	0.2/0.1	9.1/9.3	7.1/7.2	No	No
	7	0.2/0.1	9.0/9.2	7.0/7.1	No	No

Source: LSA Associates, Inc., October 2003

Notes: [1] Includes ambient one hour CO concentration of 8.0 ppm. The State's one hour CO standard is 20 ppm. The project would have no measurable changes on CO concentrations at all receptor locations analyzed.

[2] Includes ambient eight hour CO concentration of 6.3 ppm. The State's eight hour CO standard is 9.0 ppm. The project would have no measurable changes on CO concentrations at all receptor locations analyzed.

Table 4.2.K: Cumulative (Year 2025) CO Concentrations without/with Project

Intersection	Receptor Distance to Road Centerline (Meters)	Project Related Increase 1-hr/8-hr (ppm)	One-Hour CO Concentration [1] (ppm)	Eight-Hour CO Concentration [2] (ppm)	Exceeds State Standards	
					1-Hr	8-Hr
Mokelumne Cir. & Eight Mile Rd.	12	0.2/0.2	8.2/8.4	6.4/6.6	No	No
	10	0.1/0.1	8.2/8.3	6.4/6.5	No	No
	7	0.1/0.1	8.2/8.3	6.4/6.5	No	No
	7	0.1/0.1	8.2/8.3	6.4/6.5	No	No
Trinity Parkway & Eight Mile Rd.	12	0.1/0.1	8.4/8.5	6.6/6.7	No	No
	12	0.1/0.1	8.4/8.5	6.6/6.7	No	No
	7	0.1/0.1	8.4/8.5	6.6/6.7	No	No
	7	0.2/0.2	8.3/8.5	6.5/6.7	No	No
I-5 SB Ramp & Eight Mile Rd.	14	0.2/0.2	8.3/8.5	6.5/6.7	No	No
	14	0.2/0.2	8.3/8.5	6.5/6.7	No	No
	7	0.2/0.2	8.3/8.5	6.5/6.7	No	No
	7	0.2/0.2	8.3/8.5	6.5/6.7	No	No
I-5 NB Ramp & Eight Mile Rd.	17	0.1/0.1	8.4/8.5	6.6/6.7	No	No
	14	0.1/0.1	8.4/8.5	6.6/6.7	No	No
	7	0.2/0.2	8.3/8.5	6.5/6.7	No	No
	7	0.1/0.1	8.3/8.4	6.5/6.6	No	No
Oak Grove & Eight Mile Rd.	7	0.1/0.1	8.2/8.3	6.4/6.5	No	No
	7	0.1/0.1	8.2/8.3	6.4/6.5	No	No
	7	0.1/0.1	8.2/8.3	6.4/6.5	No	No
	7	0.1/0.1	8.2/8.3	6.4/6.5	No	No
Mokelumne Cir. & Scott Creek Dr.	12	0.1/0.0	8.1/8.2	6.4/6.4	No	No
	12	0.1/0.0	8.1/8.2	6.4/6.4	No	No
	12	0.1/0.0	8.1/8.2	6.4/6.4	No	No
	12	0.0/0.0	8.1/8.1	6.4/6.4	No	No
Mokelumne Cir. & Consumnes Dr.	12	0.0/0.0	8.1/8.1	6.4/6.4	No	No
	12	0.1/0.1	8.0/8.1	6.3/6.4	No	No
	12	0.1/0.1	8.0/8.1	6.3/6.4	No	No
	12	0.1/0.1	8.0/8.1	6.3/6.4	No	No
Trinity Parkway & Cosumnes Dr.	12	0.0/0.0	8.3/8.3	6.5/6.5	No	No
	12	0.1/0.1	8.2/8.3	6.4/6.5	No	No
	12	0.0/0.0	8.2/8.2	6.4/6.4	No	No
	12	0.0/0.0	8.2/8.2	6.4/6.4	No	No
Trinity Parkway & McAuliffe Dr.	12	0.0/0.0	8.3/8.3	6.5/6.5	No	No
	8	0.1/0.1	8.2/8.3	6.4/6.5	No	No
	7	0.1/0.1	8.2/8.3	6.4/6.5	No	No
	7	0.1/0.1	8.2/8.3	6.4/6.5	No	No

Source: LSA Associates, Inc., October 2003
Notes: [1] Includes ambient one hour CO concentration of 8.0 ppm. The State's one hour CO standard is 20 ppm. The project would have no measurable changes on CO concentrations at all receptor locations analyzed. [2] Includes ambient eight hour CO concentration of 6.3 ppm. The State's eight hour CO standard is 9.0 ppm. The project would have no measurable changes on CO concentrations at all receptor locations analyzed.

Potentially Significant Impacts

Impact AIR-6: The project will create short-term construction equipment exhaust-related impacts

Construction activities produce combustion emissions from various sources, such as utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, and motor vehicles transporting construction crews Exhaust emissions during construction envisioned on site would vary daily as construction activity levels change. The use of construction equipment on site would result in localized exhaust emissions. URBEMIS 2002 was used to estimate project related construction emissions for the assessment of the project's impacts on the local air quality. It is assumed that 20 acres will be under construction at a time and that the most significant impact would occur during grading activities. The emissions associated with the construction of the proposed project are summarized in Table 4.2.L.

Table 4.2.L: Emissions from Construction Activities

CATEGORY	POLLUTANTS				
	CO	**ROG**	**NO_X**	**SOx**	**PM_{10}**
Pounds per day (lb/day)	306	10,945	12	0	4
Tons per year (tons/year)	55.9	1997.5	2.2	0	0.7
SJVAPCD Thresholds (tons/year)	NA	10.0	10.0	NA	NA
Significant Impact	**No**	**Yes**	**Yes**	**No**	**No**

Source: LSA Associates, Inc., 2000.

As shown, construction equipment emissions would exceed the threshold for ROG and NOx established by the SJVAPCD. The SJVAPCD has established mitigation measures to be implemented if the construction equipment emission exhausts are deemed to have a significant impact on air quality. Feasible mitigation measures are listed below to reduce emissions generated from equipment exhaust.

Mitigation Measure AIR-6: Short Term, Construction Equipment Exhaust-Related Impacts

- The project contractors are required to implement all feasible measures identified in Tables 4.2.F, 4.2.G and 4.2.H.
- In addition to the mitigation measures stated above, SJVAPCD has established a heavy-duty engine incentive program to reduce NOx emissions. Conversation with SJVAPCD personnel revealed that NOx emissions can be offset by assisting the local farmers with replacing their existing heavy-duty engines for more efficient enginesor through monetary compensation.

Implementation of mitigation measures stated in Mitigation Measures AIR-6 will comply with SJVAPCD requirements for reducing construction equipment exhaust. However, it is expected that the remaining impacts would be adverse and unavoidable.

Impact AIR-7: The project would create long-term air quality impacts with regional effects

The land uses associated with the proposed project consists of approximately 97,357 square feet of general office space, 97,357 square feet of retail/commercial space (on the marina parcel), a 700 student elementary school, 2,161 single family residential dwelling units, and 868 Active Adult residential dwelling units. The emissions from the proposed project are calculated using URBEMIS.

The total projected emissions from long-term project operations of the proposed project are shown in Table 4.2.M. Total emissions of the proposed project would be higher than the 10 tons/year thresholds for ROG and NO_x established by the SJVAPCD. There are no feasible mitigation measures that would reduce the project's long term impacts on air quality to less than significant. However, the project is also subjected to SJVAPCD Rule 2201, New and Modified Stationary Source Review, and Rule 4001, New Source Performance Standards.

Table 4.2.M: Westlake Villages Project Emissions

	POLLUTANTS, LBS/DAY				
SOURCE	CO	ROC	NO_X	SO_2	PM_{10}
Stationary Sources: Summer	43.83	154.31	36.07	0.81	0.13
Vehicular Traffic: Summer	4,152.38	351.77	402.81	3.22	318.90
Subtotal Summer	4,196.22	506.07	438.87	4.03	319.03

Subtotal Summer (tons/year)	765.81	92.36	80.09	0.74	58.22
Stationary Sources: Winter	15.14	150.94	35.69	0.00	0.07
Vehicular Traffic: Winter	4,566.43	371.33	616.83	3.20	318.90
Subtotal Winter	4,581.56	522.26	652.52	3.20	318.97
Subtotal Winter (tons/year)	836.13	95.31	119.08	0.58	58.21
SJVAPCD Threshold (tons/year)	**NA [1]**	**10**	**10**	**NA**	**NA**

Exceed Threshold?	**NA**	**Yes**	**Yes**	**NA**	**NA**

Source: LSA Associates, Inc., October 2003.
Notes: [1] No emission threshold for this pollutant.

Mitigation Measure AIR-7 - Project Operations Related Impacts

The project would result in total (vehicular and stationary) daily emissions exceeding the daily emissions thresholds established by the SJVAPCD. No feasible mitigation measures would reduce the impacts to less than significant. However, the proposed project will be required to comply with Title 24 of the California Code of Regulations established by the Energy Commission regarding energy conservation standards. The project applicant shall incorporate the following in building plans:

- Solar or low-emission water heaters shall be used with combined space/water heater units.
- Double-paned glass or window treatment for energy conservation shall be used in all exterior windows.
- Buildings shall be oriented north/south where feasible.

Feasible mitigation measures do not exist that would reduce these impacts to a less than significant level.

Impact AIR-8: The proposed project would contribute to cumulative air quality impacts. Additionally, the project is not consistent with the Air Quality Attainment Plan.

A number of individual projects in the City will be under construction simultaneously with the proposed project. Depending on construction schedules and actual implementation of projects in the area, generation of fugitive dust and pollutant emissions during construction may result in substantial short-term increases in air pollutants. This would be a contribution to short-term cumulative air quality impacts and is unavoidable.

Air Quality Attainment Plan Consistency Analysis

An Air Quality Attainment Plan (AQAP) describes air pollution control strategies to be taken by counties or regions classified as nonattainment areas. The AQAP's main purpose is to bring the area into compliance with the requirements of federal and State air quality standards. CEQA requires that projects resulting in a General Plan Amendment be analyzed for consistency with the AQAP. For a project to be consistent with the AQAP, the pollutants emitted from the project must not exceed the SJVAPCD significance thresholds or cause a significant impact on air quality. However, if feasible mitigation measures are implemented and are shown to reduce the impact level from significant to less than significant, the project is deemed consistent with the AQAP. The AQAP uses the assumptions and projections by local planning agencies to determine control strategies for regional compliance status. Therefore, any projects causing a significant impact on air quality would impede the progress of the AQAP.

A consistency analysis determination plays an essential role in local agency project review by linking local planning and unique individual projects to the AQAP in the following ways. It fulfills the CEQA goal of fully informing local agency decision makers of the environmental costs of the project under consideration at a stage early enough to ensure that air quality concerns are fully addressed. It provides the local agency with ongoing information, assuring local decision makers that they are making real contributions to clean air goals defined in the most current AQAP. Since the AQAP is based on projections from local General Plans, projects that are consistent with the local General Plan are considered consistent with the AQAP.

Air quality models are used to demonstrate that the project's emissions will not contribute to the deterioration or impede the progress of air quality goals stated in the AQAP. The air quality models use project specific data to estimate the amount of pollutants generated from the implementation of a project. The results for the "without project" and the "with project" scenarios in the horizon year are compared to the AQAPs air quality projections. If the analyses comply with the requirements, it is considered to be consistent with the AQAP.

Currently, the region is in non-attainment for ozone and PM_{10}. Implementation of the proposed project, in conjunction with other planned developments within the cumulative study area and the region, would contribute to the delay of the attainment in the region. The proposed project will require a General Plan Amendment from agricultural uses to Mixed Use (e.g. residential). As such, the project has not been considered in preparation of the General Plan and therefore, is inconsistent with the AQAP. After the General Plan is amended, it will be forwarded to the SJVAPCD for inclusion in the next update of the AQAP.

Feasible mitigation measure does not exist that would reduce these impacts to a less than significant level.

4.2.4 Level of Significance after Mitigation

The above mitigation measures will assist in reducing the cumulative project impacts on air quality although impacts cannot be completely mitigated. Additionally, the project has not be considered under the existing General Plan and is, therefore, inconsistent with the AQAP. The project will have an air quality impact that is significant and unavoidable.

4.3 WATER RESOURCES

4.3.1 Existing Setting

Flood Control

Bishop Tract is bounded by Telephone Cut on the north, Bishop Cut on the west, Disappointment Slough, Pixley Slough, and Bear Creek on the south, and I-5 on the east. Currently, flood protection is provided by levees along Pixley Slough and Bear Creek and by Bishop Tract levees to and along Bishop Cut to the west and along Telephone Cut to the north. A series of pumps is used to lift waters out into the adjacent sloughs.

A proposed revision to the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRM) was made in 1988. At the time, the greater project area was determined to be within the 100-year flood plain due to insufficient flood improvement protection. The area's flood control levees could not provide a minimum of three feet of freeboard above the theoretical 100-year flood plain elevation, a criterion used by FEMA to determine if a property is within the flood plain.

In 1990, Local Reclamation District 20-42 (RD 20-42) annexed lands on the adjacent SPW to the east of the high voltage power line easement, and applied to FEMA to remove the 100-year flood plain designation from the greater Bishop Tract area. In 1992, FEMA accepted the request based on the passage of a Mello-Roos bond to initiate levee improvements, which are now complete.

A hydraulic analysis was performed to incorporate levee and interior drainage systems north of Bear Creek and west of Interstate 5 designed to mitigate flooding from the San Joaquin/Sacramento River Delta. A Letter of Map Revision (LOMR) was issued on December 28, 1992 which modified the base flood elevations north of Bear Creek and west of Interstate 5.

In 1994, FEMA studied the upstream channels that are tributary to the San Joaquin Delta and determined that they did not provide 100-year protection to the greater project area. This determination would have placed the project site and surrounding properties back into the 100-year flood plain. However, the San Joaquin Area Flood Control Agency (SJAFCA), a joint powers agency of the City of Stockton and San Joaquin County, was formed to assist in resolving regional flood control issues. A total of $70 million was allocated towards flood control improvements through a regional benefit assessment district.

In July 1996, the first flood control project to improve the upstream channels was initiated to correct the 100-year flood plain issue, followed by other widespread flood control improvements. Both the U.S. Army Corps of Engineers (ACOE) and RD 20-42 have acknowledged the improvements meet FEMA standards and resolve the flooding issue. The FIRM map issued on April 2, 2002, indicates that the proposed project site is located in Zone B. Zone B is defined as: "areas between the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood."

The project site is within the assessment district formed to pay for the flood protection improvements, and new development would be required to pay the flood assessment at the time of building permit issuance.

Water Quality

The project site is located in the tidally influenced lower reaches of the San Joaquin River basin north of Stockton. The existing surface water features on the site include Disappointment Slough, which provides the

site's southern border. Disappointment Slough intersects Pixley Slough southeast of the project site. Pixley

Slough meets Bear Creek at a marsh area at the southern portion of SPW; and an irrigation canal extending north from Pixley Slough to Eight Mile Road west of I-5. The western border of the project site is bounded by Bishop Cut.

Water quality is presently influenced by upstream flows from Bear Creek and Pixley Slough, agricultural runoff, City of Lodi stormwater and, possibly, by tidally caused flow reversals. The marsh area, located southeast of the project site, marginally influences local water quality by seasonally taking up or releasing nutrients, organic carbon, and other water quality constituents. The California Department of Water Resources maintains a water quality surveillance station in Disappointment Slough at Bishop Cut, located at the southwestern corner of the project site.

Water quality data from this monitoring station indicate that surface water in the project area is moderately low (less than 400 mg/l) in total dissolved solids, usually has dissolved oxygen concentrations greater than 75 percent saturation, has chlorophyll levels indicating no nuisance algae conditions (usually less than 20 Φg/l), and has high turbidity resulting from suspended solids. There is no indication of toxic or non-aesthetic concentrations of trace elements or major ions.

Table 4.3.A summarizes more recent water quality data from the Disappointment Slough at Bishop Cut monitoring station.

Table 4.3.A: Water Quality Data

YEAR	DISSOLVED OXYGEN (MG/L)	TEMPERATURE (^{N}F)	EC	CHLOROPHYLL (MICROGRAMS/L)
1996	5.5-9.4	50-79	153-301	n/a
1997	6.9-9.5	53-78	183-370	n/a
1998	n/a	n/a	n/a	n/a
1999 (February-September)	7-10	51-78	166-244	3.66-10.9

Source: LSA, 2001

Storm Water/Drainage

A technical Stormwater Management Plan and Hydrology/Hydraulic Study was prepared by Pacific Advanced Civil Engineering, Inc. (PACE) for the proposed project. The technical study is available for review at the City of Stockton, Municipal Utilities Department.

The master plan of drainage and stormwater management plan specifically encompasses the 634 acres of the proposed Westlake residential development and the 1,179 acres of drainage area to the north of Westlake. The total regional watershed study area encompassed includes a total of 1,813 tributary acres, which is generally bounded by Telephone Cut to the north, the Spanos Park East development and existing golf course to the east, the Pixley Slough and levee to the south, and the Bishop Cut or San Joaquin River levee to the west. The Spanos Park East development acts as a natural drainage boundary since this development also has a self-contained drainage system and was not designed to accept drainage to the west of this development.

There are unique existing physical constraints present within the study area. The Interstate-5 freeway roadway section is elevated and acts as a barrier from regional drainage generated from the east draining towards the San Joaquin River. The majority of the natural runoff for this area is associated with agricultural fields that are relatively flat with limited gradient. A system of earthen channels acts as the collection system for surface drainage for the existing 1,813-acre watershed which is delivered to a small existing pump station (2-60 horsepower pump) operated by the Reclamation District. The entire area is protected on the three sides adjacent to the San Joaquin River by an earthen levee system, so stormwater runoff must be pumped over the levee into to river resources since it cannot discharge by gravity because of the elevation differential with the ground and river level. Historically localized ponding and shallow flooding have been observed during larger storm events occurring adjacent to the existing drainage ditches and field closer to the existing pump station because of its limited capacity. The area also contains high groundwater levels, which influences the depth of excavation for storage basins and underground pipes (PACE, 2004).

4.3.2 Impact Significance Criteria

Potential significant impacts associated with hydrology and water quality impacts have been evaluated using the following criteria:

FC-a Risk of 100-year flood event or greater to proposed project site;

FC-b Increase in volume or rate of runoff leaving the site, causing substantial flooding or exposure of life and property to increased flooding hazards;

WQ-a Long-term and irreversible erosion and sedimentation resulting from site development and occupation; and

WQ-b Failure to meet applicable water quality criteria at any surface water discharge point or in groundwater.

4.3.3 Impacts and Mitigation Measures

Effects Considered Not to Be Significant

Flood Control/Storm Water

Impact FC-1: The project will not be significantly impacted by a 100-year flood event

With the regional flood control improvements that have been implemented over the past several years, flood control protection against the 100-year flood event is assured for the project site. Regional flood control issues have been resolved for the Bishop Tract Area, which includes the project site, as evidenced by the Zone B designation (FIRM Map #0602990270C). Additional coordination with FEMA is not necessary; the project site has received all necessary approvals and clearances from FEMA with respect to the LOMR process. Prior resolution of the 100-year flood plain issue has eliminated the conditions that are noted in **Significance Criterion FC-a**.

Potentially Significant Effects

Flood Control/Storm Water

Impact FC-2: The proposed project will increase the amount of impermeable surfaces which could subject the site to local flooding hazards.

The goal of the proposed drainage facilities is to ensure that the proposed Westlake residential development is provided with a minimum of 100-year flood protection and satisfies local drainage criteria adopted by both the City of Stockton and San Joaquin County. In addition, the existing adjacent northern tributary watershed areas do not have their current levels of flood protection impaired or reduced from the development by reducing potential flood storage areas. Detailed hydrology analysis was performed to evaluate both the onsite local development watershed and the offsite regional watershed as part of the flood protection assessment conducted by PACE.

A synthetic unit hydrograph procedure was utilized in order to generate 100-year 24-hour runoff hydrographs for both the onsite and offsite watershed in order to accurately asses the time variation of storage within the manmade lake systems and the effects of pumping. The unit hydrograph analysis was also applied to the offsite watershed but only the total runoff volume was required from the results of the analysis.

The total 100-year, 24-hour runoff volume associated from the combined inflow hydrograph is illustrated in Table 4.3.B and the total 100-year volume was used in sizing the pump station. The pumps were designed to evacuate the entire 100-year runoff volume in a 24-hour period so that the storage could be available for the next storm.

Table 4.3.B: Summary of Surface Runoff Hydrology

Land Use Condition	Onsite		Offsite		Maximum Onsite Pump Station Outflow[3] (cfs)
	Drainage Area (acres)	24-hour 100-year Runoff Volume[2] (acre-feet)	Drainage Area (acres)	24-hour 100-year Runoff Volume[2] (acre-feet)	
Existing	0	0	1813	208	-------
Westlake[1]	634	**84.5**	1148	131	**42.6**
Westlake & Remainder Parcel	845	**105.4**	968	111	**53.1**

Source: PACE, 2004

Notes: [1] Initial proposed Westlake development without the expansion of 181 acres north to Eight Mile Road. [2] "Runoff Volume" is the effective runoff from this design storm and does not represent maximum stored detention volume, which is less than the runoff volume. [3] Maximum constant pumping rate is based on evacuating the 100-year 24-hour runoff volume within a 24-hour period

The Westlake lake is designed to provide sufficient additional storage volume to allow retention of the 100-year 24-hour design stormwater runoff volume. The Westlake lake has been initially designed to retain approximately 1.2 feet over its entire surface without pumping and which is equivalent to the entire 100-year 24-hour storm effective runoff volume. The linear alignment of the lake also had the advantage of not only providing stormwater storage, but also provided a method for stormwater conveyance that eliminated some site planning constraints regarding water surface elevations, elimination and significant downsizing of the storm drain pipe system.

The underground storm drain pipe system was sized to convey the 100-year peak discharges from the local tributary area since the entire project is within the interior of a regional levee system. The 19 gravity storm drain systems/networks are composed of a variety of pipe diameters ranging in size from 18 inches to 48 inches. All the storm drain systems collect local drainage from street inlets within the development and discharge into either the upper or lower lake through specially formulated outlet structures designed to function with the lake. The major storm drains and the outlet points are shown on Figure 4.3.1. The storm drain outlets consist of long weir boxes similar to a catch basin operating in reverse. This particular design prevents the normal lake operating water surface to enter the storm drain pipe which will be at an elevation well below the lake. Nuisance and "dry-weather" flows will be continually removed from the storm drain at the outlet structure at a sump which will have a small submersible pup that discharges to the treatment wetland systems.

The stormwater pump station must continue to operate and remove large quantities of stormwater even during local electrical power outages. The operating reliability is a principal design concern and must anticipate the worst operating conditions. A dependable energy source must be provided to ensure continuous operation of the pumps, particularly if there is electrical outages during a storm event. A natural gas generator will be provided as a secondary power source for the electrical driven pump motors. Normally electrical power will be supplied from the electrical service with the development, however, if this power is interrupted then the gas generators can operate the pump station (pumps and controls). The secondary source will allow adequate time for restoration of the primary electrical power.

The initial development of the Westlake project would remove some of the available ponding areas in the adjacent farm fields to the south of the existing pump station that are currently used for storage and it would also remove some of the existing earthen channels that are used for storage and conveyance. However, a major offset to the reduced available storage is the fact that the watershed area has also been reduced that is tributary to the existing Reclamation District pump station. The initial development of Westlake will reduce the runoff volume by 37 percent while the available channel storage volume is only reduced by 29 percent. The flooding estimates using existing topography indicate that the remaining 34 acre-feet of runoff volume during the 100-year event can be stored in the adjacent 181 acre parcel south of Eight Mile Road (Spanos Parcel). If a wedge storage area is assumed for this parcel then the maximum depth of ponding adjacent to the development would be less than one-half foot. The future expansion of the Westlake project with the 181-acre parcel to Eight Mile Road would eliminate a significant portion of the existing available channel on the south side of Eight Mile Road and the existing Reclamation District pump station will have to be relocated. This particular watershed or development condition will require relocation of the existing Reclamation District pump station from the edge of the existing marina at Eight Mile Road to the levee at Telephone Cut. The reduction in storage volume will have to be accommodated through increasing the size of the existing earthen channels to protect the road and existing northern property area.

In summary, to prevent the potential conditions outlined in **Impact FC-2**, the following features are integrated as part of the proposed project:

Westlake Storm Drain Pipe Facilities. The proposed Westlake development is drained by multiple independent underground gravity storm drain systems that accommodate the proposed development site grading configuration and drainage patterns and outlet into either of two onsite manmade lake systems within the development. There are approximately 19 separate storm drain systems including numerous connector pipes for street inlets/catch basins.

Figure 4.3.1: Conceptual Storm Water Drainage System

Storm Drain Outlets to Lakes. Underground storm drain pipe discharge connection point to the manmade lake system will involve a specially designed outlet box that physically separates the lake water from the storm drain pipe and includes a small submersible pump for dry-weather nuisance flows. The outlet box is configured such that the normal operating water surface of the lake cannot enter the storm drain pipe because of a concrete wall at the lake edge separating the two systems, but also acts as a weir when runoff is delivered from the storm drain to the lake.

Lake Stormwater Detention Facility. The two interconnected lakes, with a total surface area of approximately 68-acres, can provide approximately 88-acre-feet of available stormwater flood control storage with one-foot above the normal lake operating water surface which is more than the estimated 100-year 24-hour runoff volume of approximately 84 acre-feet.

Stormwater Pump Station. The proposed stormwater pump station will serve the Westlake development drainage area. The pump housing and force main can be sized to accommodate the future runoff from the future expansion north of the development to Eight Mile Road. The pump station is sized to pump the attenuated flow from the lake and not the peak discharge since the lake provides sufficient storage. The pump is sized to pump or evacuate stored stormwater within a 24-hour period. The pump station is configured with a wet-well and permanent building to house the mechanical equipment. The station will be equipped with 4-90 horsepower submersible pumps, with three capable of pumping 55 cfs and one additional pump as standby for redundancy.

Existing Offsite Channel Storage and Pump Station. Existing pump station operated by the reclamation district consists of 2-60 horsepower pumps and drains the entire existing 1,813-acre watershed area. The existing pump station is location near the marina where Eight Mile Road terminates at the river. The pump station must be relocated north to discharge into the Telephone Cut when the Westlake development is expanded to Eight Mile Road (PACE, 2004)

Additionally, the following mitigation is required.

Mitigation Measure FC-2a: Prior to issuance of building permits for new development, the applicant shall provide evidence to the Director of Community Development Department that flood assessments have been paid.

Mitigation Measure FC-2b: Prior to construction, storm drainage analysis or plans demonstrating that the onsite lakes and stormwater runoff from the project can be adequately conveyed to the pump station at Disappointment Slough shall be reviewed and approved by the City of Stockton Department of MUD and the Public Works Department. Certificates of Occupancy shall not be issued until the drainage system is constructed to the satisfaction of the City.

Mitigation Measures GEO-3d and **GEO-3f** will also be implemented. These measures will serve to protect the site from "underseepage," localized flooding and other geotechnical constraints.

Implementation of the above mitigation measures will reduce potential flooding impacts to a less than significant level.

Water Quality

Impact WQ-1: Project implementation could result in the potential degradation of water quality during project construction and operation.

During construction, disturbance of soil and operation of construction equipment can lead to increased sediments and vehicle fluids in stormwater or surface runoff. Following development of the project site, pollutants from parking lot and roadway runoff would contain heavy metals and hydrocarbons from vehicle fluid. Chemicals used in landscaping maintenance would also impact water quality through stormwater runoff. The City has developed a Storm Water Quality Control Criteria Plan (SWQCCP) that is intended to establish uniform requirements for the selection and incorporation of storm water quality into the planning, design, construction and maintenance of flood management projects and new developments in a manner consistent with the Federal Clean Water Act (CWA) and the City's Storm Water Management Plan. All projects that require municipal approval for the division of land and construction of improvements are subject to the SWQCCP's requirements. Implementation of the SWQCCP components and the following mitigation measures will ensure that the conditions outlined in **Significance Criteria WQ-a** and **WQ-b** will be avoided.

The lake will have a stormwater treatment function that relies on recreating a natural ecosystem that can utilize biologic processes for treatment of urban pollutants in runoff as well as maintaining the normal health of the aquascape system. The water quality treatment features incorporated into the lake system include: aeration, lake biofilters, wetland planters, and vegetated pretreatment basins or wetland filters. These features function together as an effective system to manage the urban storm runoff quality and the health of the lake to ensure that any discharges to the adjacent environmentally sensitive San Joaquin River have an improved quality.

Treatment of runoff and management of water quality relies on re-creation of the natural chemical and biological processes within the lake systems resulting from a unique combination of different layers of treatment. The general treatment processes for the different target pollutants include: (1)filtering suspended solids in pretreatment wetlands, (2) reduced concentration of dissolved pollutants, nutrients, and salts through flushing of the lake water volume by utilizing the lake as the irrigation supply source, (3) reduction of nutrient concentrations from inflows (nitrogen and phosphorous) and prevention of algal blooms by using constructed gravel biofilters bed that relies on "biological filtration", (4) maintaining oxygen levels through aeration promoting oxygen exchange to prevent anaerobic conditions which allows natural process to occur such as denitrification for removal of nitrogen, (5) removal of biochemical oxygen demand and heavy metals through wetland planters, (6) collection of large sediments and floating debris at centralized outfall boxes to the lake system with debris collection facilities and sediment traps, and (7) pretreatment and primary control through wetland water quality filters designed as attached-growth biological reactors. Research has identified features of constructed artificial wetlands which successfully improve water quality. These features in wetlands in which impaired runoff flows through a permeable gravel bed and contacts the root zone of the submersed vegetation and flows that pass over the bottom sediments. Biological filtration utilizes an oxidation process where bacteria attach oxygen to nitrogen in ammonia to make nitrite and finally nitrate which occurs both in the wetland features and the gravel biofilter beds. Biological filtration is commonly applied in many manmade waterscape systems such as fish ponds.

The design of the lake system will pretreat water prior to discharge to Disappointment Slough. The following mitigation is also required.

Mitigation Measure WQ-1a: Prior to issuance of grading permits for the project site, the applicant shall submit evidence to the Director of the MUD indicating that a NOI and a copy of the developer's or contractor's SWPPP have been filed with the RWQCB.

Mitigation Measure WQ-1b: The project applicant will comply with the applicable water quality and storm drainage discharge requirements consistent with any waste discharge or water quality certification requirements authorized by the RWQCB. A Water Quality Certification may also be required.

The design of the lake system and mitigation measures will reduce the potential impacts to surface and groundwater quality both during construction and long-term conditions to a less than significant level.

4.3.4 Level of Significance after Mitigation

Potential impacts associated with flooding and water quality will be mitigated to less than significant levels with implementation of mitigation measures.

4.4 BIOLOGICAL RESOURCES

A Biological Resources Constraints Analysis was prepared for the proposed project by Monk & Associates. The analysis was used in preparation of this section and is presented in Appendix F.

4.4.1 Existing Setting

Plant Communities and Associated Wildlife Habitats

Westlake Storm Drain Pipe Facilities. The proposed Westlake development is drained by multiple independent underground gravity storm drain systems that accommodate the proposed development site grading configuration and drainage patterns and outlet into either of two onsite manmade lake systems within the development. There are approximately 19 separate storm drain systems including numerous connector pipes for street inlets/catch basins. Five plant communities are mapped on the project site: agrestal (cropland), plantation (orchard), ruderal (weedy), freshwater marsh, and valley and foothill riparian. These plant communities are defined using Holland and Keil (1995) and the San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) (2000).

Agrestal (Cropland)/SJMSCP Vegetation Type C3 (Row and Field Crops)
A majority of the project site is classified as agrestal. Agrestal communities are defined in Holland and Keil (1995) as being dominated by cultivated crops and associated weedy species. Surveys conducted in May 2003 indicated tomato and corn crops were growing within this vegetation classification.

Generally, agrestal communities do not provide quality habitat for resident wildlife species. This is due, in part, to extensive land manipulation and pesticide application associated with agricultural operations. Some species, however, inhabit these communities including: California ground squirrel (*Spermophilus beechyi*), Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), and California meadow vole (*Microtus californicus*). Several bird species are likely to occur and forage over the crop lands: American kestrel (*Falco sparverius*), northern harrier (*Circus cyaneus*), white-tailed kite (*Elanus leucurus*), red-tailed hawk (*Buteo jamaicensis*), and Swainson's hawk (*Buteo swainsonii*). Migratory species and waterfowl also tend to use agrestal communities, particularly in the winter months.

Plantation (Orchard)/SJMSCP Vegetation Type C3 (Row and Field Crops)
Plantation habitats include stands of trees that are comprised of a single species. On the project site, the plantation community consists of a group of black walnut tress (*Juglans hindsii*) associated with the abandoned homestead and planted, ornamental maple trees (*Acer* sp.) located near the marina parking lot. Vegetation growing near the abandoned homestead also included ornamental plants and invasive weedy species.

The man-made structures associated with the abandoned homestead provide limited habitat for wildlife species. The barn structure currently serves as a roost sit for barn owl (*Tyto alba*) and potential habitat for various bat species. A variety of bird species are known to occur in urbanized settings, such as: scrub jay (*Aphelocoma californica*), American robin (*Turdus migratorius*), house finch *(Carpodacus mexicanus*), house sparrow (*Passer domesticus*), starling (*Sturnus vulgaris*), and Brewer's black bird (*Euphagus cyanocephalus*). Yellow-rumped warblers (*Dendroica coronata*) were observed in the maple trees located near the marina.

Ruderal/SJMSCP Vegetation Type C3, U, or U2 (Row and Field Crops, Urban, Scraped/Paved)
Ruderal communities consist of plant species adapted to continuous disturbance. The ruderal habitat occurs in the agricultural/fallow fields and areas adjacent to the cultivated fields. This habitat also occur along

levees and other man-made structures. Species associated with the agricultural fields are dominated by wild mustard (*Brassica nigra*), Italian thistle (*Carduus pycnocephalus*), prickly lettuce *(Lactuca serriola*), prickly sow thistle (*Sonchus asper*), and canary grass (*Phalaris paradoxa*). Species occurring along the levees include milk thistle (*Silybum marianum*), ripgut grass (*Bromus diandrus*), foxtail barley (*Hordeum murinum leporinum*), mallow (*Malva parviflora*), wild radish (*Raphanus sativus*), poison hemlock (*Conium maculatum*), and red-stem filaree (*Erodium botrys*).

Wildlife species associated with ruderal habitats include western harvest mouse, California meadow vole, black-tailed jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus audubonii*), sparrows (*Zonotrichia* spp.), song sparrow (*Melospiza melodia*), red-winged blackbird (*Agelaius phoeniceus*), goldfinches (*Carduelis* spp.), and western meadowlark (*Sturnella neglecta*).

Ruderal habitats that occur along levees support California ground squirrel, Botta's pocket gopher, western fence lizard (*Sceloporus occidentalis*) and other reptile species. The presence of California ground squirrel burrows provides potential nesting habitat for burrowing owls (*Athene cunicularia*).

Aquatic Habitat Associated with Irrigation Ditches/SJMSCP Vegetation Type C3 (Row and Field Crops)
The irrigation ditches that transect the project site support typical freshwater marsh and riparian species. As defined by Holland and Keil (1995), freshwater marsh is a herbaceous community consisting of species such as cattails (*Typha* spp.), bulrushes (*Scirpus* spp.), and bur-reed (*Sparganium erectum* spp. *Stoloniferum*). Vegetation within irrigation ditches is often controlled to allow free water flow and maintain capacity.

Wildlife species observed within this habitat included mallard (*Anas platyrhynchos*), barn swallows (*Hirundo rustica*), marsh wrens (*Cistothorus palustris*), song sparrows (*Melospiz melodia*), black phoebe (*Sayornis nigricans*), great egret (*Ardea alba*), great blue heron, bullfrog (*Rana catesbeiana*), and red swamp crayfish (*Procambarus clarkii*). Western aquatic garter snakes (*Thamnophis couchii*), Pacific tree frog (*Hyla regilla*), and western pond turtle (*Clemmys marmorata*) are also expected to occur.

Woody vegetation is established in the irrigation ditches located in the southwest corner of the project site. Common species associated with this type of habitat (valley and foothill riparian) include arroyo willow (*Salix lasiolepis*), sandbar willow (*Salix sessilifolia*), and Fremont cottonwood (*Populus fremontii*). Understory species include California blackberry (*Rubus ursinus*), wild rose (*Rosa* sp.), and annual herbaceous species. This habitat is more complex and provides suitable resting, nesting and foraging habitat for a variety of species including, dark-eyed junco (*Junco hyemalis*), yellow-rumpled warbler (*Dendroica coronata*), Anna's hummingbird (*Calypte anna*), and western scrub jay (*Aphelocoma californica*).

This valley and foothill riparian habitat also occurs intermittently along Bishop Cut and Disappointment Slough to the east and south of the project site, respectively. Continuous levee maintenance has resulted in highly disturbed habitats dominated by herbaceous ruderal plants. Cliff swallows and black phoebes were observed foraging in these areas.

Special Status Species

Regulatory Background

Special status species are those species that are listed as threatened or endangered by the California Department of Fish and Game (CDFG), U.S. Fish and Wildlife Service (USFWS), or National Marine Fisheries Service (NMFS), or are on formal lists as candidates for listing as threatened or endangered. In addition, informal lists maintained by the State include California Species of Special Concern which are plant

and wildlife species that are of concern and are included in the California Natural Diversity Data Base (CNDDB). The California Native Plant Society (CNPS) also maintains informal lists containing special status plant species that are recognized by the resource and regulatory agencies.

Federal Endangered Species Act (FESA): The FESA protects listed species from "take," which is broadly defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." An activity is defined as a "take" even if it is unintentional or accidental. The USFWS and NMFS have jurisdiction over formally listed threatened and endangered species under the FESA.

When a species is listed, the USFWS and NMFS, in most cases, must officially designate specific areas as critical habitat for the species. Consultation with USFWS and/or NMFS is required for projects that include a federal action or federal funding and will modify designated critical habitat.
NMFS also regulates federal activities that could affect Essential Fish Habitat (EFH) for pacific salmon, as defined under the Magnusen-Stevens Fishery Conservation and Management Act (MSA)

California Endangered Species Act (CESA): The CDFG has jurisdiction over State-listed, threatened, and endangered species under the CESA. The CESA prohibits take of species listed under the State act, pursuant to Section 2081 of the Fish and Game Code. Under the CESA, take means to "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill."

San Joaquin County Multi-Species Habitat Conservation and Open Space Plan: The SJCOG has adopted a habitat conservation plan to offset biological impacts created by projects within San Joaquin County. One of the primary goals of the SJMSCP was to obtain permits from state and federal agencies that would cover projects over the next 50 years. To this end, the USFWS and CDFG have issued incidental take permits in conformance with FESA and CESA. Activities impacting anadromous fish and waters of the United States are subject to NMFS and ACOE regulations, respectively, and are not covered under the SJMSCP. These activities must be permitted directly through NMFS and ACOE. Generally, the direct take of species is not covered under the SJMSCP; only take of suitable habitat is allowed based on appropriate compensation and implementation of avoidance and minimization measures. Additionally, some special status species are not covered under the SJMSCP and impacts to these species require direct permitting through the appropriate agency.

Impacts to habitat for special status plant and animal species covered under the SJMSCP require payment of mitigation fees. Under the SJMSCP, ninety percent of the project site is mapped as C3. The fee for lands mapped as C3 is $1,724 per acre.

Migratory Bird Treaty Act (MBTA): The Migratory Bird Treaty Act of 1918 (16 U.S.C. §§ 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986 and 1989) makes it unlawful to "take" (kill, harm, harass, shoot, etc.) any migratory bird listed in Title 50 of the Code of Federal Regulations, Section 10.13, including their nests, eggs, or young. Migratory birds include geese, ducks, shorebirds, raptors, songbirds, wading birds, seabirds, and passerine birds (such as warblers, flycatchers, swallows, etc.).

Special Status Species Definitions

The special status species lists were generated from the CNDDB (2004) and CNPS Electronic Inventory (2004), referencing the Terminous and Lodi South quadrangles, and from knowledge of the local area. These lists were reviewed to determine which species could potentially occur on the project site. The list included numerous species representing a variety of habitat types.

Special status species are defined as follows:

X plants and animals that are listed or proposed for listing as threatened and endangered under the CESA or the FESA;

X plants and animals that are candidates for possible future listing as threatened or endangered under the FESA and CESA;

X plants and animals that meet the definition of endangered, rare, or threatened under the CEQA that may include species not found on either state or federal Endangered Species lists;

X plants occurring on Lists 1A, 1B, 2, 3, and 4 of CNPS' electronic inventory (2002). The CDFG recognizes that Lists 1A, 1B, and 2 of the CNPS inventory contain plants that, in the majority of cases, would qualify for State listing, and CDFG requests their inclusion in EIRs. Plants occurring on CNPS Lists 3 and 4 are "plants about which more information is necessary," and "plants of limited distribution," respectively (CNPS, 2001). Such plants may be included as special-status species on a case by case basis due to local significance or recent biological information;

X migratory nongame birds of management concern listed by the USFWS;

X animals that are designated as "species of special concern" by CDFG;

X animals that are designated as "species of concern" by USFWS;

X animal species that are "fully protected" in California.

Potentially Occurring Special Status Species

The following special status species have the potential to occur on the project site.

Sanford's Arrowhead. Sanford's arrowhead (*Sagittaria sanfordii*) is a perennial plant in the water plantain family. This species is listed as a federal species of concern and is a CNPS List 1B species. Sanford's arrowhead grows in freshwater marshes, ponds, and ditches. Suitable habitat is located on the project site in the open drainage ditches. The SJMSCP restricts the individual take and conversion of occupied habitat for the Sanford's arrowhead.

Delta button-celery. Delta button-celery (*Eryngium racemosum*) is a biennial or perennial plant species in the carrot or parsley family. This plant grows in clay depressions in riparian habitats within the San Joaquin Valley. This species is listed as a federal species of concern and state endangered. There is a low probability of this species occurring within the project site due to extensive habitat modification through agricultural activities. The SJMSCP restricts the individual take and conversion of occupied habitat for the Delta button-celery.

Mason's lilaeopsis. Mason's lilaeopsis (*Lilaeopsis masonii*) is a perennial plant species in the carrot or parsley family. This species is listed as a federal species of concern and rare within the state. This species is found only in the San Francisco Estuary and Bay Delta. It grows in intertidal marshes and along stream banks. Mason's lilaeopsis is found along Fourteen Mile Slough to the south of the project site and Little Potato Slough to the north. There is a low potential for this species to occur on the project site since the drainage ditches are not tidally influenced, however, any outfall or discharge into Disappointment Slough could impact this species.

Delta mudwort. Delta mudwort (*Limosella subulata*) is an annual plant species in the figwort family. Delta mudwort is a CNPS List 2 species and found only in the Bay Delta. It grows on mud banks of intertidal marshes, often in freshwater or brackish marsh, or riparian scrub habitats. The nearest occurrence of this species is northwest of the project site at the confluence of White and Little Potato Slough. There is a low potential for this species to occur on the project site since the drainage ditches are not tidally influenced, however, any outfall or discharge into Disappointment Slough could impact this species.

Slough thistle. Slough thistle (*Cirsium crassicaule*) is an annual or biennial member of the aster family. It is listed as a federal species of concern and is a CNPS List 1B species. The slough thistle grows in marshes, swamps, riparian scrub, and chenopod scrub in the San Joaquin Valley. The drainage ditches located on the project site provide marginal habitat for this species. The SJMSCP restricts the individual take and conversion of occupied habitat for the slough thistle.

Wright's trichocoronis. Wright's trichocoronis (*Trichocoronis wrightii*) is an annual to perennial member of the aster family. It is designated on CNPS List 1B. The Wright's trichocoronis is found in wet habitats, including riparian areas, within the Central Valley. It has a low probability of being found in the drainage ditches with riparian habitat.

Suisan Marsh aster. Suisan Marsh aster (*Aster lentus*) is a perennial member of the aster family. It is listed as a federal species of concern and is a CNPS List 1B species. It is found in fresh to brackish marshes in the San Francisco Estuary. The drainage ditches located on the project site provide marginal habitat for this species.

Bearded sedge. Bearded sedge (*Carex comosa*) is a perennial member of the sedge family. It is listed on CNPS List 2. This species is found in wet habitats in northern California. The onsite drainage ditches provide marginal habitat for this species.

Delta tule pea. Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*) is a perennial member of the pea family. It is designated as a federal species of concern and is a CNPS List 1B species. This plant is found in coastal and estuarine marshes inland to Stockton. There is a low probability this species occurs within the drainage ditches on the project site.

Blue skullcap. Blue skullcap (*Scutellaria lateriflora*) is a perennial member of the mint family and is on CNPS List 1B. It is found in marshes and swamps in the northern San Joaquin Valley. The onsite drainage ditches provide suitable habitat for this species.

Rose-mallow. Rose-mallow (*Hibiscus lasiocarpus*) is a perennial member of the mallow family and is on CNPS List 1B. It is found on riverbanks and marshes in the Sacramento Valley and Delta region. This species is known to occur along Disappointment Slough. The onsite drainage ditches provide suitable habitat for this species.

Western pond turtle. Western pond turtle (*Clemmys marmorata*) is a federal species of concern and state species of special concern. This reptile is found in lakes, ponds, and slow moving rivers and streams. The onsite drainage ditches provide potential basking or foraging habitat for pond turtle. No breeding habitat is present onsite.

Giant garter snake. Giant garter snake (Thamnophis gigas) is a federally and state listed threatened species. It occurs in the Sacramento and San Joaquin Valleys in California. This reptile uses agricultural wetlands, irrigation and drainage canals, ricelands, marshes, sloughs, ponds, small lakes, low gradient streams and

adjacent upland areas. The giant garter snake requires several habitat components, including: adequate water during the active season (early spring through late fall) to provide an adequate food source; emergent, herbaceous wetland vegetation for cover and foraging; upland habitat for basking; and, higher elevation upland habitat for cover and refugia. The drainage ditches and croplands on the project site provide only marginal habitat for this species due to habitat modification, and the USFWS has determined that the drainage ditches are not potential habitat for this species. However, the USFWS also stated that sloughs surrounding the project site (i.e., Disappointment and Pixley Sloughs, and Bishop Cut) constitutes potential habitat for giant garter snake (pers. comm, email to Mr. Geoff Monk from Mr. Larry Butcher of USFWS Sacramento Endangered Species Office).

Giant garter snake is covered under the SJMSCP with the exception a localized areas associated with Disappointment and Pixley Sloughs, and nearby hydrologically connected areas. The proposed project includes installation of an outfall structure for a new pump station in Disappointment Slough, which likely would not be covered under the SJMSCP.

White-tailed kite. White-tailed kite (*Elanus leucurus*) are fully protected under the Fish and Game Code and MBTA. This raptor species uses scattered trees for breeding, and open grasslands and marshes for foraging. Suitable nesting habitat is located along the edges of the project site. It is likely that the white-tailed kite forages over the project site. Direct take of nesting white-tailed kites is not covered under the SJMSCP or MBTA.

Swainson's hawk. Swainson's hawk (*Buteo swainsonii*) is a state threatened species. This raptor species is also listed under the CESA, and is otherwise protected through other Fish and Game Codes, and the MBTA. The Swainson's hawk prefers scattered riparian or woodland trees for breeding and open field for foraging. The bird winters in South America. Suitable nesting habitat is located within and adjacent to the project site. A pair of Swainson's hawks were observed during field surveys. Direct take of this species is not covered under the SJMSCP or MBTA.

Burrowing owl. Burrowing owls (*Athene cunicularia*) are a federal species of concern and state species of special concern. This raptor species is also protected under the Fish and Game Code and MBTA. Burrowing owls prefer annual and perennial grasslands, with low growing vegetation. The owls typically use rodent burrows for nesting and cover. The project site provides suitable habitat for burrowing owls and numerous occurrences have been recorded in the vicinity. Direct take of this species is not covered under the SJMSCP or MBTA.

Northern harrier. Northern harrier (*Circus cyaneus*) is a state species of special concern. This raptor species is also protected under the Fish and Game Code and MBTA. Northern harriers nest on the ground used grass lined nests within dense, low lying vegetation. Northern harriers were observed foraging and displaying mating behavior over the project site. The project site provides suitable nesting habitat for northern harriers. Direct take of this species is not covered under the SJMSCP or MBTA.

Loggerhead shrike. Loggerhead shrike (*Lanius ludovicianus*) is a federal species of concern and state species of special concern. The shrike nests in shrubs and trees with dense canopies. Suitable habitat is provided on the project site along the irrigation and drainage ditches. Direct take of this species is not covered under the SJMSCP or MBTA.

Tricolored blackbird. Tricolored blackbirds (*Agelaius tricolor*) is a federal species of concern and state species of special concern. This bird species nests in large colonies and uses dense cattails, tule patches,

blackberry patches, and other dense vegetation. The project site provide marginal habitat along the main irrigation and drainage ditches. Direct take of this species is not covered under the SJMSCP or MBTA.

Central Valley steelhead and fall run/late-fall run chinook salmon. Central Valley steelhead (*Oncorhynchus mykiss*) is a federal threatened species; it has no State status. Central Valley fall run/late-fall run chinook salmon (*Oncorhynchus tshawytscha*) is a federal candidate species; it has no State status. Both species are anadromous fish that spend part of their life cycle in freshwater and part in saltwater. These species spawn in small, freshwater streams where the young remain for one to several years before migrating to the ocean to feed and grow. Adults return to their natal streams to spawn and complete their lifecycle.

Disappointment Slough provides potential migration habitat for these species as they could potentially move through the area en route to upstream spawning grounds. Disappointment and Pixley Sloughs would be considered EFH for Central Valley fall run/late-fall run chinook salmon.

Waters of the United States

Regulatory Background

Water within the onsite irrigation and drainage ditches is provided and discharged via a system of pipes and pump stations. A pump house, located at the southwest corner of the project site, and steel pipes deliver water between Bishop Cut and the irrigation canals onsite. These pipes are the only physical connection between Bishop Cut and the onsite irrigation ditches. Bishop Cut, Disappointment Slough, and onsite irrigation ditches are potentially regulated by the following legislation.

Clean Water Act, Section 404: Under Section 404 of the CWA, the ACOE regulates the disposal of dredged or fill material into "waters of the Unites States." Waters of the Unites States are defined as "... all interstate waters including interstate wetlands...intrastate lakes, rivers, streams (including intermittent streams), wetlands, [and] natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce..." Jurisdiction of "other waters" extends to the ordinary high water mark (OHWM) or the upward extent of any adjacent wetland. Appendix F provides more detail regarding Section 404 and jurisdictional waters.

Rivers and Harbors Act: Under Section 10 of the Rivers and Harbors Acts, the ACOE has jurisdiction over navigable waters of the Unites States to the historic limit of mean high water. All activities that involve excavating, filling, dredging, or construction or placement of an obstruction would require a permit from the ACOE. In this instance, any impacts to Disappointment Slough would be regulated under Section 10.

Clean Water Act, Section 401: Under Section 401 of the CWA, the RWQCB issues clean water certifications for activities occurring within waters of the United States. These certifications are associated with Section 404 permits and require that the proposed action will not violate water quality standards individually or cumulatively over the term of the Section 404 permit.

Porter-Cologne Water Quality Control Act: This legislation requires that "any person discharging waste, or proposed to discharge waste, within any region that could affect the waters of the State to file a report of discharge." The RWQCB regulates any said discharges that may pose a threat to water quality within the State.

California Department of Fish and Game Code, Section 1602: The CDFG regulates activities that divert, obstruct, or alter stream flow, or substantially modify the bed, channel, or bank of a lake or stream, or

associated riparian vegetation. Section 1602 requires that a Streambed Alteration Agreement is obtained from CDFG prior to any activity within a lake or streambed.

4.4.2 Impact Significance Criteria

Potential significant impacts associated with biological resources have been evaluated using the following criteria:

BR-a Substantial interference with the movement of any resident or migratory fish or wildlife species;

BR-b Substantially diminished habitat for fish, wildlife, or plants;

BR-c Substantial effect on rare or endangered species of animals or plants or the habitat of the species; and

BR-d Conflict with adopted goals, policies, or regulations of relevant regulatory agencies.

The significance criteria identified above are based on CEQA Guidelines, Section 15065. A number of other agencies have promulgated criteria and definitions relevant to the implementation of CEQA significance criteria, as described below.

CEQA Section 15206 states that a project is of statewide, regional, or area wide significance if it has the potential to substantially affect sensitive wildlife habitats, including but not limited to riparian lands, wetlands, bays, estuaries, marshes, and habitats for rare and endangered species, as defined by Fish and Game Code Section 903. CEQA Section 15380 further provides that a plant or animal species may be treated as rare or endangered even if not on one of the official lists if, for example, it is likely to become endangered in the foreseeable future.

Based on guidelines established by the USFWS and CDFG, a project could be considered to have a significant adverse impact on biological resources if it would result in substantial disruption to, or destruction of, any special-status species, its habitat, or breeding grounds. A project would also be considered to have a significant impact if it would result in a substantial loss of important plant or animal species; would cause a change in species composition, abundance, or diversity beyond that of normal variability; would result in the direct or indirect measurable degradation of sensitive habitats (e.g., wetlands, riparian corridors, vernal pools, oak woodlands); or would result in loss of a significant plant community.

A project would normally have a significant impact on the environment if it would physically affect communities or species protected by adopted environmental plans and goals of the community(ies) where it is located. Any action that would conflict with these policies might be considered a significant impact.

4.4.3 Impacts and Mitigation Measures

Effects Determined to Be less than Significant

The project site provides little suitable habitat for special status plant and animal species. The loss of habitat for these species can be mitigated to less than significant levels through payment of fees to SJCOG through the SJMSCP. A fee of approximately $1,724 per acre would be paid to SJCOG. Direct take of some species, however, is not covered under the SJMSCP and these impacts are discussed below.

Storm water discharge into Disappointment Slough could affect special status species through a degradation in water quality. However, the project proposes to create two interconnected lakes, totaling 68 acres, that will serve as a water quality and urban runoff treatment facility. The lakes are sized to contain the 100-year, 24-hour storm event without pumping. The lakes will contain several layers of water treatment measures to improve water quality before discharge into Disappointment Slough. These include lake specific water quality measures (biofilters and aeration), urban storm water runoff controls (water quality filters and wetland planter areas), and lake retention of runoff (i.e., all runoff from the developed areas of the project will be collected in the lake before being discharged into Disappointment Slough, if necessary). Consequently, all water discharged into Disappointment Slough will be the same or better quality than what is currently being pumped off the project site (i.e., into Bishop Cut).

Potentially Significant Effects

Impact BR-1: Several special status plant species, including Sanford's arrowhead, Delta button-celery, and Slough thistle, not covered under the SJMSCP could occur on the project site.

The proposed project would convert the agricultural/fallow fields on the project site to residential and mixed-use development. Despite the extensive habitat modifications to the site, several special status plant species could be directly impacted by site development. Direct take of the following species are not covered under the SJMSCP and could be in violation of the FESA, and/or CESA. Special status plant species that are not covered under the SJMSCP include: Sanford's arrowhead, Delta button-celery, and Slough thistle. Therefore, the conditions outlined in **Significance Criteria BR-b** through **BR-d** would apply, resulting in potentially significant impacts to these species.

Mitigation Measure BR-1: Approximately timed rare plant surveys are required to determine the presence or absence of the Sanford's arrowhead, Delta button-celery, and Slough thistle. If these species are present on the project site, consultation with USFWS and/or CDFG will be required. Compensation mitigation could be required to offset impact to these species if they are present. Such mitigation would include implementation of all provisions required by the USFWS and/or CDFG. These provisions would likely include salvage of seeds/rhizomes or any other transplantable portion of any special status plant found on the project site and transplanting or planting gathered seeds or plants to an appropriately selected and protected habitat.

Implementation of Mitigation Measure BR-1 would prevent the conditions outlined in Significance Criteria BR-b, BR-c, and BR-d from occurring. Thus, the project would not result in a significant affect to these species.

Impact BR-2: Implementation of the project could affect several special status bird species that could occur on the project site.

The proposed project would convert the agricultural/fallow fields on the project site to residential and mixed-use development. Despite the extensive habitat modifications to the site, several special status bird species including burrowing owl, white-tailed kite, northern harrier, and Swainson's hawk could be directly impacted by site development if they are nesting on the site when construction begins. Direct take of these species are not covered under the SJMSCP and would be in violation of the Fish and Game Code and MBTA. Therefore, the conditions outlined in **Significance Criteria BR-a** through **BR-d** will occur, and the project would result in a potentially significant impacts to these species.

Mitigation Measure BR-2: Preconstruction surveys will be conducted to determine whether these bird species are nesting within the project site boundaries. If surveys determine that these bird species are nesting, nest sites will be avoided through establishment of appropriate buffers to prevent the direct take of the species.

Implementation of Mitigation Measure BR-2 would prevent the conditions outlined in Significance Criteria BR-b through BR-d from occurring. Thus, the impact is reduced to a level considered less than significant.

Impact BR-3: Construction of the outfall structure for a new pump station in Disappointment Slough could impact giant garter snake.

Although the USFWS has determined the irrigation ditches and croplands on the project site would not likely constitute habitat of the giant garter snake, as described above, the USFWS also determined that Disappointment Slough constitutes known suitable habitat for this species. Consequently, construction of the outfall structure could impact giant garter snake and **Significance Criteria BR-c** would occur, resulting in a potential adverse affect to giant garter snake.

The determination of known suitable habitat for giant garter snake in Disappointment Slough precludes the use of the SJMSCP for potential project impacts to giant garter snake associated with the new outfall structure. Consequently, it is likely that construction of the outfall structure to will require an incidental take permit from the USFWS, separate from the incidental take permit issued for the SJMSCP. It is expected that the incidental take permit would be acquired by the ACOE during the Section 404 permit process (assuming a Section 404 permit is required). ACOE would consult with USFWS pursuant to Section 7 of the FESA for project effects to giant garter snake. In the event a Section 404 permit is not required, the applicant would likely need to consult with USFWS pursuant to Section 10 of the FESA.

Mitigation Measure BR-3: The following minimization and avoidance measures outlined in the SJMSCP should be implemented, as feasible, to prevent impacts to giant garter snake.

1. Construction shall occur during the active period for the snake, between May 1 and October 1. Between October 2nd and April 30th, the JPA, with the concurrence of the Permitting Agencies' representatives on the Technical Advisory Committee, shall determine if additional measures are necessary to minimize and avoid take.
2. Limit vegetation clearing within 200 feet of the banks of potential giant garter snake aquatic habitat to the minimal area necessary.
3. Confine the movement of heavy equipment within 200 feet of the banks of potential giant garter snake aquatic habitat to existing roadways to minimize habitat disturbance.
4. Prior to ground disturbance, all on-site construction personnel shall be given instruction regarding the presence of SJMSCP Covered Species and the importance of avoiding impacts to these species and their habitats.
5. In areas where wetlands, irrigation ditches, marsh areas, or other potential giant garter snake habitats are being retained on-site:

X Install temporary fencing at the edge of the construction area and the adjacent wetland, marsh, or ditch;

X Restrict working areas, spoils and equipment storage and other project activities to areas outside of marshes, wetlands, and ditches; and,

X Maintain water quality and limit construction runoff into wetland areas through the use of hay bales, filter fences, vegetative buffer strips, or other accepted equivalents.

1. If on-site wetlands, irrigation ditches, marshes, etc. are being relocated in the vicinity: the newly created aquatic habitat shall be created and filled with water prior to dewatering and destroying the pre-existing aquatic habitat. In addition, non-predatory fish species that exist in the aquatic habitat and which are to be relocated shall be seined and transported to the new aquatic habitat as the old site is dewatered.
2. If wetlands, irrigation itches, marshes, etc. will not be relocated in the vicinity, then the aquatic habitat shall be dewatered at least two weeks prior to commencement.
3. Pre-construction surveys for the giant garter snake (conducted after completion of environmental reviews and prior to ground disturbance) shall occur within 24 hours of ground disturbance.
4. Other provisions of the USFWS Standard Avoidance and Minimization Measures during Construction Activities in Giant Garter Snake Habitat shall be implemented (excluding programmatic mitigation ratios which are superceded by the SJMSCP's mitigation ratios).

If consultation is required with USFWS is required, any specific mitigation requirements beyond those mentioned above would also become a condition of project approval.

Implementation of Mitigation Measure BR-3 would prevent the conditions outlined in Significance Criteria BR-c from occurring. Thus, the project would not result in significant adverse impacts to giant garter snake.

Impact BR-4: Construction of the outfall structure for the new pump station may impact anadromous fish species.

Construction of the outfall structure could impact Central Valley steelhead and Central Valley fall run/late-fall run chinook salmon if they are present in Disappointment Slough during construction. The outfall structure could also affect EFH for Central Valley fall run/late-fall run chinook salmon. Therefore, the conditions outlined in **Significance Criterion BR-c** will occur, thus resulting in potential significant impacts to these species.

It is likely that construction of the outfall structure to will require an incidental take permit from NMFS for project effects to Central Valley steelhead and EFH for Central Valley fall run/late-fall run chinook salmon. It is expected that the incidental take permit would be acquired by the ACOE during the Section 404 permit process (assuming a Section 404 permit is required). ACOE would consult with NMFS pursuant to Section 7 of the FESA for project impact to Central Valley steelhead. ACOE would also consult with NMFS pursuant to the MSA for potential project effects to EFH for Central Valley fall run/late-fall run chinook salmon. In the event a Section 404 permit is not required, the applicant would likely need to consult with NMFS pursuant to Section 10 of the FESA for impact to Central Valley steelhead; if now federal nexus exists, no consultation would be required for EFH.

Mitigation Measure BR-4: Impacts to the banks and/or channel of Disappointment Slough would be mitigated through preservation, creation and/or restoration of the impacted resources at a minimum ratio of 1:1. In addition, in-channel activities will be limited to the period between June 15 and September 15, when

anadromous fish are least likely to be present. If consultation is required with NMFS, any specific mitigation requirements beyond those mentioned above would also become a condition of project approval.

Implementation of Mitigation Measure BR-4 would prevent the conditions outlined in Significance Criterion BR-c and from occurring and would reduce impacts to a level considered less than significant.

Impact BR-5: The project could impact wetlands and/or other waters regulated by the ACOE, RWQCB, and/or CDFG.

The proposed project would convert the agricultural/fallow fields on the project site to residential and mixed-use development. The irrigation and drainage ditches that transect the project site may be under the jurisdiction of the ACOE and/or RWQCB. Consultation with the ACOE will be required to determine if there are wetlands and/or other waters of the U.S./State on the project site. The RWQCB uses ACOE defined areas of jurisdiction to classify waters of the State. Historically, the ACOE has not asserted jurisdiction over manmade irrigation ditches that have questionable connectivity to navigable waters. Recent court cases, however, have determined that agricultural irrigation waters may be regulated by the ACOE. CDFG may also claim jurisdiction over the irrigation ditches if they support substantial habitat for wildlife.

Construction of the outfall structure for the new pump station could also impact wetlands and/or other waters of the U.S. States in Disappointment Slough. It is likely the channel and banks of Disappointment Slough are under the jurisdiction of ACOE, RWQCB, and CDFG.

Therefore, the condition outlined in **Significance Criteria BR-d** could occur. The project would result in potentially significant adverse impacts to waters of the U.S. and State.

Mitigation Measure BR-5: Impacts to the banks and/or channel of Disappointment Slough would be mitigated through preservation, creation and/or restoration of the impacted resources at a minimum ratio of 1:1. If permits are required by ACOE, RWQCB, and/or CDFG, specific mitigation requirements, if different than described above, would also become a condition of project approval.

Implementation of Mitigation Measure BR-5 would prevent the conditions outlined in Significance Criterion BR-d from occurring. Thus, there the project would not result in significant adverse impacts to jurisdictional waters, regulated by the ACOE, RWQCB, and/or CDFG.

4.4.4 Level of Significance after Mitigation

Potential impacts to biological resources from the proposed project will be mitigated to levels less than significant with implementation of the above mitigation measures.

4.5 NOISE

Noise modeling data is provided in Appendix G.

4.5.1 Existing Setting

This noise assessment follows the City of Stockton noise standards, which include the City's Noise Element and Municipal Code Noise Control Ordinance. This study discusses the current noise environment, evaluates short-term construction noise, assesses long-term noise effects from project related traffic noise, and identifies mitigation measures and their effectiveness.

Fundamentals of Noise

Noise Definition. Noise impacts can be described in three categories. The first is audible impact that refers to increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3 decibels (dB) or greater, since this level has been found to be barely perceptible in exterior environments. The second category, potentially audible, refers to a change in the noise level between 1 and 3 dB. This range of noise levels has been found to be noticeable only in laboratory environments. The last category is changes in noise level of less than 1 dB, which are inaudible to the human ear. Only audible changes in existing ambient or background noise levels are considered potentially significant. Therefore, a 3 dBA increase in long-term noise levels is used as a threshold of significant change in this noise analysis. The decreases in noise level due to distance divergence were also used to analyze the effects of construction noise associated with the proposed project.

Characteristics of Sound. Sound increases to such disagreeable levels in our environment that it can threaten our quality of life. Noise is usually defined as unwanted sound. Noise consists of any sound that may produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep. To the human ear, sound has two significant characteristics: pitch and loudness. Pitch is generally an annoyance, while loudness can affect our ability to hear. Pitch is the number of complete vibrations or cycles per second of a wave that result in the tone's range from high to low. Loudness is the strength of a sound that describes a noisy or quiet environment and is measured by the amplitude of the sound wave. Loudness is determined by the intensity of the sound waves combined with the reception characteristics of the human ear. Sound intensity refers to how hard the sound wave strikes an object, which in turn produces the sound's effect. This characteristic of sound can be precisely measured with instruments. The analysis of a project defines the noise environment of the project area in terms of sound intensity and its effect on adjacent sensitive land uses.

Measurement of Sound. Sound intensity is measured through the A-weighted scale (i.e., dBA) to correct for the relative frequency response of the human ear. An A-weighted noise level de-emphasizes low and very high frequencies of sound similar to the human ear's de-emphasis of these frequencies. Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale, representing points on a sharply rising curve.

For example, 10 decibels are 10 times more intense than one decibel, 20 decibels are 100 times more intense and 30 decibels are 1,000 times more intense. Thirty decibels represent 1,000 times as much acoustic energy as one decibel. A sound as soft as human breathing is about 10 times greater than zero

decibel. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10-decibel increase in sound level is perceived by the human ear as only doubling of the loudness of the sound. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud).

Sound levels are generated from a source, and their decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. For a single point source, sound levels decrease approximately six decibels for each doubling of distance from the source. This drop-off rate is appropriate for noise generated by stationary equipment. If noise is produced by a line source such as highway traffic or railroad operations, the sound decreases three decibels for each doubling of distance in a hard site environment. Line source noise in a relatively flat environment with absorptive vegetation decreases four and one-half decibels for each doubling of distance.

There are many ways to rate noise for various time periods, but an appropriate rating of ambient noise affecting humans also accounts for the annoying effects of sound. However, the predominant rating scales for human communities in the State of California are the Equivalent-continuous sound level (Leq) and Community Noise Equivalent (CNEL) based on A-weighted decibels (dBA). Leq is the total sound energy of time-varying noise over a sample period. CNEL is the time-varying noise over a 24-hour period, with a weighting factor of 5 dBA applied to the hourly Leq for noises occurring from 7:00 p.m. to 10:00 p.m. (defined as relaxation hours) and with a weighting factor of 10 dBA from 10:00 p.m. to 7:00 a.m. (defined as sleeping hours). The noise adjustments are added to the noise events occurring during the more sensitive hours. Day-night average noise (Ldn) is similar to the CNEL, but without the adjustment for nighttime noise events. CNEL and Ldn are normally exchangeable and within 1 dB of each other. Other noise rating scales of importance when assessing annoyance factor include the maximum noise level, or Lmax, and percentile noise exceedance levels, or LN. Lmax is the highest exponential-time-averaged sound level that occurs during a stated time period. It reflects peak operating conditions and addresses the annoying aspects of intermittent noise. LN is the noise level that is exceeded "N" percent of the time during a specified time period. For example, the L10 noise level represents the noise level exceeded 10 percent of the time during a stated period. The L50 noise level represents the median noise level. Half the time the noise level exceeds this level and half the time it is less than this level. The L90 noise level represents the noise level exceeded 90 percent of the time and is considered the lowest noise level experienced during a monitoring period. It is normally referred to as the background noise level.

Psychological and Physiological Effects of Noise. Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects our entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, and thereby affecting blood pressure, functions of the heart, and nervous system. In comparison, extended periods of noise exposure above 90 dBA would result in permanent cell damage. When the noise level reaches 120 dBA, a tickling sensation occurs in the human ear even with short-term exposure. This level of noise is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by the feeling of pain in the ear. This is called the threshold of pain. A sound level of 190 dBA will rupture the eardrum and permanently damage the inner ear. The ambient or background noise problem is widespread and generally more concentrated in urban areas than in outlying less developed areas.

Table 4.5.A lists "Definitions of Acoustical Terms," and Table 4.5.B shows "Common Sound Levels and Their Sources." Table 4.5.C shows "Land Use Compatibility for Exterior Community Noise" recommended by the California Department of Health, Office of Noise Control.

Table 4.5.A: Definitions of Acoustical Terms

TERM	DEFINITIONS
Decibel, dB	A unit of level that denotes the ratio between two quantities that are proportional to power; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
Frequency, Hz	Of a function periodic in time, the number of times that the quantity repeats itself in one second (i.e., number of cycles per second).
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted, unless reported otherwise.
L_{01}, L_{10}, L_{50}, L_{90}	The fast A-weighted noise levels that are equaled or exceeded by a fluctuating sound level 1 percent, 10 percent, 50 percent, and 90 percent of a stated time period.
Equivalent Continuous Noise Level, L_{eq}	The level of a steady sound that, in a stated time period and at a stated location, has the same A-weighted sound energy as the time varying sound.
Community Noise Equivalent Level, CNEL	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 5 dBA to sound levels occurring in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 dBA to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level, L_{dn}	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 10 dBA to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
L_{max}, L_{min}	The maximum and minimum A-weighted sound levels measured on a sound level meter, during a designated time interval, using fast time averaging.
Ambient Noise Level	The all encompassing noise associated with a given environment at a specified time, usually a composite of sound from many sources at many directions, near and far; no particular sound is dominant.
Intrusive	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Handbook of Acoustical Measurements and Noise Control, 1991.

Table 4.5.B: Common Sound Levels and Noise Sources

NOISE SOURCE	A-WEIGHTED SOUND LEVEL IN DECIBELS	NOISE ENVIRONMENTS	SUBJECTIVE EVALUATIONS
Near Jet Engine	140	Deafening	128 times as loud
Civil Defense Siren	130	Threshold of Pain	64 times as loud
Hard Rock Band	120	Threshold of Feeling	32 times as loud
Accelerating Motorcycle at a Few Feet Away	110	Very Loud	16 times as loud
Pile Driver; Noisy Urban Street/Heavy City Traffic	100	Very Loud	8 times as loud
Ambulance Siren; Food Blender	95	Very Loud	
Garbage Disposal	90	Very Loud	4 times as loud
Freight Cars; Living Room Music	85	Loud	
Pneumatic Drill; Vacuum Cleaner	80	Loud	2 times as loud
Busy Restaurant	75	Moderately Loud	
Near Freeway Auto Traffic	70	Moderately Loud	
Average Office	60	Quiet	One-half as loud
Suburban Street	55	Quiet	
Light Traffic; Soft Radio Music in Apartment	50	Quiet	One-quarter as loud
Large Transformer	45	Quiet	
Average Residence without Stereo Playing	40	Faint	One-eighth as loud
Soft Whisper	30	Faint	
Rustling Leaves	20	Very Faint	
Human Breathing	10	Very Faint	Threshold of Hearing
	0	Very Faint	

Source: Compiled by LSA Associates, Inc. 2002.

Table 4.5.C: Land Use Compatibility for Exterior Community Noise

	NOISE RANGE (L_{DN} OR CNEL), DB			
LAND USE CATEGORY	I	II	III	IV
Passively used open spaces	50	50–55	55–70	70+
Auditoriums, concert halls, amphitheaters	45–50	50–65	65–70	70+
Residential: low-density single-family, duplex, mobile homes	50–55	55–70	70–75	75+
Residential: multifamily	50–60	60–70	70–75	75+

Transient lodging: motels, hotels	50–60	60–70	70–80	80+
Schools, libraries, churches, hospitals, nursing homes	50–60	60–70	70–80	80+
Actively used open spaces: playgrounds, neighborhood parks	50–67	—	67–73	73+
Golf courses, riding stables, water recreation, cemeteries	50–70	—	70–80	80+
Office buildings, business commercial and professional	50–67	67–75	75+	—
Industrial, manufacturing, utilities, agriculture	50–70	70–75	75+	—

Source: Office of Noise Control, California Department of Health 1976.

Notes: Noise Range I—Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Noise Range II—Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.
Noise Range III—Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
Noise Range IV—Clearly Unacceptable: New construction or development should generally not be undertaken.

Sensitive Land Uses in the Project Vicinity

The project site and surrounding properties are comprised of agricultural row crops, undeveloped land, and property development in progress. Existing land uses on the project site reflect agricultural uses. Adjacent land uses include: SPW to the east, agricultural uses to the west and south (beyond Bishop Cut and Disappointment Slough), and agricultural uses to the north (beyond Eight Mile Road). The Reserve at Spanos Park golf course is located on the north side of Eight Mile Road across from the project site. The new SPW development has residential uses and an elementary school proposed abutting the project's eastern boundary. These are sensitive receptors that, if built and occupied before construction of the proposed project, would be potentially affected by the construction of the proposed project.

Overview of the Existing Noise Environment

The primary existing noise sources in the project area are transportation facilities. Traffic on Eight Mile Road, I-5, and other collector streets near the site is the dominant source contributing to the area's ambient noise levels. Noise from motor vehicles is generated by engine vibrations, interactions between the tires and the road, and exhaust systems.

Calculated Existing Traffic Noise. The Federal Highway Administration (FHWA) Highway Traffic Noise Model (FHWA-77-108) was used to evaluate highway traffic related noise conditions in the vicinity of the project site. This model requires various parameters, including traffic volumes, vehicle mix, vehicle speed, and roadway geometry to compute typical equivalent noise levels during daytime, evening, and nighttime hours. The average daily traffic volumes (ADT) for Existing Conditions were taken from a traffic study that was conducted for the proposed project (Fehr & Peers, 2003). The resultant noise levels are weighted and

summed over 24 hour periods to determine the CNEL value. CNEL contours are derived through a series of computerized iterations to isolate the 60, 65, and 70 dBA CNEL contours for existing traffic noise in the area. Table 4.5.D shows the existing noise levels along representative roadway segments affected by the project traffic.

As shown in Table 4.5.D, traffic noise in the project vicinity is low (Scott Creek Drive, Cosumnes Drive, Mokelumne Drive, and Trinity Parkway) to moderate (Eight Mile Road), with the 70 dBA CNEL confined within the roadway right-of-way along all roadway links in the project vicinity. These noise levels represent the worst case scenario, which assumes that no shielding is provided between the traffic and the location where the noise contours are drawn. The specific assumptions used in developing these noise levels, such as average speed and roadway width, and model printouts are provided in the Appendix G.

Table 4.5.D: Existing Traffic Noise Levels

Roadway Segment	ADT	Center-line to 70 CNEL (feet)	Center-line to 65 CNEL (feet)	Center-line to 60 CNEL (feet)	CNEL (dBA) 50 feet from Outermost Lane
Eight Mile Road					
West of Mokelumne Circle	2,620	< 50 [1]	< 50	66	61.1
Between Mokelumne Circle and Trinity Parkway	4,275	< 50	< 50	91	63.2
Between Trinity Parkway and I-5 SB Ramp	4,200	< 50	< 50	90	63.1
Between I-5 SB Ramp and I-5 NB Ramp	8,520	< 50	67	144	66.2
Between I-5 NB Ramp and Oak Grove Regional Park Entrance	14,905	< 50	97	209	68.6
Scott Creek Drive					
West of Mokelumne Circle	330	< 50	< 50	< 50	45.9
East of Mokelumne Circle	320	< 50	< 50	< 50	45.8
Cosumnes Drive					
West of Mokelumne Circle	140	< 50	< 50	< 50	42.2
Between Mokelumne Circle and Trinity Parkway	625	< 50	< 50	< 50	48.7
East of Trinity Parkway	140	< 50	< 50	< 50	42.2
Mokelumne Drive					
Between Eight Mile Road and Scott Creek Drive	2,000	< 50	< 50	< 50	55.6
Between Scott Creek Drive and Cosumnes Drive	875	< 50	< 50	< 50	52.0
Trinity Parkway					
Between Cosumnes Drive and McAuliffe Drive	375	< 50	< 50	< 50	48.3
South of McAuliffe Drive	130	< 50	< 50	< 50	43.7

Source: LSA Associates, Inc., 2003.
Notes: [1] Traffic noise within 50 feet of roadway centerline requires site specific analysis.

4.5.2 Impact Significance Criteria

A project will normally have a significant effect on the noise environment if it will substantially increase the ambient noise levels for adjoining areas or conflict with adopted environmental plans and goals of the community. The applicable noise standards governing the project site are the criteria in the City's Noise Element and Noise Ordinance, and Uniform Building Code.

Noise Element of the General Plan

Applicable policies and standards governing environmental noise in the City are set forth in the Noise Element of the General Plan. The goals of the Noise Element, compiled under the mandate of section 65302(f) of the California Government Code and guidelines prepared by the California Department of Health Services (DHS), are to ensure that all areas of the City are free from excessive noise, and that appropriate maximum levels are adopted for residential, commercial, and industrial areas; to reduce new noise sources to the maximum extent possible; to reduce, to the maximum extent possible, the impact of noise within the City; and to ensure that land uses are compatible with the related noise characteristics of those uses. The following summarizes the City's noise standards.

1. The General Plan of the City considers that new residential development shall not be allowed where the ambient noise level due to locally-regulated noise sources (i.e. all noise sources other than roadway, railroad and aircraft noise) will exceed the noise level standards as set forth below in Table 4.5.E.

Table 4.5.E: Exterior Noise Level Standards for Locally-Regulated Noise Sources

NOISE LEVEL DESCRIPTOR	DAYTIME (7 AM TO 10 PM)	NIGHTTIME (10 PM TO 7 AM)
Hourly Leq, dBA	55	45
Maximum level, dBA	75	65

Source: City of Stockton, 1996

Each of the noise level standards specified above shall be reduced by five dBA for simple tone noises, noises consisting of primarily speech or music, or for recurring impulsive noises.

2. The compatibility of proposed projects with existing and future noise levels due to traffic on public roadways, railroad line operations, and aircraft in flight shall be evaluated by comparison to Table 4.5.F.
3. New development of residential land uses will not be permitted in areas exposed to existing or projected exterior noise levels exceeding 60 dBA Ldn/CNEL or the standards of Table 4.5.F unless the project design includes effective mitigation measures to reduce noise to the following levels:

Table 4.5.F: Land Use Compatibility for Community Noise Environments

LAND USE CATEGORY	NORMALLY ACCEPTABLE [1]	CONDITIONALLY ACCEPTABLE [2]	NORMALLY UNACCEPTABLE [3]	CLEARLY UNACCEPTABLE [4]
Residential	50 - 60	60 - 70	70 - 75	75 - 85
Transient Lodging - Motels, Hotels	50 - 60	60 - 70	70 - 80	80 - 85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 - 60	60 - 70	70 - 80	80 - 85
Auditoriums, Concert Halls, Amphitheatres, Sport Arenas	N/A	50 - 75	N/A	75 - 85
Playgrounds, Neighborhood Parks	50 - 70	N/A	70 - 75	75 - 85
Golf courses, Riding Stables, Water Recreation, Cemeteries	50 - 75	N/A	75 - 80	80 - 85
Office Buildings, Business Commercial and Professional	50 - 67.5	67.5 - 75	75 - 85	N/A
Industrial, Manufacturing Utilities, Agriculture	50 - 70	70 - 80	80 - 85	N/A

Source: City of Stockton, 1996

Notes: [1] Normally Acceptable - Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

[2] Conditionally Acceptable - New construction of development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems of air conditioning will normally suffice.

[3] Normally Unacceptable - New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and the needed noise insulation features included in the design.

[4] Clearly Unacceptable - New construction or development should generally not be undertaken.

X For noise due to traffic on public roadways, railroad line operations and aircraft in flight: 60 dBA Ldn/CNEL or less in outdoor activity areas, and 45 dBA Ldn/CNEL or less in indoor areas. Where it is not possible to reduce exterior noise to 60 dBA Ldn/CNEL or less by incorporating a practical application of the best available noise-reduction technology, an exterior noise level of up to 65 dBA Ldn/CNEL will be allowed. Under no circumstances will interior noise levels be permitted to exceed 45 dBA Ldn/CNEL with the windows and doors closed.

X For noise from sources other than roadways, railroads and aircraft, comply with the performance standards contained in Table 4.5.E.

4. Before approving proposed development of new residential land uses in areas exposed to existing or projected exterior noise levels exceeding 60 dBA Ldn/CNEL, an acoustical analysis shall be required. The acoustical analysis shall:

X Be the responsibility of the applicant.

X Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics.

X Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions.

X Estimate existing and projected (20 years) noise levels in terms of Ldn/CNEL and/or the standards of Table 4.5.F, and compare those levels to the adopted policies of the Noise Element.

X Recommend appropriate mitigation to achieve compatibility with the adopted policies and standards of the Noise Element. Where the noise source in question consists of intermittent single events, the acoustical analysis must address the effects of maximum noise levels in sleeping rooms in terms of possible sleep disturbance.

X Estimate noise exposure after the prescribed mitigation measures have been implemented. If the project does not comply with the adopted standards and policies of the Noise Element, the analysis must provide acoustical information for a statement of overriding considerations for the project.

5. Describe a post-project assessment program which could be used to evaluate the effectiveness of the proposed mitigation measures.

X Develop and employ procedures to ensure that requirements imposed pursuant to the findings of an acoustical analysis are implemented as part of the project review and building permit processes.

6. Noise produced by commercial uses shall not exceed 75 dBA Ldn/CNEL at the nearest property line.
7. Noise produced by industrial uses shall not exceed 75 dBA Ldn/CNEL at the nearest property line.
8. Exceptions to the noise standards for commercial and industrial uses may be granted only if a recorded noise easement is conveyed by the affected property owners.
9. Enforce the State Noise Insulation Standards (California Administrative Code, Title 24) and Chapter 35 of the Uniform Building Code (UBC).
10. Prepare a community noise control ordinance consistent with the performance standards of the Noise Element and the guidelines of the State Office of Noise Control.
11. Actively support enforcement of California Vehicle Code sections relating to adequate vehicle mufflers and modified exhaust systems.
12. New equipment and vehicles purchased by the City of Stockton shall comply with noise level performance standards consistent with the best available noise reduction technology.

The Office of Noise Control under the California Health and Safety Code has promulgated a 45 dBA CNEL standard for interior noise levels of multifamily residential units. The City also enforces building sound transmission and indoor fresh air ventilation requirements specified in Chapter 35 of the Uniform Building Code.

Noise Ordinance

The City's Municipal Code, Article IV, NOISE REGULATIONS, specifies that construction activities that would increase the ambient noise level by more than five dBA at the property line are generally restricted to between 7:00 a.m. and 8:00 p.m. within 500 feet of a residential zone. Loading and unloading of construction equipment or materials within 500 feet of a residential zone are restricted to the hours between 6:00 a.m. and 8:00 p.m.

4.5.3 Impacts and Mitigation Measures

Implementation of the proposed project would result in short-term construction and long-term traffic noise impacts. The following focuses on the increase in noise associated with the construction of the proposed project and traffic in the project area.

Impacts Determined to Be Less than Significant

Impact NOI-1: The project could create on-site stationary source noise impact.

The proposed homes and elementary schools would not result in any significant on-site operational noise that would impact off-site noise sensitive uses. School outdoor activities would be limited to daytime hours.

Potentially Significant Impacts and Mitigation Measures

Impact NOI-2 Construction related activities may negatively impact surrounding receptors.

Two types of short-term noise impacts would occur during project construction. The first is the increase in traffic flow on local streets, associated with the transport of workers, equipment, and materials to and from the project site. The pieces of heavy equipment for grading and construction will be moved to the site, and remain for the duration of each construction phase. The increase in traffic flow on the surrounding roads due to construction traffic is expected to be small. The associated increase in long-term traffic noise will not be perceptible. However, there will be short-term intermittent high noise levels associated with trucks passing the project site.

The second type of short-term noise impact is related to the noise generated by heavy equipment operating on the project site. Construction is performed in discrete steps. Each of these steps has its own mix of equipment and noise characteristics. These various sequential phases would change the character of the noise generated on the site and, therefore, the noise levels surrounding the site. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction related noise ranges to be categorized by work phase. Table 4.5.G lists typical construction equipment noise levels recommended for noise impact assessments, based on a distance of 50 feet between the equipment, and a noise receptor.

Typical noise levels range up to 91 dBA Lmax at 50 feet during the noisiest construction phases. The site preparation phase, which includes excavation and grading of the site, tends to generate the highest noise level because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavating machinery such as dozers and loaders. Earthmoving and compacting equipment includes compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings.

Construction of the proposed project is expected to require the use of earthmovers, dozers, and water and pickup trucks. Noise typically associated with the use of construction equipment is estimated between 79 and 89 dBA Lmax at a distance of 50 feet from the construction effort for the grading phase. This equipment would be used on the project site. As seen in Table 4.5.G, the maximum noise

Table 4.5.G: Maximum Construction Equipment Noise Levels

TYPE OF EQUIPMENT	RANGE OF MAXIMUM SOUND LEVELS MEASURED (DBA AT 50 FEET)	SUGGESTED MAXIMUM SOUND LEVELS FOR ANALYSIS (DBA AT 50 FEET)
Pile Drivers, 12,000 to 18,000 ft-lb/blow	81 to 96	93
Rock Drills	83 to 99	96
Jack Hammers	75 to 85	82
Pneumatic Tools	78 to 88	85

Pumps	74 to 84	80
Dozers	77 to 90	85
Scrapers	83 to 91	87
Haul Trucks	83 to 94	88
Cranes	79 to 86	82
Portable Generators	71 to 87	80

Rollers	75 to 82	80
Tractors	77 to 82	80
Front-End Loaders	77 to 90	86
Hydraulic Backhoe	81 to 90	86
Hydraulic Excavators	81 to 90	86
Scrapers	81 to 87	85

Graders	79 to 89	86
Air Compressors	76 to 89	86
Trucks	81 to 87	86

Source: Bolt, Beranek & Newman, 1987.

level generated by each earthmover on the proposed project site is assumed to be 88 dBA Lmax at 50 feet from the earthmover. Each dozer would also generate 88 dBA Lmax at 50 feet.

The maximum noise level generated by water and pickup trucks is approximately 86 dBA Lmax at 50 feet from these vehicles. Each doubling of the sound sources with equal strength increases the noise level by 3 dBA. Assuming that each piece of construction equipment operates as an individual noise source, the worst case composite noise level during this phase of construction would be 91 dBA Lmax at a distance of 50 feet from an active construction area. The nearest sensitive receptors are residential homes and elementary school in the Spanos Park West development to the east of the project site. These receptors are located at a distance of approximately 100 feet and may be subjected to short-term noise reaching 85 dBA Lmax.

Construction related noise impacts of the proposed project would be potentially adverse and will be significant in the short term.

Mitigation Measure NOI-2

During project construction, the construction superintendent shall implement the following measures to reduce construction noise impacts:

X Limiting construction activities that would increase the ambient noise level by more than five dBA at the property line to between 7:00 a.m. and 8:00 p.m. within 500 feet of a residential zone.

X Proper muffling and maintenance of all internal combustion engines used for construction on the site;

X Locating all stationary noise generating sources, such as air compressors and portable power generators, as far away as possible from homes and classrooms; and

X Prohibiting unnecessary idling of internal combustion engines.

Implementation of Mitigation Measures NOI-2 will ensure that noise impacts related to construction activities will not be significant.

Impact NOI-3: Implementation of the proposed project will increase noise levels on the project site and surrounding areas.

Traffic Impact

The proposed residential homes and schools would result in new traffic trips to and from the project site. These traffic trips would also impact roadway links and intersections in the project vicinity. Existing off-site sensitive receptors in the vicinity of the project site (e.g., within Spanos Park West) would be potentially affected by noise associated with these new traffic trips. The proposed facilities may also be exposed to potentially significant traffic noise impacts.

The future traffic noise levels along roadway links in the project vicinity were calculated using the FHWA Highway Traffic Noise Prediction Model. The future 2008 and 2025 traffic volumes were taken from a traffic study conducted for the project (Fehr & Peers, 2003). Table 4.5.H lists the calculated year 2008 baseline traffic noise levels along roadway links in the project vicinity. Table 4.5.I lists the year 2008 plus project traffic noise levels along the same roadway links. Table 4.5.J lists the year 2025 baseline no project traffic noise levels along the same roadway links. Table 4.5.K lists the calculated year 2025 plus project traffic noise levels along roadway links in the project vicinity. Similar to the existing conditions, these traffic noise levels represent the worst case scenario, which assumes that no shielding is provided between the roadway traffic and where the contours are drawn.

Tables 4.5.H and 4.5.J show that, under the future year 2008 and year 2025 conditions without the project, traffic noise along Eight Mile Road and Trinity Parkway would increase by a large margin over their corresponding existing levels. The 70 dBA CNEL contour along Eight Mile Road would extend up to 85 and 97 feet, respectively, from the roadway centerline for the years 2008 and 2025. The 65 dBA CNEL contour would extend up to 173 and 202 feet, respectively, for the years 2008 and 2025. Along Trinity Parkway, the 70 dBA CNEL would remain confined within the roadway right of way, but the 65 dBA CNEL contour would extend up to 66 and 71 feet, respectively, from the roadway centerline for the years 2008 and 2025.

Table 4.5.H: Year 2008 Baseline Traffic Noise Levels

ROADWAY SEGMENT	ADT	CENTER-LINE TO 70 CNEL (FEET)	CENTER-LINE TO 65 CNEL (FEET)	CENTER-LINE TO 60 CNEL (FEET)	CNEL (DBA) 50 FEET FROM OUTERMOST LANE
Eight Mile Road					
West of Mokelumne Circle	2,660	< 50 [1]	< 50	67	61.1
Between Mokelumne Circle and Trinity Parkway	11,195	< 50	81	173	66.8
Between Trinity Parkway and I-5 SB Ramp	34,845	85	173	368	70.4
Between I-5 SB Ramp and I-5 NB Ramp	29,830	80	158	333	69.4
Between I-5 NB Ramp and Oak Grove Regional Park Entrance	27,940	77	151	319	69.1
Scott Creek Drive					
West of Mokelumne Circle	2,010	< 50	< 50	< 50	53.8
East of Mokelumne Circle	1,690	< 50	< 50	< 50	53.0
Cosumnes Drive					
West of Mokelumne Circle	680	< 50	< 50	< 50	49.1
Between Mokelumne Circle and Trinity Parkway	7,875	< 50	< 50	53	59.7
East of Trinity Parkway	3,850	< 50	< 50	< 50	56.6
Mokelumne Drive					
Between Eight Mile Road and Scott Creek Drive	8,955	< 50	< 50	77	62.1
Between Scott Creek Drive and Cosumnes Drive	3,935	< 50	< 50	< 50	58.5
Trinity Parkway					
Between Eight Mile Road and Cosumnes Dr.	17,895	< 50	57	122	65.1
Between Cosumnes Drive and McAuliffe Drive	22,320	< 50	66	141	66.1
South of McAuliffe Drive	16,370	< 50	54	115	64.7

Source: LSA Associates, Inc., 2003.
Notes: [1] Traffic noise within 50 feet of roadway centerline requires site specific analysis.

Table 4.5.I: Year 2008 Plus Project Traffic Noise Levels

ROADWAY SEGMENT	ADT	CENTER-LINE TO 70 CNEL (FEET)	CENTER-LINE TO 65 CNEL (FEET)	CENTER-LINE TO 60 CNEL (FEET)	CNEL (DBA) 50 FEET FROM OUTERMOST LANE	CHANGE FROM NO PROJECT LEVEL (DBA)
Eight Mile Road						
West of Rio Blanco Road	2,400	< 50 [1]	< 50	62	60.7	N/A
Between Rio Blanco Road and Westlake Villages Entrance [1]	10,705	< 50	78	168	67.2	N/A
Between Westlake Villages Entrance [1] and Westlake Villages Entrance [2]	16,965	< 50	106	228	69.2	N/A
Between Westlake Villages Entrance [2] and Mokelumne Circle	23,770	62	133	285	70.6	9.5
Between Mokelumne Circle and Trinity Parkway	32,360	76	163	350	70.4	3.6
Between Trinity Parkway and I-5 SB Ramp	55,160	112	233	499	72.4	2.0
Between I-5 SB Ramp and I-5 NB Ramp	43,000	98	199	424	71.0	1.6
Between I-5 NB Ramp and Oak Grove Regional Park Entrance	32,015	83	165	349	69.7	0.6
Scott Creek Drive						
West of Mokelumne Circle	3,360	< 50	< 50	< 50	56.0	2.2
East of Mokelumne Circle	3,040	< 50	< 50	< 50	55.6	2.6
Cosumnes Drive						
West of Mokelumne Circle	1,310	< 50	< 50	< 50	51.9	2.8
Between Mokelumne Circle and Trinity Parkway	10,780	< 50	< 50	66	61.1	1.4
East of Trinity Parkway	4,970	< 50	< 50	< 50	57.7	1.1
Mokelumne Drive						
Between Eight Mile Road and Scott Creek Drive	9,010	< 50	< 50	77	62.1	0.0
Between Scott Creek Drive and Cosumnes Drive	4,915	< 50	< 50	52	59.5	1.0
Trinity Parkway						
Between Eight Mile Road and Cosumnes Drive	18,560	< 50	58	125	65.3	0.2
Between Cosumnes Drive and McAuliffe Drive	24,580	< 50	70	151	66.5	0.4
South of McAuliffe Drive	17,360	< 50	56	120	65.0	0.3

Source: LSA Associates, Inc., 2003.
Notes: [1] Traffic noise within 50 feet of roadway centerline requires site specific analysis.

Table 4.5.J: Year 2025 Baseline Traffic Noise Levels

ROADWAY SEGMENT	ADT	CENTER-LINE TO 70 CNEL (FEET)	CENTER-LINE TO 65 CNEL (FEET)	CENTER-LINE TO 60 CNEL (FEET)	CNEL (DBA) 50 FEET FROM OUTERMOST LANE
Eight Mile Road					
West of Mokelumne Circle	8,000	< 50 [1]	64	138	65.9
Between Mokelumne Circle and Trinity Parkway	15,700	< 50	101	217	68.3
Between Trinity Parkway and I-5 SB Ramp	44,200	97	202	431	71.5
Between I-5 SB Ramp and I-5 NB Ramp	39,300	93	188	399	70.6
Between I-5 NB Ramp and Oak Grove Regional Park Entrance	29,800	80	158	333	69.4
Scott Creek Drive					
West of Mokelumne Circle	3,100	< 50	< 50	< 50	55.6
East of Mokelumne Circle	2,600	< 50	< 50	< 50	54.9
Cosumnes Drive					
West of Mokelumne Circle	4,100	< 50	< 50	< 50	56.9
Between Mokelumne Circle and Trinity Parkway	10,750	< 50	< 50	66	61.0
East of Trinity Parkway	3,500	< 50	< 50	< 50	56.0
Mokelumne Drive					
Between Eight Mile Road and Scott Creek Drive	9,900	< 50	< 50	82	62.5
Between Scott Creek Drive and Cosumnes Drive	4,750	< 50	< 50	51	59.4
Trinity Parkway					
Between Eight Mile Road and Cosumnes Dr.	23,800	< 50	69	148	66.4
Between Cosumnes Drive and McAuliffe Drive	25,150	< 50	71	153	66.6
South of McAuliffe Drive	18,100	< 50	57	213	65.2

Source: LSA Associates, Inc., 2003.
Notes: [1] Traffic noise within 50 feet of roadway centerline requires site specific analysis.

Table 4.5.K: Year 2025 Plus Project Traffic Noise Levels

ROADWAY SEGMENT	ADT	CENTER-LINE TO 70 CNEL (FEET)	CENTER-LINE TO 65 CNEL (FEET)	CENTER-LINE TO 60 CNEL (FEET)	CNEL (DBA) 50 FEET FROM OUTERMOST LANE	CHANGE FROM NO PROJECT LEVEL (DBA)
Eight Mile Road						
West of Rio Blanco Road	2,360	< 50 [1]	< 50	62	60.6	N/A
Between Rio Blanco Road and Westlake Villages Entrance [1]	13,360	< 50	90	194	68.1	N/A
Between Westlake Villages Entrance [1] and Westlake Villages Entrance [2]	22,310	59	127	273	70.4	N/A
Between Westlake Villages Entrance [2] and Mokelumne Circle	29,110	71	152	326	71.5	5.6
Between Mokelumne Circle and Trinity Parkway	36,870	83	178	382	72.0	3.7
Between Trinity Parkway and I-5 SB Ramp	64,510	123	259	554	73.1	1.6
Between I-5 SB Ramp and I-5 NB Ramp	52,475	110	227	483	71.9	1.3
Between I-5 NB Ramp and Oak Grove Regional Park Entrance	33,880	86	171	362	70.0	0.6
Scott Creek Drive						
West of Mokelumne Circle	4,450	< 50	< 50	< 50	57.2	1.6
East of Mokelumne Circle	3,950	< 50	< 50	< 50	56.7	1.8
Cosumnes Drive						
West of Mokelumne Circle	4,730	< 50	< 50	< 50	57.5	0.6
Between Mokelumne Circle and Trinity Parkway	13,660	< 50	< 50	77	62.1	1.1
East of Trinity Parkway	6,420	< 50	< 50	< 50	58.8	-2.1
Mokelumne Drive						
Between Eight Mile Road and Scott Creek Drive	9,960	< 50	< 50	83	62.6	0.1
Between Scott Creek Drive and Cosumnes Drive	5,735	< 50	< 50	57	60.2	0.8
Trinity Parkway						
Between Eight Mile Road and Cosumnes Drive	24,465	< 50	70	150	66.5	0.1
Between Cosumnes Drive and McAuliffe Drive	27,400	< 50	76	162	67.0	0.4
South of McAuliffe Drive	19,070	< 50	59	127	65.4	0.2

Source: LSA Associates, Inc., 2003.
Notes [1] Traffic noise within 50 feet of roadway centerline requires site specific analysis.

Off-site Traffic Noise Impact

Tables 4.5.I and 4.5.K show that project-related traffic noise level increases along most roadway segments in the project vicinity would be 2.8 dBA or lower in year 2008 and 2025, except along Eight Mile Road. These traffic noise level increases are less than the 3 dBA threshold of change considered to be perceptible to human ear. Although there are existing residences along these roadways, noise impact from project-related increases would be considered less than significant.

Along Eight Mile Road, however, project related traffic noise level increases would be greater than 3 dBA between the project site and Trinity Parkway. Based on traffic noise levels included in Table 4.5.K, areas along Eight Mile Road would be exposed to traffic noise reaching 70 dBA CNEL. However, the proposed residential uses in the SPW development along Eight Mile Road in this area have an eight-foot noise barrier proposed along Eight Mile Road, and would effectively reduce the exterior noise levels to 65 dBA CNEL or lower. Therefore, no significant traffic noise impacts on off-site sensitive uses would occur. Project-related traffic noise level increases along other segments of Eight Mile Road would be below the 3 dBA threshold and would not result in any significant impacts.

On-site Traffic Noise Impact

The City discourages residential homes and elementary schools to be built in areas exceeding the 60 dBA CNEL, unless the project design includes effective mitigation measures allowing up to a maximum of 65 dBA CNEL noise standard. If new construction or development does proceed, noise insulation features must be included in the design. Standard construction for residential exterior walls would provide a minimum sound transmission class (STC) rating of STC-42, which would provide sufficient noise attenuation. A hollow-core wood door with no gaskets would provide an STC-12. With gaskets and drop door bottom seals, the door provides STC-19. A solid-core wood door with gaskets and drop door seals would provide at least STC-21. Steel doors and wood doors with adequate acoustical ratings can achieve up to STC-51 in noise attenuation. Monolithic and insulated glass provides STC ratings from the high 20s to the low 30s. Double paned windows provide STC ratings from the high 30s to the high 40s in noise attenuation.

Homes That Would Not Be Significantly Impacted by Traffic Noise. The proposed residential homes and elementary school that are not directly adjacent to Eight Mile Road would not be exposed to noise levels exceeding 60 dBA CNEL. This is less than the maximum 65 dBA CNEL exterior noise standard recommended by the City. These homes and elementary school would not be significantly affected by traffic noise from Eight Mile Road or any other local streets in the project area due to the distance and shielding provided by the front line buildings/structures. Standard construction for California residential buildings would provide 24 dBA or more in exterior to interior noise reduction with windows closed. With windows open, the noise reduction is 12 dBA or higher. It is not expected that the interior of these proposed residential dwellings would experience more than 45 dBA CNEL from traffic noise. The City's recommended interior noise standard of 45 dBA CNEL would not be violated.

Homes That Would Be Potentially Impacted by Significant Traffic Noise. The proposed residential uses on the northern part of the project site along Eight Mile Road would be potentially impacted by noise exceeding 70 dBA CNEL from Eight Mile Road traffic.

Typically, there are three types of traffic noise impacts that require measures to reduce the noise level:

X Group A: Areas that would be exposed to traffic noise exceeding 70 dBA CNEL. Residential homes with outdoor use areas exposed to traffic noise would require a freestanding sound wall

or sound wall and berm combination with an effective height of eight feet above grade along the property line. This eight foot sound wall or sound wall/berm combination would provide 7 dBA or more in noise reduction for ground floor receptors, when the direct line of sight to the traffic is blocked. Ground floor bedrooms facing the road would receive 7 dBA or more in noise attenuation provided by the sound wall or sound wall/berm combination. With a combination of walls, doors, and windows, standard construction for northern California residential buildings would provide more than 24 dBA in exterior to interior noise reduction with windows closed and 12 dBA or more with windows open. With windows closed, interior noise level in ground floor units would be 45 dBA CNEL or lower. Therefore, no building facade upgrades would be required. However, with windows open, there is a potential for interior noise in the ground floor units to exceed the 45 dBA CNEL standard (e.g., 63 dBA - 12 dBA = 51 dBA). Therefore, an air conditioning system, a form of mechanical ventilation, would be required to ensure that windows can remain closed for a prolonged period of time.

For second-story bedrooms exposed to 70 dBA CNEL or higher traffic noise, the eight foot sound wall would not provide sufficient noise mitigation. Therefore, second-story bedrooms with windows exposed to the traffic require building facade upgrades, such as double paned (or dual glazing) windows. In addition, mechanical ventilation, such as an air conditioning system, would be required.

Dwelling units located within 71 feet of the roadway centerline of Eight Mile Road would have the potential to be exposed to 70 dBA CNEL traffic noise impacts, and therefore, would be subject to the above requirements.

X Group B: Areas that would be exposed to traffic noise between 65 and 70 dBA CNEL. Residential homes with outdoor active use areas exposed to the traffic would require a freestanding sound wall or sound wall and berm combination with an effective height of six feet above grade along the property line. This six foot sound wall or sound wall/berm combination would provide 5 dBA or more in noise reduction for ground floor receptors when the direct line of sight to the traffic is blocked. Ground floor bedrooms facing the road would receive 5 dBA or more in noise attenuation provided by the sound wall or sound wall/berm combination. With windows closed, interior noise level in ground floor units would be 45 dBA CNEL or lower. Therefore, no building facade upgrades would be required. However, with windows open, there is a potential for interior noise in the ground floor units to exceed the 45 dBA CNEL standard (e.g., 60 dBA - 12 dBA = 48 dBA). Therefore, an air conditioning system should be provided to ensure that windows can remain closed for a prolonged period of time.

For second-story bedrooms exposed to 65 to 70 dBA CNEL traffic noise, the six foot sound wall would not provide sufficient noise mitigation. Therefore, second-story bedrooms with windows exposed to the traffic require building facade upgrades, such as double paned (or dual glazing) windows. In addition, an air conditioning system would be required.

Dwelling units located within 152 feet of the roadway centerline of Eight Mile Road, when no homes (such as Group A Homes above) or other structures are built between the road and these dwelling units, would have the potential to be exposed to 65 dBA CNEL traffic noise impacts, and therefore, would be subject to the above requirements.

X Group C: Areas that would be exposed to traffic noise between 57 and 65 dBA CNEL. Residential homes that fall within this category do not require mitigation measures for their outdoor active use areas, such as backyards or barbecue areas. With windows open, Group C homes would potentially experience interior noise levels exceeding the 45 dBA CNEL (e.g., 60 dBA - 12 dBA = 48 dBA) standard adopted by the State of California and City. An air conditioning system should be provided to ensure that windows can remain closed for a prolonged period of time. No building facade upgrades would be required.

Dwelling units located within 326 feet of the roadway centerline of Eight Mile Road, when no homes (such as Group A or Group B homes above) or other structures are built between the road and these dwelling units, would have the potential to be exposed to 60 dBA CNEL traffic noise impacts. There are no dwelling units exposed to this condition (i.e., all homes at this distance are shielded by intervening homes).

Other On-site Noise Impacts

The proposed residential homes would be adjacent to pump stations. It is not anticipated that pump noise would result in any significant noise impacts, as long as the City's noise ordinance requirements are met.

Similarly, noise associated with outdoor activities at the proposed elementary school would need to comply with the City's noise ordinance requirements, and would not result in any significant noise impacts.

Mitigation Measure NOI-3: During project operation, the following mitigation measures should be implemented to reduce long-term project related traffic noise impacts:

X Mechanical ventilation, such as air conditioning systems, is recommended for all residential homes along Eight Mile Road and are within 326 feet of the roadway centerline.

X A six-foot barrier is recommended for all outdoor active use areas, such as backyards, associated with homes along Eight Mile Road and are within 152 feet of the roadway centerline with direct exposure to traffic on Eight Mile Road. A five-foot barrier is recommended for balconies, if any, associated with these homes. Windows with a minimum sound transmission class (STC) rating of STC-30 are recommended for all bedroom windows within 152 feet of Eight Mile Road centerline and are directly exposed to traffic. Maintenance of sounds walls will be the responsibility of the HOA.

X An eight-foot barrier is recommended for all outdoor active use areas, such as backyards, associated with homes along Eight Mile Road and are within 71 feet of the roadway centerline. A five-foot barrier is recommended for balconies associated with these homes. Windows with a minimum STC-32 are recommended for all bedroom windows within 152 feet of Eight Mile Road centerline and are directly exposed to traffic. Maintenance of sounds walls will be the responsibility of the HOA.

Implementation of Mitigation Measures NOI-3 will ensure that noise impacts related to traffic will not be significant.

4.5.4 Level of Significance after Mitigation

There would be no significant noise impacts from short-term construction or long-term operation of the project site after implementation of Mitigation Measures NOI-2 and NOI-3.

4.6 LAND USE

4.6.1 Existing Setting

Existing Land Use

The project site consists of agricultural fields and Paradise Point Marina. Drainage and irrigation ditches transect the project site. These ditches provide aquatic habitat and riparian vegetation. The project site is surrounded by a variety of land uses. To the north of Eight Mile Road are agricultural uses, and the Reserve at Spanos Park golf course. To the west is Bishop Cut and agricultural operations. To the south is Disappointment Slough. The slough is hydrologically connected to the San Joaquin/Sacramento Delta. To the east, SPW is a multi-use development consisting of residential and commercial components. Figure 4.6.1 illustrates the existing land uses.

General Plan

The project site is currently within the jurisdiction of San Joaquin County. A component of the project is to annex the Master Development Plan Area within the City's boundaries. Subsequent to the annexation, the project site will be under the jurisdiction of the City and guided by the City's General Plan. Figure 4.6.2 illustrates the existing County General Plan land use designations on the project site. Table 4.6.A presents the acreage for existing County General Plan designations. The Spanos Parcel will be included in the General Plan Amendment and Sphere of Influence/Urban Service Area changes but will not be annexed as part of the project.

Table 4.6.A: Existing General Plan Designations

APN	COUNTY GENERAL PLAN	ACRES
071-12-13	General Agriculture	11.2
071-12-11	General Agriculture	671.5
055-310-04, 055-310-05, 055-310-06	Commercial- Recreation	170
Total		852.7

The existing San Joaquin County General Plan designation for the development and marina parcels is General Agriculture. This designation is intended to preserve agricultural lands for the continuation of commercial agricultural enterprises. The existing County General Plan designation for the Spanos Parcel is Commercial-Recreation.

Existing Zoning

The existing zoning districts for the project site are shown on Figure 4.6.3 and listed in Table 4.6.B. All of the land within the Master Development Plan Area is currently zoned AG-40. This zoning designation allows agricultural uses. The zoning for the Spanos Parcel is Commercial-Recreation (C-R) in unincorporated San Joaquin County.

Figure 4.6.1: Existing Surrounding Land Uses

Figure 4.6.2: Existing General Plan Designations

Figure 4.6.3: Existing Zoning Designations

Table 4.6.B: Existing Zoning Designations

APN	COUNTY ZONING	ACRES
071-12-13 (Marina)	AG-40	11.2
071-12-11 (Development Project)	AG-40	671.5
055-310-04, 055-310-05, 055-310-06 (Spanos Parcel)	C-R	170
Total		852.7

Surrounding General Plan Land Use

The San Joaquin County General Plan designates the lands to the north of the project site as General Agriculture. Lands to the south and west (across Disappointment Slough and Bishop Cut) are designated as General Agriculture. These lands are outside of the area designated as the Stockton Urban Service Area. The Urban Service Area is applied to areas where future urban development is anticipated, and infrastructure is or will be available. If the City of Stockton intends to provide service outside the City limits, the City must apply to and obtain approval from Local Agency Formation Commission (LAFCO).

The City of Stockton General Plan designates the land bordering to the east of the project site (SPW) as Low Density Residential. Interstate 5 is located east of SPW.

Planning North of Eight Mile Road

The City of Stockton is actively reviewing the lands north of Eight Mile Road for inclusion in the City's General Plan Study Area. Currently, a major comprehensive General Plan Update is underway in Stockton. A component of the planning program involves an assessment of the development potential of the expanse of land between Stockton (at Eight Mile Road) and the southerly Lodi Sphere of Influence.

Special Planning Study Area

The City of Stockton considered expanding its planning area to encompass some of the predominantly agricultural lands north of Eight Mile Road. The city prepared a Draft and Final EIR on the Special Planning Area Study (SPAS) and received substantial public comments. The proposed SPAS revisions would have allowed development of new urban residential and other land uses north of Eight Mile Road. The Planning Commission considered, but did not certify, the Final EIR and rejected the SPAS General Plan Amendment on June 29, 1993.

4.6.2 Impact Significance Criteria

Potentially significant impacts associated with land use have been evaluated using the following criteria:

LU-a Type and extent of conversion from agricultural to suburban uses;

LU-b Change in land use represents a substantial adverse deviation from the character of the previous designations;

LU-c Compatibility with surrounding land uses (current and planned);

LU-d Consistency with City General Plan and regional land use plans and policies; and

LU-e Result in a substantial increase in intensity as a result of land use changes.

4.6.3 Impacts and Mitigation Measures

Effects Considered Not to Be Significant

Impact LU-1: The project may have growth inducing impacts and inconsistencies with regional land use policies.

The Westlake Villages project is located at the extreme limits of Stockton's boundaries, minimizing the opportunity to extend growth into adjacent San Joaquin County. The County's jurisdictional control, combined with the agricultural designations north of Eight Mile Road, provides emphasis on the limitations of the Westlake Villages project's growth-inducing influence on those lands, including such influence on the Community Separator (**Significance Criteria LU-d**).

Potentially Significant Impacts

Impact LU-2: Implementation of the proposed project will lead to the conversion of agricultural lands.

The 11.2-acre marina parcel is considered Prime Farmland and zoned within the County as AG-40. The soils mapped on the site are also prime soils, however, this site is actively used as a marina. As such, these land uses are not conducive to agricultural production. The Master Development Plan proposes to develop the marina parcel based on future market forces, therefore the existing onsite land uses are not expected to change in the near future. The eventual conversion of the marina parcel to urban uses is not considered significant within respect to the conversion of agricultural lands due to the existing on-site land uses.

The remainder of the project site encompasses 841.5 acres (development and Spanos Parcel) of Prime Farmland that is actively farmed with row crops. Implementation of the project will convert this agricultural land to urban uses. This conversion runs contrary to policies set by the City and County General Plans to protect agricultural lands outside the City's boundary. Although this conversion presents a logical expansion of urban uses due to the proximity of SPW, the site is still agriculturally productive. Soils comprising the site are all considered prime agricultural soils which would be irretrievably lost through project development. Therefore, the conditions outlined in **Significance Criteria LU-a** would occur.

The proposed project will result in the conversion of agricultural lands. This represents an adverse effect on land use. No feasible mitigation is available to offset this impact.

Impact LU-3: Implementation of the proposed project will substantially alter the character of the previous land use.

The applicant is proposing a change in land use and zoning for the Master Development Plan Area. A General Plan Amendment is being requested for the Spanos Parcel. Tables 4.6.A and 4.6.B illustrate the changes required for the proposed project. The proposed project will amend the existing City General Plan and zoning designations with the following:

General Plan. The development and marina parcel will be redesignated to Mixed Use. This designation provides for a range of land uses on large parcels. The Mixed Use designation is intended to encourage the development of a mixture of compatible land uses including residential, administrative and professional offices, retail and service uses, light industrial, and public and quasi-public facilities. The allowable residential densities, nonresidential intensities, and the specific development standards for proposed projects are presented in the Master Development Plan (Appendix B). The Spanos Parcel will be redesignated as Low-Medium Density Residential but will not be developed as part of the project. Previous Figure 3.4.1 illustrates the proposed General Plan designations.

Zoning. The development and marina parcels would be prezoned M-X (Mixed Use District) as illustrated in Figure 3.4.2. This is the zoning district that most closely corresponds to the Mixed Use designation. Rezoning to the M-X (Mixed Use) zoning district shall occur concurrent with the Master Development Plan and General Plan Amendment. The M-X zoning district is intended to apply to large properties that can accommodate a wide range of residential and nonresidential land uses. Specific land uses and specific development standards for each M-X zoning district shall be determined on a site-by-site basis, as defined in the Master Development Plan prepared for the proposed project. The M-X zoning district is consistent with the Mixed Use land use designation of the General Plan. The Spanos Parcel will not be prezoned as part of the proposed project.

The project proposes to change the existing agricultural land use in the San Joaquin County General Plan to Mixed Use designations for the development and marina parcels. The Mixed Use designations allow for a variety of land uses, however, the Westlake Villages project proposes only residential uses at a variety of densities on the development parcel. Development of the marina would depend on future market forces. The Spanos Parcel will be changed from Commercial Recreation in the County's General Plan to Low-Medium Density Residential in the City's General Plan. While both designations (County and City) allow residential uses, the land use change will facilitate the conversion of current agricultural land uses to urban uses on the Spanos Parcel. These residential uses represent a significant change from the existing agricultural character of the site. Land use intensity will also be significantly increased (**Significance Criterion LU-b**).

The proposed project will result in an adverse effect on land use character and intensity when compared with previous designations and land uses.

Impact LU-4: Implementation of the proposed project would potentially result in incompatibility with surrounding land uses.

Land use compatibility within the project's proposed land uses and existing surrounding land uses are reviewed in the following sections. Planned developments located adjacent to the proposed project are identified in Table 3.1.A.

Residential Land Uses

Figure 3.3.1 presents the overall Master Development Plan for the project. All areas within the Master Development Plan Area will be developed with residential or associated uses. Land use changes on the marina parcel are dependent on future market forces. The Spanos Parcel will not be developed as part of the project.

There are four land uses surrounding the project site: single family residential (east), open space and sloughs (south and west), golf and recreation (north), and agriculture (north, west, and south).

The agricultural land uses to the south and west are separated from the project by Disappointment Slough and Bishop Cut, respectively. Due to these physical barriers, there will be no conflict between the proposed project and agricultural uses. Agricultural land uses located north of Eight Mile Road will also be buffered by the existing roadway.

There are no apparent land use conflicts between the project and the SPW Mixed Use development located east of the proposed project site. The Reserve at Spanos Park is located north of a portion of the proposed project site. This recreational use is compatible with the M-X designations since Westlake Villages will be developed as a residential community. The adjacent waterways (Bishop Cut and Disappointment Slough) and levees provide open space and recreational opportunities. These uses are not incompatible with the proposed project as long as these natural resources are protected from degradation or destruction. Mitigation measures provided within Section 4.2, Water Resources and Section 4.4, Biological Resources will minimize negative impacts to water resources, therefore, the proposed project land use is not inconsistent with these residential, open space, and recreational uses.

Although the Spanos Parcel will be redesignated to Low-Medium Density Residential in the General Plan Amendment, the parcel will not be developed as part of the project and will retain its current agricultural land uses. The residential uses proposed for the Master Development Plan Area are not consistent with the agricultural land uses on the Spanos Parcel. No buffers or physical barriers exist between the Master Development Plan Area and Spanos Parcel. Due to the lack of physical barriers, impacts could include late night agricultural operations, nuisance odors, and dust and wind erosion disturbing Westlake Villages residents, or residents vandalizing agricultural areas.

The following mitigation is proposed to reduce the potential conflicts associated with the proposed residential uses with the ongoing agricultural operations on the Spanos Parcel.

Mitigation Measure LU-1: To reduce agricultural/residential land use incompatibilities, the following shall be required:

X The Applicant/Developer(s) shall inform and notify prospective buyers in writing, prior to purchase, about existing and on-going agricultural activities in the immediate area in the form of a disclosure statement. The notifications shall disclose that the Stockton area is an agricultural area subject to ground and aerial applications of chemical and early morning or nighttime farm operations which may create noise, dust, et cetera. The language and format of such notification shall be reviewed and approved by the City Community Development Department prior to recordation of final map(s). Each disclosure statement shall be acknowledged with the signature of each prospective owner.

X Prior to issuance of certificates of occupancy and predicated on the sequence of development, the perimeter of the project site affected by the potential conflicts in land use noted above shall be appropriately buffered by a landscaped open space buffer area, fences, and/or walls, to minimize conflicts between project residents, non-residential uses, and adjacent agricultural uses.

X Proposed homes adjacent to active agricultural operations shall be included in the final project construction phases.

X Prior to recordation of the final map(s) for homes adjacent to existing agricultural operations, the Applicant/Developer shall submit a detailed wall and fencing plan for review and approval by the Community Development Department.

Implementation of the proposed project will result in land use incompatibilities with agricultural uses on the Spanos Parcel.

Elementary School

The proposed elementary school will be located near the southeastern corner of the project site. The applicant is working with the Lodi Unified School District to determine the suitability of the proposed location. By locating the school adjacent to residential uses, this avoids potential land use compatibility conflicts between surrounding agricultural uses on the Spanos Parcel.

Parks and Open Space

The public and village parks proposed within Westlake Villages are consistent with the proposed residential uses. The parks and open space will not be incompatible with surrounding land uses.

Table 4.6.C presents a summary of the land use compatibility for parcels surrounding the project site.

Table 4.6.C: Primary Land Use Compatibility

PROPOSED PROJECT	ADJACENT LAND USE		COMPATIBILITY
LAND USE	DIRECTION	LAND USE	
Residential	East	Residential (SPW)	Compatible
Residential	North	Agriculture (north of Eight Mile Road)	Compatible
Residential	North	Recreation (The Reserve at Spanos Park)	Compatible
Residential	Northwest	Agriculture (Spanos parcel)	Incompatible
Residential	West	Agriculture (across Bishop Cut)	Compatible
Residential	West	Open Space (Bishop Cut)	Compatible
Residential	South	Open Space (Disappointment Slough)	Compatible
Residential	South	Agriculture	Compatible

Impact LU-5: Elements of the proposed project may not be consistent with the City's General Plan.

The City's General Plan contains goals and policies that can be examined for project consistency. A number of the land use policies address urban growth and development, residential land uses, housing, transportation, natural and cultural resources, noise, and public services. The relationship of the proposed project to the City's goals and policies is addressed in Table 4.6.D.

Table 4.6.D: Goals and Policies

GOALS AND POLICIES	PAGE NUMBER	GOAL AND POLICY NUMBER	CONSISTENCY STATEMENT
General Objectives	I-13	**Objective 1:** Develop a balanced and complete community in terms of land use distribution and densities, housing types, and economic development opportunities.	**Consistent.** The proposed project provides a well developed community that integrates low and medium single family residential and Active Adult living units with open space, recreation area, parklands, and education facilities. The proximity of the SPW commercial development provides a nearby job base.
General Objectives	I-13	**Objective 4:** Promote the development of a sufficient quantity and variety of decent, safe, and sanitary housing units to meet the needs of all residents.	**Consistent.** The proposed project will provide a maximum of 2,894 low to medium density residential units. As proposed, the project would develop a maximum of 847 Active Adult units and 2,047 conventional single-family residential units.
General Objectives	I-13	**Objective 5**: Establish a balanced transportation and circulation system which provides for the efficient movement of people and goods while minimizing the impacts on adjacent land uses.	**Consistent.** A fundamental objective of the Westlake Villages project is to provide an orderly hierarchy of roadways to meet the transportation demands generated by the project. In addition, the proximity of SPW's commercial business center provides employment opportunities and the efficient movement of people and goods between developments will be facilitated.
General Objectives	I-13	**Objective 11:** Promote development which by its location and design reduces the need for nonrenewable energy resources and the associated release of air pollutants.	**Consistent.** The proximity of SPW's commercial business center increases the efficiency and movement of people and goods within the development.
Land Use - Urban Growth and Overall Development	III-1	**Goal 1, Policy 2:** The Urban Service Area shall be expanded only when applicable General Plan policies can be met and appropriate services and efficient infrastructure can be provided.	**Consistent**. Based on City policies, the project site will not be annexed unless adequate services, utilities, and infrastructure are available. The project applicant will extend all infrastructure from SPW and pay appropriate fees to mitigate related impacts. Additionally, the project applicant will provide amendments to the City's Sewer, Water, and Drainage Master Plans.
Land Use - Urban Growth and Overall Development	III-1	**Goal 1, Policy 3:** Future urban development adjacent to the City should occur within the City. This requires that vacant unincorporated properties shall annex to the City prior to provision of any City services.	**Consistent**. The project applicant has submitted an annexation application to the City of Stockton.
Land Use - Urban Growth and Overall Development	III-1	**Goal 1, Policy 4:** Considering the large amount of undeveloped land beyond the existing City Limits yet within the Urban Service Area, it is the City's intention not to accept or process applications for General Plan Amendments for land outside the Urban Service Area boundaries until completion of the authorized Special Planning Area Study.	**Consistent.** A majority of the area within the Urban Service Area has been developed. The project is located adjacent to an area that is currently being developed with residential and commercial uses.

GOALS AND POLICIES	PAGE NUMBER	GOAL AND POLICY NUMBER	CONSISTENCY STATEMENT
Land Use - Urban Growth and Overall Development	III-3	**Goal 4, Policy 1:** The wasteful and inefficient sprawl of urban uses into agricultural lands surrounding the urban area should be avoided by regulating the location of urban uses through the Urban Growth and Overall Development policies to minimize the consumption of agricultural land and other open areas containing valuable natural resources or scenic beauty.	**Inconsistent.** The project will convert 841.5 acres of productive agricultural lands and prime agricultural soils to urban uses.
Land Use - Urban Growth and Overall Development	III-4	**Goal 4, Policy 2:** Urban growth shall be geographically limited by such environmental hazards as flood vulnerability and unstable soil characteristics.	**Consistent.** Extensive improvements have occurred to levee structures surrounding the project area. As a result of these improvements, the project site is not subject to 100-year flood plain constraints. As indicated in section 4.1, Geophysical Resources, soil characteristics associated with the project site are considered capable of supporting the proposed development provided appropriate engineering techniques are incorporated.
Land Use - Urban Growth and Overall Development	III-4	**Goal 4. Policy 3:** Urban growth, particularly sensitive developments (i.e., homes, schools, hospitals) should avoid locating in areas which are subject to adverse environmental or noise impacts.	**Consistent.** The proposed project is not located in an area that is subject to adverse environmental or noise impacts.
Land Use - Urban Growth and Overall Development	III-4	**Goal 4, Policy 4:** Environmentally sensitive areas, such as the Delta, oak groves, and areas of archaeological/historic value, should be preserved for the benefit of present and future generations.	**Inconsistent.** The farmstead located on the project site is potentially eligible for the California Register and will be removed through project implementation.
Land Use - Urban Growth and Overall Development	III-4	**Goal 4, Policy 5:** Storm water quality measures shall be undertaken to enhance to the maximum extent practicable the quality of the water in the sloughs, creeks, and rivers in this area.	**Consistent.** The applicant will be required to comply with conditions set forth in all applicable permits which may include: NPDES General Construction Permit, Waste Discharge Permit, Streambed Alteration Agreement, and/or Section 404 permit. The proposed storm drainage system must also be approved by the City's Municipal Utilities Department.
Land Use - Urban Growth and Overall Development	III-4	**Goal 4, Policy 6:** Encourage the use of energy efficient transportation systems and building designs along with other measures to reduce air pollution and to conserve energy resources in the process of urban development.	**Consistent.** Building designs proposed in the project will be required to conform to State energy conservation standards and Title 24 regulations. Mitigation proposed in Section 4.2, Air Quality, will help reduce air emissions.
Land Use - City Concept and Design	III-4	**Goal 1, Policy 1:** Encourage the development of identifiable boundaries for the City to maintain a sense of community identity. The City should also consider the development of some type of "gateway" treatment at major entrances into the City.	**Consistent.** The proposed project will extend the City's boundary west of the existing Spanos Park West residential/commercial development. The Master Development Plan for the proposed project provides landscaping and entry treatments into the residential development from Eight Mile Road that are aesthetically pleasing and will promote a positive image for the City.

GOALS AND POLICIES	PAGE NUMBER	GOAL AND POLICY NUMBER	CONSISTENCY STATEMENT
Land Use - City Concept and Design	III-5	**Goal 1, Policy 3:** Residential subdivisions shall be designed to provide for internal circulation within neighborhoods and to prevent through traffic from traversing neighborhoods.	**Consistent.** Connector roadway facilities are proposed for Westlake Villages project. Likewise, additional connections are being provided to Spanos Park West at the eastern end of the project site. These roadway connections are designed to convey traffic on major collector roads (Eight Mile Road), thus avoiding residential neighborhood impacts.
Land Use - City Concept and Design	III-5	**Goal 1, Policy 4:** Promote aesthetically pleasing and environmentally sound urban development by providing for design flexibility through the use of development controls such as planned unit developments.	**Consistent.** An objective of the project is to provide sound urban development while also providing maximum flexibility in the design concepts. Standards and design concepts proposed in the Master Development Plan have been designed to maintain considerable flexibility in the approach to development. All of the design concepts and guidelines are intended to promote aesthetically pleasing and environmentally sound planning development concepts.
Land Use - City Concept and Design	III-5	**Goal 2, Policy 1:** Varied residential densities, housing types, and styles should be equitably and appropriately distributed throughout the community and integrated with public facilities and commercial services.	**Consistent.** The project proposes a range of densities that provide low to medium density units. The proposed project will provide conventional single family residential units and Active Adult units.
Land Use - Residential Land Use	III-6	**Goal 2, Policy 1:** The neighborhood shall be utilized as the basic planning unit for maintaining and preserving existing residential areas and in the planning of new ones. Key features of the neighborhood unit include a centrally located meeting place (i.e., school, park), access to arterials only through collector streets with an internally directed local street system, and services located at the periphery of the neighborhood (i.e., commercial, offices, institutional).	**Consistent.** The neighborhood design incorporates the concept for a basic planning unit by looping the primary collector roadway around the neighborhood, without providing through vehicle travel. This design enhances neighborhood unity and minimizes the vehicular activity. Each village within the proposed development is centered around a village park. The community as a whole will be centered around public parks, natural open space areas, and recreation areas. A hierarchical system of local roadways promotes access to the primary collector roadway through smaller collector and local streets with internally directed local street system (courts, cul-de-sacs, etc.).
Land Use - Residential Land Use	III-6	**Goal 2, Policy 3:** Residential development shall provide open space in either private yards or common areas to partially meet the residents' recreational needs.	**Consistent.** A variety of open space types will be included within the development. Several public parks and open space/recreational areas are proposed for the project, including 12 acres of village parks.
Land Use - Residential Land Use	III-6	**Goal 2, Policy 6:** Residential neighborhoods shall be protected from the excessive encroachment of incompatible activities and land uses (i.e., traffic, noise) and environmental hazards (i.e., flood, soil instability) which may have negative impacts on the living environment.	**Consistent.** The proposed residential uses will be protected from traffic and noise on I-5 by the intervening SPW. Onsite soils are assumed to be adequate for development and the project site is protected from regional flooding hazards.

GOALS AND POLICIES	PAGE NUMBER	GOAL AND POLICY NUMBER	CONSISTENCY STATEMENT
Land Use - Commercial Land Use	III-7	**Goal 1, Policy 3:** The compatible integration of commercial and new residential uses shall be encouraged. Existing residential areas shall be buffered from new commercial uses through the provisions of the zoning code.	**Consistent.** While the proximity of SPW's commercial business center provides employment and commercial opportunities, the residential component of SPW will buffer Westlake Villages from these commercial uses.
Land Use - Mixed Land Use	III-10	**Goal 4, Policy 1:** Project developments proposed in the Mixed Use designation shall be implemented by developing and processing a Master Development Plan for the project area, and rezoning the area to an M-X District.	**Consistent.** A General Plan Amendment and rezoning are being requested by the project applicant. A Master Development Plan has been prepared and submitted concurrently with those applications for consideration by the City to ensure internal and external land use compatibility (Appendix B).
Land Use - Mixed Land Use	III-10	**Goal 4, Policy 2:** Land uses proposed for a Mixed Use development in the Mixed Use designation shall support each other by providing an integrated master plan that may include one or more of the following: industries, services, offices, retail, and residential opportunities for the common needs of the occupants and users of the Mixed Use development.	**Consistent.** The Master Development Plan includes a variety of densities and uses that have been designed to complement each other. The mixture of uses are internally compatible and are meant to function as a complementary land use program.
Housing - Adequate Sites	III-13	**Goal 1, Policy 1:** The General Plan shall designate sufficient vacant land for residential purposes to accommodate anticipated population growth.	**Consistent.** Implementation of the proposed project will require a General Plan Amendment, annexation, and amendment to City's Sphere of Influence for the Master Development Plan Area. The project is proposed to fulfill the future demand for housing and the existing need for affordable Active Adult facilities. As such, the proposed project is consistent with the intent of this policy.
Housing - Adequate Sites	III-13	**Goal 1, Policy 2:** New residential uses shall be located close to main transportation routes to ensure convenient access to employment centers, schools, shopping, and recreational facilities.	**Consistent.** Residential uses will be proximate to the commercial uses on the adjacent Spanos Park West. The project site will also have convenient access to I-5 via Eight Mile Road. Consequently, residents in Westlake Villages will have convenient access to local commercial uses adjacent to the project, as well as regional commercial uses, employment centers, etc.
Housing - Adequate Sites	III-13	**Goal 1, Policy 3:** Sites designated for new residential development on the General Plan shall be adequately served by public utilities, minimally impacted by noise and blighting conditions, and be compatible with surrounding land uses.	**Consistent.** The proposed project residential uses within the Westlake Villages project will be adequately served by public utilities. Utility planning has already been initiated. The Master Development Plan describes how those utilities will be provided to the project site. Residential uses will not be exposed to significant sources of noise or blighted conditions. While traffic noise may affect residential uses, those uses will be adequately mitigated with noise attenuation in order to meet City exterior and interior noise standards.

GOALS AND POLICIES	PAGE NUMBER	GOAL AND POLICY NUMBER	CONSISTENCY STATEMENT
Housing - Adequate Sites	III-13	**Goal 1, Policy 5:** Encourage the construction of new homes on vacant lots in the existing developed areas of the City where most public improvements have already been installed.	**Consistent.** The proposed project site is located directly adjacent to SPW. All infrastructure and utilities will be extended from the adjacent development In addition, previous improvements to levee structures and channels in the Bishop Tract area have resolved local flooding issues from 100-year flood plain constraints.
Housing - Affordability	III-13	**Goal 1, Policy 1:** Designate adequate high-density areas on the General Plan to provide for the development of apartments, planned unit residential developments, and other forms of high-density housing.	**Inconsistent.** The Westlake Villages project does not provide high density housing.
Housing - Governmental Constraints	III-14	**Goal 1, Policy 2:** Continue to plan for the timely and adequate expansion and/or improvement of public facilities and infrastructure to coincide with housing development and improvements.	**Consistent.** The proposed project intends to extend water and sewer infrastructure from the adjacent SPW development. The Master Development Plan describes the phasing of infrastructure to ensure that the development and infrastructure coincide in the appropriate time frame. The City's Master Sewer, Water, and Storm Water Drainage Plans are being amended to include the proposed project.
Housing - Preserving Housing and Neighborhoods	III-14	**Goal 1, Policy 4:** Provide and maintain community facilities in all community areas.	**Consistent.** The project will provide numerous "village" parks, public parks, recreational areas, and open space. The onsite lakes will be available for non-motorized boating recreation.
Housing - Adequate Sites	III-16	**Implementation Program 1:** Continue to monitor the supply of land in various zoning categories (R-1, R-2, R-3, and C-R) to prevent shortages from developing which may increase housing costs.	**Inconsistent**. While the project will provide extensive single family housing, multi-family dwellings are not proposed as part of the project.
Housing - Affordability	III-16	**Implementation Program 3:** Maintain at least 900 acres of undeveloped land designated for Low/Medium Density Residential uses on the General Plan to assure an adequate supply of such land.	**Consistent.** By developing 2,894 single family residential units, the applicant will be providing approximately 683 acres of residential uses thus assisting in providing an adequate supply of low/medium density residential land. The Spanos Parcel will be redesignated to Low-Medium Density Residential, allowing for the future development of residential uses.
Housing Affordability	III-16	**Implementation Program 4:** Maintain at least 300 acres of undeveloped land designated for High-Density Residential Uses on the General Plan to assure an adequate supply of such land.	**Inconsistent.** The project does not provide high density residential units.
Transportation - Streets and Highways	III-20	**Goal 1, Policy 2:** The street system shall provide at least two (2) independent access routes for all major developed areas.	**Consistent.** The project will provide 2 access routes via Eight Mile Road..

GOALS AND POLICIES	PAGE NUMBER	GOAL AND POLICY NUMBER	CONSISTENCY STATEMENT
Transportation - Streets and Highways	III-20	**Goal 1, Policy 3:** Significant trip generating land uses should be served by roadways adequate to provide vehicular access with a minimum of delay.	**Consistent.** The project roadways are designed to accommodate expected vehicular trips.
Transportation - Streets and Highways	III-21	**Goal 1, Policy 8:** Seek to improve freeway interchanges along both Route 99 and Interstate 5 to current design standards as required by the traffic demands of new development.	**Consistent**. Feasible mitigation is available to offset all project-related traffic impacts, however, feasible mitigation does not exist to offset all cumulative impacts.
Transportation - Streets and Highways	III-21	**Goal 1, Policy 9:** For traffic operating conditions use "Level-of-Service" (LOS) of "D" or better on a p.m. peak hour basis as the planning objective for the evaluation of new development, mitigation measures, impact fees, and public works capital improvement programs.	**Consistent**. Feasible mitigation is available to offset all project-related traffic impacts, however, feasible mitigation does not exist to offset all cumulative impacts.
Transportation - Streets and Highways	III-21	**Goal 2, Policy 1:** Inter-neighborhood traffic movement should occur on arterial and collector streets and is discouraged on neighborhood streets.	**Consistent.** One of the objectives included in the overall Westlake Villages planned community is to create a system of street hierarchy that discourages traffic through neighborhood streets.
Transportation - Streets and Highways	III-21	**Goal 2, Policy 2:** Neighborhood streets shall be designed to discourage through traffic and excessive speeds.	**Consistent.** One of the objectives included in the overall Westlake Villages planned community is to create a system of street hierarchy that discourages traffic through neighborhood streets.
Transportation - Streets and Highways	III-21	**Goal 2, Policy 3:** Off-street parking shall be required for all land uses in order to reduce congestion, improve overall operation and land use compatibility.	**Consistent.** Off-street parking will be included in all non-residential uses. The Master Development Plan includes standards, design guidelines, and concepts to ensure that off-street parking will adequately accommodate the parking demand generated by the proposed nonresidential land uses.
Transportation - Streets and Highways	III-22	**Goal 3, Policy 1:** Streets and highways shall be constructed to accommodate the expected traffic flow from existing and planned development, both local and regional.	**Consistent**. Feasible mitigation is available to offset all project-related traffic impacts, however, feasible mitigation does not exist to offset all cumulative impacts.
Transportation - Public Transportation	III-23	**Goal 1, Policy 2:** Large new developments along arterial and major collector streets shall provide transit-related public improvements (i.e., bus pullouts, bus shelters) to encourage bus use.	**Consistent.** The Master Development Plan include provisions for bus parking areas, turnouts, and shelters. The design and location of these facilities will be approved by the Community Development Director and Transit Authority.
Public Services and Facilities - Public Facilities	III-29	**Goal 1, Policy 2:** Capital improvements and facility needs generated by new development shall be financed by new development. The existing community should not be burdened by increased taxes and fees or by lowered service levels to accommodate the needs created by new development. Exceptions to this policy may be considered in an effort to encourage affordable housing.	**Consistent**. The project applicant will pay all required City fees as a condition of the Tentative Map and as outlined in the Annexation Memorandum of Understanding. A Homeowner's Association will also provide fees for maintenance of some parks, landscaping, etc.

GOALS AND POLICIES	PAGE NUMBER	GOAL AND POLICY NUMBER	CONSISTENCY STATEMENT
Public Services and Facilities - Public Facilities	III-29	**Goal 1, Policy 3:** The Urban Service Area shall not be expanded without taking into consideration the funding necessary to adequately provide services and facilities to the development anticipated in any area proposed for expansion.	**Consistent**. The project applicant will pay all required City fees as a condition of the Tentative Map. A Homeowner's Association will also provide fees for maintenance of some parks, landscaping, etc.
Public Services and Facilities - Public Facilities	III-30	**Goal 2, Policy 1:** Elementary schools should be located within residential neighborhoods with an ideal service radius of approximately ½ mile. Elementary schools should be located where students need not cross major arterial or collector streets.	**Consistent**. The project applicant is working with the Lodi Union School District to determine the appropriate location for the planned elementary school. The proposed site would serve SPW and Westlake Villages, meeting the ½ mile radius requirement.
Public Services and Facilities - Public Facilities	III-31	**Goal 2, Policy 7:** Residential developers should coordinate with the school district to insure the adequate provision of schools.	**Consistent**. The applicant has been working with the LUSD to provide an appropriate location for the elementary school. The LUSD has indicated that the elementary school planned as part of the proposed project will adequately serve the project. Existing middle and high schools will adequately serve the proposed project.
Public Services and Facilities - Public Facilities	III-31	**Goal 3, Policy 2:** Schools and other public facilities shall be encouraged to provide sufficient off-street parking on-site for both normal use and for special events.	**Consistent.** Off-street parking will be included in all non-residential uses. The Master Development Plan includes standards, design guidelines, and concepts to ensure that off-street parking will adequately accommodate the parking demand generated by the proposed land uses.
Public Services and Facilities - Water Facilities	III-32	**Goal 1, Policy 4:** The use of Best Management Practices for the reduction of pollutants in urban runoff shall be encouraged within the storm drainage system in order to reduce the amount of pollutants entering the surface waters.	**Consistent.** The applicant will be required to comply with all conditions set forth in the NPDES General Construction Permit and Waste Discharge Permit, and any City regulations regarding treatment of storm water runoff. Prior to the commencement of construction activities, the contractor will provide proof of a SWPPP.
Public Services and Facilities - Water Facilities	III-32	**Goal 1, Policy 7:** Encourage and support water conservation measures by all City water users.	**Consistent.** Landscaping irrigation will be designed with the most current water conservation policies and available equipment. The onsite lakes may provide a source of water for landscape irrigation.
Public Services and Facilities - Water Facilities	III-32	**Goal 1, Policy 8:** Non-potable water should be used to fill any lake or water features within development projects.	**Consistent.** The on-site lakes will be filled with storm water and/or ground water.

GOALS AND POLICIES	PAGE NUMBER	GOAL AND POLICY NUMBER	CONSISTENCY STATEMENT
Public Facilities and Services - Parks and Rec	III-33	**Goal 1, Policy 1:** The City shall ensure that park and recreation facilities are provided at a level that meets the City's park and recreation standards, as shown in the following table. **Type of Park — Acres/1,000 pop. — Acres/Park — Service Radius** Neighborhood Park — 1.00 — 5 - 10 — ½ mile Community Park — 2.00 — 10 - 30 — 1 mile to city wide Regional Park — 7.00 — 30+ — region wide Golf Courses — 1 course/40,000 — 130 - 180 — region wide	**Inconsistent.** The project provides 12 acres of "village" parks, however, these parks will be between 0.5 - 1.0 acres in size. This does not meet the City's minimum size requirement for village parks. The project will also provide a 12.8 acre public park. The size of this park does not meet the City's standard of 2 acres per 1,000 individuals. Based on the City's requirements, the proposed project is 3.5 acres short of meeting this requirement. Additionally, some of the proposed parks will be private and inaccessible to the general public.
Public Facilities and Services - Parks and Rec	III-33	**Goal 1, Policy2:** The City shall ensure that community centers are provided at a level that meets the following standards. **Community Center Standards** City-owned community centers — 1 center / 50,000 population Combined City-owned, school district, and housing authority — 1 center / 30,000 population Combined City-owned, school district, and housing authority — ½ square foot per resident Minimum to preferred size per center — 10,000 to 15,000 square feet for multipurpose centers Service radius 1-1/2 miles	**Consistent.** Private and public recreational areas are included in the proposed project. In light of the fact that some of these facility will be privately owned/operated, the recreation areas will not meet all of the community center needs of the residents, when compared to a facility that would be publicly owned and operated. However, the onsite elementary school could serve as a community center as this facility will be open to the general public. The City's General Plan include provisions to include all schools as meeting the requirement for community centers.
Public Facilities and Services - Parks and Rec	III-33	**Goal 1, Policy 3:** The City shall require that new parks be located and designed in such a way as to facilitate their security and policing.	**Consistent.** The public park sites proposed in Westlake Villages have been sited along the interior collector roadways to facilitate visibility and security. All park sites will be reviewed by the City Parks and Recreation Director for compliance with security and policing concerns.

GOALS AND POLICIES	PAGE NUMBER	GOAL AND POLICY NUMBER	CONSISTENCY STATEMENT
Public Facilities and Services - Parks and Rec	III-33	**Goal 1, Policy 4:** Whenever possible, the City shall develop neighborhood parks in conjunction with elementary schools that are centrally located within the neighborhood and where park patrons need not cross major arterial or collector streets.	**Consistent.** A majority of the villages within the proposed project are centered around "village parks." The community as a whole will be centered around the public park and recreation areas. While the elementary school will not be located adjacent to parklands, it will serve as a community center. Park patrons will not need to cross major arterials or collector streets to access the parks, recreation areas, or elementary school.
Public Facilities and Services - Parks and Rec	III-33	**Goal 1, Policy 5:** Community and City-wide parks shall be located with access to arterial or collector streets and shall have public streets around the balance of the park except where it is adjacent to another public facility.	**Consistent.** The proposed public park will be bounded on three sides by the two main collector streets in Westlake Villages. The fourth side will be directly adjacent to the western recreation area.
Public Facilities and Services - Parks and Rec	III-33	**Goal 1, Policy 6:** Continue to provide for the development of linear parkways and recreational bikeways where the opportunity exists (i.e., Calaveras River path, EBMUD right-of-way).	**Consistent.** The project applicant has provided bike lanes on major streets within the proposed development. Existing levees along Bishop Cut and Disappointment Slough will also be maintained as recreational bicycle facilities.
Public Facilities and Services - Parks and Rec	III-33	**Goal 1, Policy 7:** Continue to cooperate with the County and the various school districts to provide a wide variety of recreational opportunities for Stockton residents and visitors.	**Consistent.** The project applicant has integrated park and recreational facilities into the Westlake Villages Master Development Plan. These facilities will be available to residents and visitors to the community.
Public Facilities and Services - Parks and Rec	III-33	**Goal 1, Policy 8:** The City shall encourage the development of private open space and recreational facilities in larger residential developments in order to meet a portion of the open space and recreation needs generated by the residents of those developments.	**Consistent.** The project applicant has integrated 139 acres of parklands, recreational areas, and opens space into the Westlake Villages Master Development Plan. Six of the neighborhoods will be gated and private therefore the parks located in these villages will not be accessible to the public. This represents between 3 to 6 acres of parkland. However, since the project will provide 139 acres of parklands, recreational areas, and open space, this is not considered significant.
Public Facilities and Services - Fire Safety	III-36	**Goal 1, Policy 4:** New development shall provide adequate access for emergency vehicles, particularly firefighting equipment, as well as provide evacuation routes.	**Consistent.** Mitigation is proposed in Section 4.7, Traffic and Circulation, to ensure that the entire development has adequate emergency access. Additionally, the City of Stockton's Fire Department should review and approve the project plan.
Public Facilities and Services - Police Protection	III-36a	**Goal 1, Policy 1:** Seek to promote the inclusion of security features in all structures.	**Consistent.** The City of Stockton's Fire Department should review and approve the project plan. The applicant will implement all applicable city, State, and Uniform Building and Fire Codes relating to security features in structures.

GOALS AND POLICIES	PAGE NUMBER	GOAL AND POLICY NUMBER	CONSISTENCY STATEMENT
Public Facilities and Services - Police Protection	III-36a	**Goal 1, Policy 2:** Defensible space design techniques shall be considered in the review of new developments in order to enhance crime prevention.	**Consistent.** The Master Development Plan includes features to facilitate the concept of defensible space (e.g. lighting, gated-community, landscaping requirements). The applicant will consult with the City of Stockton's Police Department regarding any additional measures that are feasible for the proposed project.
Natural and Cultural - Conservation	III-37	**Goal 1, Policy 1:** Existing agricultural soils capable of producing a wide variety of valuable crops shall be retained in agricultural use until the time that such soils are needed for logical urban expansion.	**Inconsistent.** The project will convert 841 acres of productive agricultural lands and prime agricultural soils to urban uses.
Natural and Cultural - Conservation	III-37	**Goal 1, Policy 2:** Support firm policies and ordinance by San Joaquin County to protect productive agricultural land.	**Inconsistent.** The project will convert 841 acres of productive agricultural lands and prime agricultural soils to urban uses.
Natural and Cultural - Conservation	III-38	**Goal 3, Policy 1:** Consider the cumulative air quality impacts from development and use land use regulations to reduce air pollution.	**Inconsistent.** Generation of fugitive dust and pollutant emissions during construction may result in substantial short-term increases in air pollutants. This would be a contribution to short-term cumulative air quality impacts and is unavoidable.
Natural and Cultural - Conservation	III-38	**Goal 4, Policy 2:** Land use decisions shall consider the proximity of industrial and commercial uses to major residential areas in order to reduce commuting.	**Consistent.** Residential uses will be proximate to the commercial uses on the adjacent Spanos Park West. The project site will also have convenient access to I-5 via Eight Mile Road. Consequently, residents in future residential uses will have convenient access to local commercial uses adjacent to the project, as well as regional commercial uses, employment centers, etc., as a result of the I-5 facility.
Natural and Cultural - Conservation	III-39	**Goal 5, Policy 2:** Review proposed development for both local and regional air quality impacts.	**Consistent.** Section 4.3, Air Quality, assesses the local and regional air quality impacts of the proposed project.
Natural and Cultural - Conservation	III-39	**Goal 5, Policy 3:** Assist project applicants in understanding and meeting the air quality mitigation requirements established by the San Joaquin County Air Pollution Control District.	**Consistent.** Measures are proposed in Section 4.3, Air Quality, to mitigate impacts of the proposed project. The General Plan will be amended as part of the proposed project. If approved, the amendment will be included in the next revision of the regional AQAP.
Natural and Cultural - Open Space	III-39	**Goal 1, Policy 1:** The Delta and related waterways shall be used only for activities which are consistent with the sensitive environmental characteristics of this area. Any disturbance of levee vegetation should be minimized and replaced consistent with flood control and reclamation district constraints.	**Consistent**. The upgrade of the existing pump station may require the removal of riparian vegetation. Removal of this vegetation may be subject to numerous regulations including, Section 1602 of the Fish and Game Code, Streambed Alteration Agreement. The applicant will comply with all applicable laws, regulations and permits relating to the potential removal of riparian vegetation along Bishop Cut or Disappointment Slough.

GOALS AND POLICIES	PAGE NUMBER	GOAL AND POLICY NUMBER	CONSISTENCY STATEMENT
Natural and Cultural - Open Space	III-39	**Goal 1, Policy 2:** Urban development adjacent to the Delta and related waterways should give special consideration to the natural hazards in this area (i.e., flooding, soil subsidence, peat fires) and shall be required to provide access to and along this resource consistent with public safety and the preservation of sensitive biological areas.	**Consistent**. The project site is protected from a 100-year flood event. The applicant will ensure that the design of the proposed project meets all city, State, and federal regulations regarding minimization of flooding hazards. Measure recommended in Section 4.1, Geophysical Resources, should be implemented.
Natural and Cultural - Open Space	III-40	**Goal 1, Policy 6:** Continue to recognize and preserve Stockton's historical and cultural resources.	**Consistent.** Mitigation has been provided to avoid potential cultural resource impacts.
Natural and Cultural - Open Space	III-40	**Goal 2, Policy 1:** Residential developments shall be encouraged to provide private open space areas.	**Consistent.** The project applicant has integrated 139 acres of parklands, recreational areas, and opens space into the Westlake Villages Master Development Plan. Six of the neighborhoods will be gated and private therefore the parks located in these villages will not be accessible to the public. This represents between 3 to 6 acres of parkland. However, since the project will provide 139 acres of parklands, recreational areas, and open space, this is not considered significant.
Natural and Cultural - Open Space	III-40	**Goal 2, Policy 1:** Major arterials shall be provided with landscaped median strips in order to enhance these street systems as aesthetic open space corridors.	**Consistent.** The project applicant has designed the main collector street to include a landscaped center median. No major arterials run through the project site.
Natural and Cultural	III-41	**Implementation Programs 2:** Prepare and adopt a City right-to-farm ordinance to protect the viable farm area immediately adjacent to the City from complaints due to normal agricultural operations.	**Consistent.** The City has adopted a right to farm ordinance that protects adjacent farm lands from existing and planned residential land use conflicts.
Natural and Cultural	III-41	**Implementation Programs 3:** Encourage San Joaquin County to maintain large lot zoning (minimum parcel size - 40 acres) within the agricultural lands adjacent to Stockton's Urban Service Area.	**Consistent.** The lands adjacent to the proposed project site annexation are zoned with a minimum parcel size of 40 acres.
Noise	III-48	**Goal 2, Policy 2:** The compatibility of proposed projects with existing and future noise levels due to traffic on public roadways, railroad line operations, and aircraft in flight shall be evaluated by comparison to Figure 1 of the Stockton General Plan Policy Document (May 20, 1996).	**Consistent.** Section 4.5, Noise, assesses the noise impacts of the proposed project.

GOALS AND POLICIES	PAGE NUMBER	GOAL AND POLICY NUMBER	CONSISTENCY STATEMENT
Noise	III-49	**Goal 2, Policy 3:** New development of residential land uses will not be permitted in areas exposed to existing or projected exterior noise levels exceeding 60 dB L_{dn}/CNEL or the standards in Policy 1 above unless the project design includes effective mitigation measures to reduce noise to the following levels: a. For noise due to traffic on public roadways, railroad line operations, and aircraft in flight: 60 dB L_{dn}/CNEL or less in outdoor activity areas, and 45 dB L_{dn}/CNEL or less in indoor areas. Where it is not possible to reduce exterior noise to 60 dB L_{dn}/CNEL or less by incorporating a practical application of the best available noise-reduction technology, an exterior noise level of up to 65 dB L_{dn}/CNEL will be allowed. Under no circumstances will interior noise levels be permitted to exceed 45 dB L_{dn}/CNEL with the windows and doors closed.	**Consistent.** Section 4.5, Noise, assesses the noise impacts of the proposed project. Mitigation measures are provided to comply with this policy.

Policy Consistency Conclusion

The above consistency analysis concludes that the proposed Westlake Villages project is consistent with a majority of the General Plan policies that have applicability to the project. Inconsistencies are discussed under Section 4.8, Housing/Population/Socieconomics, Section 4.9, Public Services, and Section 4.12, Cultural Resources. Inconsistencies with agricultural land uses are discussed at the beginning of this section (**Impact LU-2**).

This impact is significant and unavoidable. No feasible mitigation exists to offset this impact (Significance Criterion LU-d).

4.6.4 Level of Significance after Mitigation

Implementation of the proposed Westlake Villages project is consistent with a majority of the City's policies that are relevant to the project. The project does not provide high density residential housing which conflicts with the City's goals for providing affordable, high density residential units. Additionally, the project will create impacts to parklands and air quality that are not consistent with the General Plan. The conversion to urban uses will represent an irretrievable loss of prime agricultural lands and soils. Potential land use conflicts between the ongoing agricultural uses on the Spans Parcel and the proposed residential uses cannot be completely mitigated. These impacts are significant and unavoidable.

4.7 TRAFFIC AND CIRCULATION

This section of the EIR describes the transportation and circulation conditions in the area surrounding the project site, and identifies transportation impacts associated with development of the proposed project. The analysis focuses on potential impacts to intersections, freeway segments, and internal site circulation, and evaluates the project's consistency with the City of Stockton General Plan Policy Document (adopted January 22, 1990). The following section on Traffic and Circulation was prepared by Fehr & Peers Associates. Technical analyses data related to this section are included in Appendix H. Selected revised data sheets are provided in Appendix A.

4.7.1 Existing Setting

Roadway System

The roadways in the study area are described below and shown on Figure 4.7.1.

Interstate 5 (I-5) is a major north-south freeway that traverses the western United States, originating in southern California and continuing north towards Sacramento and beyond. I-5 runs through the western portion of the City of Stockton, east of the project site. Access to the site from I-5 is provided via an interchange at Eight Mile Road. Three mixed-flow lanes are provided in each direction of I-5 in the vicinity of the project site.

Eight Mile Road is a two-lane, east-west rural roadway that extends from west of I-5 to east of State Route (SR) 99. Future plans call for between six and eight lanes on Eight Mile Road to the east of the project site. As this roadway is being improved, sidewalks and bicycle facilities are being added.

Thornton Road (County Road 8) is primarily a two-lane, north-south major arterial that extends from the north of Eight Mile Road to Hammer Lane, where it continues south as Pacific Avenue. Speed limits range from 45 to 55 miles per hour (mph) along the roadway. Sidewalks are provided along improved sections of Thornton Road throughout the study area.

Davis Road is a two-lane, north-south rural road throughout the study area. This roadway extends from Thornton Road through Eight Mile Road within the study area. No bicycle or pedestrian facilities are provided. The speed limit on this roadway is 45 mph.

Lower Sacramento Road (County Road 10) is a two-lane, north-south rural road that extends from north of Eight Mile Road to Thornton Road. No bicycle or pedestrian facilities are provided on this roadway in the study area. The posted speed limit is 55 mph.

Trinity Parkway is a new six-lane, north-south roadway that connects McAuliffe Drive to Eight Mile Road on the west side of I-5. This roadway provides primary access to the commercial portion of the Spanos Park West project. Bicycle lanes and sidewalks are provided along the entire length of the roadway.

Additionally, *Scott Creek Drive, Cosumnes Drive, Mokelumne Circle, McAuliffe Drive, Whistler Way, and A.G. Spanos Boulevard* are all local roadways that provide residential access within the study area.

Figure 4.7.1: Study Intersection Locations

Traffic Conditions and Operations

Impacts on study intersection and freeway segments were determined by measuring the effect project traffic would have on traffic operations at key inter-sections during the AM (7:00 to 9:00 AM) and PM (4:00 to 6:00 PM) peak periods. The following intersections and freeway segments were selected for analysis, as shown on Figure 4.7.1.

Study Intersections

1. Eight Mile Road/Mokelumne Circle
2. Eight Mile Road/Trinity Parkway
3. Eight Mile Road/I-5 Southbound Ramps
4. Eight Mile Road/I-5 Northbound Ramps
5. Eight Mile Road/Oak Grove Regional Park Entrance
6. Eight Mile Road/Thornton Road
7. Eight Mile Road/Davis Road
8. Eight Mile Road/Lower Sacramento Road
9. Mokelumne Circle/Scott Creek Drive (west intersection)
10. Mokelumne Circle/Cosumnes Drive (east intersection)
11. Trinity Parkway/Cosumnes Drive
12. Trinity Parkway/McAuliffe Drive
13. Thornton Road/AG Spanos Boulevard (north intersection)
14. Thornton Road/Whistler Way
15. Thornton Road/AG Spanos Boulevard (south intersection)
16. Mariners Drive/Otto Drive
17. Hammer Lane/Mariners Drive
18. Hammer Lane/I-5 Northbound Ramps
19. Hammer Lane/I-5 Southbound Ramps

The proposed site access intersections with Eight Mile Road are also included in the analysis.

Freeway Segments

1. Northbound I-5, South of Eight Mile Road
2. Southbound I-5, South of Eight Mile Road
3. Northbound I-5, North of Eight Mile Road
4. Southbound I-5, North of Eight Mile Road

Analysis Scenarios

The following five scenarios were evaluated for this study:

Existing - Represents existing (2003) conditions from recent traffic counts.

Existing Plus Approved Projects - Near-term forecast conditions considering trips from approved developments and near-term roadway improvements.

Existing Plus Approved Projects Plus Project - Existing Plus Approved Projects conditions plus project-related traffic.

Cumulative Without Project - Future (Year 2025) forecasted conditions taking into account future development in the City of Stockton and the surrounding jurisdictions, in addition to planned roadway improvements.

Cumulative With Project - Future (Year 2025) forecasted conditions plus project-related traffic.

Analysis Methodology

The analysis methodologies presented in the Transportation Research Board's Circular 212 (1980) and 2000 Highway Capacity Manual (HCM) were utilized for service level calculations for signalized and unsignalized intersections, respectively. HCM methodologies were also used to analyze conditions on I-5 in the study area.

Level of Service Criteria

To measure and describe the operational status of the local roadway network, transportation engineers and planners commonly use a grading system called level of service (LOS). Level of service is a description of an intersection's operation, ranging from LOS A (indicating free-flow traffic conditions with little or no delay) to LOS F (representing over-saturated conditions where traffic flows exceed design capacity, resulting in long queues and delays).

Signalized Intersections. At signalized intersections, the Circular 212 methodology was used to determine the LOS rating. This method is based on the volume-to-capacity (V/C) ratio which relates total traffic volume for critical opposing movements to the theoretical capacity for those movements. Table 4.7.A summarizes the relationship between the V/C ratio and LOS for signalized intersections.

Unsignalized Intersections. For unsignalized (all-way stop-controlled and side-street stop-controlled) intersections, the 2000 HCM methodology for unsignalized intersections was utilized. With this methodology, operations are defined by the average control delay per vehicle (measured in seconds) for each stop-controlled movement. This incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. For side-street, stop-controlled intersections, the delay is typically represented for each stop-controlled movement. Table 4.7.B summarizes the relationship between delay and LOS for unsignalized intersections.

Freeway Mainline. For the freeway mainline segments, LOS was calculated using the 2000 HCM methodology. This methodology considers peak hour traffic volumes, free-flow speeds, percentage of heavy vehicles (i.e., trucks), and the number of travel lanes. These factors are used to determine the vehicle

density, measured in passenger cars per mile per lane, for a freeway segment. Table 4.7.C summarizes the relationship between vehicle density and LOS for mainline freeway segments.

Table 4.7.A: Signalized Intersection Level of Service Definitions Using V/C Ratio

LEVEL OF SERVICE	DESCRIPTION OF TRAFFIC CONDITIONS	V/C RATIO
A	Stable flow – Very slight or no delay. Conditions are such that no approach phase is fully utilized by traffic and no vehicle waits longer than one red indication.	0.00 – 0.60
B	Stable flow – Slight delay. An occasional approach phase is fully utilized.	0.61 – 0.70
C	Stable flow – Acceptable delay. A few drivers arriving at the end of a queue may have to wait through one signal cycle.	0.71 – 0.80
D	Approaching unstable flow – Tolerable delay. Delay may be substantial during short periods, but excessive back ups do not occur.	0.81 – 0.90
E	Unstable flow – Intolerable delay. Delay may be great – up to several signal cycles. Long queues form upstream of intersection.	0.91 – 1.00
F	Forced flow – Excessive delay. Volumes vary widely, depending on downstream queue conditions.	> 1.00

Source: Circular 212, Transportation Research Board, 1980.

Table 4.7.B: Unsignalized Intersection Level of Service Definitions Using Average Vehicular Control Delay

LEVEL OF SERVICE	DESCRIPTION	AVERAGE CONTROL DELAY (SECONDS PER VEHICLE)
A	Little or no delays.	< 10.0
B	Short traffic delays.	10.1 to 15.0
C	Average traffic delays.	15.1 to 25.0
D	Long traffic delays.	25.1 to 35.0
E	Very long traffic delays	35.1 to 50.0
F	Extreme traffic delays with intersection capacity exceeded.	> 50.0

Source: Highway Capacity Manual, Transportation Research Board, 2000.

Table 4.7.C: Freeway Mainline Level of Service Definitions Using Density Ranges

LEVEL OF SERVICE	DESCRIPTION	DENSITY RANGE (PASSENGER CARS PER MILE PER LANE)
A	Free-flow operations where vehicles are relatively unimpeded in their ability to maneuver within the traffic stream. Effects of incidents are easily absorbed.	0 to 11
B	Relative free-flow operations where vehicles maneuvers within the traffic stream are slightly restricted. Effects of minor incidents are easily absorbed.	> 11 to 18
C	Travel is still at relative free-flow speeds, although freedom to maneuver within the traffic stream is noticeably restricted. Minor incidents may be absorbed, but local deterioration in service will be substantial. Queues begin to form behind significant blockages.	> 18 to 26
D	Speeds begin to decline slightly with increasing flows and densities begin to increase more quickly. Freedom to maneuver is noticeably limited. Minor incidents can be expected to create queuing as the traffic stream has little space to absorb disruptions.	> 26 to 35
E	Operation at capacity. Vehicles are closely spaced with little room to maneuver. Any disruption in the traffic stream can establish a disruption wave that propagates throughout the upstream traffic flow. Any incident can be expected to produce a serious disruption in traffic flow and extensive queuing.	> 35 to 45
F	Breakdown in vehicle flow.	> 45

Source: Highway Capacity Manual, Transportation Research Board, 2000.

Existing Traffic Counts. Intersection turning movement counts were conducted in April 2003 at the study intersections during the AM (7:00 to 9:00 AM) and PM (4:00 to 6:00 PM) peak periods. Traffic counts were conducted on a clear weekday with area schools in normal session. For each count period, the single hour with the highest traffic volumes was identified and is represented on Figure 4.7.2. The peak hour data is used as the basis for analysis. The existing lane configuration at each study intersection is shown on Figure 4.7.3.

Existing (2002) traffic counts on I-5, both north and south of the Eight Mile Road interchange, were taken from Caltrans' Traffic Volumes on the California Highway System website. Current daily traffic volumes on I-5 are 70,000 vehicles south of Eight Mile Road and 56,000 vehicles north of Eight Mile Road.

Existing Intersection Operations. Existing intersection conditions were evaluated for the weekday AM and PM peak hours at the 19 study intersections, as summarized in Table 4.7.D. As shown, the all-way stop-controlled Eight Mile Road/Davis Road intersection operates unacceptably during both the AM and PM peak hours. Although the Eight Mile Road/I-5 Southbound Ramps, Eight Mile Road/I-5 Northbound Ramps, and Eight Mile Road/Oak Grove Regional Park Entrance intersections operate at an overall acceptable service level, individual side-street movements operate at LOS E or LOS F during one or both peak hours.

Figure 4.7.2: Existing Peak Hour Traffic Volumes

Figure 4.7.3: Existing Lane Configuration and Traffic Control

Table 4.7.D: Existing (2003) Peak Hour Intersection Levels of Service

	INTERSECTION	CONTROL [1]	PEAK HOUR	V/C RATIO [2] OR DELAY [3]	LOS
1.	Eight Mile Road/Mokelumne Circle	SSSC	AM PM	7 Sec. (WB 10 Sec.) 6 Sec. (EB 11 Sec.)	A (B) A (B)
2.	Eight Mile Road/Trinity Parkway	Signalized	AM PM	0.20 0.15	A A
3.	Eight Mile Road/I-5 Southbound Ramps	SSSC	AM PM	32 Sec. (SB > 50 Sec.) 33 Sec. (SB > 50 Sec.)	D (F) D (F)
4.	Eight Mile Road/I-5 Northbound Ramps	SSSC	AM PM	13 Sec. (NB 43 Sec.) 9 Sec. (NB 26 Sec.)	B (E) A (D)
5.	Eight Mile Road/Oak Grove Regional Park Entrance	SSSC	AM PM	3 Sec. (NB 36 Sec.) 2 Sec. (NB 20 Sec.)	A (E) A (C)
6.	Eight Mile Road/Thornton Road	Signal	AM PM	0.79 0.66	C B
7.	Eight Mile Road/Davis Road	AWS	AM PM	**> 50 Sec.** **> 50 Sec.**	**F** **F**
8.	Eight Mile Road/Lower Sacramento Road	Signal	AM PM	0.77 0.65	C B
9	Mokelumne Circle/Scott Creek Drive (west intersection)	SSSC	AM PM	1 Sec. (EB 12 Sec.) 1 Sec. (EB 10 Sec.)	A (B) A (B)
10.	Mokelumne Circle/Cosumnes Drive (east intersection)	SSSC	AM PM	5 Sec. (EB 9 Sec.) 7 Sec. (EB 9 Sec.)	A (A) A (A)
11.	Trinity Parkway/Cosumnes Drive	SSSC	AM PM	2 Sec. (WB 9 Sec.) 2 Sec. (WB 9 Sec.)	A (A) A (A)
12.	Trinity Parkway/McAuliffe Drive	SSSC	AM PM	2 Sec. (SB 7 Sec.) 5 Sec. (WB 8 Sec.)	A (A) A (A)
13.	Thornton Road/AG Spanos Boulevard (north intersection)	Signal	AM PM	0.48 0.24	A A
14.	Thornton Road/Whistler Way	Signal	AM PM	0.33 0.21	A A
15.	Thornton Road/AG Spanos Boulevard (south intersection)	Signal	AM PM	0.36 0.34	A A
16.	Mariners Drive/Otto Drive	No Control	AM PM	N/A N/A	N/A N/A
17.	Hammer Lane/Mariners Drive	Signal	AM PM	0.58 0.65	A B
18.	Hammer Lane/I-5 Northbound Ramps	Signal	AM PM	0.86 0.52	D A
19.	Hammer Lane/I-5 Southbound Ramps	Signal	AM PM	0.55 0.73	A C

Source: Fehr & Peers, 2003.
Notes: N/A = Not Applicable. There are currently no conflicting movements at the Mariners Drive/Otto Drive intersection.
[1] Signal = Signalized intersection
SSSC = Side-street stop-controlled intersection
AWS = All-way stop-controlled intersection
[2] Signalized intersection level of service is based on V/C ratio according to the Circular 212 methodology, Transportation Research Board, 1980.
[3] Side-street stop-controlled intersections level of service is based on average delay per vehicle (in seconds) according to the Highway Capacity Manual, Transportation Research Board, 2000. Both the average intersection control delay and worse case stop-controlled movement delay are presented.
Values in bold represent unacceptable level of service

Traffic Signal Warrant Analysis. In addition to intersection operations, this study examines peak hour traffic signal warrants at the unsignalized study intersections to determine if signalization would be warranted. The

need for signalization is determined through the peak hour signal warrant analyses procedures presented in Caltrans' Traffic Manual. Table 4.7.E indicates the degree to which the unsignalized study intersections meet the peak hour signal warrant.

Peak hour signal warrants are currently satisfied at two intersections: Eight Mile Road/I-5 Northbound Ramps and Eight Mile Road/Davis Road. Operation of the Eight Mile Road/I-5 Northbound Ramps intersection would be improved with implementation of improvements to the Eight Mile Road/I-5 interchange planned in conjunction with the Spanos Park West development.

Freeway Analysis. The freeway mainline segments north and south of Eight Mile Road were analyzed based on the peak hour volumes shown in Table 4.7.F. The analysis results indicate that all mainline segments are currently operating at LOS C or better during both peak hours.

Bicycle, Pedestrian, and Transit Access. Within the study area, pedestrian facilities are provided along improved portions of roadways including: Thornton Road, Trinity Parkway, Scott Creek Drive, Cosumnes Drive, Mokelumne Circle, McAuliffe Drive, Whistler Way, and A.G. Spanos Boulevard. Bicycle facilities are also provided on Thornton Road and are planned for most of the major roadways in the future. Figure 4.7.4 illustrates existing and future bicycle facilities within the study area.

Regulatory Setting

The City's General Plan was utilized to provide evaluation criteria for determining project impacts. Goals outlined within the Transportation section of the General Plan were used for reference in this study. These goals are summarized below.

Streets and Highways Goal 1.2 - The street system shall provide at least two (2) independent access routes for all major developed areas.

Streets and Highways Goal 1.3 - Significant trip generating land uses should be served by roadways adequate to provide vehicular access with a minimum of delay.

Streets and Highways Goal 1.6 - Traffic signals on arterial streets shall be synchronized to the extent possible to facilitate the flow of traffic and to minimize stops or delays.

Streets and Highways Goal 1.8 - Seek to improve freeway interchanges along both Route 99 and Interstate 5 to current design standards as required by the traffic demands of new development.

Streets and Highways Goal 1.9 - For traffic operating conditions use "Level-of-Service" (LOS) of "D" or better on a PM peak hour basis as the planning objective for the evaluation of new development, mitigation measures, impact fees and public works capital improvement programs.

Streets and Highways Goal 2.3 - Off-street parking shall be required for all land uses in order to reduce congestion, improve overall operation and land use compatibility.

Streets and Highways Goal 4.2 - Specific Plans for future roadways on the fringe of the City shall be prepared in coordination with the County and/or Caltrans.

Table 4.7.E: Existing Conditions (2003) Peak Hour Signal Warrants [1]

INTERSECTION	PEAK HOUR	STATUS
Eight Mile Road/Mokelumne Circle	AM	Not Met
	PM	Not Met
Eight Mile Road/I-5 Southbound Ramps	AM	Not Met
	PM	Not Met
Eight Mile Road/I-5 Northbound Ramps	AM	Met
	PM	Met
Eight Mile Road/Oak Grove Regional Park Entrance	AM	Not Met
	PM	Not Met
Eight Mile Road/Davis Road	AM	Met
	PM	Met
Mokelumne Circle/Scott Creek Drive (west intersection)	AM	Not Met
	PM	Not Met
Mokelumne Circle/Cosumnes Drive (east intersection)	AM	Not Met
	PM	Not Met
Trinity Parkway/Cosumnes Drive	AM	Not Met
	PM	Not Met
Trinity Parkway/McAuliffe Drive	AM	Not Met
	PM	Not Met

Source: Fehr & Peers, 2003.
Notes: [1] Based on methodologies presented in Caltrans Traffic Manual.

Table 4.7.F: Mainline I-5 Analysis Existing Conditions

SEGMENT	DIRECTION OF TRAVEL	AM PEAK HOUR			PM PEAK HOUR		
		VOLUME [1]	DENSITY [2]	LOS [3]	VOLUME [1]	DENSITY [2]	LOS [3]
North of Eight Mile Road	Northbound	1,610	8.7	A	2,770	14.9	B
North of Eight Mile Road	Southbound	2,760	14.9	B	1,940	10.5	A
South of Eight Mile Road	Northbound	2,010	10.8	A	3,460	18.6	C
South of Eight Mile Road	Southbound	3,450	18.6	C	2,420	13.0	B

Source: Fehr & Peers, 2003.
Notes: [1] Traffic volumes taken from Caltrans web page, 2002.
[2] Density measured in passenger cars per mile per lane.
[3] Mainline segment LOS based on vehicle density, according to the Highway Capacity Manual, Transportation Research Board, 2000.

Figure 4.7.4: Existing and Future Bicycle Network

Public Transportation Goal 1.2 - Larger new developments along arterial and major collector streets shall provide transit-related public improvements (i.e., bus pullouts, bus shelters) to encourage bus use.

Public Transportation Goal 1.5 - Strongly encourage that new development projects incorporate transit-related design features as outlined below.

X A through roadway should connect adjacent developments so as to permit transit circulation between developments.

X In major employment/commercial areas, parking should be prohibited on collector and arterial streets to provide access to bus stops in these areas.

X Shielded openings in subdivisions sound walls should be provided to facilitate more direct pedestrian access to transit stops.

X In major employment/commercial areas, the Transit District should be encouraged to post route and schedule information.

X Commercial and industrial developments should have easy access to major arterials and transit stops.

X Park and ride sites should be strategically located to maximize utilization.

X Park and ride lots should be designed to accommodate not only motorists but also other users of public transit and van or carpooling.

Non-Motorized Transportation Goal 1.1 - Pedestrian travel shall be encouraged as a viable mode of movement throughout the City by providing safe and convenient pedestrian facilities, particularly in commercial areas and residential neighborhoods.

Non-Motorized Transportation Goal 1.2 - Within large retail and office centers, provisions shall be made for convenient and safe pedestrian movement through the large parking areas which surround these commercial centers.

Non-Motorized Transportation Goal 1.3 - Recreational bikeways shall be developed and maintained on separate rights-of-way (i.e., Calaveras River path, East Bay Municipal Utility District easement paths).

Non-Motorized Transportation Goal 1.4 - Right-of-way requirements for bike usage shall be considered in the planning of new arterial and collector streets and in street improvement projects.

Non-Motorized Transportation Goal 1.5 - Safe and secure bicycle parking facilities should be provided at major activity centers such as public facilities, employment sites and shopping and office centers.

4.7.2 Significance Criteria

Based on the CEQA Guidelines, a traffic increase from a project is considered to be a significant impact if the associated change to the transportation system either:

X Conflicts with adopted environmental plans and goals of the community where it is located; or

X Causes an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system.

Conditions without and with the project have been compared to identify significant impacts according to the following criteria:

X If a signalized intersection is projected to operate acceptably (i.e., LOS D or better with a V/C ratio equal to or less than 0.90) without the project and the project is expected to cause the facility to operate at an unacceptable LOS (LOS E or worse with a V/C ratio greater than 0.90), the impact is considered significant.

X If an unsignalized intersection is projected to operate acceptably (i.e., LOS D or better with an average control delay equal to or less than 35.0 seconds per vehicle for the entire intersection) without the project and the project is expected to cause the facility to operate at an unacceptable LOS (LOS E or worse with an average control delay greater than 35.0 seconds per vehicle), the impact is considered significant.

X If a facility is projected to operate unacceptably (i.e., LOS E or worse) without the project, and the project is expected to increase total volume through the intersection by more than 5 percent, the impact is considered significant.

X If a facility is projected to operate at an unacceptable LOS E without the proposed project and the proposed project is expected to cause the facility to operate at an unacceptable LOS F, but the total traffic volumes through the intersection do not increase by more than 5 percent, City staff would determine whether the project has a significant impact.

Failure to comply with the Transportation Policy of the City's General Plan would result in a significant impact.

Existing plus Approved Projects Traffic Conditions

This section discusses the Existing Plus Approved Projects traffic condition.

Planned Roadway Improvements

There are several planned roadway improvements in the study area that are anticipated to be completed prior to occupancy of Westlake Villages. The following improvements were assumed for the analysis of Existing Plus Approved Project conditions:

1. Constructing the Askland Drive extension over Bear Creek which would connect Trinity Parkway to Otto Drive and Mariners Drive.
2. Widening of Eight Mile Road to eight lanes at the I-5 interchange.
3. Improving the Eight Mile Road/I-5 interchange to provide additional ramp capacity and signalization of the ramp intersections.
4. Signalizing the following intersections:

X Eight Mile Road/Mokelumne Circle

X Trinity Parkway/Cosumnes Drive

X Trinity Parkway/McAuliffe Drive

5. Completion of the Eight Mile Road/I-5 interchange improvements is expected by late 2004. The assumed lane configurations are shown on Figure 4.7.5.

Existing plus Approved Project Traffic Forecasts

This scenario includes existing traffic counts and traffic from those developments that are approved and/or under construction within the study area. Therefore, these conditions represent the likely traffic levels with the opening of the project in the next several years.
Based on information provided by City of Stockton staff, three developments would add traffic in the immediate study area. The location of these developments is shown on Figure 4.7.6, with a description of each project listed in Table 4.7.G.

The Spanos Park West project would also include the following commercial land uses:

X 43,560 square-foot mini-storage (4-acre site developed with a floor-to-area ratio [FAR] of 0.25)

X 60,000 square-foot auto dealership

X 207,990 square-foot Wal-Mart

X 795,825 square feet of retail (749,761 square-foot Park West Pavilions and 4.23-acres remainder site developed with a FAR of 0.25)

X 215,800 square-foot office parcel

X 24.29 acres of remaining parcel developed with 150,000 square feet of office space

X 1,150 student middle school (consistent with future enrollment estimates at middle schools in both the adjacent Stockton and Lodi school districts)

Approved project vehicle trip generation was estimated using appropriate trip generation rates for the proposed land uses from ITE's Trip Generation (6th Edition), as shown in Table 4.7.H. Vehicle trip generation was derived by applying the appropriate ITE trip generation rates to the proposed project components. Trip generation for the approved development is shown in Table 4.7.I.

Trip generation for the middle school portion of Spanos Park West was adjusted to account for students that would reside in Spanos Park West. Based on discussions with staff from the Lodi Unified School District, an estimated 0.081 middle school students (grades 7-8) would be generated per single-family home, and 0.162 middle school students would be generated per apartment unit, resulting in approximately 152 middle school students residing in Spanos Park West. The number of students expected to come from within Spanos Park West were subtracted from the total number of students, as it is anticipated that these students would bicycle or walk to school, or be dropped off by a parent on their way to work. The residential trip generation was not reduced to account for student drop-off/pick-up, as it was assumed that this trip would be part of another trip destined outside Spanos Park West.

Trips generated by the approved projects in the study area were added to the existing intersection volumes, as shown on Figure 4.7.7, to form the basis of the Existing Plus Approved Projects analysis.

Figure 4.7.5: Existing Plus Approved Projects Lane Configurations and Traffic Control

Figure 4.7.6: Approved Development Locations

Table 4.7.G: Approved Residential Project Listing

MAP NUMBER	PROJECT NAME	TOTAL PLANNED UNITS	BUILDING PERMITS ISSUED	REMAINING BUILDING PERMITS
1.	North Stockton Projects[1]	688	341	347
2.	Spanos Park East	1,794	1,544	250
3.	Spanos Park West[2]	1,640	858	782

Source: City of Stockton Residential Development, 2003.
Notes: [1]Elkhorn County Club, Waterford Estates West and East, Beck Ranch, Beck Estates, Fairway Greens.
[2]Current residential plan for Spanos Park West obtained from A.G. Spanos Companies (2003). Building permits have been issued for 411 single-family homes and a 308-unit apartment complex. The apartment complex was not occupied at the time traffic counts were collected.

Table 4.7.H: Trip Generation Rates for Approved Projects

PROPOSED LAND USE	ITE CODE	DAILY[1]	AM PEAK HOUR[1]	PM PEAK HOUR[1]
Single-Family	210	Ln(T) = 0.920 Ln(D) + 2.707	T= 0.7(X) + 9.477	Ln(T) = 0.901 Ln(X) + 0.527
Apartment	220	T = 5.994(D) + 134.114	T=0.497(X)+3.238	T = 0.541(X) + 18.743
Office	710	Ln(T) = 0.768 Ln(X) + 3.654	Ln(T) = 0.797 Ln(X) + 1.558	T = 1.121(X) + 79.295
Retail	820	Ln(T) = 0.643 Ln(X) + 5.866	Ln(T) = 0.596 Ln(X) + 2.329	Ln(T) = 0.66 Ln(X) + 3.403
Mini-Storage	151	T = 2.50(X)	T = 0.15(X)	T = 0.26(X)
Auto Dealership	841	T = 37.50(X)	T = 2.21(X)	T = 2.80(X)
Discount Superstore	813	T = 46.96(X)	T = 1.84(X)	T = 3.82(X)
Middle School	522	T = 1.45(S)	T = 0.46(S)	T = 0.16(S)

Source: Trip Generation (6th Edition), Institute of Transportation Engineers
Notes: [1]T= Number of trips, LN= Natural Logarithm, D= Dwelling units, S = Students, X=1,000 square feet of development

Table 4.7.I: Trip Generation Approved Projects

PROPOSED PROJECT	SIZE		DAILY	AM PEAK HOUR			PM PEAK HOUR		
				INBOUND	OUTBOUND	TOTAL	INBOUND	OUTBOUND	TOTAL
North Stockton Projects	347	Dwelling units	3,260	63	189	252	211	118	325
Spanos Park East	250	Dwelling units	2,410	46	138	184	157	88	245
Spanos Park West									
Mini-Storage	43,560	sf	110	4	3	7	6	5	11
Auto Dealership	60,000	sf	2,250	97	36	133	67	101	168
Wal-Mart	207,990	sf	9,760	195	188	383	390	405	795
Shopping Center	795,826	sf	25,870	335	215	550	1,185	1,284	2,469
General Office	150,000	sf	1,810	227	31	258	42	205	247
General Office	215,800	sf	2,400	303	41	344	55	266	321
Spanos Park West Commercial Subtotal			42,200	1,161	514	1,675	1,745	2,266	4,011
Apartments	308	Dwelling units	1,980	25	131	156	124	61	185
Single Family Homes	1,260	Dwelling units	10,670	223	668	891	674	379	1,053
Spanos Park West Residential Subtotal			12,650	248	800	1,048	798	440	1,238
Less Internal Trips									
From Commercial (5%)			2,110	58	26	84	87	113	201
To Residential			2,110	26	58	84	113	87	201
Middle School [1]	998	Students	1,450	262	197	459	75	85	160
Spanos Park West Net New Trips			52,080	1,590	1,430	3,010	2,420	2,590	5,010

Source: Fehr & Peers, 2003
Notes: [1] The estimated middle school enrollment of 1,150 was reduced by 152 (0.081 students per single-family home and 0.162 students per apartment unit) to account for students residing in the residential portion of the project.

Cumulative Traffic Conditions

This section describes build-out conditions within the vicinity of project site. The analysis of future traffic conditions considers future development within the City and land use development within the surrounding jurisdictions.

Planned Roadway Improvements

The future lane configurations at the study intersections are shown on Figure 4.7.8. Major roadway improvements in the study area include:

X Construction of a new I-5 interchange at Otto Drive. (Construction of a freeway under-crossing at Otto Drive was not assumed. Therefore, from the west side of the freeway, only access to the southbound ramps is provided; from the east side of the freeway, only northbound I-5 access is provided.)

X Widening of Eight Mile Road to eight lanes from Trinity Parkway through West Lane.

Figure 4.7.7: Existing Plus Approved Projects Peak Hour Traffic Volumes

Figure 4.7.8: Cumulative Lane Configurations and Traffic Control

Cumulative Traffic Forecasts

City staff requested adjustments to the model to reflect land uses in the study area that were not accounted for in the model.

X Detail was added to account for the Spanos Park West project, located east of the project site.

X Development on the Spanos Property, west of Westlake Villages, was assumed to occur with single-family homes at similar densities to the proposed project.

X No development was assumed to occur on the Shima Tract, located south of the project site.

X Future (Year 2025) Without Project peak hour traffic volumes at each study intersections are shown on Figure 4.7.9.

Analysis of Existing plus Approved Projects and Cumulative Conditions Without the Project

As shown in Table 4.7.J, fourteen of the nineteen study intersections, would operate at acceptable LOS ranges (i.e., LOS D or better) in the Existing Plus Approved Projects scenario. The five intersections that would operate at unacceptable levels include:

1. Eight Mile Road/Trinity Parkway - PM peak hour
2. Eight Mile Road/Thornton Road - AM and PM peak hours
3. Eight Mile Road/Davis Road - AM and PM peak hours
4. Eight Mile Road/Lower Sacramento Road - AM and PM peak hours
5. Hammer Lane/I-5 Northbound Ramps - AM peak hour

In the Cumulative Without Project condition, all study intersections are expected to operate at acceptable service levels, except for the Hammer Lane/I-5 Northbound Ramps intersection, which is projected to operate at LOS F during the AM peak hour.

Traffic Signal Warrants

Peak hour traffic signal warrants were reviewed for the Existing Plus Approved Projects and Cumulative Without Project scenarios, as presented in Table 4.7.K. This review indicated that, for the Existing Plus Approved Projects scenario, traffic signal warrants would be satisfied at the Eight Mile Road/Davis Road intersection. In the Cumulative Without Project scenario, peak hour signal warrants would not be satisfied at the two unsignalized intersections.

Figure 4.7.9: Cumulative Without Project Peak Hour Traffic Volumes

Table 4.7.J: Without Project Peak Hour Intersection Level of Service

	Intersection	Peak Hour	Existing		Existing Plus Approved Projects		Cumulative Without Project	
			V/C Ratio[1] or Delay[2]	LOS	V/C Ratio[1] or Delay[2]	LOS	V/C Ratio[1] or Delay[2]	LOS
1.	Eight Mile Road/Mokelumne Circle	AM PM	7 Sec. (WB 10) 6 Sec. (EB 11)	A (B) A (B)	0.41 0.36	A A	0.51 0.43	A A
2.	Eight Mile Road/Trinity Parkway	AM PM	0.20 0.15	A A	0.64 **0.92**	B **E**	0.52 0.63	A B
3.	Eight Mile Road/I-5 Southbound Ramps	AM PM	32 Sec. (SB > 50) 33 Sec. (SB > 50)	D (F) D (F)	0.63 0.80	B C	0.87 0.68	D B
4.	Eight Mile Road/I-5 Northbound Ramps	AM PM	13 Sec. (NB 43) 9 Sec. (NB 26)	B (E) A (D)	0.46 0.52	A A	0.51 0.70	A C
5.	Eight Mile Road/Oak Grove Regional Park Entrance	AM PM	3 Sec. (NB 36) 2 Sec. (NB 20)	A (E) A (C)	3 Sec.(NB>50) 3 Sec.(NB>50)	A (F) A (F)	0.45 0.29	A A
6.	Eight Mile Road/Thornton Road	AM PM	0.79 0.66	C B	**1.17** **1.07**	**F** **F**	0.71 0.53	C A
7.	Eight Mile Road/Davis Road	AM PM	**> 50 Sec.** **> 50 Sec.**	**F** **F**	**> 50 Sec.** **> 50 Sec.**	**F** **F**	0.45 0.50	A A
8.	Eight Mile Road/Lower Sacramento Road	AM PM	0.77 0.65	C B	**0.94** **0.93**	**E** **E**	0.74 0.65	C B
9	Mokelumne Circle/Scott Creek Drive (west intersection)	AM PM	1 Sec. (EB 12) 1 Sec. (EB 10)	A (B) A (B)	5 Sec. (EB>50) 2 Sec. (EB 24)	A (F) A (C)	5 Sec. (EB 47) 4 Sec.(EB 33)	A (E) A (D)
10.	Mokelumne Circle/Cosumnes Drive (east intersection)	AM PM	5 Sec. (EB 9) 7 Sec. (EB 9)	A (A) A (A)	7 Sec. (EB 15) 8 Sec. (EB 11)	A (C) A (B)	7 Sec. (EB 16) 9 Sec. (WB 15)	A (B) A (C)
11.	Trinity Parkway/Cosumnes Drive	AM PM	2 Sec. (WB 9) 2 Sec. (WB 9)	A (A) A (A)	0.43 0.59	A A	0.43 0.73	A C
12.	Trinity Parkway/McAuliffe Drive	AM PM	2 Sec. (SB 7) 5 Sec. (WB 8)	A (A) A (A)	0.37 0.57	A A	0.43 0.64	A B
13.	Thornton Road/AG Spanos Boulevard (north intersection)	AM PM	0.48 0.24	A A	0.59 0.31	A A	0.40 0.35	A A
14.	Thornton Road/Whistler Way	AM PM	0.33 0.21	A A	0.41 0.28	A A	0.46 0.39	A A
15.	Thornton Road/AG Spanos Boulevard (south intersection)	AM PM	0.36 0.34	A A	0.56 0.65	A B	0.53 0.52	A A
16.	Mariners Drive/Otto Drive	AM PM	N/A N/A	N/A N/A	9 Sec. (EB 12) 15 SEC. (EB23)	A (B) B (C)	4 Sec. (SB 23) 4 Sec. (NB 23)	IA I(C)
17.	Hammer Lane/Mariners Drive	AM PM	0.58 0.65	A B	0.50 0.82	A D	0.67 0.66	B B
18.	Hammer Lane/I-5 Northbound Ramps	AM PM	0.86 0.52	D A	**1.01** 0.73	**F** C	**1.11** 0.57	**F** A
19.	Hammer Lane/I-5 Southbound Ramps	AM PM	0.55 0.73	A C	0.59 0.80	A D	0.64 0.68	B B

Source: Fehr & Peers, 2003.
Notes: [1]Signalized intersection level of service is based on V/C ratio according to the Circular 212 methodology, Transportation Research Board, 1980 [2]Side-street stop-controlled intersections level of service is based on average delay per vehicle (in seconds) according to the Highway Capacity

Manual, Transportation Research Board, 2000. Both the average intersection control delay and worse-case stop-controlled movement delay are presented. Values in bold represent unacceptable level of service

Table 4.7.K: Without Project Peak Hour Signal Warrants [1]

INTERSECTION	PEAK HOUR	EXISTING PLUS APPROVED PROJECTS	CUMULATIVE WITHOUT PROJECT
Eight Mile Road/Oak Grove Regional Park Entrance	AM PM	Not Met Not Met	N/A
Eight Mile Road/Davis Road	AM PM	Met Met	N/A
Mokelumne Circle/Scott Creek Drive (west intersection)	AM PM	Not Met Not Met	Not Met Not Met
Mokelumne Circle/Cosumnes Drive(east intersection)	AM PM	Not Met Not Met	Not Met Not Met
Otto Drive/Mariners Drive	AM PM	Not Met Not Met	Not Met Not Met

Source: Fehr & Peers, 2003.
Notes: [1] Based on methodologies presented in Caltrans' Traffic Manual
N/A = Not Applicable – Intersection Signalized in Cumulative Condition

Freeway Analysis

Traffic from the approved projects was added to the existing peak hour traffic on I-5 to determine near-term traffic volumes on I-5. Under Cumulative Without Project conditions, I-5 forecasts were developed using the Stockton Traffic Model. Each mainline segment of I-5 north and south of Eight Mile Road was analyzed based on the volumes shown in Table 4.7.L. The analysis results indicated that, for the Existing Plus Approved Projects scenario, all mainline segments would operate at LOS D or better during both peak hours. In the Cumulative Without Project condition, the southbound segment of I-5 south of Eight Mile Road would operate at a deficient LOS E during the AM peak hour and the northbound segment of I-5 south of Eight Mile Road would operate at a deficient LOS E during the PM peak hour.

Project Trip Generation and Distribution Assumptions

This section provides an overview of the proposed project components, and addresses the project trip generation, distribution, and assignment characteristics. This allows for an evaluation of project impacts on the surrounding roadway network.

Table 4.7.L: Mainline I-5 Analysis Without Project Conditions

SEGMENT	PEAK HOUR	EXISTING			EXISTING PLUS APPROVED PROJECTS			CUMULATIVE WITHOUT PROJECT		
		VOLUME	DENSITY[1]	LOS[2]	VOLUME	DENSITY[1]	LOS[2]	VOLUME	DENSITY[1]	LOS[2]
North of Eight Mile Road Northbound	AM	1,610	8.7	A	1,784	9.6	A	1,991	10.7	A
	PM	2,770	14.9	B	3,065	16.5	B	3,409	18.4	C
North of Eight Mile Road Southbound	AM	2,7601,9	14.9	B	2,9252,2	15.8	B	3,314	17.9	B
	PM	40	10.5	A	35	12.0	B	2,324	12.5	B
South of Eight Mile Road Northbound	AM	2,010	10.8	A	2,551	13.7	B	3,189	17.2	B
	PM	3,460	18.6	C	4,447	24.3	C	6,104	40.4	E
South of Eight Mile Road Southbound	AM	3,450	18.6	C	4,074	22.1	C	5,702	35.0	E
	PM	2,420	13.0	B	3,364	18.1	C	3,725	20.1	C

Source: Fehr & Peers, 2003.
Notes: [1] Density measured in passenger cars per mile per lane.
[2] Mainline segment LOS based on vehicle density, according to the Highway Capacity Manual, Transportation Research Board, 2000.

No specific development program is currently proposed for the 16.7-acre Marina site, although development is anticipated to occur with a maximum FAR ratio of 0.25, with 50 percent of the square footage devoted to office use and 50 percent to retail. A 14-acre elementary school site is also proposed within the development. For purposes of trip generation, an enrollment of 700 students was assumed, which is based on projected future average elementary school enrollment as developed by both the Stockton and Lodi Unified School Districts. Construction of several village parks and recreation areas is also proposed as part of this project. Trip generation for the recreational portions of the project was assumed to remain internal to the site, as the majority of users would originate within the site.

Project Trip Generation. Standard ITE trip generation rates, as presented in Trip Generation (6th Edition), were utilized to estimate project trips for all uses, except the Active Adult component of the project. Trip generation rates for this component were based on trip generation surveys conducted by Fehr & Peers at a similar development in Brentwood, California. The community surveyed is restricted to active adults (age 55+) and provides minimal on-site amenities. Based on data collected over a week-long period, daily trip generation for Active Adult communities was documented at about 45 percent of single-family home daily trip generation. Peak hour trip generation was approximately 44 percent of single-family home peak hour trip generation.

Trip generation for the elementary school portion of the project was reduced to account for students residing in Westlake Villages. Based on discussions with staff from the Lodi Unified School district, an estimated 0.302 elementary school students would be generated per single-family home within the development, resulting in approximately 650 elementary school students residing in Westlake Villages with maximum conventional housing densities (the remaining 50 students would reside in other neighborhoods in the school district). The number of students expected to come from within Westlake Villages were subtracted from the total number of students, as it is anticipated that these students would bicycle or walk to school or be dropped off by a parent on an already planned trip (e.g., commute trip to work). The residential trip generation was not reduced to account for student drop-off/pick-up, as it was assumed that this trip would be part of another trip destined outside Westlake Villages.

Internal trips were assumed between the residential and commercial portions of the project, as the commercial portion would be neighborhood-serving. Internal trips are trips that originate in one portion of the project that are destined for another portion of the project. Internal trips were assumed between the following land uses:

Westlake Villages Residential and Marina Site Commercial and Office - Based on internal capture rates presented in ITE's publication Trip Generation Handbook (2001), an internal capture rate of 25 percent was applied to the commercial and office trip generation (i.e., 25 percent of the Marina Sites commercial and office trips would originate from Westlake Villages).

Westlake Villages Residential and Proposed Elementary School Site - Based on elementary school student generation per single family household (0.302 elementary school students generated per single-family household), 93 percent of elementary school traffic would originate in Westlake Villages.

Westlake Residential and Spanos Park West Commercial Site - Based on information contained in Spanos Park West Traffic Impact Analysis (Rajappan & Meyer., 2001) as well as internal capture rates presented in ITE's publication Trip Generation Handbook (2001), an internal capture rate of 10 percent was applied to Westlake Village's residential generation (i.e., 10 percent of the Westlake Villages trips would be destined for the Spanos Park West commercial and office development).

For purposes of the traffic analysis, development of the project at maximum density was assumed. At this density, the proposed project is expected to generate approximately 29,880 daily trips, including 2,294 AM and 3,081 PM peak hour trips. The 25 percent commercial internal trip reduction accounting for elementary school students that reside in Westlake Villages, results in 4,670 daily, 331 AM, and 573 PM peak hour trips remaining within the site. As shown in Table 4.7.M, the proposed project is expected to generate approximately 25,210 new daily trips, including 1,964 AM and 2,509 PM peak hour trips that would be added to the adjacent roadway system.

Pass-by trips (i.e., trips already on the roadway system that stop on an already planned trip) were not assumed, as the amount of through traffic by the Marina is minimal, and the marina site is not visible from regional roadways.

Trip Distribution. The City of Stockton Traffic Model was used as a preliminary means to determine general trip distribution patterns for Westlake Villages. Information provided in the Spanos Park West Traffic Impact Analysis (Rajappan & Meyer, 2001) was also utilized. Trip distribution percentages are shown on Figure 4.7.10.

Trips generated by the proposed project were assigned to the roadway system based on the approach and departure directions shown on Figure 4.7.10. AM and PM peak hour project trip assignment is shown on Figures 4.7.11a and 4.7.11b for the near-term and Figures 4.7.11c and 4.7.11 d for the cumulative condition.

Table 4.7.M: Westlake Villages Trip Generation Summary

UNITS	LAND USE	DAILY	AM PEAK HOUR			PM PEAK HOUR		
		TRIPS	INBOUND	OUTBOUND	TOTAL	INBOUND	OUTBOUND	TOTAL
700	Student Elementary School[1]	710	120	83	203	84	98	182
2,161	Single Family Homes[2]	17,520	381	1,142	1,522	1,096	616	1,712
868	Active Adult Residences[3]	3,650	103	183	286	244	138	382
	Residential Subtotal	21,170	484	1,325	1,808	1,340	754	2,094
97,357	Square Feet General Office[4]	1,300	161	22	183	32	156	188
97,357	Square Feet Retail[5]	6,700	61	39	100	296	321	617
	Commercial Subtotal	8,000	222	61	283	328	477	805
Less Internal Trips								
653	Elementary School Students[6]	670	112	77	189	78	92	170
	To Commercial (25%)	2,000	56	15	71	82	119	201
	From Residential	2,000	15	56	71	119	82	201
	Net New Trips	25,210	643	1,321	1,964	1,473	1,036	2,509

Source: Fehr & Peers, 2003.

Notes:[1]Trip generation determined from the average rates for Elementary Schools (Land Use 520) in ITE's Trip Generation (6th Edition), as presented below.

Daily Rate: T = 1.02 (S)

AM Rate: T = 0.29 (S) (inbound = 59 percent, outbound = 41 percent)

PM Rate: T = 0.26 (S) (inbound = 46 percent, outbound = 54 percent)

[2]Trip generation determined from the regression equation for Single Family Detached Housing (Land Use 210) in ITE's Trip Generation (6th Edition), as presented below.

Daily Equation: Ln(T) = 0.920 Ln(D) + 2.707

AM Equation: T = 0.700 (D) + 9.477 (inbound = 25 percent, outbound = 75 percent)

PM Equation: Ln(T) = 0.901 Ln(D) + 0.527 (inbound = 64 percent, outbound = 36 percent)

[3] Trip generation determined trip generation studies conducted by Fehr & Peers of similar Active Adult residences, as presented below.

Daily Rate: T = 4.21 (D)

AM Rate: T = 0.33 (D) (inbound = 36 percent, outbound = 64 percent)

PM Rate: T = 0.44 (D) (inbound = 64 percent, outbound = 36 percent)

[4]Trip generation determined from the regression equation for General Office (Land Use 710) in ITE's Trip Generation (6th Edition), as presented below.

Daily Equation: Ln(T) = 0.768 Ln(X) + 3.654

AM Equation: Ln (T) = 0.797 Ln(X) + 1.558 (inbound = 88 percent, outbound = 12 percent)

PM Equation: T = 1.121 (X) + 79.295 (inbound = 17 percent, outbound = 83 percent)

Trip generation determined from regression equation for Shopping Center (Land Use 820) in ITE's Trip Generation (6th Edition), as presented below.

Daily Equation: Ln(T) = 0.643 Ln(X) + 5.866

AM Rate: T = 1.03 (X) (inbound = 61 percent, outbound = 39 percent)

PM Equation: Ln (T) = 0.66 Ln(X) + 3.403 (inbound = 48 percent, outbound = 52 percent)

Where: T = trip ends, LN = logarithmic equation, D = number of dwelling units, X = 1,000's of square feet, S = Students

[6] Elementary school trip generation reduced to account for students residing in Westlake Villages. Based on information provided from the Lodi Unified School District, conventional single-family homes in their district generate approximately 0.302 elementary school students per household.

Figure 4.7.10: Project Trip Distribution

Figure 4.7.11a: Peak Hour Project Trip Assignment - Near-Term

Figure 4.7.11b: Peak Hour Project Trip Assignment - Near-Term

Figure 4.7.11c: Peak Hour Project Trip Assignment - Cumulative

Figure 4.7.11d: Peak Hour Project Trip Assignment - Cumulative

Existing plus Approved Projects plus Project Conditions Analysis

Intersection Analysis. Traffic from the proposed project was added to the Existing Plus Approved Projects forecasts, as shown on Figures 4.7.12a and 4.7.12b. Each study intersection was analyzed (including the project entrances) as summarized in Table 4.7.N. The analysis results indicate that sixteen of twenty-two study intersections would operate at an acceptable LOS range (i.e., LOS D or better) with the addition of project traffic. The six intersections that would operate at unacceptable levels include:

X Eight Mile Road/Trinity Parkway - AM and PM peak hours

X Eight Mile Road/I-5 Southbound Ramps - AM and PM peak hours

X Eight Mile Road/Thornton Road - AM and PM peak hours

X Eight Mile Road/Davis Road - AM and PM peak hours

X Eight Mile Road/Lower Sacramento Road - AM and PM peak hours

X Hammer Lane/I-5 Northbound Ramps - AM peak hour

Traffic Signal Warrant Analysis. The results of the signal warrant analysis listed in Table 4.7.O shows that traffic signal warrants are satisfied at the Eight Mile Road/Davis Road intersection prior to the addition of project traffic. The addition of project traffic would cause the peak hour signal warrant to be met at the following four intersections:

X Mokelumne Circle/Scott Creek Drive (west intersection)

X Eight Mile Road/Rio Blanco Road

X Eight Mile Road/Primary Entrance

X Eight Mile Road/Secondary Entrance

Satisfaction of traffic signal warrants at the Eight Mile Road/Rio Blanco Road intersection is largely a function of the westbound left-turn and northbound right-turn volumes to the Marina Parcel. As the left- and right-turn movements do not conflict and the side-street would operate at LOS A, signalization of this intersection is not recommended. Signalization for the two project entrances on Eight Mile Road, as well as the Mokelumne Circle/Scott Creek Drive intersection, is recommended.

Freeway Analysis. Traffic from the approved projects and Westlake Villages was added to the existing peak hour traffic on I-5. Each mainline segment of I-5 north and south of Eight Mile Road was analyzed based on the volumes shown in Table 4.7.P. The analysis results indicate that, with the addition of project traffic, all mainline segments would operate at LOS D or better during both peak hours.

Figure 4.7.12a: Existing Plus Approved Projects Plus Project Traffic Volumes

Figure 4.7.12b: Existing Plus Approved Projects Plus Project Traffic Volumes

Table 4.7.N: Existing Plus Approved Projects Plus Project Intersection Level of Service Summary

	Intersection	Peak Hour	Existing		Existing + Approved Projects		Existing + Approved Projects + Project	
			V/C Ratio[1] or Delay[2]	LOS	V/C Ratio[1] or Delay[2]	LOS	V/C Ratio[1] or Delay[2]	LOS
1.	Eight Mile Road/Mokelumne Circle	AM PM	7 Sec. (WB 10) 6 Sec. (EB 11)	A (B) A (B)	0.41 0.36	A A	0.75 0.63	C B
2.	Eight Mile Road/ Trinity Parkway	AM PM	0.20 0.15	A A	0.64 **0.92**	B **E**	**0.98** **1.17**	**E** **F**
3.	Eight Mile Road/I-5 Southbound Ramps	AM PM	32 Sec. (SB > 50) 33 Sec. (SB > 50)	D (F) D (F)	0.63 0.80	B C	**1.07** **1.13**	**F** **F**
4.	Eight Mile Road/I-5 Northbound Ramps	AM PM	13 Sec. (NB 43) 9 Sec. (NB 26)	B (E) A (D)	0.46 0.52	A A	0.63 0.78	B C
5.	Eight Mile Road/Oak Grove Regional Park Entrance	AM PM	3 Sec. (NB 36) 2 Sec. (NB 20)	A (E) A (C)	3 Sec.(NB>50) 3 Sec.(NB>50)	A (F) A (F)	3 Sec.(NB>50) 4 Sec.(NB>50)	A (F) A (F)
6.	Eight Mile Road/Thornton Road	AM PM	0.79 0.66	C B	**1.17** **1.07**	**F** **F**	**1.24** **1.18**	**F** **F**
7.	Eight Mile Road/Davis Road	AM PM	**> 50 Sec.** **> 50 Sec.**	**F** **F**	**> 50 Sec.** **> 50 Sec.**	**F** **F**	**> 50 Sec.** **> 50 Sec.**	**F** **F**
8.	Eight Mile Road/ Lower Sacramento Road	AM PM	0.77 0.65	C B	**0.94** **0.93**	**E** **E**	**1.02** **1.00**	**F** **E**
9.	Mokelumne Circle/ Scott Creek Drive (west intersection)	AM PM	1 Sec. (EB 12) 1 Sec. (EB 10)	A (B) A (B)	5 Sec. (EB>50) 2 Sec. (EB 24)	A (F) A (C)	9 Sec. (EB>50) 5 Sec. (EB 32)	A (F) A (D)
10.	Mokelumne Circle/ Cosumnes Drive (east intersection)	AM PM	5 Sec. (EB 9) 7 Sec. (EB 9)	A (A) A (A)	7 Sec. (EB 15) 8 Sec. (EB 11)	A (C) A (B)	9 Sec. (EB 21) 9 Sec. (WB 13)	A (C) A (B)
11.	Trinity Parkway/ Cosumnes Drive	AM PM	2 Sec. (WB 9) 2 Sec. (WB 9)	A (A) A (A)	0.43 0.59	A A	0.52 0.69	A B
12.	Trinity Parkway/ McAuliffe Drive	AM PM	2 Sec. (SB 7) 5 Sec. (WB 8)	A (A) A (A)	0.37 0.57	A A	0.45 0.67	A B
13.	Thornton Road/AG Spanos Boulevard (north intersection)	AM PM	0.48 0.24	A A	0.59 0.31	A A	0.62 0.36	B A
14.	Thornton Road/ Whistler Way	AM PM	0.33 0.21	A A	0.41 0.28	A A	0.42 0.30	A A
15.	Thornton Road/AG Spanos Boulevard (south intersection)	AM PM	0.36 0.34	A A	0.56 0.65	A B	0.64 0.75	B C
16.	Mariners Drive/Otto Drive	AM PM	N/A N/A	N/A N/A	9 sec. (EB 13) 15 SEC. (EB 24)	A C	10 Sec. (BE 14) 17 sec. (27)	A(B) C(D)
17.	Hammer Lane/Mariners Drive	AM PM	0.58 0.65	A B	0.72 0.74	C C	0.74 0.75	C C
18.	Hammer Lane/I-5 Northbound Ramps	AM PM	0.86 0.52	D A	**1.01** 0.73	**F** C	**1.01** 0.73	**F** C
19.	Hammer Lane/I-5 Southbound Ramps	AM PM	0.55 0.73	A C	0.59 0.80	A D	0.60 0.81	A D
20.	Eight Mile Road/Rio Blanco Road	AM PM	-- --	-- --	-- --	-- --	6 Sec. (NB 9) 9 Sec. (NB 14)	A (A) A (B)

21.	Eight Mile Road/Primary Entrance	AM PM	-- --	-- --	-- --	-- --	6 Sec. (NB 12) 5 Sec. (NB 21)	A (C) A (C)
22.	Eight Mile Road/ Secondary Entrance	AM PM	-- --	-- --	-- --	-- --	6 Sec. (NB 24) 5 Sec. (C27)	A (C) A (D)

Source: Fehr & Peers, 2003.
Notes: [1] Signalized intersection level of service is based on V/C ratio according to the Circular 212 methodology, Transportation Research Board, 1980.
[2]Side-street stop-controlled intersections level of service is based on average delay per vehicle (in seconds) according to the Highway Capacity Manual,
Transportation Research Board, 2000. Both the average intersection control delay and worse case stop-controlled movement delay are presented.

Table 4.7.O: Existing Plus Approved Plus Project Peak Hour Signal Warrants [1]

INTERSECTION	PEAK HOUR	EXISTING PLUS APPROVED	EXISTING PLUS APPROVED PLUS PROJECT
Eight Mile Road/Oak Grove Regional Park Entrance	AM PM	Not Met Not Met	Not Met Not Met
Eight Mile Road/Davis Road	AM PM	Met Met	Met Met
Mokelumne Circle/Scott Creek Drive (west intersection)	AM PM	Not Met Not Met	Met Not Met
Mokelumne Circle/Consumnes Drive (east intersection)	AM PM	Not Met Not Met	Not Met Not Met
Mariners Drive/Otto Drive	AM PM	Not Met Not Met	Not Met Not Met
Eight Mile Road/Rio Blanco Road	AM PM	-- --	Not Met Met
Eight Mile Road/Primary Entrance	AM PM	-- --	Met Met
Eight Mile Road/Secondary Entrance	AM PM	 --	Met Met

Source: Fehr & Peers, 2003.
Notes: [1] Based on methodologies presented in Caltrans' Traffic Manual

Table 4.7.P: Mainline I-5 Analysis Near-Term Conditions

SEGMENT	PEAK HOUR	EXISTING			EXISTING PLUS APPROVED			EXISTING PLUS APPROVED PLUS PROJECT		
		VOLUME	DENSITY[1]	LOS[2]	VOLUME	DENSITY[1]	LOS[2]	VOLUME	DENSITY[1]	LOS[2]
North of Eight Mile Road Northbound	AM	1,610	8.7	A	1,784	9.6	A	1,916	10.3	A
	PM	2,770	14.9	B	3,065	16.5	B	3,169	17.1	B
North of Eight Mile Road Southbound	AM	2,760	14.9	B	2,925	15.8	B	2,989	16.1	B
	PM	1,940	10.5	A	2,235	12.0	B	2,382	12.8	B
South of Eight Mile Road Northbound	AM	2,010	10.8	A	2,551	13.7	B	2,901	15.6	B
	PM	3,460	18.6	C	4,447	24.3	C	5,254	30.4	D
South of Eight Mile Road Southbound	AM	3,4502,4	18.	C	4,074	22.1	C	4,798	26.7	D
	PM	20	13.0	B	3,364	18.1	C	3,932	21.2	C

Source: Fehr & Peers, 2003
Notes: [1] Density measured in passenger cars per mile per lane.
[2] Mainline segment LOS based on vehicle density, according to the Highway Capacity Manual, Transportation Research Board, 2000.

Cumulative Conditions Analysis

Intersection Analysis. Traffic from the proposed project was added to the Cumulative Without Project forecasts, as shown on Figures 4.13a and 4.13b. Each study intersection was analyzed (including the project entrances) as summarized in Table 4.7.Q. The analysis results indicate that the addition of project traffic would degrade the operation of the Eight Mile Road/I-5 Southbound Ramps and the Eight Mile Road/I-5 Northbound Ramps intersections. Additionally, the project would add traffic to an intersection projected to operate at a deficient LOS F (Hammer Lane/I-5 Northbound Ramps - AM peak hour). All other intersections would operate acceptably (i.e., LOS D or better) with the addition of project traffic.

Traffic Signal Warrant Analysis. Traffic signal warrants were reviewed for the Cumulative condition, as presented in Table 4.7.R. Traffic signal warrants would not be satisfied at any of the unsignalized study intersections prior to the addition of project traffic. With the addition of project traffic, signal warrants would be satisfied at the following four intersections:

X Mokelumne Circle/Scott Creek Drive (west intersection)

X Eight Mile Road/Rio Blanco Road

X Eight Mile Road/Primary Entrance

X Eight Mile Road/Secondary Entrance

The satisfaction of traffic signal warrants at the Eight Mile Road/Rio Blanco Road intersection is largely a function of the westbound left-turn and northbound right-turn volumes to the Marina Parcel. As the left- and right-turn movements do not conflict, and the side-street would operate at LOS B or better during the peak hours, signalization of this intersection is not recommended. Signalization of the two project entrances on Eight Mile Road, as well as the Mokelumne Circle/Scott Creek Drive intersection, is recommended.

Freeway Analysis. Traffic from the proposed project was added to the Cumulative Without Project peak hour traffic forecasts for I-5. Each mainline segment of I-5 north and south of Eight Mile Road was analyzed based on the volumes shown in Table 4.7.S. The analysis results indicated that the addition of project traffic would worsen the service level conditions from LOS E to LOS F for the southbound I-5 south of Eight Mile

Road (AM peak hour) and northbound I-5 south of Eight Mile Road (PM peak hour). All other freeway study segments would operate at acceptable service levels with the addition of project traffic.

Figure 4.7.13a: Cumulative With Project Peak Hour Traffic Volumes

Figure 4.7.13b Cumulative With Project Peak Hour Traffic Volumes

Table 4.7.Q: Cumulative Build Conditions Intersection Level of Service Summary

	INTERSECTION	PEAK HOUR	EXISTING		CUMULATIVE WITHOUT PROJECT		CUMULATIVE WITH PROJECT	
			V/C RATIO[1] OR DELAY[2]	LOS	V/C RATIO[1] OR DELAY[2]	LOS	V/C RATIO[1] OR DELAY[2]	LOS
1.	Eight Mile Road/Mokelumne Circle	AM PM	7 Sec. (WB 10) 6 Sec. (EB 11)	A (B) A (B)	0.51 0.43	A A	0.83 0.70	D C
2.	Eight Mile Road/ Trinity Parkway	AM PM	0.20 0.15	A A	0.52 0.63	A B	0.74 0.82	C D
3.	Eight Mile Road/I-5 Southbound Ramps	AM PM	32 Sec. (SB > 50) 33 Sec. (SB > 50)	D (F) D (F)	0.87 0.68	D B	**1.29** **0.94**	**F** **E**
4.	Eight Mile Road/I-5 Northbound Ramps	AM PM	13 Sec. (NB 43) 9 Sec. (NB 26)	B (E) A (D)	0.51 0.70	A C	0.68 **0.97**	B **E**
5.	Eight Mile Road/Oak Grove Regional Park Entrance	AM PM	3 Sec. (NB 36) 2 Sec. (NB 20)	A (E) A (C)	0.45 0.29	A A	0.50 0.31	A A
6.	Eight Mile Road/Thornton Road	AM PM	0.79 0.66	C B	0.71 0.53	C A	0.76 0.60	C A
7.	Eight Mile Road/Davis Road	AM PM	**> 50 Sec.** **> 50 Sec.**	**F** **F**	0.45 0.44	A A	0.46 0.46	A A
8.	Eight Mile Road/ Lower Sacramento Road	AM PM	0.77 0.65	C B	0.74 0.65	C B	0.76 0.66	C B
9.	Mokelumne Circle/ Scott Creek Drive (west intersection)	AM PM	1 Sec. (EB 12) 1 Sec. (EB 10)	A (B) A (B)	5 Sec. (EB 47) 4 Sec.(EB 33)	A (E) A (D)	8 Sec. (EB>50) 9 Sec. (EB>50)	A (F) A (F)
10.	Mokelumne Circle/ Cosumnes Drive (east intersection)	AM PM	5 Sec. (EB 9) 7 Sec. (EB 9)	A (A) A (A)	7 Sec. (EB 16) 9 Sec. (WB 15)	A (B) A (C)	10 Sec. (EB 23) 15 Sec. (WB 29)	B (C) C (D)
11.	Trinity Parkway/ Cosumnes Drive	AM PM	2 Sec. (WB 9) 2 Sec. (WB 9)	A (A) A (A)	0.43 0.73	A C	0.52 0.85	A D
12.	Trinity Parkway/ McAuliffe Drive	AM PM	2 Sec. (SB 7) 5 Sec. (WB 8)	A (A) A (A)	0.43 0.64	A B	0.49 0.69	A B
13.	Thornton Road/AG Spanos Boulevard (north intersection)	AM PM	0.48 0.24	A A	0.40 0.35	A A	0.41 0.38	B A
14.	Thornton Road/ Whistler Way	AM PM	0.33 0.21	 A	0.46 0.39	A A	0.47 0.41	A A
15.	Thornton Road/AG Spanos Boulevard (south intersection)	AM PM	0.36 0.34	A A	0.53 0.52	A A	0.61 0.61	B B
16.	Mariners Drive/Otto Drive	AM PM	N/A N/A	N/A N/A	4 Sec. (SB 23) 4 Sec. (NB 23)	A (C) A (C)	4 Sec. (SB 24) 4 Sec. (NB 23)	A (C) A (C)
17.	Hammer Lane/Mariners Drive	AM PM	0.58 0.65	A B	0.67 0.66	B B	0.69 0.68	B B
18.	Hammer Lane/I-5 Northbound Ramps	AM PM	0.86 0.52	D A	**1.11** 0.57	**F** A	**1.11** 0.59	**F** A
19.	Hammer Lane/I-5 Southbound Ramps	AM PM	0.55 0.73	A C	0.64 0.68	B B	0.65 0.68	B B
20.	Eight Mile Road/Rio Blanco Road	AM PM	-- --	-- --	-- --	-- --	6 Sec. (NB 9) 9 Sec. (NB 14)	A (A) A (B)
21.	Eight Mile Road/Primary Entrance	AM PM	-- --	-- --	-- --	-- --	5 Sec. (NB 17) 7 Sec. (NB 42)	A (C) A (E)

22.	Eight Mile Road/Secondary Entrance	AM PM	-- --	-- --	-- --	-- --	13 Sec. (NB>50) 6 Sec. (NB 42)	B (F) A (E)

Source: Fehr & Peers, 2003.
Notes: [1] Signalized intersection level of service is based on V/C ratio according to the Circular 212 methodology, Transportation Research Board, 1980.
[2] Side-street stop-controlled intersections level of service is based on average delay per vehicle (in seconds) according to the Highway Capacity Manual, Transportation Research Board, 2000. Both the average intersection control delay and worse case stop-controlled movement delay are presented.
Values in bold represent unacceptable level of service

Table 4.7.R: Cumulative Conditions Peak Hour Signal Warrants [1]

INTERSECTION	PEAK HOUR	CUMULATIVE	CUMULATIVE PLUS PROJECT
Mokelumne Circle/Scott Creek Drive (west intersection)	AM PM	Not Met Not Met	Met Not Met
Mokelumne Circle/Cosumnes Drive (east intersection)	AM PM	Not Met Not Met	Not Met Not Met
Eight Mile Road/Rio Blanco Road	AM PM	-- --	Not Met Met
Eight Mile Road/Primary Entrance	AM PM	-- --	Met Met
Eight Mile Road/Secondary Entrance	AM PM	-- --	Met Met

Source: Fehr & Peers, 2003.
Notes: [1] Based on methodologies presented in Caltrans' Traffic Manual

Table 4.7.S: Mainline I-5 Analysis Cumulative Conditions

SEGMENT	PEAK HOUR	EXISTING			CUMULATIVE			CUMULATIVE PLUS PROJECT		
		VOLUME	DENSITY[1]	LOS[2]	VOLUME	DENSITY[1]	LOS[2]	VOLUME	DENSITY[1]	LOS[2]
North of Eight Mile Road Northbound	AM PM	1,610 2,770	8.7 14.9	A B	1,991 3,409	10.7 18.4	A C	2,123 3,513	11.4 18.9	B C
North of Eight Mile Road Southbound	AM PM	2,760 1,940	14.9 10.5	B A	3,314 2,324	17.9 12.5	B B	3,378 2,471	18.2 13.3	C B
South of Eight Mile Road Northbound	AM PM	2,010 3,460	10.8 18.6	A C	3,189 **6,104**	17.2 **40.4**	B **E**	3,539 **6,911**	19.1 **> 45**	C **F**
South of Eight Mile Road Southbound	AM PM	3,450 2,420	18.6 13.0	C B	**5,702** 3,725	**35.0** 20.1	**E** C	**6,426** 4,293	**> 45** 23.4	**F** C

Source: Fehr & Peers, 2003.
Notes: [1] Density measured in passenger cars per mile per lane.
[2] Mainline segment LOS based on vehicle density, according to the Highway Capacity Manual, Transportation Research Board, 2000.
Values in bold represent unacceptable level of service

4.7.3 Impacts and Mitigation Measures

Existing plus Approved Projects plus Project Conditions

The following describes the impacts and mitigation measures for the proposed project under the Existing Plus Approved Projects Plus Project condition.

Potential for Unacceptable Intersection Operations - Existing plus Approved Projects plus Project

Based on the significance criteria, the proposed project would potentially result in significant impacts at six intersections in the Existing Plus Approved Projects Plus Project scenario.

Further review of the potentially impacted intersections shows the proposed project would increase traffic through the Hammer Lane/I-5 Northbound Ramps intersection by less than 5 percent. Therefore, the impact of the proposed project does would not be considered significant at the Hammer Lane/I-5 Northbound Ramps intersection.

Impact TRAF-1: The proposed project would worsen the operation at four intersections projected to operate at an unacceptable service level under Existing Plus Approved Projects conditions. This is considered a significant impact under Streets and Highways Goal 1.9.

a. Eight Mile Road/Trinity Parkway. Project traffic would result in LOS E conditions during the AM peak hour and worsen projected LOS E conditions to LOS F during the PM peak hour.

Mitigation Measure TRAF-1a. The project applicant shall contribute its fair share towards the following improvements: dual northbound right-turn lanes and dual westbound left-turn lanes. With implementation of this mitigation measure, this impact would be reduced to a less-than-significant level, as shown in Table 4.7.T.

b. Eight Mile Road/Thornton Road. Project traffic would worsen the LOS F conditions during both peak hours.

Mitigation Measure TRAF-1b: The project applicant shall contribute its fair share toward planned improvements at this intersection. Planned improvements include widening Eight Mile Road to provide four through lanes in each direction, dual eastbound and westbound left-turn lanes, and eastbound and westbound right-turn only lanes. Planned improvements on the north leg of Thornton Road include a left-turn lane, two through lanes and a right-turn lane. Improvements on the south leg of Thornton Road include dual left-turn lanes, three through lanes, and a right-turn lane. With implementation of this mitigation measure, the impact would be reduced to a less-than-significant level, as shown in Table 4.7.T.

c. Eight Mile Road/Davis Road. Project traffic would worsen the LOS F conditions during both peak hours.

Table 4.7.T: Near-Term Intersection Analysis With Mitigation

	INTERSECTION	PEAK HOUR	EXISTING PLUS APPROVED PROJECTS		EXISTING PLUS APPROVED PROJECTS PLUS PROJECT		EXISTING PLUS APPROVED PROJECTS PLUS MITIGATION		EXISTING PLUS APPROVED PROJECTS PLUS PROJECT PLUS MITIGATION	
			V/C RATIO[1] OR DELAY[2]	LOS	V/C RATIO[1] OR DELAY[2]	LOS	V/C RATIO[1] OR DELAY[2]	LOS	V/C RATIO[1] OR DELAY[2]	LOS
2.	Eight Mile Road/ Trinity Parkway	AM PM	0.64 **0.92**	B **E**	**0.98** **1.17**	**E** **F**	0.45 0.57	A A	0.78 0.82	C D
3.	Eight Mile Road/I-5 Southbound Ramps	AM PM	0.63 0.80	B C	**1.07** **1.13**	**F** **F**	0.40 0.41	A A	0.46 0.76	A C
4.	Eight Mile Road/ Thornton Road	AM PM	**1.17** **1.07**	**F** **F**	**1.24** **1.18**	**F** **F**	0.60 0.57	A A	0.64 0.64	B B
7.	Eight Mile Road/ Davis Road	AM PM	**> 50 Sec.** **> 50 Sec.**	**F** **F**	**> 50 Sec.** **> 50 Sec.**	**F** **F**	0.33 0.27	A A	0.34 0.29	A A
8.	Eight Mile Road/ Lower Sacramento Road	AM PM	**0.94** **0.93**	**E** **E**	**1.02** **1.00**	**F** **E**	0.40 0.37	A A	0.42 0.38	A A
9.	Mokelumne Circle/ Scott Creek Drive	AM PM	5 Sec. (EB>50) 2 Sec. (EB 24)	A (F) A (C)	9 Sec. (EB>50) 5 Sec. (EB 32)	A (F) A (D)	0.45 0.35	A A	0.48 0.40	A A
21.	Eight Mile Road/ Primary Entry	AM PM	-- --	-- --	6 Sec. (NB 12) 5 Sec. (NB 21)	A (B) A (C)	-- --	-- --	0.44 0.65	A B
22.	Eight Mile Road/ Secondary Entry	AM PM	-- --	-- --	6 Sec. (NB 24) 5 Sec. (NB 27)	A (C) A (D)	-- --	-- --	0.61 0.72	B C

Source: Fehr & Peers, 2003.

Notes: [1]Signalized intersection level of service is based on V/C ratio according to the Circular 212 methodology, Transportation Research Board, 1980.

[2] Stop-controlled intersections level of service is based on average delay per vehicle (in seconds) according to the Highway Capacity Manual, Transportation Research Board, 2000.

Mitigation Measures TRAF-1c: The project applicant shall contribute its fair share toward planned improvements at this intersection. Planned improvements include widening of Eight Mile Road to provide four through lanes in each direction, dual eastbound and westbound left-turn lanes, and an eastbound right-turn lane. Planned improvements on Davis Road include a left-turn lane, two through lanes, and a right-turn lane in both directions. The intersection would also be signalized. With implementation of this mitigation measure, the impact would be reduced to a less-than-significant level, as shown in Table 4.7.T.

d. Eight Mile Road/Lower Sacramento Road. Project traffic would worsen projected LOS E conditions to LOS F during the AM peak hour, and worsen projected LOS E conditions during the PM peak hour.

Mitigation Measures TRAF-1d: The project applicant shall contribute its fair share toward planned improvements at this intersection. Planned improvements include widening of Eight Mile Road to provide four through lanes in each direction, dual eastbound and westbound left-turn lanes, and an eastbound right-turn lane. Planned improvements on Lower Sacramento Road include a left-turn lane, two through lanes, and a right-turn lane in the northbound direction, and dual left-turn lanes, two through lanes, and a right-turn only lane in the southbound direction. With implementation of this mitigation measure, this impact would be reduced to a less-than-significant level, as shown in Table 4.7.T.

Implementation of the above mitigation measures would reduce TRAF-1 impacts to a less than significant level.

Impact TRAF-2: The proposed project would result in unacceptable service levels at the Eight Mile Road/I-5 interchange. This is considered a significant impact under Streets and Highways Goals 1.8 and 1.9.

Eight Mile Road/I-5 Southbound Ramps. The addition of project trips would result in unacceptable LOS F conditions at the Eight Mile Road/I-5 southbound ramps intersection.

Mitigation Measures TRAF-2: The project applicant shall provide an eastbound to southbound free right-turn lane at the Eight Mile Road/I-5 southbound ramps intersection.

With implementation of this measure, the impact would be reduced to a less-than-significant level, as shown in Table 4.7.T.

Table 4.7.U shows the project contribution for each intersection, in addition to the proportion of existing traffic and traffic from approved developments, at each mitigated intersection.

Table 4.7.U: Project Contribution to Mitigation Under Existing Plus Approved Plus Project Conditions

INTERSECTION	TRAFFIC CONTRIBUTION [1]		
	EXISTING TRAFFIC	APPROVED DEVELOPMENT	WESTLAKE VILLAGES
Eight Mile Road/ Trinity Parkway	420 Vehicles (7 percent)	3,065 Vehicles (55 percent)	2,117 Vehicles (38 percent)
Eight Mile Road/I-5 Southbound Ramps	1,012 Vehicles (16 percent)	3,217 Vehicles (51 percent)	2,031 Vehicles (33 percent)
Eight Mile Road/ Thornton Road	2,097 Vehicles (54 percent)	1,338 Vehicles (35 percent)	407 Vehicles (11 percent)
Eight Mile Road/ Davis Road	1,607 Vehicles (56 percent)	1,007 Vehicles (35 percent)	253 Vehicles (9 percent)
Eight Mile Road/ Lower Sacramento Road	2,322 Vehicles (67 percent)	884 Vehicles (26 percent)	252 Vehicles (7 percent)

Source: Fehr & Peers, 2003.
Notes: XX (YY) = Traffic Volume (Percent of Total)
[1] Percentage is based on the projected project traffic divided by the total traffic at the intersection. The PM peak hour contribution is reflected.

Potential for Unacceptable Operations at Site Access Intersections

Impact TRAF-3: The proposed project would result in unacceptable operations at the site access intersections. This is considered a significant impact based on Streets and Highways Goal 1.3.

Although the Primary and Secondary access roadways would operate at an overall acceptable service level, delay would be experienced for vehicles exiting the site onto Eight Mile Road, as well as vehicles traveling through the Mokelumne Circle/Scott Creek Drive intersection. Additionally, peak hour traffic signal warrants would be satisfied at all three intersections with the addition of project traffic.

Mitigation Measure TRAF-3: The project applicant shall install traffic signals at the Westlake Villages Primary and Secondary Entrances on Eight Mile Road, as well as the Mokelumne Circle/Scott Creek Drive intersection.

The signalization of these intersections would minimize delay for vehicles exiting the project site and would improve overall access to the development, reducing this impact to a less-than-significant level, as shown in Table 4.7.T.

Cumulative Conditions

The following describes the impacts and mitigation measures for the proposed project under Cumulative Plus Project conditions.

Potential for Unacceptable Intersection Operations - Cumulative Conditions

Based on the significance criteria, the proposed project would potentially result in significant impacts at three intersections in the Cumulative With Project scenario. Further review of the potentially impacted intersections shows that the proposed project would increase traffic through the Hammer Lane/I-5

Northbound Ramps intersection by less than 5 percent. Therefore, the impact of the proposed project would not be considered significant at the Hammer Lane/I-5 Northbound Ramps intersection.

Impact TRAF-4: The proposed project would result in unacceptable service levels at the Eight Mile Road/I-5 interchange. This is a significant impact under Streets and Highways Goal 1.9.

The addition of traffic through the Eight Mile Road/I-5 interchange would result in LOS F conditions during the AM peak hour at the southbound ramps intersection and LOS E during the PM peak hour at both the northbound and southbound ramps intersections.

Mitigation Measure TRAF-4: The project applicant shall fund improvements to the Eight Mile Road/I-5 interchange. Recommended improvements are shown in Figure 4.7.14 and include a northbound loop off-ramp.

As identified in ***Impact TRAF-3***, the proposed project would result in unacceptable operations at the site access intersections. **Mitigation Measure TRAF-3** would also mitigate the cumulative site access impact, as shown on Table 4.7.V.

With implementation of this measure, the impact would be reduced to a less-than-significant level, as shown in Table 4.7.V.

Impact TRAF-5: The proposed project would worsen the operation of two freeway segments projected to operate at unacceptable service levels without the proposed project. This is considered a significant impact under Streets and Highways Goal 1.8 and 1.9.

The addition of project traffic would result in LOS F conditions for the segment of I-5 south of Eight Mile Road. These conditions would be experienced in the southbound direction during the AM peak hour, and the northbound direction during the PM peak hour.

Mitigation Measures TRAF-5: None Available. Widening of I-5 to provide four mixed-flow travel lanes per direction would reduce this impact to a less-than-significant level, as shown in Table 4.7.W. The widening of I-5 from the Monte Diablo undercrossing to Eight Mile Road is included in the San Joaquin Council of Governments 2025 Regional Transportation Plan as a Tier 1 project sponsored by Caltrans. However, the Plan notes that full project funding has not yet been identified.

Therefore, because the improvement is not fully funded, its implementation cannot be assured and this impact would remain significant and unavoidable.

Figure 4.7.14: Cumulative Interchange Improvements

Table 4.7.V: Cumulative Intersection Analysis With Mitigation

INTERSECTION	PEAK HOUR	CUMULATIVE WITHOUT PROJECT		CUMULATIVE WITH PROJECT		CUMULATIVE WITHOUT PROJECT PLUS MITIGATION		CUMULATIVE WITH PROJECT PLUS MITIGATION	
		V/C RATIO[1] OR DELAY[2]	LOS	V/C RATIO[1] OR DELAY[2]	LOS	V/C RATIO[1] OR DELAY[2]	LOS	V/C RATIO[1] OR DELAY[2]	LOS
Eight Mile Road/I-5 Southbound Ramps	AM PM	0.87 0.68	D B	**1.29** **0.94**	**F** **E**	0.55 0.48	A A	0.63 0.85	B D
Eight Mile Road/I-5 Northbound Ramps	AM PM	0.51 0.70	A C	0.68 **0.97**	B **E**	0.40 0.41	A A	0.50 0.52	A A
Mokelumne Circle/ Scott Creek Drive	AM PM	5 Sec. (EB 47) 4 Sec.(EB 33)	A (E)A (D)	8 Sec. (EB>50) 9 Sec. (EB>50)	A (F) A (F)	0.42 0.41	A A	0.45 0.46	A A
Eight Mile Road/ Primary Entry	AM PM	-- --	----	5 Sec. (NB 17) 7 Sec. (NB 42)	A (C)A (E)	-- --	-- --	0.56 0.69	A B
Eight Mile Road/ Secondary Entry	AM PM	-- --	-- --	13 Sec. (NB>50) 6 Sec. (NB 42)	B (F)A (E)	-- --	-- --	0.73 0.76	C C

Source: Fehr & Peers, 2003.
Notes: [1]Signalized intersection level of service is based on V/C ratio according to the Circular 212 methodology, Transportation Research Board, 1980.
[2] Side-street stop-controlled intersections level of service is based on average delay per vehicle (in seconds) according to the Highway Capacity Manual, Transportation Research Board, 2000. Both the average intersection control delay and worse case stop-controlled movement delay are presented.

Site Access, Circulation, and Parking

This section evaluates project site access, on-site circulation, and parking.

Vehicular Site Access. Access to the residential portion of the project would be provided from two roadways intersecting Eight Mile Road and three east-west roadways connecting to the neighboring Spanos Park West development. Access to the Active Adult component of the project would be provided from one roadway connecting to the main collector roadway of the conventional housing project. The secondary access road could potentially be extended across Pixley Slough to provide additional access to the neighboring Shima Tract if it develops in the future.

Access to the Marina portion of the project site would be provided from Rio Blanco Road (an existing roadway that intersects with Eight Mile Road).

Inconsistencies with the Eight Mile Road Specific Plan

Impact Traf-6: the Project Proposes Modifications to Eight Mile Road That Are Inconsistent with the Eight Mile Road Specific Plan. This Is Considered a Significant Impact under Streets and Highways Goal 4.2.

The Eight Mile Road Specific Plan (Omni-Means, 2003) specifies future roadway cross-sections on Eight Mile Road between I-5 and SR 99. It does not address the improvement needs for the section of Eight Mile Road west of I-5, including the segment adjacent to the project site.

Table 4.7.W: Mainline I-5 Analysis Cumulative Conditions Plus Mitigation

SEGMENT	PEAK HOUR	CUMULATIVE WITHOUT PROJECT			CUMULATIVE WITH PROJECT			WITHOUT PROJECT PLUS MITIGATION		WITH PROJECT PLUS MITIGATION	
		VOLUME	DENSITY	LOS	VOLUME	DENSITY	LOS	DENSITY	LOS	DENSITY	LOS
South of Eight Mile Road Northbound	AM	3,189	17.2	B	3,539	19.1	C	12.9	B	14.3	B
	PM	**6,104**	**40.4**	**E**	**6,911**	**> 45**	**F**	25.2	C	29.8	D
South of Eight Mile Road Southbound	AM	**5,702**	**35.0**	**E**	**6,426**	**> 45**	**F**	23.3	C	26.9	D
	PM	3,725	20.1	C	4,293	23.4	C	15.1	B	17.3	B

Source: Fehr & Peers, 2003.
Notes: Density measured in passenger cars per mile per lane.
Mainline segment LOS based on vehicle density, according to the Highway Capacity Manual, Transportation Research Board, 2000.

Mitigation Measures TRAF-6: The project applicant shall update the Eight Mile Road Specific Plan and construct the required widening improvements between I-5 and Rio Blanco Road. This update should consider the roadway cross-sections and intersection design requirements for the subject section of Eight Mile Road.

Implementation of this measure would reduce this impact to a less-than-significant level

Potential for Increase in Transit Demand

Transit, Pedestrian, and Bicycle Access. Transit service is not currently provided in the study area. Four potential transit stop locations are proposed within the project site. These locations would directly serve the public park area, the Active Adult housing, as well as the two school sites. Appropriate bus shelters would also be provided at the bus stops, thereby satisfying Public Transportation Goal 1.2. The layout of these stops would provide for counter-clockwise transit circulation along the main collector within the project site.

Impact TRAF-7: The project would increase transit demand in an area that is not currently served by public transit. This considered a significant impact under Public Transportation Goal 1.2.

Mitigation Measures TRAF-7: The project applicant shall construct transit stops and transit shelters within the project site at locations approved by San Joaquin Regional Transit District. Implementation of this measure would reduce the impact to a less-than-significant level.

Implementation of this measure would reduce this impact to a less-than-significant level.

Potential to Conflict with General Plan Policies - Non-motorized Transportation

Impact TRAF-8: The proposed project would not provide for adequate levels of connectivity for bicycle and pedestrian routes within the project site. This considered a significant impact under Non-Motorized Transportation Goal 1.1.

Proposed roadway-cross sections indicate that sidewalks would be provided along all roads within the project site. Bike lanes would be provided along the collector roads and the Active Adult entry road. Both bike lanes and sidewalks would connect Westlake Villages to Spanos Park West, while a dedicated pedestrian and bike path would run along the levee for access to the marina parcel (i.e., Pixley Slough multi-use trail).

As shown on the site plan, pedestrian access to Eight Mile Road would be limited to the primary and secondary access roads, resulting in circuitous access to Eight Mile Road for some neighborhoods. Additionally, access between adjacent neighborhoods and to the Pixley Slough multi-use trail would be circuitous for neighborhoods K, N, and S. Additionally, only one pedestrian access is proposed from neighborhood K.

Mitigation Measure TRAF-8: The project applicant shall provide a bicycle/pedestrian connection to the trail from neighborhoods N and S, as well as a second access from neighborhood K to the adjacent neighborhoods.

Implementation of the above mitigation measure would reduce the impact to a less than significant level.

Potential for Inadequate Access

On-Site Circulation. The on-site circulation elements include one major collector loop providing access from Eight Mile Road, an east-west collector road connecting to Spanos Park West, a collector road with future potential extension across Pixley Slough, and the Active Adult entry road. The travel lanes on the internal roadways range from 9 to 12 feet in width. The major internal roads have either 10- or 12-foot wide travel lanes. Residential streets and the collector joining Westlake Villages to Spanos Park West have 7- or 8-foot wide adjacent parking lanes on both sides of the road. The collectors that interface with Spanos Park West include two-way center left-turn lanes, while the collector loop and Active Adult entry road have a landscaped median with left-turn pockets. All roadway cross-sections are adequate to provide circulation within the project site.

No direct access is proposed to residences along the collector roadways, which is positive in terms of minimizing conflicts between resident's access and through traffic. Most of the neighborhoods are served by two or more access points which allows for efficient access and circulation.

Impact TRAF-9: The proposed project would not provide multiple access points for all major developed areas within the site. This is considered a significant impact under Streets and Highways Goal 1.2.

One vehicular access is proposed to neighborhoods K, L, P, and R through W (Active Adult neighborhood). Neighborhood K would include a maximum of 132 housing units, Neighborhood L would include a maximum of 99 housing units, and Neighborhood P would provide a maximum of 121 units. A maximum of 868 Active Adult homes would be provided.

Mitigation Measures TRAF-9: The project applicant shall provide a second vehicular access point to neighborhoods K, L, P, and R through W. The additional access shall, at minimum, accommodate emergency vehicles.

Impact TRAF-10: The project site plan does not provide sufficient detail to evaluate access plans for the proposed elementary school. Due to the potential for safety-related conflicts between vehicles, bicycles, and pedestrians, this is considered a significant impact.

Access to the proposed elementary school site would occur from three roadways: the Secondary Access collector and two minor residential collectors. The site plan does not indicate a circulation scheme for the school.

Mitigation Measure TRAF-10: The project applicant shall prepare a detailed access and circulation plan for the elementary school in accordance with applicable design standards. The plan shall identify the location of proposed access points for vehicle, bicycle, and pedestrian traffic including drop-off and pick-up areas. The plan shall be approved by the City and LUSD prior to site construction.

Implementation of these measures would reduce these impacts to less than significant levels

Potential for Inadequate Parking Supply

Parking. As indicated by the proposed roadway cross-sections, on-street parking would be permitted only on residential streets and the collector interfacing with Spanos Park West. The City of Stockton Municipal Code (Section 16-102.1.1) requires one covered parking space and paved access thereto for each single-family dwelling unit. As all houses would be constructed with garages, each unit would provide its required off-street parking supply. The City has no requirements for on-street parking; therefore, any on-street parking provided would be considered sufficient.

The project site plan does not include sufficient detail to assess the adequacy of the off-street parking for the commercial and office uses proposed at the Marina. The following describes the parking requirements for these components of the project based on the City of Stockton Municipal Code (Section 16-102.2.B2 and 16-102.2.B3).

X *Commercial.* Off-street parking would be required at a rate of 13 parking spaces plus one additional space for each 250 square feet of gross floor area in excess of 5,000 square feet (Section 16-102.2.B2). For a 97,357 square-foot retail center, a total of 382 off-street parking spaces would be required.

X *Office.* A total of 125 parking spaces would be required plus one additional space per each 500 square feet of gross floor area in excess of 25,000 square feet (Section 16-102.2.B3). For a 97,357 square foot-office development, a total of 270 off-street parking spaces would be required.

Impact TRAF-11: The project site plan does not provide sufficient detail to evaluate parking plans for the proposed Marina commercial and office development. This is considered a significant impact.

Mitigation Measures TRAF-11: The project applicant shall provide adequate parking as required by the City's Zoning Code prior to the approval of the site plan for each non-residential use within the project area. Implementation of this measure would reduce the impact to a less-than-significant level.

Implementation of this measure would reduce this impact to a less than significant level.

4.7.4 Level of Significance after Mitigation

All project-related impacts will be mitigated to a less than significant level. However, feasible mitigation does not exist to offset all cumulative impacts. These impacts are significant and unavoidable.

4.8 HOUSING/POPULATION/SOCIOECONOMICS

4.8.1 Existing Setting

Population

Figure 4.8.1 presents the five population subareas used to describe population changes. Over the years, Stockton has grown primarily to the north. In 1960, only 26 percent of Stockton's Metropolitan Area population (22,805 persons) resided in the area north of the Calaveras River (Subarea A). By 1990, the population of Subarea A increased to 47.9 percent (129,064 persons) of the total. The other four subareas (B, C, D1, and D2) have decreased in population during this same period, suggesting that people are migrating to the north area away from the other subareas. This movement, coupled with natural increase and new in-migration, account for the rapid growth of Subarea A. The population of Subarea D1 grew slightly from 2.3 percent in 1980 to 2.5 percent in the 1990's, indicating some recent growth in the downtown Stockton area. Subarea B's share of the population showed the most significant reduction in population share from 1960 to 1990, dropping from 40.7 percent to 23.6 percent of the total population (LSA, 2001). Table 4.8.A shows the population changes by subarea from 1960 to 1990.

Table 4.8.A: Population Changes by Subarea Metropolitan Stockton, 1960 - 1990

	1960		1970		1980		1990	
SUBAREA	NUMBER	% TOTAL	NUMBER	% TOTAL	NUMBER	% TOTAL	NUMBER	% TOTAL
A	22,805	14.7%	42,978	24.5%	86,631	42.2%	129,064	47.9%
B	63,168	40.7%	63,658	36.3%	56,213	27.4%	63,527	23.6%
C	15,007	9.7%	16,967	9.7%	16,112	7.8%	18,196	6.7%
D_1	7,980	5.1%	6,008	3.4%	4,833	2.4%	6,765	2.5%
D_2	46,261	29.8%	45,954	26.2%	41,600	20.3%	52,070	19.3%
Total	**155,221**	100.0%	175,565	100.0%	205,389	100.0%	269,622	100.0

Source: City of Stockton, 2003

The County and City have each shown substantial growth since 1980, driven by immigration of Southeast Asians and increases in Bay Area commute traffic. The City's average annual growth rate between 1990 and 2000 has been about 1.6 percent. Between April 2000 and January 2002, the City of Stockton experienced a 4.1 percent growth rate (SJCOG, 2003).

Demographic characteristics have also changed in the City within the last 20 years. Race or ethnicity within the City has varied from white residents comprising 57 percent of the population in 1980 to 32 percent in 2000. The percentage of black residents has increased from 10 percent in 1980 to 11 percent in 2000. The percentage of Hispanics has increased from 22 percent in 1980 to 33 percent in 2000, while the percentage of Asians has increased from 9 percent in 1980 to 19 percent in 2000 (City of Stockton, 2003).

Figure 4.8.1: Population Subareas

The General Plan indicated that Stockton is expected to "experience relatively significant population growth (2-4% annually) and increasing demand for housing" over the planning period. The General Plan projects a population increase for the City of Stockton to a total population of 262,955 by 2000 (25%) and 302,900 by 2010 (44%). The General Plan indicates that "North Stockton will continue to be the focal point of increased population and housing development."

The SJCOG also projects that Stockton will reach a population of 311,033 by 2010 and 374,631 by 2020. SJCOG projections are shown in Table 4.8.B.

Table 4.8.B: SJCOG Projections Metropolitan Stockton and San Joaquin County Planning Areas

	2000	2010	2020
PLANNING AREA	POPULATION	POPULATION	POPULATION
Stockton*	247,400	311,033	374,631
Escalon	5,825	7,448	8,929
Lathrop	9,975	15,546	20,627
Lodi	57,900	63,787	69,156
Manteca	49,500	64,248	77,699
Ripon	10,400	15,695	20,524
Tracy	54,200	87,456	117,788
Unincorporated	131,400	134881	138,056
Total	**566,600**	**700,095**	**821,851**

Source: SJCOG, 2003
*Notes: *SJCCOG's 1990 population is lower than the 1990 Census tabulation due to slight difference in geographic coverage.*

Housing

The State Department of Finance reports the 2000 household size for Stockton as 3.143 (City of Stockton, 2003).

Information provided by the applicant states that 40% of the individuals moving into the Active Adult community will relocate from within the City while seven percent will relocate from within the County (Gruen, 2003). The average household size for the Active Adult is assumed to be 1.8, based on information provided by the applicant (see Appendix A for documentation). To be conservative, the figure of 2 individuals per household was used to estimate the Active Adult population for the proposed project.

The City's General Plan recognizes the probability of continuing population growth and housing demand over the next 10 to 20 years. The General Plan establishes a series of goals and policies which will ensure that adequate infrastructure and community needs are provided as anticipated growth occurs. The plan contains no policies directly related to population growth.

The housing stock for the City of Stockton as of 2000 was 81,621 total units as determined by the California Department of Finance (DOF) Demographic Research Unit. Between 1990 and 2000, 9,096 units were added, an increase of about 12.5%. The average increase was approximately 910 units per year over the decade. The number of housing units in the North Stockton area has increased from 6,280 in 1960 to 45,883 in 1990 (City of Stockton, 2003). Housing stock totals for 2000, 1990, and 1980 for the City are shown in Table 4.8.C.

Table 4.8.C: Housing Stock, City of Stockton, 1980-2000

	1980 UNITS	%	1990 UNITS	%	2000 UNITS	%
Single Family Units	39,706	64.8	44,871	61.9	53,107	65.1
Multi-Family Units	21,584	35.2	26,325	36.2	27,184	33.3
Mobile Homes	not given		1,329	1.9	1,330	1.6
Total	61,290		72,525		81,621	

Source: DOF 1990

Based on the 2000 Census, the housing vacancy rate (Jan. 1, 2000) is reported at 4.2% for the City of Stockton and 4.0% for San Joaquin County.

Land available for housing development is represented by the designations of vacant land in the General Plan. Nearly 1,526 acres of Low-Medium Density Residential and 285 acres of High-Density Residential designated lands are vacant and available for housing development. These designations would accommodate up to 7,497 and 3,871 units of housing, respectively, for a total of 11,368 units.

The Housing Element of the General Plan contain several goals, policies, and objectives related to housing, primarily related to land allocation. Other policy direction establishes criteria for project-level decisions or mandates action on the part of government officials which would further the provision of housing to all economic segments of the community. Housing policies relevant to the proposed project are discussed in Section 4.6, Land Use as are more general land use policies.

Employment

The 2000 Census indicates that the total labor force for the City of Stockton was 101,850 individuals. The unemployment rate for the civilian labor force was estimated at 12.4%. Total wage and salary employment by industry for the Stockton-Lodi Metropolitan Service Area in 1990, 2000, and 2002 are shown in Table 4.8.D.

Stockton area employment is dominated by four industries which together make up about 62% of the employed civilian labor force. The largest of these industries, trade, transportation, and utilities, makes up 21 percent of the total. Government makes up the second largest industry at approximately 20 percent. Educational and health services make up 12 percent while manufacturing makes up 10 percent of employment. Agriculture, formerly an important part of San Joaquin County's economy, now represents the sixth largest industry at approximately 8 percent of total employment (SJCOG, 2001).

San Joaquin County unemployment averaged about 10% in 2002 (EDD, 1996). This represents an increase after a long, slow decline from 1982-1989 when average annual employment dropped to 9.4%. The unemployment rate is subject to seasonal fluctuation due to the seasonal nature of agricultural, construction, and construction-related employment. Unemployment during 1995, for example, averaged 12.3% but fluctuated from a high of 14.1% in January to a low of 9.7% in September (LSA, 2001).

Table 4.8.D: Stockton-Lodi Metropolitan Service Area Wage and Salary Employment by Industry

INDUSTRY	1990	2000	2002
Agriculture, and Natural Resource and Mining	15,700	16,900	16,200
Construction	9,500	11,600	13,400
Manufacturing	24,300	24,700	21,000
Trade, Transportation, and Utilities	30,800	41,700	44,300
Information	2,700	3,000	3,100
Financial Activities	9,300	8,500	9,200
Professional and Business Services	9,200	16,800	17,200
Educational and Health Services	16,500	22,000	23,300
Leisure and Hospitality	11,700	14,400	15,900
Other Services	4,800	5,900	6,400
Government	33,800	37,000	40,100
Total	**168,300**	**202,500**	**210,100**

Source: San Joaquin Council of Governments 2001

4.8.2 Impact Significance Criteria

Potential significant impacts associated with population, housing, and socioeconomics have been evaluated using the following criteria:

HPS-a Result in substantial, unanticipated population growth;

HPS-b Level of conflict with housing/population projections and policies in the General Plan;

HPS-c Compliance with Stockton's affordable housing policies and objectives;

HPS-d Compliance with Stockton's jobs/housing balance policies and objectives;

HPS-e The CEQA Guidelines state that a project may have adverse impacts on housing if it will affect the existing supply of housing or create a demand for additional housing. A shift in housing supply or demand can produce significant impacts on household formation, commute patterns, and a community's quality of life; and

HPS-f Divide or disrupt the physical arrangement of an established community.

4.8.3 Impacts and Mitigation Measures

Effects Considered to Be less than Significant

Impact HPS-1: The project may have an impact on the City's housing/population projections and policies.

In 2010, the projected population for the City is 311,033. This represents an increase of 63,633 individuals over the 2000 population. Based on an average household size of 3.143, the City will need to add 20,265 housing units to accommodate this population increase. Recent and proposed residential development projects have constructed 13,900 housing units with an additional 3,036 units to be developed. A remaining 3,329 units would need to be planned to accommodate projected population growth. As such, the proposed project does not conflict with housing/population projections in the General Plan. The project will supply housing for a projected demand, including providing an Active Adult community. Therefore, the conditions presented in **Significance Criterion HPS-b** will not occur.

Impact HPS-2: The project may have an impact on the City's jobs/housing balance.

It is expected that 40 percent of the Active Adult home buyers will relocate from within the City limits, while 7 percent will relocate from within the County (Gruen, 2003). It is assumed that these individuals will retain their existing jobs and will not burden the City's jobs/housing balance. A number of these individuals are also expected to be retired. Additionally, a number of individuals who purchase homes in Westlake Villages will come within the City of Stockton. It can be assumed that these individuals are already employed and will not impact the jobs/housing balance. Individuals who relocate from outside of Stockton will most likely move due to employment relocation and will not impact the jobs/housing balance. Additionally, the commercial uses on SPW will provide an employment base, if needed. Therefore, the conditions presented in **Significance Criterion HPS-d** will not occur.

Impact HPS-3: The project will not shift a housing supply or create the need for additional housing.

Project implementation is not expected to affect any existing housing supplies or create a demand for additional housing beyond those proposed in the project. The project is designed to complement the adjacent SPW residential community and will not adversely affect established neighborhoods. Consequently, the project does not result in a shift in housing supply or demand, rather it is a response to expected demand and needed supply. As a result, the conditions expressed in **Significance Criterion HPS-e** will not occur.

Impact HPS-4: The project will not impact established communities.

The project site is located adjacent to SPW and has been designed to complement and extend this community. Project implementation will not divide or disrupt this residential neighborhood or otherwise have an effect on established communities. Therefore, the conditions presented in **Significance Criterion HPS-f** will not occur.

Potentially Significant Effects

Impact HPS-5: Result in substantial, unanticipated population growth.

It is expected that 40 percent of the Active Adult home buyers will relocate from within the City limits, while 7 percent will relocate from within the County. A number of individuals who purchase homes in the

conventional single-family communities are also expected to relocate from within the City. However, based on the number of proposed units, the project would add 8,128 individuals to the City of Stockton population. Based on a 2002 population of 253,800, the proposed project would increase the City's population to 261,928. This constitutes an approximate 3 percent increase in the City's population. In spite of the number of individuals that may relocate within the City, this represents a significant population growth since this area was not considered in planning projections of 2-4% growth rates. In light of these findings, the project may result in the conditions outlined in **Significance Criterion HPS-a**.

This impact is significant and unavoidable. No feasible mitigation exists to offset this impact.

Impact HPS-6: The proposed project does not provide high density residential units (or equivalent) which conflicts with the City's goals for multi-family residential uses.

The General Plan indicates that 300 acres of undeveloped plan should be provided in the General Plan area for high density housing. Because the project does not provide any multi-family housing, the existing deficiency of high density areas will be exacerbated. In light of these findings, the project may result in the conditions outlined in **Significance Criterion HPS-c**.

This impact is significant and unavoidable. No feasible mitigation exists to offset this impact.

4.8.4 Level of Significance after Mitigation

The proposed project results in two significant and unavoidable impacts to population and housing. The project will generate a substantial and unanticipated population that has not been considered in planning efforts and will not provide affordable housing, compounding existing deficiencies. Mitigation is not available to offset these impacts.

4.9 PUBLIC SERVICES

The following subsections briefly describe the existing public services within the City relating to the proposed project.

4.9.1 Existing Setting

Parks and Recreation

Background

Park and Recreation Standards
The City of Stockton has adopted the parkland standards presented in Table 4.9.A.

Table 4.9.A: Recommended Park Classification and Standards

TYPE OF PARK	ACRES/1,000 POP.	ACRES/PARK	SERVICE RADIUS
Neighborhood Park	1	5 - 10	½ mile
Community Park	2	10 - 30	1 mile to citywide
Regional Park	7	30+	region wide

Source: LSA, 2001.

Neighborhood and Community Parks
By applying the above standards to the City's population base, the Park and Recreation Element determined the total parkland acreage by park type. This park acreage is expressed by park "need" for the entire City of Stockton in accordance with the parkland standard. The population of the City is estimated at 261,300 with a parkland need of 783.9 acres. When compared to the existing amount of parkland (545.25 acres), there is an overall deficiency of 238.65 acres. Table 4.9.B illustrates the parkland deficiency for the City.

Table 4.9.B: Neighborhood and Community Park Acreage Stockton City Limits

PARK TYPE	EXISTING CITY PARKS	NEED PER PARKLAND STANDARD	SURPLUS/ (DEFICIT)

PARK TYPE	EXISTING CITY PARKS	NEED PER PARKLAND STANDARD	SURPLUS/ (DEFICIT)
Total Citywide (Population 261,300)			
Neighborhood	153.15	261.3	(108.15)
Community	392.1	522.6	(130.5)
Total	**545.25**	**783.9**	**(238.65)**

Source: City of Stockton, 2003

Regional Parks

Table 4.9.C illustrates the existing regional parks that serve the Stockton area and how their combined acreage compares with the City standard. It should be noted that none of the regional parks are located in the City of Stockton.

Table 4.9.C: Regional Park Facilities and Regional Park Standard Comparison

PARK	ACREAGE
Micke Grove	258
Oak Grove	180
Silver Lake	150*
Regional Sports Center	70
Total Acreage	**658**
Needed Acreage per Parkland Standard	**1,829**
(Shortfall)/Overage	**(1,171)**

Source: LSA, 2001.
*Notes: *Actual acreage of the camp is 17 acres; however, this number is increased to include surrounding USFS land.*

The City and County are significantly deficient in regional parkland per the City's parkland standards.

Community Centers
Five community centers operate within the City: McKinley, Seifert, Sierra Vista, Stribley, and Van Buskirk. Based on a City standard of providing 1 community center per 30,000 people, the City appears to fall short of this standard. Additionally, the City falls short of meeting the standard of ½ square foot per resident, with a city population of 261,300. However, the City's General Plan provides policies to consider schools as community centers, thereby alleviating the deficiency in community centers.

Assessment of Future Demand

According to the City's Park and Recreation Element, as the City continues to grow in population, additional parks will need to be added to the City's current park system to keep up with demand. The City currently has several park sites that it anticipates developing over the next five to ten years. These sites are listed in Table 4.9.D.

The SJCOG estimates that the Stockton Metropolitan Area's population will grow by 90,000, to approximately 380,000, in 2010 (the Stockton Metropolitan Area is larger than the City of Stockton). Using the standard of 3 acres of neighborhood and community parkland per 1,000 population, 270 acres of parkland would need to be developed to meet the needs of these 90,000 new residents. As Table 4.9.D shows, only approximately 25.7 acres of this parkland is currently planned. Therefore, not counting the existing City-owned undeveloped sites, an additional 244.3 acres would need to be planned and developed to meet Stockton's estimated 2010 population. This calculation does not consider the existing deficit of neighborhood and communities parklands within the City limits.

Table 4.9.D: Future Park Sites

PARK	TOTAL ACREAGE
S.L. Fong (formerly Blossom Ranch Park)	5.0
Matt Equinoa Park (formerly La Morada Park)	15.0
Mike Garrigan Park	5.7
John Peri Park	N/A
Arnold Rue Park	N/A
Total	**25.7**

Source: City of Stockton, 2003.

Planned Bikeways

In May 1995, the City adopted the Bikeway Facilities Master Plan (Bikeway Plan). The Bikeway Plan was amended in January, 1999, and is currently being proposed for a subsequent amendment. The Bikeway Plan defines a classification system for bikeways, describes a proposed bikeway system (including construction and maintenance cost estimates), recommends policies for promoting bicycling and maintaining the City's bikeways, and presents a set of short-term (three- to five-year) implementation projects. The Bikeway Plan suggests a system that includes a total of 66 miles of separated bike paths (Class I), 92 miles of striped bike lanes (Class II), and 78 miles of bike routes (Class III). Figure 4.7.4 shows the adopted bikeway route plan. The plan designates a class I bikeway (12-foot width) along Pixley Slough, which forms the southern boundary of the SPW development. It is assumed that the bike path would be extended to include the Westlake Villages site.

Solid Waste/Landfill

The City of Stockton Public Works Department is responsible for the planning and administration of the solid waste management plans for the City. In the City, a majority of solid waste disposal is by means of landfill with material recovery accounting for the rest.

As mandated by law, the City complies with the requirements outlined in the California Solid Waste Reuse and Recycling Access Act (PRC 42900 through 42911).

The Forward, North County, and Foothill Landfills are the City of Stockton's main landfills. The Forward Landfill receives 85% of the City's waste and is owned and operated by Allied Waste North America. The remaining 15% is sent to the North County and Foothill Landfills which are County owned facilities (Miller, 2003). The Forward Landfill is a Class I, II, and III facility that accepts municipal, construction, agricultural, and industrial wastes, including asbestos, contaminated soils, and biosolids (CIWMB, 2003).

Disposal of commercial waste is handled in the competitive market and will be disposed of at the discretion of the collection companies.

Fire Protection Services

The City of Stockton Fire Department is responsible for fire protection services, water rescues, technical rescues (e.g., building collapse rescues), and response to hazardous materials spills within the City. It also provides emergency medical services, although American Medical Response, a private company, provides transport services. The current firefighting staff size of the Fire Department is 218 (City of Stockton, General Plan Background Report, 2003), and the standard structure fire response time is 3-4 minutes.

Police Protection Services

The City of Stockton Police Department provides protection to the community. The Police Department has centralized offices at 22 East Market Street in the downtown area of the City. There are approximately 377 sworn officers and 183 additional staff working for the Police Department. The Police Department has a master plan that estimates future staffing needs to lower crime rates and meet response time standards.

The proposed project would fall under the Police Department's Lakeview District geographical borders, generally Pacific Avenue to the east, Harding Way to the south, and the City limits to the north and west. A new police facility located in north Stockton at Hammertown and Tam O'Shanter is scheduled to open in November 2003. The four district comprising the Police Department will be reconfigured after the new station is opened (Evans, 2003).

Schools

The project site is located within the Lodi Unified School District (LUSD). The LUSD is responsible for providing public education to area residents at the elementary, middle, and high school levels. In light of the current vacant condition associated with the project site, there are no students being generated by the project site. An elementary school is planned for the adjacent SPW development.

The applicant has had preliminary contact with the LUSD. Discussions regarding the provision of an elementary school site, location, and size requirements have been initiated. It is expected that the students generated from the Westlake Villages project would be served by the proposed Westlake Villages elementary school, Spanos Park West elementary school, Delta Sierra Middle School, and Bear Creek High School (Ryan, 2003). Current enrollments are presented in Table 4.9.E.

Table 4.9.E: Current Enrollments

SCHOOL	CURRENT ENROLLMENT	TOTAL CAPACITY
Delta Sierra Middle School	887	727*
Bear Creek High School	2,398	1,773

Source: Ryan, 2003
** Year-round education. Actually holds more than 727 students.*

Library

The Stockton-San Joaquin Public Library Department is operated by Stockton as a City department but is funded jointly by the City and County. The library system serves the entire County with the exception of the City of Lodi, which has its own system.

The library closest to the project site is the Troke Branch at 502 Benjamin Holt Drive, located approximately 8.0 miles south of the project site. The Thornton Branch is located in Thornton, approximately 15 miles north of the project area and is a County Library that serves the unincorporated areas of the County (a population of approximately 10,000 people).

The annual library attendance for 2002, was approximately 21,000 people. Library collections totaled approximately 20,000 as of 2002, however, current totals are probably higher and also include collection access on the internet.

The Library Department is planning a new branch library to be located at Morada Lane and West Lane, adjacent to the proposed Lodi High School development. This library is intended to serve the northeast Stockton area and would be approximately 7.0 miles southeast of the project area. Currently, there is no northwest branch site planned. Any branch library for the northwest area of Stockton would be based on future need (Stanke, 2003).

Vector Control. The proposed project is located immediately adjacent to lands managed for agriculture and environmental purposes. These uses are capable of harboring and producing mosquitoes, which can migrate to the proposed development site. Although the San Joaquin County Mosquito and Vector District performs routine abatement services to these lands, the District cannot assure control to acceptable levels.

4.9.2 Impact Significance Criteria

Potentially significant impacts associated with public services have been evaluated using the following criteria:

Parks and Recreation

PR-a Provide an adequate supply of parkland and related facilities to meet the City's Parkland acreage and size requirements for neighborhood and community parks;

PR-b Contribute to the over-usage of Oak Grove Regional Park due to the proximity of the project to the park.

PR-c Park maintenance requirements could contribute to the financial burden of the City.

PR-d Conflict with General Plan policies for park locations.

Community Center

CC-a Satisfy the City's Community Center facility requirements of one center per 30,000 residents (combined city-owned, school district, and housing authority);

Police Protection

PP-a Increase the demand for law enforcement services and interfere with the Police Department's ability to deter crime;

Schools

SCH-a Project-generated students would substantially increase the public school population beyond existing or planned school capacity;

Fire Protection

FP-a The increased demand for fire protection would substantially interfere with the ability of the fire department(s) to provide adequate service to the City and the project;

FP-b The ability of the fire department to provide an adequate response time to emergency calls would be compromised;

Library Services

LIB-a Meet City's requirements for library services for urban conditions;

Solid Waste

SW-a Increase in solid waste sufficient to exceed landfill capacity or substantially shorten the life of the landfill; and

SW-b Generation of solid waste sufficient to overburden the collection agency beyond their ability to service the project.

Vector Control

VC-1 Expose project residents to health risks due to transmission of vector-related viruses.

4.9.3 Impacts and Mitigation Measures

Effects Determined to Be Insignificant

Community Center

Impact CC-1: The project may not provide adequate community center facilities, aggravating existing City deficiencies.

Public and private recreation areas will satisfy some of the community center needs of the project's residents. The private areas will not provide the same level of services should the center be publicly owned and operated. However, the elementary school proposed as part of the project would be open to the general public and would offset this deficiency. Therefore, the conditions included in **Significance Criterion CC-a** are not expected to occur.

Potentially Significant Effects

Parks and Recreation

Impact PR-1: Project implementation shall result in an overall deficiency of parkland area, based on the project population and demand.

Community Parks. As indicated on the Master Development Plan (Figure 3.3.1), the Westlake Villages project will provide 12.8-acres of public parkland[1] for use by the project residents. Based on a maximum of 2,894 units, the total number of residents generated by the proposed project would be 8,128 (based on 3.143 individuals per conventional housing and 2.0 individuals per Active Adult housing). City parkland standards would require a total of 16.3 acres of community parklands. The proposed project is 3.5-acres deficient in community parklands based on City standards. As a result, the project would have a significant impact on the provision of community park land, and the conditions outlined in **Significance Criterion PR-a** would occur.

Neighborhood Parks. The project will provide 12 acres of village parks[2], ranging in size from 0.5 to 1.5 acres. The total acreage for these parklands was not provided in the Master Development Plan. Based on City standards of 1 acre for every 1,000 individuals, the proposed project should provide 8.1-acres of neighborhood parklands. Additionally, City standards for neighborhood parks require a minimum size of 5 acres per park. Collectively, it appears that the proposed project would provide an adequate amount of neighborhood parks, however, the proposed village parks do not meet the City's minimum size requirements. As a result, the project would have a significant impacts on the provision of neighborhood park land, and the conditions outlined in **Significance Criterion PR-a** would occur.

The proposed project does not provide adequate community parkland space and the proposed size of the neighborhood parks do not meet minimum City size requirements. In light of the existing shortfall of park land in the City, project implementation would aggravate this deficiency and contribute further to the unmet

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[1]Referred to as public parks in the Westlake Villages. Public parks do not meet the minimum size standards for Community Parks.

[2]Referred to as village parks in the Westlake Villages. Village parks do not meet the minimum size standards for Neighborhood Parks.

demand for parks. As a result, the project would have a significant impact on the provision of park lands, and the conditions outlined in **Significance Criterion PR-a** would occur.

Regional Parks. As presented in Table 4.9.A, the recommended regional parkland standard for the City of Stockton is 7.0 acres per thousand population. Application of this standard to the Westlake Villages project would warrant an obligation of 56.9 acres of regional parkland.

Oak Grove Regional Park provides a total of 180 acres of regional park land in the north Stockton region. Despite this relatively large County facility near the project site, based on population of 261,300 persons, a sizeable regional parkland shortfall (1,171 acres) is noted in the City when applying the regional parkland standard of 7.0 acre per 1,000 population. When adding the new population from the proposed project to the region, the shortfall will be incrementally impacted. Additionally, consultation with County staff indicates that Oak Grove Regional Park is already overburdened during events. Consequently, the conditions outlined in **Significance Criterion PR-b** are expected to occur.

Mitigation Measure PR-1: Prior to issuance of building permits, the applicant shall pay in-lieu fees equivalent to the neighborhood and community park acreage requirements (per City standards) that remain unfulfilled. The applicant will be required to provide 56.9 acres of regional parklands or an equivalent fee as determined by the City.

While payment of in-lieu fees is required to accommodate the park dedication requirements for the Westlake Villages project, park land will continue to be in short supply for the City. Unless the applicant provides adequate parkland acreage (as previously identified), the project will adversely contribute to these shortages, and is considered a significant impact.

Impact PR-2: Public parks proposed within the Westlake Villages project will impose a financial burden on the City with respect to park maintenance.

The City has adopted a policy regarding the development and maintenance of public parks. The policy specifies that the City will not develop a park unless a maintenance funding mechanism is in place. The primary mechanism is the City Consolidated Landscape Maintenance District. As a result of Proposition 218, City Council policy specifies that parks will be developed only when property owners approve an assessment for park maintenance fees and sufficient funds have been accumulated within the area's development fee zone for such improvements. For the Westlake Villages project, the policy is applicable to the parks, recreation areas, and open space proposed by the applicant. The applicant will fund park maintenance through the formation of a homeowner's association or equivalent. This homeowner's association will assess fees to provide funds to maintain the parklands within the project boundary. Therefore, the conditions outlined in **Significance Criterion PR-c** will not occur. However, the following measures are required.

Mitigation Measure PR-2a: Prior to recordation of any Final Map, the Owner, Developer, successor-in-interest (ODS) shall form a new zone of the Stockton Consolidated Landscape Maintenance District 96-2, and approve an assessment providing for the subdivision's proportionate share of the costs to maintain any public parks within the service area for this subdivision or serving this subdivision. The ODS may request to annex to an existing zone of the Stockton Consolidated Landscape Maintenance District 96-2 provided the subdivision is within the service area of a park for which a zone of the Stockton Consolidated Landscape Maintenance District 96-2 has already been formed.

Formation of a new zone shall result in an assessment being established that include, but not limited to, costs for: 1) annual maintenance of the park; and 2) administrative costs. The assessment levied shall contain a provision that will allow the maximum annual assessment to be increased in an amount equal tot he greater of: 1) three percent (3%) or 2) the percentage increase of the Consumer Price Index for the San Francisco - Oakland - San Jose County Area for All Urban Consumers, as developed by the U.S. Bureau of Labor Statistics, for a similar period.

Mitigation Measure PR-2b: Prior to recordation of any Final Map, the ODS shall establish a maintenance entity acceptable to the Community Development Director, the Parks and Recreation Director, and the Public Works Director to provide funding for the maintenance of, and if necessary, replacement at the end of the useful life of, improvements including, but not limited to, common area landscaping, landscaping in the right-of-way, sound walls and/or backup walls, and all "improvements" serving or for the special benefit of this subdivision.

If the ODS elects to provide maintenance for the improvements through a maintenance assessment district, the ODS shall form a new zone of the Stockton Consolidated Landscape Maintenance District 96-2 that include the entire subdivision. The entire subdivision may be considered for annexation to an existing zone of the Stockton Consolidate Landscape Maintenance District 96-2, provided the type, intensity, and amount of the improvements to be maintained are similar to improvements in the zone to which annexation is proposed. Formation/annexation shall result in an assessment being approved that shall be levied on all properties in the subdivision to ensure that all property owners pay their proportionate share of the costs of maintaining, in perpetuity, the improvements serving or for the special benefit of this subdivision.

Mitigation Measure PR-2c: All walls shall be located on private property and a separate maintenance easement shall be recorded for such walls. Such easement shall be sufficient to allow for regular maintenance (i.e graffiti removal) and shall include the width of the support footing as it extends from both sides of the wall.

Implementation of the above mitigation measure will ensure that the park facilities provided in Westlake Villages will receive sufficient financial means to be maintained and operated parks over the long term.

Impact PR-3: Design and/or locations for neighborhood parks without public street access around the park will conflict with City design criteria.

General Plan policy (Public Facilities and Services - Parks and Recreation, Goal 1, Policy 5) requires neighborhood park sites to be surrounded by public street access. All the village park sites proposed by the applicant will be surrounded by public streets, consequently, the conditions outlined in **Significance Criterion PR-d** will not occur.

Implementation of the proposed project will not result in inconsistencies with General Plan policy regarding the provision of public street access around neighborhood park sites.

Solid Waste/Landfill

Impact SW-1: Implementation of the Westlake Villages project could generate significant volumes of solid waste, which could adversely impact landfill capacity.

During project construction, minor quantities of materials will be generated for disposal at the area landfills. Unlike many development projects that generate significant quantities of waste are generated during site preparation, construction at the project site will not have this effect. With the exception of minor farming facilities that may be present (irrigation facilities, diversion equipment), the site is virtually barren. As the building and development process occurs, wastes will be generated as typical of construction activities. These materials will be removed by commercial haulers and disposed at local landfills. As discussed below, the long term outlook for landfill capacity is favorable. Construction wastes that are generated on a one time basis should not adversely accelerate depletion of landfill capacity.

Consultation with the City's Solid Waste Manager provided the following solid waste generation rates and estimates. Table 4.9.F presents the daily solid waste generation estimates.

Table 4.9.F: Daily Solid Waste Generation (pounds per day)

LAND USE	PROPOSED UNITS	TOTAL PEOPLE	DAILY GENERATION FACTOR	PROPOSED WASTE
Proposed Westlake Villages				
Residential	2,894	8,128	11.5 lbs./person/day	93,472
Total:				**93,472**

Source: Miller, 2003

The application of these rates to the population projected for the proposed Westlake Villages project results in an estimated volume of 93,472 pounds per day or 41 tons per day. Assuming a 50% diversion rate, the total landfill capacity required for the proposed project would be 7,483 tons per year.

The City is guaranteed landfill capacity for residential and commercial until June 2019. This service is provided under the terms of the City's exclusive residential and commercial collection contracts with Waste Management and Allied Waste. These companies would be contractually obligated to provide landfill space for the proposed project. The conditions presented in **Significance Criterion SW-a** will not occur.

Solid waste service is a competitive business that benefits from an increase in service. As a result of the competition generated by market demand, collection service companies adjust to specific demand requirements. While the collection companies may require additional staff, equipment, etc., to manage the increase in project demand, the effects are beneficial to the individual participating companies. Consequently, the conditions presented in **Significance Criterion SW-b** will not occur.

Implementation of the proposed project will not result in overburdening the regional landfills or collection services.

Fire

Impact FP-1: Project implementation will increase the demand for fire protection services which could affect the level of service protection and response times.

The proposed project would add 8,128 individuals to the North Stockton area. This would require a subsequent increase in fire fighting personnel to provide adequate fire protection services. A fire station is included as part of the project and will be located at the southwestern corner of Eight Mile Road and Driveway #1. This will prevent increases to response times and level of service. The new fire station will also provide services to areas outside of the project site. However, the fire station will need to be staffed which may create a financial burden on the City. Mitigation is provided to offset this impact.

New developments tend to generate fewer fire-related calls due to the use of new materials and construction techniques in accordance with current codes. The Active Adult community is expected, however, to generate more emergency medical services calls than conventional communities (Gruen, 2003).

Mitigation Measure FP-1a: The applicant will provide an on-site fire station at the southwest corner of Eight Mile Road and F Street. Additionally, prior to issuance of building permits, the project applicant shall pay development impacts fees (as applicable) to reduce the burden on fire protection services. Evidence indicating payment of fees shall be provided to the Director of Community Development Department.

Mitigation Measure FP-1b: The applicant will consult with the City's Fire Department regarding adequacy of project plans relating to the safety of structure, safety devices, and emergency vehicle access.

Implementation of the above mitigation measures will reduce fire protection impacts to less than significant levels.

Police

Impact PP-1: The proposed Westlake Villages project will increase the demand for law enforcement services.

The proposed project would add 8,128 individuals to the North Stockton area. This would require a subsequent increase in law enforcement officers to provide adequate police protection services. The Active Adult community is expected to generate only 54 percent of the average per capita police costs induced by the conventional housing community (Gruen, 2003).

It was noted, however, that the "gated" nature of villages G through L will serve to deter criminal activity, thereby decreasing the number of calls generated from the project site.

Mitigation Measure PP-1a: Prior to issuance of building permits, the project applicant shall pay development impacts fees (as applicable) to reduce the burden on police protection services. Evidence indicating payment of fees shall be provided to the Director of Community Development Department.

Mitigation Measure PP-1b: The applicant will consult with the City's Police Department regarding adequacy of project plans relating to the safety and defensible space issues.

Mitigation Measure PP-1c: Contractors are responsible for providing licensed uniformed security guards for after hours and weekends to prevent damage or theft of building materials, equipment, and/or appliances. Removal of doors to home appliances until after installation in new hoes shall be considered.

Mitigation Measure PP-1d: Construction site perimeter fencing is also essential to prevent criminal activity during construction.

Implementation of the above mitigation measures will reduce police-related/security impacts to less than significant levels.

Schools

Impact SCH-1: Project implementation will generate additional students and could affect the capacity of existing schools.

The LUSD relies on student generation rates to estimate the potential students from proposed developments. Table 4.9.G presents LUSD generation rates.

Table 4.9.G: LUSD Generation Rates

GRADE LEVEL	SINGLE FAMILY
K-6	0.302
7-8	0.081
9-12	0.150

Source: LUSD, 2003

The composite number used for K-12 is 0.533.

Based on the maximum allowable single family units per the Master Development Plan and generation rates, Table 4.9.H reflects an estimate of the project student generation.

Table 4.9.H: Estimated Student Generation from Westlake Villages

GRADE LEVEL	SINGLE FAMILY
K-6	618
7-8	166
9-12	307
Total:	**1,091**

Source: LSA, 2003

A new elementary school facility will be constructed at Westlake Villages to serve a majority of the new elementary aged children. The first phase of Westlake Villages will be accommodated by the new Spanos Park West elementary school. Students generated by the proposed project for middle and high school levels will be accommodated by the new Crista McAuliffe Middle School (to be completed in August 2004) and Bear Creek High School. As a result, the conditions outlined in **Significance Criterion SCH-a** would not occur.

Mitigation Measure SCH-1: Prior to issuance of building permits, the project applicant shall pay fees (as applicable) to comply with State-mandated impact fees. Evidence indicating payment of fees shall be provided to the Director of Community Development Department. The project applicant will provide an elementary school as identified in the project description.

Project implementation will not have a significant impact on LUSD school services.

Library

Impact LIB-1: Implementation of the proposed project will increase the demand for library services.

The proposed project would result in a higher demand for library services. Currently, the City is planning to construct a branch library to service the northeastern portion of the City. The City's Library Master Plan does not provide provisions for a library in the northwestern section of the City. Consultation with library personnel indicated that providing adequate space within the commercial portion of Spanos Park West would offset any impacts from the proposed project. It is expected that the additional population generated as part of the proposed project may result in the conditions outlined in **Significance Criterion LIB-a**.

Mitigation Measure LIB-1a: Prior to issuance of building permits, the project applicant shall pay development impacts fees (as applicable) to reduce the burden on community library services. Evidence indicating payment of fees shall be provided to the Director of Community Development Department.

Implementation of the previous mitigation measure will create a less than significant impact on library services.

Vector Control

Impact VC-1. Locating the project development adjacent to sources of mosquito populations could result in health risks to residents

The County Mosquito and Vector Control District monitors mosquito populations throughout the project area, and provides vector control services to reduce health risks to area residents. Based on their records, the mosquito populations may periodically be at levels that could present a public health problem. Even with aggressive mosquito control operations, mosquito populations may remain higher that considered appropriate or acceptable for the project uses.

The project site will continue to rely on vector control services provided by the District. Like similar developments in the vicinity, fees collected from property taxes and/or other sources will be used to control mosquito populations.

Mitigation Measure VC-1: Should the District's efforts to control mosquito populations within the project area fail to adequately control the potential health risk to the project population, the Westlake Villages Owner's Association or similar organization shall provide additional resources or financial support to protect project residents from vector-related health risks.

Implementation of the above measure will reduce the potential vector-related health risks to less than significant levels.

4.9.4 Level of Significance After Mitigation

Except for park land impacts, implementation of the above mitigation measures will reduce the impacts to public services to less than significant levels. For park lands, even with the proposed mitigation measures, the potential impacts to park lands will remain significant and adverse.

4.10 PUBLIC WATER SUPPLY ASSESSMENT

The City of Stockton Municipal Utilities District has prepared a Water Supply Assessment in conjunction with the proposed project. This Water Supply Assessment is the basis for this section of this EIR and is provided in Appendix I.

4.10.1 Existing Setting

Water Supply

The Stockton East Water District (SEWD) is a public agency that treats and supplies water to City of Stockton, San Joaquin County, California Water Service Company and San Joaquin County farmers. At the time of the Water Supply Assessment, the SEWD water treatment plant capacity was 45 million gallons per day (mgd). Actual SEWD water supply availability ranges from 100,000 acre-feet per year (wet years) to 30,000 acre-feet per year (dry years) to 22,000 acre-feet (critical years). The source of SEWD's is via the New Hogan Reservoir (up to 110,000 acre-feet) and New Melones Reservoir (75,000 acre-feet). The contract for New Hogan Reservoir water also entitles the SEWD to 10,000 acre-feet per year that has not yet been appropriated by Calaveras County. The SEWD also has interim contacts with the Oakdale Irrigation District (OID) and South San Joaquin Irrigation District (SSJID) for a total of 30,000 acre-feet per year. Surface water availability is expected to decrease, in the future, since either the OID or SSJID contracts will not be renewed. Additionally, as Calaveras County appropriates more water from the Calaveras River, less will be available to the SEWD. Table 4.10.A outlines SEWD water sources.

Table 4.10.A: Existing SEWD Water Sources and Critical Year Availability

Water Source	Annual Contract Amount Thousand Acre Feet	Projected "Critical Year" Annual Availability (acre-feet per year)		
		2000	2010	2020
New Hogan Water Supplies	Total Yield 100	12,000	12,000	12,000
New Melones Interim Contract	Total Contract 75	Not Available in Dry Years		
Calaveras County Water District	Unused Calaveras County Water Rights	10,000	8,000	6,000
Oakdale Irrigation District	15	4,000	4,000	4,000
South San Joaquin Irrigation District	15	4,000	4,000	0
TOTAL	205	30,000	28,000	22,000

Source: MUD, 2004

Ground water comprises approximately 40 percent of City of Stockton Metropolitan Area's (COSMA) total water supply. Between 1947 and 1978, ground water levels declined due to the reliance of ground water as the sole means of a water supply. More recently, ground water fluctuations are due to seasonal wetness and irrigation usage. Since the drought of the early 1990's, the ground water basin is considered to be recovering and is "operating within a manageable range." Since 1947, saline water has migrated east-northeast and

rendered groundwater unusable in some areas. The estimated sustainable use of ground water is 0.92 acre-feet per acre per year for new growth in the northeastern portion of the City and 0.75 acre-feet per acre per year for the remaining areas. These numbers are expected to limit saline water intrusion, maintain or not significantly lower ground water levels, and be sustainable over the long term. This equals approximately 43,000 acre-feet per year over wet and dry years.

Significant growth in the City of Stockton has increased the demand of water. This growth coupled with regulatory "pressures" and saltwater intrusion of groundwater have put pressure on the City of Stockton's water supplies. To offset this pressure and growth, the City has attempted to secure existing surface water supplies from the SEWD and sustainably manage groundwater supplies. The City has applied to the State Water Resources Control Board to appropriate up to 125,900 acre-feet of water per year from the Delta Water Supply Project. The rights to this water supply are not yet secure.

Currently, the existing water demand for the City of Stockton Metropolitan Area (COSMA) is 68,000 acre-feet per year. This is expected to increase to 85,330 acre-feet per year by 2015, which coincides with the build-out under the current City of Stockton General Plan. Table 4.10.B outlines the existing water supplies and demands for the COSMA. Table 4.10.C outlines the estimated future water demand based on approved General Plan projects.

Table 4.10.B: Existing Water Supplies and Demands for the COSMA

Year Type	Demand Reduction	Surface Water (acre-feet/ year)	Ground Water (acre-feet/ year)	Total Water Supply (acre-feet/year)	Year 2000 Demand with Reductions (acre-feet/ year)
Normal	0%	48,194	19,806	68,000	68,000
Single Dry	15%	19,300	38,500	57,800	57,800
Multiple Dry (hypothetical 3-year drought)	0% (first) 10% (second) 10% (third)	48,194 19,300 19,300	19,806 41,900 41,900	68,000 61,200 61,200	68,000 61,200 61,200
Average over 70 years	5%	35,620	29,199	64,819	64,819

Source: MUD, 2004

Table 4.10.C: Future Water Demand Based on Approved General Plan

General Plan Land Use Designation	Unit Demand Factor (acre-feet per acre per year)	General Plan Area (acres)	Municipal Water Demands at Year 2015 (acre-feet per year)
Low-Medium Density Residential	1.5	31,222	47,872
High-Density Residential	3.0	1,368	4,104
Administrative Professional	1.5	841	1,266
Commercial	1.5	3,776	5,749
Performance Industrial/Industrial	1.5	9,582	14,020
Institutional	1.5	6,648	10,235
Park and Recreational	2.0	1,042	2,084
Agricultural/Open Space	---	27,585	—
TOTAL		82,064	85,330

Source: MUD, 2004

Water Distribution System

Construction of the conveyance facilities for New Melones Reservoir water to the treatment plant and expansion of the water treatment plant have helped meet the water needs of the planning area. Since 1988, a portion of the infrastructure to serve the project site has been constructed. This infrastructure includes the Northwest Reservoir (two 3.4 million gallon storage tanks and associated transmission facilities within the proposed project site), and the segment of the north Stockton 30-inch line (LSA, 2001). A third water storage tank is planned in this area to serve the storage and water pressure requirements for development in this region. This third storage tank is a planned City Capital Improvement Project and is being funded through developer-related fees. Construction of the tank will occur in response to anticipated development activity. A 24-inch stub line, which exists along Consumnes Drive in Spanos Park West would be extended into Westlake Villages. A 12-inch water line located in Eight Mile Road and a 12-inch line in Trinity Way could also be extended into the proposed project area. Numerous smaller pipes to distribute water at the appropriate pressures to all points within the system are also necessary to serve this development. These lines are included in the Master Development Plan and would be constructed as the development progresses (DEA, 2003). According to the project engineer, the existing water lines within Spanos Park West have been sized to accommodate future demand in the North Stockton area. Figure 4.10.1 provides a layout of existing and proposed (conceptual) water facilities.

Regulatory Background

The California Water Code requires that land use lead agencies and public water purveyors plan for adequate water supplies to meet existing and future demands. California Water Code Sections 10910-10915 dictate the following: 1) to identify the responsible public water purveyor for a proposed development project, and 2) to request from the responsible purveyor, a "Water Supply Assessment". This assessment is

Figure 4.10.1: Conceptual Water System Plan

required to demonstrate that the public water purveyor can adequately supply the proposed project and existing and planned future water demand. The California Water Code specifies the information to be addressed in the Water Supply Assessment.

4.10.2 Impact Significance Criteria

WSA-a Demonstrate that available water supply can meet the proposed project demand; and

WSA-b Provision for water system modifications sufficient to meet proposed project demand.

4.10.3 Impacts and Mitigation Measures

Impact WSA-1: Implementation of the proposed project will increase the demand for water supplies. The City may not be able to guarantee a supply of water beyond on a first-come, first-serve basis.

Water supplies to the SEWD are expected to decrease in the future due to the loss of OID or SSJID water, and the loss of Calaveras River water. This decrease will be partially offset by increases in New Hogen or New Melones water deliveries. It is expected that the SEWD will meet dry year water deficiencies through the use of ground water, water conservation , and other sources of surface water supplies. These other sources of surface water may include water transfer agreements with local irrigation districts and municipalities. Table 4.10.D presents the existing water supplies and demands for the COSMA.

The proposed project's water demands will be met using surface and ground water. Currently, the average water demand per acre equals 1.6 acre-feet per acre per year. This average is used to assess demand from future developments. Surface and ground water supplies will be used to meet the proposed project water demand. The source of the water (surface or ground) will depend on the hydrologic year (wet, dry or critical) and availability of surface water. New development applications will receive 0.92 acre-feet per acre per year of ground water. The remaining 0.68 acre-feet per acre per year will be obtained through "surface water and other supplemental supplies including but not limited to the SEWD supplies, adjacent water districts, water conservation , and reclaimed water" (MUD, 2004).

Table 4.10.D indicates how the COSMA water demands will be met in the year 2024. Under normal conditions, surface and ground water will be used to meet projected demands. In dry years, ground water will be relied on to meet shortages in surface water supplies.

Table 4.10.D: Available Water Supplies and Demands Including the Proposed Project

Year Type	Demand Reduction	Surface Water (acre-feet/ year)	Ground Water (acre-feet/ year)	Total Water Supply (acre-feet/year)	Year 2000 Demand with Reductions (acre-feet/ year)
Normal	0%	49,102	24,391	73,493	73,493
Single Dry	15%	19,300	43,169	62,469	62,469
Multiple Dry (hypothetical 3-year drought)	0% (first) 10% (second) 10% (third)	49,102 19,300 19,300	24,391 46,844 46,844	73,493 66,144 66,144	73,493 66,144 66,144
Average over 70 years	5%	35,623	34,195	69,819	69,819

Source: MUD, 2004

The Water Supply Assessment indicates that there is a sufficient supply of water to serve the proposed project. The City has indicated that water will be provide on a first-come, first-serve basis and the Water Supply Assessment also indicates that "annexation of the project to the City of Stockton assumes no pre-existing entitlement of water." However, the Water Supply Assessment states that "the COSMUD ... has sufficient water supplies to meet the water supplies of the project" and this Water Supply Assessment "will remain valid for 24 months from the date of transmittal to the Community Development Department." If the project is approved within this 24 month time frame, the Water Supply Assessment indicates that water will be available and the conditions outlined in **Significance Criterion WAT-a** will not occur.

The following conclusions are included in the Water Supply Assessment:
"The COSMUD determines that it has sufficient water supplies to meet the water demands of the project. The COSMUD makes this determination based on the information provided in the WSA and on the following specific facts:

X The existing near-term and long-term reliable supplies of SEWD surface water supplies and indigenous groundwater supplies can deliver a sustainable reliable water supply without impacting environmental values and/or impacting the current stabilization of the groundwater basin underlying the COSMA.

X The existing conjunctive use program of using SEWD and future COSMUD surface water supplies and COSMA groundwater supplies. These two supplies have been extensively analyzed as part of the DWSP Feasibility Report, and additional groundwater studies completed as part of a regional [Water Supply Assessment] shows that sufficient water rights and available groundwater exist for the Project.

X The project will be served by water supplies made available through the existing COSMUD conjunctive program."

If the project is approved within this 24 month time frame, the Water Supply Assessment indicates that water will be available and the conditions outlined in Significance Criterion WAT-a will not occur.

Impact WSA-2: Project implementation could require extensive modifications to the existing water system to meet proposed project demand.

Development of the proposed project would necessitate water system modifications in order to provide adequate distribution. Most of the water system modifications that would be necessary to support development of the proposed project have already been implemented (see discussion in the above section Water Distribution System). The remaining infrastructure needed includes numerous smaller pipes to distribute water at appropriate pressures to all points within the system. It is expected that the water supply infrastructure will be extended from Spanos Park West and development impact fees exacted on new development projects for surface water connections would assist in financing expanded services to the proposed project. As mentioned in the Existing Setting, the existing water system lines in Spanos Park West have been sized to accommodate additional demand in the North Stockton area. The project engineer (DEA) has submitted preliminary water system plans to the City's Municipal Utilities Department for comment. According to DEA, the City has indicated that sufficient line capacity is available to serve the proposed project. Therefore, the conditions outlined in **Significance Criterion WAT-b** would not occur. The following measures are required.

Mitigation Measure WSA-1a: Prior to issuance of building permits, the applicant shall pay all applicable connection fees and/or capital improvement fees required by City ordinance to fund the necessary improvements to the domestic water supply. The Department of Community Development will collect fees in conjunction with building permit issuance. The MUD will oversee water system analysis. The Departments of Planning, Building, and MUD shall verify that conditions are attached to Tentative Maps and that necessary dedications are made or secured prior to approval of Final Map. All conditions set forth in the Annexation MOU will be met by the applicant.

Mitigation Measure WSA-1b: Prior to issuance of building permits, the applicant shall provide evidence of compliance with plumbing, metering, and other water conservation measures in effect, including the 16 BMPs included in the City's Urban Water Management Plan, 1995 Update. The Department of Community Development would collect fees in conjunction with building permit issuance. The MUD will oversee water system analysis. The Departments of Planning, Building, and MUD shall verify that conditions are attached to Tentative Maps and that necessary dedications are made or secured prior to approval of Final Map.

Mitigation Measure WSA-1c: Prior to approval of improvement plans for each development unit, the applicant will perform a water system analysis of the annexation project areas utilizing methodology approved by the Municipal Utilities Department. The Department of Community Development would collect fees in conjunction with building permit issuance. The MUD will oversee water system analysis. The Departments of Planning, Building, and MUD shall verify that conditions are attached to Tentative Maps and that necessary dedications are made or secured prior to approval of Final Map.

Mitigation Measure WSA-1d: Prior to approval of the Final Map, the applicant shall design and construct all on-site and off-site water facilities to comply with the revised City Master Water Plan and the water system analysis. The Department of Community Development would collect fees in conjunction with building permit issuance. The MUD will oversee water system analysis. The Departments of Planning, Building, and MUD shall verify that conditions are attached to Tentative Maps and that necessary dedications are made or secured prior to approval of Final Map.

Development of the proposed project would require construction of additional infrastructure to accommodate water delivery. However, the proposed mitigation measures (i.e., Mitigation Measures WSA 1a-1d) would reduce the impacts to a less than significant level.

4.10.4 Level of Significance After Mitigation

Implementation of the mitigation measures outlined above will ensure that the water supply impacts are reduced to less than significant levels.

4.11 UTILITIES AND SERVICE SYSTEMS

4.11.1 Existing Setting

Wastewater

Sewage Treatment

Sewage from the proposed project will be treated at the City of Stockton's Regional Wastewater Control Facility (RWCF) located on Navy Drive in southwest Stockton. The RWCF provides secondary and tertiary treatment of wastewater, and following treatment, effluent is discharged into the San Joaquin River in accordance with the terms of a NPDES permit issued by the Central Valley RWQCB.

Stockton's adopted Wastewater Treatment Master Plan points out that certain unit processes at the RWCF are approaching their functional capacity. Engineering-Science also points out in their 1992 Secondary Treatment Facilities Expansion Study that the actual wastewater treatment capacity is estimated to be 38 mgd of average dry weather flow. The present amount of average dry weather flow being treated at the RWCF is approximately 30 mgd during the non-canning season and 38 mgd during the canning season. The City has initiated the construction of a six-staged plant expansion program at the RWCF to increase the overall treatment plant capacity. Under the expansion program, the RWCF would be capable of treating 56 mgd by December 2003. City Council approved a general plan build out wastewater treatment capacity of 55 mgd in July 1997.

Existing Collection System

The proposed project is located within the System 10 service area. System 10 comprises the undeveloped area south of Eight Mile Road and west of SR 99. The recently completed North Stockton Pipelines project extended the North Stockton sewer outfall to the eastern boundary of the System 10 service area. The North Stockton sewer outfall extension now services an area of over 4,700 acres and 24,000 dwelling units. The ultimate capacity of the System 10 service area will exceed 17 mgd) and wastewater generated within the service area will be pumped by the “ultimate” 14-Mile Sewer Pump Station (SPS). The ultimate 14-Mile SPS will be an upgrade to the existing “interim” 14-Mile SPS. This upgrade consists of larger pumps, pump motors, on-site pumping modifications, and upgrades to the electrical and control systems.

The existing interim 14-Mile SPS is located at the former Northwest Sewage Treatment Plant. This interim system consist of three submersible wastewater pumps (each with a capacity of 1,200 gallons per minute at 120 feet of head), surge tank, standby power generation equipment, electrical and control building, and magnetic flow meter. The system was designed to serve wastewater flows generated by the System 10 collection system via the 66-inch North Stockton outfall sewer and to provide relief capacity to the existing 33-inch North/South Interceptor.

Table 4.11.A presents the developments that are serviced by the North Stockton outfall sewer and North Stockton Pipelines project. Table 4.11.B provides wastewater flow information generated by each project. North Stockton projects identified in Table 4.11.A include: Elkhorn Country Club, Waterford Estates, Beck Ranch, Beck Estates, Fairway Greens. North Stockton Pipelines extension projects include: Villa Tuscany, La Morada, Villa Antinori, High School (West Lane). The North Stockton Pipelines extension projects Planned Development Area does not include active projects and wastewater flows from this area are not

currently conveyed to the 14-Mile SPS. The Planned Development Area is included to account for "ultimate" development conditions.

Table 4.11.A Developments Serviced by the North Stockton Outfall Sewer

			DWELLING UNIT EQUIVALENT			
DEVELOPMENT	CURRENT GROSS ACREAGE	ULTIMATE GROSS ACREAGE	CURRENT OCTOBER 2003	ULTIMATE	PERCENT CURRENT COMPLETE	PERCENT ULTIMATE COMPLETE
LeBaron Estates	36	36	135	162	83	83
Spanos Park East	418	418	1,750	1,794	98	98
Spanos Park West	460	460	1,372	2,718	50	50
North Stockton Projects	112	112	225	502	45	45
North Stockton Pipelines Extension - Active Projects	650	650	560	3,628	15	15
North Stockton Pipelines Extension - Planned Development Area		2,272		11,360		0
TOTAL	1,676	3,948	4,042	20,164	46	20

Source: Thompson-Hysell, 2003

Table 4.11.B Current and Ultimate Wastewater Flows, gallons per day (gpd)

DEVELOPMENT	CURRENT ANNUAL DRY WEATHER FLOWS	CURRENT INFLOW AND INFILTRATION	ULTIMATE INFLOW AND INFILTRATION	CURRENT PEAK WET WEATHER FLOWS	ULTIMATE PEAK WET WEATHER FLOWS	PERCENT OF ULTIMATE TOTAL
LeBaron Estates	40,500	14,256	14,256	104,036	119,426	1
Spanos Park East	525,000	16,7284	16,7284	1,315,340	1,340,420	8
Spanos Park West	411,600	184000	184,000	1,131,640	1,898,860	11
North Stockton Projects	67,500	44,800	44,800	213,370	371,260	2
North Stockton Pipelines Extension - Active Projects	168,000	260,000	260,000	813200	2,591,960	15
North Stockton Pipelines Extension - Planned Development Area			908,800		8,201,920	48
TOTAL	1,212,600	670,340	1,517,540	3,577,586	14,493,846	100

Source: Thompson-Hysell, 2003

The 14-Mile SPS is estimated to have a capacity of 3.75 mgd with two pumps operating and one pump on standby. The 14-Mile SPS has an ultimate capacity of 5.1 mgd with all three pumps operating, however, this does not allow for standby capacity and resulting backpressures are too high for the pipeline. As shown in Table 4.11.B, the 14-Mile SPS peak wet weather flows are approximately 3.58 mgd. As such, the reliable

capacity of the 14-Mile SPS is almost met by current active developments. The remaining available capacity of the 14-Mile SPS is 0.17 mgd (Thompson-Hysell, 2003).

According to the project engineer, the existing sewer lines within Spanos Park West have been sized to accommodate future demand in the North Stockton area. The Westlake Villages project site would be serviced by extending lines from Spanos Park West. Currently, a 30-inch gravity force main is located at the western end of Spanos Park West in Cosumnes Drive. A 24-inch line also exists in Trinity Way and a sewer stub is located in Eight Mile Road (DEA, 2003). Figure 4.11.1 provides a layout of existing and proposed (conceptual) sewer facilities.

Gas and Electric Services

The proposed project site is within the service area of the Pacific Gas and Electric Company (PG&E). PG&E currently serves the development located in Spanos Park West, as well as development south of the site in the City of Stockton.

Electricity

Three major electric transmission lines traverse the approximate center of the Spanos Park West development on a north-south axis. Two of the easements are each 125 feet in width and contain the United States Department of Energy, Western Area Power Administration's Hurley-Tracy 230-kv transmission lines. The third easement is 75 feet in width and contains PG&E's Rio Oso-Tesla 230-kv transmission line. These high voltage transmission lines are suspended from large structural towers located well above ground, and are a significant feature of the SPW area (LSA, 2001).

There are two substations currently serving the area: the Stagg Substation, located on Feather River Drive at March Lane, and the Eight Mile Substation, located west of Interstate Highway 5 and north of Eight Mile Road. According to Mike Lang, PG&E Engineer, these facilities should adequately serve the proposed development (Lang, 2003).

Natural Gas

There are existing gas facilities on the west side of I-5 and on the east side of I-5, however, the two facilities are not connected. In the future, PG&E anticipates connecting the two facilities which will provide better service to the area. Currently, the SPW development is being adequately served from the existing west side facility. The existing lines on Scott Creek Drive and Cosumnes Drive would be utilized for distribution to the proposed Westlake Villages, however PG&E could not commit to the ability to provide adequate natural gas service to the proposed project (Lang, 2003).

Figure 4.11.1: Conceptual Sewer System Plan

Communication Services

Telephone service in Stockton is provided by the SBC. Phone lines will be extended from SPW and have the capacity to service the Westlake Villages project. High speed internet access (DSL) will be available through the same lines (Weld, 2003).

Cable television services are provided by Comcast. The Stockton Municipal Code, Part IV, Cable Television Franchises Procedures, Specifications and Terms, requires the extension of services "...to any area annexed . . . during the term of the franchise."

Extension of telephone services and cable television services would occur in conjunction with the installation of other private utility facilities and public improvements (LSA, 2001).

4.11.2 Impact Significance Criteria

Potential significant impacts associated with public utilities and service systems have been evaluated using the following criteria:

Wastewater

WW-a Adequacy of proposed and/or planned system modifications to meet proposed demand; and

WW-b Ability of treatment plant to meet proposed demand.

Electricity/Gas/Energy

EG-a Increased demand for gas or electricity requiring new production facilities and infrastructure to supply the development;

EG-b Encouragement of activities that result in the use of large amounts of energy or fuel, or the project uses energy in a wasteful manner; and

Communication

COM-a Increase in telephone service demand would substantially interfere with the ability of Pacific Bell to serve the existing customers; and,

COM-b Increase in cable television service demand would substantially interfere with the ability of the cable service provider to serve the existing customers.

4.11.3 Impacts and Mitigation Measures

Effects Considered to Be less than Significant

Impact EG-1: The project will result in increased demand for gas or electricity requiring new production facilities and infrastructure to supply the development Electricity and Natural Gas Services.

In light of the agricultural character of the project site, project implementation will require the construction of new facilities and infrastructure to serve the proposed land uses. Development of the proposed project

would require the installation of additional transmission and distribution lines. Typically, in accordance with Public Utilities Commission Electric Rules 15.1 and 16, Gas Rules 15 and 16, subdivider/utility company cost-sharing agreements are executed to provide for the installation of facilities required to serve new developments (LSA, 2001).

According to planning staff at PG&E, there is adequate capacity available to serve the proposed project with electrical service (Lang, 2003). It is unclear whether PG&E can provide natural gas service, however, this is not considered significant due to PG&E's ability to provide electrical service. Consequently, the conditions outlined in **Significance Criterion EG-a** would not occur.

Impact COM-1 The project may result in the increase in telephone and cable service demand which may interfere with the ability of utility providers to serve the existing customers.

Capacity for both telephone service and cable television service would need to be expanded in order to serve the project area. Pursuant to the franchise agreement between SBC and the State of California, SBC will provide service to all new developments within the franchise area. Similarly, the Stockton Municipal Code, Part IV, Cable Television Franchises Procedures, Specifications and Terms, requires the extension of services "...to any area annexed...during the term of the franchise." Extension of telephone services and cable television services would occur in conjunction with the installation of other private utility facilities and public improvements. The conditions outlined in **Significance Criteria COM-a** and **COM-b** are not expected.

Potentially Significant Effects

Wastewater

Impact WW-1: Existing and proposed wastewater conveyance facilities may not have adequate capacity to meet proposed project demand.

Currently, the 14-Mile SPS has a remaining capacity of approximately 0.17 mgd. Current, active development projects are approximately 46% complete, consisting of approximately 4,042 dwelling units. With the completion of active development projects, the 14-Mile SPS will exceed capacity. This capacity will likely be reached within the next year. Construction of approved and planned projects will increase the service area to 24,000 dwelling units, generating wastewater flows of 17 mgd. This exceeds the 14-Mile SPS's capacity of 3.75 mgd by 13.25 mgd. Table 4.11.C presents future wastewater flow conditions based on active, approved, and planned development projects (Thomspon-Hysell, 2003).

As mentioned in the Existing Setting, the existing sewer lines in Spanos Park West have been sized to accommodate additional demand in the North Stockton area. The project engineer (DEA) has submitted preliminary sewer plans to the City's Municipal Utilities Department for comment. According to DEA, the City has indicated that sufficient sewer line capacity is available to serve the proposed project. It should also be noted that the proposed project will require a sewage lift station and force main to convey wastewater to the sewer main located in Spanos Park West. The lift station and force main are included in the design for the Master Development Plan.

Table 4.11.C Ultimate Wastewater Flows for Active, Approved, and Planned Projects, gpd

DEVELOPMENT	CURRENT ANNUAL DRY WEATHER FLOWS	CURRENT INFLOW AND INFILTRATION	ULTIMATE INFLOW AND INFILTRATION	CURRENT PEAK WET WEATHER FLOWS	ULTIMATE PEAK WET WEATHER FLOWS	PERCENT OF ULTIMATE TOTAL
LeBaron Estates	40,500	14,256	14,256	104,036	119,426	1
Spanos Park East	525,000	16,7284	16,7284	1,315,340	1,340,420	8
Spanos Park West	411,600	184000	184,000	1,131,640	1,898,860	11
North Stockton Projects	67,500	44,800	44,800	213,370	371,260	2
North Stockton Pipelines Extension - Active Projects	168,000	260,000	260,000	813,200	2,591,960	15
North Stockton Pipelines Extension - Planned Development Area			908,800		8,201,920	48
Westlake Villages			272,800		2,017420	12
Spanos Parcel			65,600		592,040	3
TOTAL	1,212,600	670,340	1,917,540	3,577,586	17,103,306	100

Source: Thompson-Hysell, 2003

Mitigation Measure WW-1a: Prior to issuance of building permits, the owners, developers, and/or successors-in-interest shall pay the applicable sewer connection fees required for improvements to the City's Regional Wastewater Collection Facilities. The Community Development Department will ensure that sewer connection fees are paid in conjunction with building permit issuance.

Mitigation Measure WW-1b: An assessment of the 14-Mile SPS was prepared for the City that indicates the SPS does not have capacity to meet the needs of the proposed project. Therefore, the developer shall contribute a fairshare contribution to upgrade the 14-Mile SPS to ensure that the system can adequately service the proposed project. Accordingly, the City of Stockton will condition the approval of applicable tentative maps, subdivision improvement plans, and building permits. The Department of Community Development will ensure that connection fees are paid in conjunction with building permit issuance. The Departments of Community Development and MUD shall verify that all conditions of approval appear on the actual building plans and that compliance with the conditions is checked in the field during construction and operation, as appropriate.

Implementation of these mitigation measures would avoid the conditions presented in **Significance Criterion WW-a.**

Development of the proposed project would require construction of additional infrastructure on-site to accommodate wastewater collection. Payment of sewer connection fees and fairshare upgrades to the 14-Mile SPS as required by the above mitigation measures would reduce the impacts to wastewater conveyance facilities to a less than significant level.

Impact WW-2: Sewage demand generated by the proposed project could exceed the capacity of the wastewater treatment plant.

The wastewater treatment plant currently has limited excess capacity to serve new projects. With a current capacity of 42 mgd, and peak usage ranging from 32 to 40 mgd (depending on the canning season), approximately 2-10 mgd is available at present for new projects, until the plant reaches capacity. It is the City's policy to provide treatment capacity as it is required. The plant has been designed to accommodate treatment expansion on an incremental or modular basis. Additional capacity of approximately 6 mgd will be available with the next expansion, for a total of 48 mgd. Each project is served on a first-come, first-served basis.

With the expansion capabilities of the wastewater treatment plant, the conditions presented in **Significance Criterion WW-b** will be avoided.

Mitigation Measure WW-2: Prior to issuance of building permits, the applicant shall pay the applicable Sewer Connection Fees required for Improvements to the City's Wastewater Collection Systems. The City of Stockton will include the mitigation measures as stated above as a condition of approval for the applicable tentative maps, subdivision improvement plans, and building permits. The Department of Community Development will ensure that connection fees are paid in conjunction with building permit issuance. The Departments of Community Development and Public Works shall verify that all conditions of approval appear on the actual building plans and that compliance with the conditions is checked in the field during construction and operation, as appropriate.

Implementation of the above mitigation measures will reduce the impact on wastewater treatment facilities to a less than significant impact.

Natural Gas/electricity

Impact EG-2: The proposed project will use large amounts of energy.

The estimated average monthly gas and electrical demands for the residential development within the proposed project is presented in Table 4.11.D.

Table 4.11.D: Average Monthly Gas and Electric Demand for Residential Development

LAND USE	PROPOSED UNITS (MAXIMUM)	THERMS	KW	TOTAL
Proposed Westlake Villages				
Natural Gas Electricity	2,894 2,894	37	 600	107,078 Therms 1,736,400 Kw

Source: Spanos Park West 1988 SEIR

As shown in Table 4.11.D, the proposed project will need approximately 107,078 therms of natural gas and 1.7 million kilowatts of electricity. While this will significantly increase consumption of electricity and natural gas, utility providers have indicated that the existing system has the capacity to accommodate the increase in electrical service. The conditions outlined in **Significance Criteria EG-b** would not occur.

Mitigation Measure EG-2: As feasible, the applicant should install energy reducing fixtures and implement energy reducing measures to decrease the amount of energy used.

Implementation of the proposed mitigation measures outlined above would reduce the impact on electric service facilities to a less than significant level.

4.11.4 Level of Significance after Mitigation

Implementation of the proposed project will not have a significant impact on utilities and service systems. Potential impacts for utilities and service systems would be mitigated through the collection of connection and/or development fees or through implementation of conservation and monitoring programs.

4.12 AESTHETICS/LIGHT AND GLARE

4.12.1 Existing Setting

Visual Character of the Site

The topography of the area is typical of the San Joaquin Valley and Delta region with elevations around sea level or slightly above. This area is characterized by flat, featureless landforms. Local vegetation occurs primarily along the southern and eastern project boundaries at Disappointment Slough and Bishop Cut, respectively. Vegetation also grows along the drainage canals that transect the project site. During the growing season, the site is characterized predominantly by row crops. To the east, a major residential subdivision is under construction. These characteristics of the project site are fairly typical of the undeveloped northwest Stockton/San Joaquin County region.

There is currently no artificial lighting on the property.

In general, there are no unique aesthetic features, either natural or manmade, that are visually unique on the project site. Features found on the project site are characteristic of those commonly found associated with agricultural uses throughout the region.

Visual Character of Adjacent Uses

Agricultural uses are present to the north, south, and east. These uses are present across Eight Mile Road, Disappointment Slough, and Bishop Cut. The golf uses (The Reserve at Spanos Park) are also located north of Eight Mile Road. The golf uses present a manmade landscape that is considered to have high aesthetic value due to the extensive use of turf and ornamental landscaping. Residential uses are located directly west of the project site at SPW. The project site is directly bounded to the west and south by Bishop Cut and Disappointment Slough, respectively. The water resources provide high aesthetic value.

Existing Views of the Site

The site is visible from two public viewpoints. These are:

X Paradise Point Marina

X Eight Mile Road

From Paradise Point Marina, views extend unobstructed down the site to SPW. From Eight Mile Road, the views extend unobstructed down the length of the site to Disappointment Slough.

4.12.2 Impact Significance Criteria

Potential significant impacts associated with visual quality have been evaluated using the following criteria:

VIS-a Reduction in scenic quality due to high contrast with existing conditions or elimination of unique landscape features;

VIS-b Introduce physical features which are substantially out of character with existing and planned uses in the surrounding area;

VIS-c Have a substantial, demonstrative negative aesthetic effect;

VIS-d Create substantial sources of light or glare; and

VIS-e Create shade/shadow images that adversely impact existing residential development.

4.12.3 Impacts and Mitigation Measures

The proposed project has been evaluated for potentially significant visual impacts that would be attributable to construction of structures, supporting infrastructure, and major landscaping.

Effects Found Not to Be Significant

Impact VIS-1: The project may reduce the scenic quality due to high contrast with existing conditions or elimination of unique landscape features.

The project site is located in an area that has historically been agricultural in character. The surrounding area, however, is slowing converting to urban uses (e.g. Spanos Park West and the Reserve at Spanos Park). Unique landscape features are not located within the project boundary. The project will complement the adjacent Spanos Park West residential development and the Reserve at Spanos Park. The proposed project will provide continuity to the area by complementing adjacent land uses (**Significance Criterion VIS-a**).

Impact VIS-2: The project may introduce physical features which are substantially out of character with existing and planned uses in the surrounding area.

With the proposed development, topographical features of the site will be retained in a primarily flat or level condition. Riparian habitats associated with Bishop Cut and Disappointment Slough will not be significantly impacted by the proposed project or impacts will be mitigated to less than significant levels. Open space land uses (bike and pedestrian trails) are proposed along the existing levees. These uses provide an appropriate buffer to the more intense urban uses proposed in the project. The project will serve as an extension of Spanos Park West, providing visual continuity to the area. Therefore, the project will not introduce physical features which are substantially out of character with existing or planned uses for the area (**Significance Criterion VIS-b**).

Impact VIS-3: The project may have a substantial, demonstrative negative aesthetic effect.

As indicated in the Project Description (Section 3.3), a Master Development Plan has been prepared as a requirement of the M-X designation. The purpose of the Master Development Plan is to present a framework for project development that ultimately enhances site aesthetics and visual amenities. The site has been planned as an extension of Spanos Park West, thereby creating a positive effect for the area. (**Significance Criterion VIS-c**).

Impact VIS-4: The project may create shade/shadow images that adversely impact existing residential development.

The proposed structures within Westlake Villages will be a maximum of two stories. Due to these height restrictions, the proposed residences will not create shadows that negatively impact SPW. Therefore, **Significance Criterion VIS-e** will not occur.
The following conclusions are made from the above findings:

X Existing and approved development to the east and north of the project site is similar to and consistent with the proposed Westlake Villages project;

X Implementation of the proposed project will include a range of development concepts, standards and regulations and guidelines directed towards an aesthetically enhanced development program which complements Spanos Park West;

X Views into the project site are limited to motorists' views from Eight Mile Road to the north, and Paradise Point Marina to the west. Public views are not available from the south or west.

Potentially Significant Effects

Impact VIS-5: Implementation of the proposed project could result in potentially significant nighttime light, both during and after construction.

After project buildout, there will be several new sources of light during nighttime hours. Glare from residential structures is not expected to be significant due to the traditional use of non-glare materials in construction.

The new light sources may negatively impact wildlife species located within, near, or traveling through the project area. However, due to the proximity of SPW and associated light sources, impacts to wildlife are not expected to be significant.

Most of the new nighttime light sources would be created by street lighting, parking lot lights, and lights from individual residences. While these new light sources are not expected to be significantly different from typical uses in these categories, the change in light conditions from vacant land to urban development will be substantial. Simply stated, the site will have new sources of light where none previously existed.

The Master Development Plan text includes development standards and design guidelines for outdoor lighting and illumination. Implementation of these standards and design guidelines will mitigate the potentially adverse effects of light and glare on the environment. Therefore, the conditions outlined in **Significance Criterion VIS-d** will be avoided. The following mitigation is also required.

Lighting Requirements

All outdoor lighting for the illumination of landscaped areas, buildings, parking areas and pathways shall comply with the standards of the City and the design guidelines included in Chapter Seven of the Master Development Plan. General lighting guidelines are as follows:

a. All lighting fixtures located within Westlake Villages shall conform to Pacific Gas & Electric Company and City of Stockton standards.

b. Photocell monitoring equipment should be installed with all lighting equipment, where feasible, to ensure efficient use of energy and minimize unnecessary "on-time."

c. Site and street lighting should be designed and installed to minimize glare on adjacent properties, buildings, and right-of-way. Additionally, lighting should be installed in such a manner to reduce the effect of ambient lighting and "light pollution."

d. Within the residential areas of the development, lighting should be located at intersections and along streets for safety and security. Street lighting should conform to standards established by the City of Stockton.

e. Light standards' bases should be above grade and all electric service should be located below grade.

f. Lights should blend with the architecture of the buildings and structures, and be complimentary to the street scape design.

g. All lighting shall be reviewed and approved by the Design Review Board.

The following are "Streetscape Lighting Guidelines" presented in the Master Development Plan.

a. Streetlights and traffic signals, as well as other lights in public spaces, should be of simple design.

b. Street lighting throughout Westlake Villages should be consistent on similar streets. All lighting fixtures shall be reviewed and approved by the Design Review Board and the City Engineer.

Mitigation Measure VIS-5a: Mitigation may include prior review and approval of building materials and lighting specifications by the Westlake Design Review Board and City Community Development Director. Downcast lighting should be used where feasible. To ensure compliance with specification set forth by the Westlake Design Review Board and City Community Development Director, the applicant should maintain control over all development within the project site. This can be done through compliance with the Master Development Plan and conditions placed on the covenants, conditions, and restrictions established by the applicant for the development.

Mitigation Measure VIS-5b: Prior to site plan review for development, the applicant shall provide evidence to the Design Review Board that non-reflective building materials will be used. The City's Community Development Director or Site Plan Review Committee shall review and approve building materials and their applications to ensure light and glare effects are minimized.

Implementation of the above listed measure would reduce impacts from glare and lighting to less than significant levels. Consequently, the conditions included in Significance Criterion VIS-d will be avoided.

Impact VIS-6: Implementation of the proposed project will impact views from Eight Mile Road, Paradise Point Marina and Spanos Park West. This would be a potentially significant impact under Significance Criterion VIS-b.

Motorists traveling along Eight Mile Road will have temporary views of the residential development. These views will be consistent with the adjacent Spanos Park West development. Views from within Spanos Park West will be limited to residences along the western edge of that development. These views will also be consistent with the surrounding development.

West of Westlake Villages

The adjacent lands west of the proposed project (across Bishop Cut) are undeveloped and are designated for agricultural use. Since these lands are unoccupied, the visual effects on the agricultural uses are insignificant.

North of Spanos Park West

Visitors to The Reserve at Spanos Park golf course will also have views of the residential development. These views will be consistent with the SPW development and are not considered significant.

The adjacent lands north of the proposed project (across Eight Mile Road) are undeveloped and are designated for agricultural use. Since these lands are unoccupied, the visual effects on the agricultural uses are insignificant.

Landscape Buffers

Landscape buffers are required along the entire project frontage at Eight Mile Road, and on both sides of the arterial and collector streets in Westlake. No buildings or parking areas are allowed within these buffer areas. Monument signs, entry treatments, pathways, lighting, and street furniture are allowed in the buffer area. These buffers are measured from the face of curb to the property line of the adjoining parcel (typically the public right-of-way), and in some cases is expanded by an additional landscaping parcel owned and maintained by the HOA.

Landscape Requirements

a. Landscape plans for all areas intended to be landscaped within a proposed development project other than those for single family residences, shall be prepared by a Landscape Architect licensed by the State of California.

b. The Landscape Plans shall utilize water conserving and drought tolerant plant materials and incorporate Best Management Practices for maintenance and irrigation.

c. Fully-dimensioned landscape plans shall be prepared for all proposed development projects as specified by Chapter Seven of the Master Development Plan.

d. Landscaped buffers and solid barriers shall be used to separate the areas proposed for commercial and public facilities from adjacent residential areas.

e. The landscape plans for all development projects proposed for the Project shall conform to the design guidelines contained in Chapter Seven of this Master Development Plan.

f. Street tree landscape plans shall reflect the tiered hierarchy of the roads and streets in Westlake and shall reinforce the identity and character of the roadway network as defined by this Master Development Plan. The street tree planting scheme shall conform to the plant materials list include in Chapter Seven.

g. All parking areas having five (5) or more spaces shall be screened and include a landscape area of five feet (5') or more along the road or street side property lines not occupied by driveways. Parking area landscape screens shall be a minimum of thirty-six inches (36") in height and a maximum of sixty inches (60") at maturity, constructed of suitable materials as approved by the Design Review Board.

All parking areas, having eight (8) or more spaces shall provide one (1) tree for every eight (8) spaces. Trees installed in such parking areas shall be a minimum of 15-gallon can in size at the time of planting, and shall be placed in tree wells suitable for the species of trees to be installed. All trees planted in Westlake parking areas shall conform to the Plant Palette included in Chapter Seven of this Master Development Plan. All trees planted in parking areas shall be provided with a means for irrigation and maintenance as described in this Master Development Plan.

i. The street tree landscape plan shall identify the species and location of all trees to be planted during the installation of the backbone infrastructure for Westlake. Subsequent development proposals within Westlake shall also be required to include a Street Tree Landscape Plan. These plans shall be subject to the review and approval of the Design Review Board.

j. Landscape Plans for any development in Westlake shall consider service lines, traffic safety sight line requirements, and structures on adjacent properties to avoid conflicts as the landscape elements mature. Street trees and trees planted in landscaped areas near public walkways or street curbs shall be selected and installed to prevent reasonable damage to sidewalks, curbs, gutters, and other public improvements. Tree species with invasive root systems shall not be allowed near water lines or sewer lines. All landscape plans shall be subject to the review and approval of the Design Review Board.

k. Automatic irrigation systems shall be installed in all public areas, rights of way, commercial/office mixed use areas and residential areas. Irrigation Plans shall include low volume spray heads and drip emitters when practical. Irrigation Plans shall be compatible with reclaimed water systems or other water conservation techniques as appropriate.

l. The Plant Palette included in Chapter Seven of this Master Development Plan shall be used to prepare the Landscape Plans for all areas of development within Westlake. Plant materials not included on the palette included in Chapter Seven shall be subject to the review and approval of the Design Review Board.

m. Landscape maintenance practices shall include irrigation at regular intervals necessary to promote plant health, pruning, clearing of debris and weeds, removal and replacement of dead or dying plant materials, and repair and replacement of non-functioning or damaged irrigation equipment. Areas of lawn or ground cover shall be trimmed or mowed on a regular schedule. Fertilization, cultivation and pruning of trees shall be part of the regular maintenance program. Stakes, guy wires, and tree ties shall be checked regularly for proper function and removed once the plant material is established according to the intent of the landscape plans. Ties are to be positioned correctly as necessary to avoid damage to tree trunks or branches.

n. Development projects within Westlake shall include design characteristics of the project that incorporate the concept of "defensible space", such as increased lighting, low-level landscaping to reduce cover for intruders and entrances and windows facing on main access ways.

o. All development plans for projects proposed within Westlake shall be reviewed and approved by the Design Review Board and the Site Plan Review Committee of the City of Stockton. The Master Developer, or his successors in interest, shall implement all crime deterrence measures as required by the City. Compliance with these requirements shall be noted on project building and landscape plans and shall be monitored through site inspection by City staff prior to the issuance of certificates of occupancy.

Landscape Maintenance Requirements

All landscaped areas, view corridor areas, parks and open space areas within Westlake shall be maintained by the Master Developer, by a Commercial Tenant Owner's Association, or, in the absence of a Commercial Tenant Owner's Association, by the City of Stockton through the formation of one or more Landscaping and Maintenance Districts or similar improvement districts, or by any combination of the above.

Equipment and Utility

All utilities that provide service to Westlake shall be placed underground.

a. Equipment and mechanical devices shall not be located in any required setback area or side yard except for electrical, telephone or fiberoptic lines installed by the service provider.

b. Equipment areas shall be screened by structures or landscape materials that are compatible with the architectural character of the building or structure as determined and approved by the Design Review Board.

c. Service areas proposed in marina and commercial uses shall be screened from public view.

d. Storage of recreational vehicles, trailers, boats, or their component parts, loose rubbish, garbage, garbage receptacles, tents, or building materials shall not be allowed within residential villages/neighborhoods if publicly visible. Sport Utility Vehicles are exempted. Within the Marina development, motor vehicles, trailers and boats may be stored in locations that are screened from public view by fences, walls or other devices.

e. Building materials for use on the same premises may be stored on a lot or parcel during the time that a valid permit is in effect for construction on that site.

Implementation of the standards set forth in the Master Development Plan will create a less than significant impact on visual resources.

4.12.4 Level of Significance after Mitigation

The development and design standards outlined in the Master Development Plan provide measures to offset potential visual resource impacts. Implementation of the standards set forth in the Master Development Plan will create a less than significant impact on visual resources.

4.13 CULTURAL RESOURCES

A technical cultural resources study was prepared for this site by LSA Associates, Inc. entitled *A Cultural and Paleontological Resource Study for the Paradise Village Development Project*, September 2003. For confidentially purposes, the document is available for review (by permission) at the City of Stockton, Community Development Department.

4.13.1 Environmental Setting

Cultural Setting

Prehistory

The Stockton area was probably settled by native Californians between 12,000 and 6,000 years ago. The Paleo-Archaic-Emergent cultural sequence developed by Frederickson (1974) is commonly used to interpret the prehistoric occupation of Cental California. The sequence is broken into three broad periods: the Paleoinidan period (10,000-6,000 B.C.); the three-staged Archaic period, consisting of the Lower Archaic (6,000-3,000 B.C.), Middle Archaic (3,000-1,000 B.C.) and Upper Archaic (1,000 B.C.-A.D. 500); and the Emergent period (A.D. 500-1,800).

The Paleo period began with the first entry of people into California. These people probably subsisted mainly on big game, minimally processed plant foods, and had no trade networks. The Archaic Period is characterized by increased use of plant foods, elaboration of burial and grave goods, and increasingly complex trade networks (Bennyhoff and Frederickson, 1994; Moratto, 1984). The Emergent Period is marked by the introduction of the bow and arrow, the ascendence of wealth-linked social status, and the elaboration and expansion of trade networks, signified in part by the appearance of clam disk bead money (Moratto, 1984).

Ethnography

Prior to European contact, the study areas was within the territory of the Northern Valley Yokuts. The population of the eighteenth-century Valley Yokuts is estimated at 40,000, making them the largest ethnic group in precontact California (Moratto, 1984). The territory of the Northern Valley Yokuts extended from a line midway between the Mokelumne River and Calaveras River south to near where the San Joaquin River makes a big bend toward the north. The western limit has been identified as the eastern side of the Coast Ranges (Milliken, 1994), while the eastern limit extended to the juncture of the San Joaquin Plain and the foothills of the Sierra Nevada (Wallace, 1978).

Yokuts settlements were typically placed on low mounds near the banks of large watercourses like the San Joaquin River. This elevated position helped keep the inhabitants and their house above the spring flood levels (Wallace, 1978). The abundant riverine environment promoted a sedentary life and influenced succeeding generations to remain at the same sites. It is estimated that the Yokuts lived in tribes of approximately 300 people (Wallace, 1978) and built several styles of dwellings. Most Yokuts houses were circular or oval single-family dwellings consisting of tule mats over pole frames (Moratto, 1984). Wedge-shaped tule houses and small dwellings made of bark placed against the framework were also constructed (Kroeber, 1925).

Technology of the Yokuts included basket weaving and a wide range of tools and implements fashioned from stone. They used stone mortars and pestles for processing acorns and other plant food. Chert and

jasper were used to make arrow points, scraping tools, and knives along with choppers and hammerstones (Wallace, 1978). Bone was used to make awls and personal adornments and baskets were used for cooking and/or food preparation (Kroeber, 1925).

Acorns were a staple food, and various seeds, nuts, roots, berries, and greens were also collected. The northern Yokuts relied heavily on salmon (Moratto, 1984), but geese, mudhens, and other waterfowl and the eggs of these birds also provided a substantial portion of their diet (Wallace, 1978).

By 1776, Spanish expeditions into the interior and the establishment of the Spanish mission system contributed to the rapid disappearance of the native inhabitants. Introduced diseases claimed thousands of lives and wiped out entire communities of San Joaquin Valley Indians. By 1834, the Mexican government had desecularized the missions and the language and culture of the Yokuts had been permanently disrupted. Many Yokuts left the abandoned missions and returned to their former territories where they survived by hunting and gathering; other worked on ranches as laborers or house servants (Wallace, 1978).

Stockton History

Captain Charles M. Weber purchased the land that would become Stockton from William Gulnac in 1845. Weber changed the name in 1849 in honor of Commodore Robert F. Stockton (Hoover et al., 1990).

During the California Gold Rush, various trails led from Stockton to the gold fields and Weber recognized early that the City would become profitable as a supply and shipping center for gold miners. With the opening of the Southern Mines, Stockton grew rapidly in importance and size, and soon became a flourishing trade center (Marschner, 2000). Miners made their way to Stockton by boat up the San Joaquin River or over the Livermore Pass. Commerce grew and freighting and staging activities developed along with the cattle and agriculture industries. With the establishment of churches and schools, Stockton became a permanent settlement. By 1850, 5,000 people lived in Stockton. The City was incorporated and became the county seat (Hoover et al., 1990). In 1851, Stockton was nearly destroyed by fire. Subsequent fires in 1856 and 1862 resulted in the need for more permanent structures, and stone and brick establishments were built in the commercial district, including a new city hall that was erected in 1852 (Costello and Marvin, 1999).

In the 1860's, the City began making civic improvements that included road construction, street improvements, and sewer works, in addition to building more churches, schools, and volunteer fire companies. By the mid 1860's, residential neighborhoods were also being developed. In the 1880's and 1890's, grain mills and warehouses were constructed, along with manufacturing plants and lumber yards, near the Stockton Channel. More farmlands were developed to provide for the growing population (Costello and Marvin, 1999).

The first inland seaport in California opened in Stockton in 1933 and by the late 1930's, Stockton was known for its boat building industry which included the paddle-wheel steamers the Delta King and Delta Queen that navigated the San Joaquin River from 1850 to 1938. Local shipyards were active during World War II, filling government contracts; by 1943, fifty firms were supplying the wartime effort. The late 1940's saw a growth of residential and commercial areas to the north of Stockton and by the 1970's, the population almost quadrupled (Hillman and Covello, 1985).

Today, with a population of 260,000, Stockton remains the focal point for agribusiness in the San Joaquin Valley. The rich farmland of the San Joaquin/Sacramento River Delta supports varied agriculture, including potatoes, corn, sunflowers, tomatoes, asparagus, and wine grapes. Stockton is also known as a major

transportation hub and a popular water recreation areas that has over 1,000 miles of waterways for boating and water sports.

Delta History

Although provisioning the gold mines contributed to Stockton's early development, it was agriculture that would provide for the City's long term growth and success. Farmers were drawn to the Delta area's fine silt and deep peat soils when the gold rush began to wane. The only obstacle was the over abundance of water.

In 1850, Congress passed the Swamp and Overflow Land Act which gave all states any unsold federal land that was swamp or subject to overflowing. Under the act, states were to ensure that the lands would be drained, reclaimed, and used for agricultural purposes. Delta ownership was passed from the federal government to the state, and by 1855, California had passed the Reclamation District Act providing for the sale of the swamp and overflow lands.

Major attempts to reclaim sections of the Delta did not begin until the completion of the transcontinental railroad in 1869. A ready source of labor became available when the railroad's Chinese labor force found themselves without work. They made their way to the Delta, where they built the first levees around a number of islands. In the late 1870's, the clamshell dredge was invented which soon replaced human labor in building levees.

Reclamation of the Delta tracts was expensive and often the result of cooperative ventures. One such arrangement was between a man named Phillips and George Shima, a successful Japanese American farmer, led to the reclamation of four islands and nine tracts of land, which included the Bishop Tract. Labor camps were built on all tracts and manage by Shima (Maniery and Syda, 1988).

At one time, Shima owned 4,000 acres of land and leased an additional 25,000. He is credited with reclaiming a total of 102,000 acres of land; 62,000 of which were located in the Delta (Maniery and Syda, 1988). Shima's crop of choice was the potato. He used the latest developments in agricultural science and was so successful, he became known as the "Potato King." By 1920, he controlled 85% of California's potato crop and had become the wealthiest Japanese man in California.

By the 1920's, 1,100 miles of levees were protecting 420,000 acres of what may be the most productive farmland in the world. Because of its contribution to California's agricultural development, the Delta levee system is listed in Historic Civil Engineering Landmarks of Sacramento and Northeastern California along with other significant civil engineering achievements, the majority which may be considered Local Historic Civil Engineering Landmarks (American Society of Civil Engineers, 1976).

Agriculture continues to be San Joaquin County's core industry (Locke, 2003). San Joaquin County ranked sixth in agricultural production in 2002. It ranked number one in California in the production of English walnuts, cherries, asparagus, apples, pumpkins, grain corn.

Paleontological Setting

Modesto Formation

The entire project area and vicinity are located on sediments of the Modesto Formation, which fills much of the San Joaquin Valley (Wagner et al., 1987). This formation is comprised of arkosic alluvium deposited in the Late Pleistocene, approximately Rancholabrean in age (between 2 million years and 10,000 years).

Sediments of this age in the area have produced significant vertebrate fossils (Marchand and Allwardt, 1977) as indicated by the fossil locality search conducted by the UCMP. Examples of Rancholabrean vertebrate fossils include turtle, reptile, bird, rodent, horse, ground sloth, dire wolf, sabre-tooth cat, camel, and mammoth (Savage, 1951; Stirton, 1939).

Undifferentiated Early Tertiary Marine Deposits

The sediments of the Modesto Formation are underlain at extreme depths by these Tertiary sediments (Wagner et al., 1987). Little is known about these early marine deposits as they are buried deeply below the surface.

Field Review

A pedestrian field survey was conducted by LSA archaeologists on May 19-21 and June 3-4, 2003. Approximately 85% of the project areas was planted in row crops of corn and tomato. Systematic survey was limited to straight transects of the rows. Cultivated areas were walked in approximately 20-meter-wide transects. In May, the corn was 12 to 18 inches tall and visibility of the ground was approximately 85%. In June, the corn had grown to 5 feet and visibility had diminished to 10%. Dense vegetation obscured visibility along irrigation ditches, but all areas of bare ground adjacent to the irrigation ditches were intensively examined for cultural resources. Areas of bare ground on paved road shoulders, and slopes and sides of levees, and dirt farm roads were also examined for archaeological deposits. Small areas of ground were regularly exposed by trowel, and rodent burrow backdirt was examined for possible archaeological deposits. Thick, five-foot tall clusters of milk thistle, black mustard, and dense grasses limited access to approximately 15% of the project area in an uncultivated section of the southeast portion. This area was only cursorily surveyed as the heavy vegetation limited access and obscured visibility. Documentation included field notes, graphs, maps and photos. The marina at Paradise Point was not surveyed. A paleontological field survey was not conducted.

The constituents of the site are as reported by Napton and Greathouse. The following was observed at the site during the field visit: obsidian, chert, and quartzite flakes and tools; numerous pieces of heat-affected rock; burned bone; a few pieces of shellfish (possibly mussel); a piece of mica; charcoal; and a dark brown, sandy midden soil. The full range of materials as identified by Napton and Greathouse was not noted, but review of the archaeological site was hindered by dense grasses, forbs, berry bushes, and areas of standing water.

Also, the extent of the site is essentially as recorded. There are two maps of the site, one is in the site record (Napton and Greathouse, 1987), the other is in the evaluation report (Napton with Greathouse, 1987). All archaeological deposits and possible archaeological deposits noted during the field review are within an area . . . (confidential location). The areas to the west, north, and east are several feet lower than the area of the (confidential location) and consist of plowed farm fields. To the west and a portion of the north are tan soils readily distinguishable from the darker midden soils; another portion of the farm fields to the north and those to the east were inundated or covered with dense vegetation and could not be readily examined.

One cultural resource was identified in the project area: a 1910's or 1920's historic farm site that was most likely established by George Shima. The site consists of the farm landscape, farm fields, main farm complex which include five structures, a pump house, pumping station, collapsed structure, levee, and irrigation ditches. Since the surveys were conducted, the farm site has been demolished.

A fossil locality search was conducted by the staff at the University of California Museum of Paleontology (UCMP), Berkeley, California, on June 19, 2003. There are no fossil localities located within or adjacent to the Westlake Villages project site; however, two vertebrate fossil localities are within five miles of the project site. These fossils are Pleistocene, between 2 million years and 10,000 years in age, specifically Rancholabrean and coeval with the sediments at the project site. Fossil horses (*Equus* sp.) and mammoths (*Mammuthus* sp.) were found at these two fossil localities.

Consultation with the Native American Heritage Commission (NAHC) did not indicate the presence of Native American cultural resources in the immediate project area. A Native American representative indicated that the site is archaeologically sensitive. Consultation with the Haggin Museum indicated that a flexed burial site has been identified on the Shima Tract and any high areas on the project site could be burial grounds or occupation sites.

4.13.2 Impact Significance Criteria

Potential significant impacts associated with cultural and paleontological resources have been evaluated using the following criteria:

CR-a The proposed project would result in damage to important cultural resources;

CR-b The proposed project would result in damage to potentially important cultural resources (i.e., unevaluated milling feature sites);

CR-c The proposed project would result in damage to previously undiscovered cultural resources; and

CR-d The proposed project would result in direct or indirect destruction of a unique paleontological resource or site or unique geological feature.

Under CEQA only those cultural resources deemed important (e.g., California Register of Historic Places [California Register] or National Register of Historic Places [National Register]-eligible) can be significantly affected (i.e., impacted) with project implementation.

A cultural resource is evaluated under four California Register criteria to determine its historical significance. A resource must be significant at the local, state, or national level in accordance with one or more of the following criteria:

A. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

B. Is associated with the lives of persons important in our past;

C. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic value; or,

D. Has yielded, or may be likely to yield, information important in prehistory or history.

Additionally, the Society of Vertebrate Paleontology has identified vertebrate fossils, their taxonomic and associated environmental indicators, and fossiliferous deposits as significant nonrenewable paleontological resources. Botanical and invertebrate fossils and assemblages may also be considered as significant.

4.13.3 Impacts and Mitigation Measures

Potentially Significant Effects

Impact CR-1: Project site development could potentially effect known and unknown resources with cultural significance.

The farm identified during the field survey has been removed from the site. Therefore, construction activities will not impact the previously identified structures. However, artifacts associated with these structures and era may exist below the surface.

In addition, although paleontological resources were not identified on the site, two vertebrate fossil localities have been identified within five miles of the project site and contain the same geological formations as the project site. Consultation with Native American representatives and the Haggin Museum indicate that the site is archeologically sensitive and could be the site of human burials or occupation. (**Significance Criteria CR-a** through **CR-d**).

Mitigation Measure CR-1a: Project personnel should not collect or move any archaeological material. Fill soils that may be used for construction purposes should not contain archaeological materials.

Mitigation Measure CR-1b: If deposits of prehistoric or historic archaeological materials are encountered during the project activities, all work within 50 feet of the discovery should be redirected and a qualified archaeologist contacted to evaluate the finds and make recommendations. It is recommended that such deposits be avoided by project activities. If such deposits cannot be avoided, they should be evaluated for their significant in accordance with the California Register. If the resources are not significant, further protection is not necessary. If the resources are significant, they will need to be avoided by adverse effects or such effects must be mitigated. Upon the completion of the archaeological evaluation, a report should be prepared documenting the methods, results, and recommendations. The report should be submitted to the Central California Information Center and appropriate City agencies.

Prehistoric materials can include flaked-stone tools (e.g., projectile points, knifes, choppers) or obsidian, chert, or quartzite toolmaking debris; cultural darkened soil (i.e., midden soil often containing heat affected rock, ash and charcoal, shellfish remains, and cultural materials); and stone milling equipment (e.g., mortars, pestles, handstones). Historical materials might include wood, stone, concrete, or adobe footings, walls and other structural remains; filled wells or privies; and deposits of wood, metal, glass, ceramics, and other refuse.

Mitigation Measure CR-1c: During grading of other invasive site construction activities, the contractor shall comply with Section 7050.5 of the California Health and Safety Code. The code states that in the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the County in which the human remains are discovered has determined whether or not the remains are subject to the coroner's authority. If human remains are encountered, work should halt within 50 feet of the find and the County Coroner notified immediately. The contractor shall also immediately notify the Community Development Director and the Secretary of the Cultural Heritage Board. At the same time, an archaeologist should be contacted to evaluate the situation. If the human remains are of Native American origin, the Coroner must notify the Native American Heritage Commission with 24 hours of this identification. The Native American Heritage Commission will identify a Native American Most

Likely Descendent to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods.

Mitigation Measure CR-1d: If paleontological resources are identified within the project area, all work within 50 feet of the discovery should be redirected and a qualified paleontologist should be contacted to evaluate the finds and make recommendations. If the paleontological resources are found to be significant, they should be avoided by project activities. If avoidance is not feasible, adverse effects to such resources should be mitigated. Upon completion of the paleontological evaluation, a report should be prepared documenting the methods, results, and recommendations. The report should be submitted to the UCMP and appropriate City agencies.

Because the farmhouse and associated structures have been removed, impacts to this resource will not occur. Implementation of the mitigation measures will mitigate impacts to unknown cultural or paleontological resources.

4.13.4 Level of Significance after Mitigation

Implementation of mitigation measures will mitigate impacts to unknown cultural or paleontological resources.

4.14 HAZARDOUS MATERIALS/WASTES

4.14.1 Environmental Setting

A visual site survey was conducted for the project site on June 11, 2004. Two major areas were identified as containing improperly stored and/or disposed hazardous materials and wastes. The first site is located at the southeastern corner of the Spanos Parcel. This site appears to be a staging area for agricultural operations. A number of 50 gallon drums containing hydraulic fluid and oil are located at this site. These items do not appear to be properly stored (e.g. on concrete pads or within an enclosure). A used oil filter was also discarded at this site. Surface staining was observed in association with the used oil filter. The second site is located at the historic homestead, adjacent to Disappointment Slough. A number of empty, overturned 50 gallon drums were observed. These drums were labeled as herbicides. An abandoned tractor was located near the homestead with what appeared to be empty containers of pesticides. Empty quarts of oil were observed along the irrigation channels and empty fertilizer bags were located throughout the site. Trash was also observed along the eastern boundary of the project site (adjacent to SPW) in the fallow field.

A government records search, prepared by Environmental Data Resources, Inc., indicates that no spills, accidents, or releases of hazardous materials or wastes have been reported for the project site. The records search also indicates that the operator of the project site is not registered as a generator of hazardous wastes. This records search is provided in Appendix J.

4.14.2 Impact Significance Criteria

HAZ-1 Development of the project would create a substantial hazard to the public or environment due to the release of hazardous materials or wastes.

4.14.3 Impacts and Mitigation Measures

Potentially Significant Effects.

Impact HAZ-1: Due to the existing conditions of the site, the environment and construction workers could be exposed to hazardous wastes and materials.

The government records search did not identify any major spills or accidents on the site or project vicinity. However, during the visual survey, hazardous materials were observed on the project site. These materials did not appear to be properly stored. Surface staining was observed in proximity to improperly disposed oil filters. Based on these observations, there is the potential that these hazardous materials/wastes have impacted the project site. Mitigation is provided below to offset potential impacts to the environment and construction workers.

It is not expected that the proposed land uses (residential and recreation) will introduce hazardous materials to the environment or the general public. Hazardous substances may be used in conjunction with construction activities. To prevent the accidental release of these substances, mitigation is provided below to offset potential impacts.

Mitigation Measures HAZ-1a: A Spill Prevention and Containment Plan (SPCP) will be prepared prior to the commencement of any construction activities. The SPCP will identify any and all hazardous materials

that will be used or stored on site. The SPCP will also identify any hazardous wastes that might be generated by the proposed project. The SPCP will detail proper measures to handle and/or transport

hazardous materials. The plan will also present procedures to contain or initiate cleanup of any spills. The phone number of the appropriate government agency will be contained on the plan in the event of any release of hazardous substances.

Mitigation Measures HAZ-1b: All hazardous wastes and materials that exist on the project site will be removed. Testing will be conducted in the vicinity to any observed surface staining. This testing will be conducted to determine the extent, if any, of hazardous materials/waste releases. The cleanup and testing procedures and requirements will be coordinated with and approved by the City.

4.14.4 Level of Significance after Mitigation

Implementation of the mitigation measures will reduce potential impacts to a less than significant level.

CHAPTER 5.0 GROWTH INDUCEMENT

At one time, the City considered expanding its planning area to encompass some of the predominantly agricultural lands north of Eight Mile Road. The City prepared an EIR on the Special Planning Area Study. In 1993, the City's Planning Commission considered, but did not certify, the Final EIR and rejected the SPAS General Plan Amendment. Any extension of the City's boundaries north of Eight Mile Road would require the City to re-evaluate the impacts of this action and reconsider its previous decision.

The City's General Plan acknowledges that this area of northern Stockton is a growth area and has set into motion the service and infrastructure requirements necessary to accommodate growth. This effort is being conducted independent of the proposed project plans. For this reason, the project is not considered growth inducing to lands north of Eight Mile Road.

The proposed project will, however, facilitate the conversion of agricultural lands on the Spanos Parcel. The General Plan Amendment for the Spanos Parcel to Low-Medium Density Residential will facilitate the conversion of existing onsite agricultural land uses. Additionally, the incompatibility of the agricultural land uses on the Spanos Parcel and the proposed project will likely hasten this conversion. The infrastructure design outlined in the Master Development Plan also facilitates the extension of utilities and services to the Spanos Parcel, thereby accelerating land use conversion.

CHAPTER 6.0 ALTERNATIVES

CEQA requires that an EIR include a discussion of reasonable project alternatives that are "capable of eliminating any significant adverse environmental effects or reducing them to a level of insignificance, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly" (CEQA Section 15126 (d)(3)).

Additionally, the CEQA Guidelines, Section 15126 (d), state, "If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives."

Section 6.3 discussed impacts of each of the project alternatives. For each alternative, the alternative is described, a discussion of environmental impacts associated with that alternative is provided, and the responsiveness of each alternative to the project objectives is analyzed. Table 6.1.A provides a comparative summary of impacts associated with each alternative.

6.1 PROJECT OBJECTIVES

The overall goal for the Westlake Villages project is to construct a quality residential development that offers opportunities to live and work within a planned community setting. Further, it is the goal of the applicant to implement an active adult community by providing a community with multiple on-site amenities.

The project applicant's objectives for the proposed project include:

X The primary goal is to create a community designed to enhance social interaction. To design and develop a community at a human scale, with neighborhoods diverse in use and population. To introduce ample common ground into the development; parks, trails, lakes, and large community centers functioning as gathering places for the future residents and enhancing project livability.

X Westlake Villages would provide an opportunity to develop Paradise Point Marina with a mix of upscale commercial and service-oriented businesses, promoting the highest quality development. The project would place a significant number of potential customers within walking distance of these businesses to help ensure in their long-term viability.

X The goal for the residential component of Westlake Villages is to build a unique community combining the best of modern suburban development practices with the building types and styles of traditional neighborhoods. To create a safe, secure environment with walkable neighborhoods that meet the lifestyle goals of families with children and elderly alike. To design streets and a circulation system resulting in neighborhoods that balance the pedestrian and car, to promote and enhance the pedestrian experience.

X Westlake Villages would promote open space within neighborhoods to provide a convenient and safe destination for children to play and families to congregate. To develop a system of lakes that provide scenic vistas, and recreation opportunities, that would also be utilized for enhancing the environment and improving water quality. Open space would also include a system of trails that

would be available to the public, providing accessibility, recreation opportunities, and a visual amenity enjoyed by the entire community.

Table 6.1.A: Alternatives Matrix

ISSUE AREA	ALTERNATIVE 1 - NO PROJECT	ALTERNATIVE 2 - MINIMUM DENSITY	ALTERNATIVE 3 - ALL CONVENTIONAL
Geology and Soils	less	same	same
Air Resources	less	less	more
Water Resources	less	same	same
Biological Resources	less	same	same
Noise	less	same	same
Land Use	less	similar	same
Traffic and Circulation	less	similar	similar
Population, Housing, and Socioeconomics	less	similar	more
Public Services	less	less	more
Water Supply Assessment	less	similar	more
Utilities and Service Systems	less	similar	more
Aesthetics/Light and Glare	less	same	same
Cultural Resources	less	same	same
Hazardous Materials/Wastes	more	same	same
Reduces Significant Effects of the Project	yes	yes	no
Meet Project Objectives:			
The primary goal is to create a community designed to enhance social interaction. To design and develop a community at a human scale, with neighborhoods diverse in use and population. To introduce ample common ground into the development; parks, trails, lakes, and large community centers functioning as gathering places for the future residents and enhancing project livability.	No	Yes	Yes
Westlake Villages would provide an opportunity to develop Paradise Point Marina with a mix of upscale commercial and service-oriented businesses, promoting the highest quality development. The project would place a significant number of potential customers within walking distance of these businesses to help ensure in their long-term viability.	No	Yes	Yes
The goal for the residential component of Westlake Villages is to build a unique community combining the best of modern suburban development practices with the building types and styles of traditional neighborhoods. To create a safe, secure environment with walkable neighborhoods that meet the lifestyle goals of families with children and elderly alike. To design streets and a circulation system resulting in neighborhoods that balance the pedestrian and car, to promote and enhance the pedestrian experience.	No	Yes	No
Westlake Villages would promote open space within neighborhoods to provide a convenient and safe destination for children to play and families to congregate. To develop a system of lakes that provide scenic vistas, recreation opportunities, that would also be utilized for enhancing the environment and improving water quality. Open space would also include a system of trails that would be available to the public, providing accessibility, recreation opportunities, and a visual amenity enjoyed by the entire community.	No	Yes	Yes

Notes: More: Impacts with this alternative are more than the proposed project; Similar: Impacts are similar to the proposed project
Same: Impacts are the same as for the proposed project; Less: Impacts are less than the proposed project

6.2 PROPOSED PROJECT SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

Based on the discussion contained in this EIR, there are six significant and unavoidable impacts that will occur from the proposed Westlake Villages project. These include the following:

- $ Total emissions of the proposed project would be higher than the 10 tons/year thresholds for ROG and established by the SJVAPCD. No feasible mitigation is available to offset this impact. Cumulative fugitive dust issues will also be significant and unavoidable.
- $ Impacts on community and neighborhood park land shortages.
- $ Incompatibility with surrounding land uses and conflicts with General Plan policies.
- $ All cumulative traffic related impacts cannot be mitigated.
- $ Unanticipated population growth in an undeveloped area.

6.3 ALTERNATIVES CONSIDERED

The following alternatives to the proposed project are considered in this DEIR:

- $ Alternative 1 - No Project Alternative
- $ Alternative 2 - Minimum Residential Density
- $ Alternative 3 - All Conventional Housing

Alternative 1: No Project Alternative

The CEQA-required No Project Alternative would retain the site in its current condition, namely agricultural and fallow lands. With this alternative, no further site improvement activity would occur. No development would occur on site and current General Plan land use and zoning designations would remain in place.

Geology and Soils

Implementation of the No Project Alternative would not affect the geophysical conditions associated with the site. Similarly, the geophysical conditions of the site would not adversely affect the site's agricultural/ open space uses (i.e., seismic and other geophysical concerns would not be hazardous to site uses).

Generally, the soils on the project site are capable of accommodating the proposed project. Engineering techniques will be required, however, to mitigate impacts from expansive soils and high ground water levels. Therefore, the No Project Alternative does presents advantages regarding geology and soils and is an environmentally superior to the proposed project.

Comparable Impacts: Less than the Proposed Project
Reduces Significant Impact: No

Air Resources.

The No Project Alternative would not require any site improvements or construction, nor create any new uses that generate stationary and mobile source emissions. Therefore, the No Project Alternative would not further contribute to air quality exceedances or adversely affect the County's attainment status. It should be noted that the existing exposed earth conditions could have an effect on air quality from dust emissions due to long-term soil exposure to wind erosion.

Total emissions of the proposed project would be higher than thresholds established by the SJVAPCD for ROG. Similarly, on a cumulative basis, the project generates fugitive dust and emissions during construction.

Since the No Project Alternative does not have long-term impacts on air quality, this alternative is considered environmentally superior when compared with the proposed project.

Comparable Impacts: Less than the Proposed Project
Reduces Significant Impacts: Yes

Water Resources

The No Project Alternative would not change the surface or subsurface water resources associated with the site or the region. Groundwater resources have been utilized for crop irrigation and have had a long-term effect on the water table. Surface water conditions, including runoff and water quality conditions, would not change.

Implementation of the proposed project will result in changes to the subsurface water resources. High water table conditions on the project site complicate earthwork, site development, and lake construction. To resolve the high water table issues, dewatering will be required resulting in the lowering of the water table sufficient to prepare the site for development. Waters removed from the subsurface will be pumped into Disappointment Slough during construction. The geotechnical study prepared for the project recommends installing a permanent dewatering system to ensure that localized onsite flooding does not occur. It is likely that these dewatering activities would permanently lower water table elevations as experienced at SPW.

Project development will change surface water resources. Increases in runoff are expected due to changes to the hydrology and watershed. The No Project alternative would retain existing conditions for surface and ground water resources. Although all project related impact will be mitigated to a less than significant level, the proposed project will create changes to the existing water conditions. Therefore, the No Project Alternative presents conditions that are considered advantageous when compared with the proposed project (as mitigated) and is considered environmentally superior.

Comparable Impacts: Less as the Proposed Project
Reduces Significant Impacts: No

Biological Resources

Implementation of the No Project Alternative would retain the undeveloped, agricultural conditions with limited biological habitat value. Although existing conditions on the project site provide limited habitat value, a number of special status species have the potential to or are known to occur on the project site. The proposed project would eliminate habitat for these species. Payment of fees for the loss of habitat and compliance with applicable laws and permitting requirements would reduce these impacts to less than significant levels.

Although impacts to biological resources will be less than significant with the proposed project, the No Project alternative will not eliminate potential habitat. For this reason, the No Project alternative is considered more advantageous regarding the impacts on biological resources and therefore is considered environmentally superior.

Comparable Impacts: Less than the Proposed Project
Reduces Significant Impacts: No

Noise

Noise conditions on the project site would remain at current levels for the No Project alternative. Therefore, the site conditions would not contribute towards any local noise level increases.

Implementation of the proposed project will introduce stationary and mobile noise sources that will cause incremental increases in noise levels. However, none of the increases will exceed City noise standards for existing sensitive receptors, and are not considered significant. Within the project, noise effects can be mitigated for residential uses along Eight Mile Road.

All noise-related impacts can be mitigated for the Proposed Project, however, the ambient noise environment will increase through project implementation. Therefore, the No Project Alternative presents an advantages when compared with the proposed project and, therefore, is considered environmentally superior.

Comparable Impacts: Less than the Proposed Project
Reduces Significant Impacts: No

Land Use

With the No Project Alternative, the project site would not be annexed within the City's boundaries. The existing County General Plan land use and zoning designations would remain in place (General Agriculture/ AG-40 and Commercial-Recreation/C-R). Current agricultural land uses on site would remain unchanged.

The No Project Alternative would be considered compatible with most adjacent uses, excepting Spanos Park West. The existing on site land uses do not conflict with the City's General Plan policies and guidelines.

Consequently, the No Project Alternative presents advantages when compared with the proposed project and is considered environmentally superior with respect to land use conditions.

Comparable Impacts: Less than the Proposed Project
Reduces Significant Impacts: Yes

Traffic and Circulation

No off-site traffic impacts would occur from this alternative, although the deficiencies identified in the Existing Plus Approved Projects and Cumulative Without Project scenarios would still occur.

With the proposed project, the project uses would generate traffic that would affect peak hour traffic conditions and intersection congestion, along surrounding roadways and intersections. However, these traffic impacts are mitigable.

Although the proposed project does not adversely affect levels of service and congestion (after mitigation), the No Project Alternative is considered advantageous when compared with the proposed project and, therefore, is environmentally superior.

Table 6.3.A: Project Alternatives Mitigation Summary

IMPACT	DESCRIPTION	NO PROJECT
TRAF 1	Potential for unacceptable intersection operations – Existing Plus Approved Project Plus Project Scenario	No Mitigation Required
TRAF 2	Potential for unacceptable interchange operations – Existing Plus Approved Project Plus Project Scenario	No Mitigation Required
TRAF 3	Potential for Unacceptable Operations at Site Access Intersections	No Mitigation Required
TRAF 4	The proposed project would result in unacceptable service levels at the Eight Mile Road/I-5 interchange.	No Mitigation Required
TRAF 5	Potential for unacceptable interchange operations – Cumulative Conditions	No Mitigation Required
TRAF 6	Inconsistencies with the Eight Mile Road Specific Plan	No Mitigation Required
TRAF 7	Potential for Increase in Transit Demand	No Mitigation Required
TRAF 8	Potential to Conflict with General Plan Policies – Non-Motorized Transportation	No Mitigation Required
TRAF 9	Potential for Inadequate Site Access	No Mitigation Required
TRAF 10	Potential for Inadequate Elementary School Circulation.	No Mitigation Required
TRAF 11	Potential for Lack of Adequate Parking at Marina Site	No Mitigation Required

Source: Fehr & Peers, 2003

Comparable Impacts: Less than the Proposed Project
Reduces Significant Impacts: Yes

Population, Housing, and Socioeconomics

The No Project Alternative would not generate additional population, provide additional housing or employment opportunities, or otherwise affect socioeconomic conditions. Since there would be no site development, there would be no housing or population generation. The long-term forecasts for City population, housing, and employment projections would remain unaffected by the project site.

Site development will generate unexpected population growth, which will create impacts to public services, traffic, etc. In light of these impacts, the No Project Alternative is considered advantageous when compared with the proposed project and, therefore, is environmentally superior.

Comparable Impacts: Less than the Proposed Project
Reduces Significant Impacts: Yes

Public Services

The No Project Alternative will not require an increase in public services to serve the project site. Current service levels would remain unaffected, and the demand for services would remain at current levels.

The proposed project will require an increase in public services due to the increase in population. The proposed project does not provide adequate parklands based on City standards. Feasible mitigation does not exist to offset impacts to parklands, creating a significant, unavoidable impact. Therefore, the No Project alternative is considered advantageous when compared with the proposed project and is environmentally superior.

Comparable Impacts: Less than the Proposed Project
Reduces Significant Impacts: Yes

Water Supply Assessment

The No Project alternative will not consume additional water supplies. The proposed project will create additional demands on water consumption. A majority of the utility requirements of the proposed project can be provided within the forecasted infrastructure. In addition, the project does not require lengthy extension of infrastructure or service lines to serve the site. These systems will be extended from SPW and are available to serve the site. The No Project alterative will not require additional water supplies, therefore, the No Project alterative is considered advantageous and is environmentally superior.

Comparable Impacts: Less than the Proposed Project
Reduces Significant Impacts: Yes

Utilities and Service Systems

The No Project Alternative will not require the extension of utilities or service systems to serve the site. Similarly, the No Project alternative will not require treatment of wastewater. The No Project alternative will not affect other public utilities, including telephone, electricity, and cable television services.

The proposed project will generate sewage for treatment at the wastewater treatment plant. A majority of the utility requirements of the proposed project can be provided within the forecasted infrastructure. In addition, the project does not require lengthy extension of infrastructure or service lines to serve the site. These systems will be extended from SPW and are available to serve the site. Similarly, other public utilities can be provided for the proposed project without adversely impacting those services. Significant impacts to utilities are not expected. However, the No Project alternative will not require the extension of any utilities or generate additional utility needs, therefore, the No Project alternative is environmentally superior.

Comparable Impacts: Less than the Proposed Project
Reduces Significant Impacts: Yes

Aesthetics/Light and Glare

Aesthetics and light and glare conditions will remain unchanged with the No Project Alternative. The current agricultural uses on the site would be retained. The site will continue to be absent of light and glare.

With the proposed project, the aesthetic character will be substantially changed to reflect conditions associated with an intense residential subdivision. The project is designed to complement the adjacent SPW development and therefore, impacts are not considered to be significant.

Night-time light will increase as the site is developed with new residential uses. However, the lighting associated with the residences will be mitigated and reduced through the Master Development Plan concepts.

Although impacts to visual resources created by the proposed project will be mitigated, the No Project alternative presents significant advantages over the proposed project and is considered environmentally superior.

Comparable Impacts: Less than the Proposed Project
Reduces Significant Impacts: Yes

Cultural Resources

The No Project Alternative will not have an effect on known or unknown historic and prehistoric resources.

Comparable Impacts: Less than the Proposed Project
Reduces Significant Impacts: Yes
Hazardous Materials/Wastes

Under the No Project Alternative, existing hazardous materials and wastes that are located on site would not be removed and would present potential hazards to the public and environment. As part of the proposed project, the materials will need to be removed from the site and disposed at an appropriate facility that handles hazardous materials/wastes.

Development of the project will improve site conditions with respect to hazardous materials/wastes therefore, the No Project Alternative is not considered advantageous and is not environmentally superior.

Comparable Impacts: More than the Proposed Project
Reduces Significant Impacts: No

Conclusion

The proposed project has significant impacts with respect to air quality, land use, public services, population, and traffic. These impacts are avoided with the No Project Alternative due to the absence of development. With the proposed project, impacts for most other environmental issue areas are either less than significant or can be adequately mitigated. For these areas, the No Project alternative often presents reduced levels of impact. Development of the proposed project will improve conditions relating to hazardous materials/wastes. The No Project alternative is considered an environmentally superior alternative.

Alternative 2: Minimum Residential Density

The minimum residential density alternative would consist of 501 fewer conventional single-family homes and 202 fewer Active Adult residences than the proposed project. All other project uses would remain the same.

Geology and Soils

Implementation of the Minimum Density alternative would create the same geophysical issues as the proposed project. Like the proposed project, structures proposed for Minimum Density alternative would have to meet building standards for the region. Engineering techniques required for the proposed project to offset impacts of expansive soils and high water table elevations would also be necessary for the Minimum Density alterative.

With appropriate measures, geophysical conditions present on site are capable of accommodating the proposed project and the Minimum Density alternative. Since there are no geophysical conditions that cannot be mitigated, the Minimum Density alternative does not present any advantages regarding geophysical resources, therefore, is not considered environmentally superior to the proposed project.

Comparable Impacts: Same as the Proposed Project
Reduces Significant Impacts: No

Air Resources

Construction of the project at lower densities would result in 4,470 fewer daily trips, 373 fewer AM and 411 fewer PM peak hour trips, as shown in Table 6.3.B. The reduced number of vehicle trips will likely generate lower levels of pollutants when compared to the Proposed Project. The Minimum Density alternative would result in similar levels of pollutants generated on site during construction due to complete site development.

Under the Minimum Density alternative, the decreased number of vehicles and vehicle trips will reduce the pollutants emitted by operation of project. As such, the Minimum Density alternative is considered advantageous to the Proposed Project and environmentally superior, since pollutant levels will likely be

reduced. However, significant impacts will remain likely with this alternative.

Comparable Impacts: Less than the Proposed Project
Reduces Significant Impacts: No

Water Resources

Implementation of the Minimum Density alternative would require the same measures in preparing and maintaining the project site. Under the Minimum Density alterative, onsite lakes would be created, the site would be permanently dewatered, and storm water would be discharged to Disappointment Slough. These measures are the same under the Proposed Project. Therefore, the Minimum Density alternative is not considered advantageous to the Proposed Project and is not environmentally superior.

Comparable Impacts: Same as the Proposed Project
Reduces Significant Impacts: No

Biological Resources

Implementation of the Minimum Density alternative would require the same measures in preparing and maintaining the project site. Under the Minimum Density alterative, the site would be graded, drainage canals would be filled, and storm water would be discharged to Disappointment Slough. These measures are the same under the Proposed Project. Therefore, the Minimum Density alternative is not considered advantageous to the Proposed Project and is not environmentally superior.

Comparable Impacts: Same as the Proposed Project
Reduces Significant Impacts: No

Noise

Implementation of the Minimum Density alternative would require the same measures to prepare and operate the site. Although the number of vehicles and trips on project roadways would be decreased under this alternative, mitigation would still be necessary to offset noise impacts for homes along Eight Mile Road. It is expected that the same mitigation measures would be required for the Minimum Density alternative. Therefore, the Minimum Density alternative is not considered advantageous to the Proposed Project and is not environmentally superior.

Comparable Impacts: Same as the Proposed Project
Reduces Significant Impacts: No

Land Use

Implementation of the Minimum Density alternative would require the same measures to prepare and operate the site. A General Plan amendment and rezoning would be necessary to annex the project site to within the City's boundary. Agricultural land would be lost and high-density housing would not be provided. These impacts are the same under the Proposed Project. Therefore, the Minimum Density alternative is not considered advantageous to the Proposed Project and is not environmentally superior.

Comparable Impacts: Similar to the Proposed Project
Reduces Significant Impacts: No

Traffic and Circulation

Construction of the project at lower densities would result in 4,470 fewer daily trips, 373 fewer AM and 411 fewer PM peak hour trips, as shown in Table 6.3.B.

In the Existing Plus Approved Project Plus Minimum Density scenario, the deficient intersections identified with the addition of project traffic would remain inadequate. All project impacts identified in the Cumulative scenario would remain significant. No additional impacts would occur with development of the Minimum Density alternative. The mitigation measures developed to address the significant off-site traffic impacts of the proposed project would also mitigate impacts for the Minimum Density Alternative, as shown in Table 6.3.C.

Comparable Impacts: Similar to the Proposed Project
Reduces Significant Impacts: No

Table 6.3.B: Minimum Density Trip Generation Summary [1]

		DAILY	AM PEAK HOUR			PM PEAK HOUR		
UNITS	LAND USE	TRIPS	INBOUND	OUTBOUND	TOTAL	INBOUND	OUTBOUND	TOTAL
Minimum Density Alternative								
700	Student Elementary School	710	120	83	203	84	98	182
1,660	Single Family Homes	13,740	293	878	1,171	864	486	1,350
666	Active Adult Residences	2,800	79	141	220	188	105	293
	Residential Subtotal	16,540	372	1,019	1,391	1,052	591	1,643
97,357	Square Feet General Office	1,300	161	22	183	32	156	188
97,357	Square Feet Retail	6,700	61	39	100	296	321	617
	Commercial Subtotal	8,000	222	61	283	328	477	805
	Less Internal Trips							
501	Elementary School Students[2]	510	86	59	145	60	70	130
	To Commercial (25%)	2,000	56	15	71	82	119	201
	From Residential	2,000	15	56	71	119	82	201
	Net New Trips	20,740	557	1,033	1,591	1,203	895	2,098
Proposed Project								
	Net New Trips[3]	25,210	643	1,321	1,964	1,473	1,036	2,509

Source: Fehr & Peers, 2003.

Notes:[1] Trip generation rates presented in Table 4.7.M.

[2] Elementary School Students residing in Westlake Villages would decrease with fewer conventional single family homes.

[3] Detailed project trip generation presented in Table 4.7.M

Table 6.3.C: Minimum Density Alternative Mitigation Summary

IMPACT	DESCRIPTION	MINIMUM DENSITY
TRAF 1	Potential for unacceptable intersection operations – Existing Plus Approved Project Plus Project Scenario	Less than significant after mitigation.
TRAF 2	Potential for unacceptable interchange operations – Existing Plus Approved Project Plus Project Scenario	Less than significant after mitigation.
TRAF 3	Potential for Unacceptable Operations at Site Access Inter-sections	Less than significant after mitigation.
TRAF 4	Potential for unacceptable intersection operations – Cumulative Conditions	Less than significant after mitigation.
TRAF 5	Potential for unacceptable interchange operations – Cumulative Conditions	No feasible mitigation.
TRAF 6	Inconsistencies with the Eight Mile Road Specific Plan	Less than significant after mitigation.
TRAF 7	Potential for Increase in Transit Demand	Less than significant after mitigation.
TRAF 8	Potential to Conflict with General Plan Policies – Non-Motorized Transportation	Less than significant after mitigation.
TRAF 9	Potential for Inadequate Site Access	Less than significant after mitigation.
TRAF 10	Potential for Inadequate Elementary School Circulation.	Less than significant after mitigation.
TRAF 11	Potential for Lack of Adequate Parking at Marina Site	Less than significant after mitigation.

Source: Fehr & Peers, 2003

Population, Housing, and Socioeconomics

The Minimum Density alternative would add 6,485 individuals to the population. This represents 1,972 fewer individuals that the Proposed Project, however, the population growth would still be significant and unexpected. Additionally, the Minimum Density alternative would not provide any affordable, high density housing which is in conflict with City policies. For these reasons, the Minimum Density alternative has similar impacts to the Proposed Project and is not environmentally superior.

Comparable Impacts: Similar to the Proposed Project
Reduces Significant Impacts: No

Public Services

The project will add 1,972 fewer individuals to the population than the proposed project. Demand for fire, police, parklands, and library services would be reduced accordingly. Based on City standards, the Minimum Density alternative would require 13 acres of community parks and 6.5 acres of neighborhood parks. The Minimum Density alternative would be 0.7-acres deficient in community parklands. The minimum size acreage of the neighborhood parks would not comply with City standards.

The Minimum Density alternative provides advantages for public services when compared with the Proposed Project due to less demand on libraries, parklands, police and fire. For these reasons, the Minimum Density alternative is environmentally superior.

Comparable Impacts: Less than the Proposed Project
Reduces Significant Impacts: Yes

Water Supply Assessment

If the project is approved within 24 months, the Water Supply Assessment indicates that water supplies will be available to serve the proposed project. This impact would be the same for the Minimum Density alternative, therefore, the Minimum Density alternative is not environmentally superior to the proposed project.

Comparable Impacts: Same to the Proposed Project
Reduces Significant Impacts: No

Utilities and Service Systems

Under the Minimum Density alternative, the demand for utilities would be decreased, however, the Minimum Density alternative does not provide significant advantages to the Proposed Project and is not environmentally superior.

Comparable Impacts: Similar to the Proposed Project
Reduces Significant Impacts: No

Aesthetics/Light and Glare

Like the Proposed Project, the Minimum Density alternative would change the undeveloped, agricultural nature of the site to a developed, urban condition. The Minimum Density alternative would create similar light and shadow conditions when compared with the project. Therefore, the Minimum Density alternative is not considered advantageous for aesthetics and light/glare when compared with the Proposed Project and is not environmentally superior.

Comparable Impacts: Same as the Proposed Project
Reduces Significant Impacts: No

Cultural Resources

Development of the site with the Minimum Density alternative would create the same impact to cultural resources. Therefore, this alternative is not considered advantageous with respect to cultural resources when compared with the proposed project and is not environmentally superior.

Comparable Impacts: Same as the Proposed Project
Reduces Significant Impacts: No

Hazardous Materials/Wastes

The same conditions exist for the Minimum Density Alternative as the proposed project. The site would need to be cleared of all potentially hazardous wastes and materials. As part of the proposed project, the materials will need to be removed from the site and disposed at an appropriate facility that handles hazardous materials/wastes.

Development of the Minimum Density Alternative will present the same conditions as the proposed project and is not considered advantageous and is not environmentally superior.

Comparable Impacts: Same as the Proposed Project
Reduces Significant Impacts: No

Conclusion

The Minimum Density alternative would have fewer significant impacts that the Proposed Project. Impacts to public services would be reduced due to fewer individuals and vehicles generated under this alternative. The severity of impacts to air quality, land use, traffic, and population, while similar to the Proposed Project, will likely be reduced. Overall the Minimum Density alternative is an environmentally superior alternative due to decreased impacts to air quality and public services.

Alternative 3: All Conventional Housing

The All Conventional Housing alternative would replace Active Adult housing with conventional housing. This alternative would construct a maximum of 2,994 single-family homes. All other project uses would remain the same.

Geology and Soils

Implementation of the All Conventional alternative would create the same geophysical issues as the proposed project. Like the proposed project, structures proposed for the All Conventional alternative would have to meet building standards for the region. Engineering techniques required for the proposed project to offset impacts of expansive soils and high water table elevations would also be necessary for the All Conventional alterative.

With appropriate measures, geophysical conditions present on site are capable of accommodating the proposed project and the All Conventional alternative. Since there are no geophysical conditions that cannot be mitigated, the All Conventional alternative does not present any advantages regarding geophysical resources, therefore, is not considered environmentally superior to the proposed project.

Comparable Impacts: Same as the Proposed Project
Reduces Significant Impacts: No

Air Resources

The All Conventional housing alternative would replace Active Adult housing with conventional housing although the total number of units would be equivalent to the Proposed Project. This alternative would construct a maximum of 2,994 single-family homes, resulting in an additional 3,150 daily trips, 486 AM and 372 PM peak hour trips as shown in Table 6.3.D. The increased number of vehicle trips will likely generate higher levels of pollutants when compared to the Proposed Project. The All Conventional alternative would result in equivalent levels of pollutants generated on site during construction when compared to the project.

Under the All Conventional alternative, the increased number of vehicles and vehicle trips will increase the pollutants emitted by operation of project. As such, the All Conventional alternative is not considered advantageous to the Proposed Project and is not environmentally superior.

Comparable Impacts: More than the Proposed Project
Reduces Significant Impacts: No

Water Resources

Implementation of the All Conventional alternative would require the same measures in preparing and maintaining the project site. Under the All Conventional alterative, onsite lakes would be created, the site would be permanently dewatered, and storm water would be discharged to Disappointment Slough. These measures are the same under the Proposed Project. Therefore, the All Conventional alternative is not considered advantageous to the Proposed Project and is not environmentally superior.

Comparable Impacts: Same as the Proposed Project
Reduces Significant Impacts: No

Biological Resources

Implementation of the All Conventional alternative would require the same measures in preparing and maintaining the project site. Under the All Conventional alterative, the site would be graded, drainage canals would be filled, and storm water would be discharged to Disappointment Slough. These measures are the same under the Proposed Project. Therefore, the All Conventional alternative is not considered advantageous to the Proposed Project and is not environmentally superior.

Comparable Impacts: Same as the Proposed Project
Reduces Significant Impacts: No

Noise

Implementation of the All Conventional alternative would require the same measures to prepare and operate the site. Although the number of vehicles and trips on project roadways would be increased under this alternative, the same mitigation would be necessary to offset noise impacts for homes along Eight Mile Road. It is expected that the same mitigation measures would be required for the All Conventional alternative. Therefore, the All Conventional alternative is not considered advantageous to the Proposed Project and is not environmentally superior.

Comparable Impacts: Same as the Proposed Project
Reduces Significant Impacts: No

Land Use

Implementation of the All Conventional alternative would require the same measures to prepare and operate the site. A General Plan amendment and rezoning would be necessary to annex the project site to within the City's boundary. Agricultural land would be lost and high-density housing would not be constructed. These impacts are the same under the Proposed Project. Therefore, the All Conventional alternative is not considered advantageous to the Proposed Project and is not environmentally superior.

Comparable Impacts: Same as the Proposed Project

Reduces Significant Impacts: No

Traffic and Circulation

This alternative would construct a maximum of 2,994 single-family homes, resulting in an additional 3,150 daily trips, 486 AM and 372 PM peak hour trips as shown in Table 6.3.D.

In the Existing Plus Approved Project Plus Conventional Housing scenario, the deficient intersections identified with the addition of traffic from the proposed project would remain deficient and no additional impacts were identified. All project impacts identified in the Cumulative scenario would remain significant. No additional cumulative impacts were identified for the All Conventional alternative. Additionally, mitigation measures developed to address significant off-site traffic impacts of the proposed project would also mitigate impacts of the All Conventional alternative, as shown in Table 6.3.E.

Comparable Impacts: Same as the Proposed Project
Reduces Significant Impacts: No

Table 6.3.D: All Conventional Alternative Trip Generation Summary [1]

		DAILY	AM PEAK HOUR			PM PEAK HOUR		
UNITS	LAND USE	TRIPS	INBOUND	OUTBOUND	TOTAL	INBOUND	OUTBOUND	TOTAL
All Conventional Housing								
700	Student Elementary School	710	120	83	203	84	98	182
2,994	Single Family Homes	23,650	526	1,579	2,105	1,469	827	2,296
	Residential Subtotal	*24,360*	*646*	*1,662*	*2,308*	*1,553*	*925*	*2,478*
97,357	Square Feet General Office	1,300	161	22	183	32	156	188
97,357	Square Feet Retail	6,700	61	39	100	296	321	617
	Commercial Subtotal	*8,000*	*222*	*61*	*283*	*328*	*477*	*805*
	Less Internal Trips							
700	Elementary School Students[2]	710	120	83	203	84	98	182
	To Commercial (25%)	2,000	56	15	71	82	119	201
	From Residential	2,000	15	56	71	119	82	201
	Net New Trips	**28,360**	**797**	**1,652**	**2,450**	**1,680**	**1,201**	**2,881**
Proposed Project								
	Net New Trips[3]	**25,210**	**643**	**1,321**	**1,964**	**1,473**	**1,036**	**2,509**

Source: Fehr & Peers, 2003.

Notes: [1] Trip generation rates presented in Table 4.7.M.

[2] Elementary School Students residing in Westlake Villages would increase with more conventional single family homes.

[3] Detailed project trip generation presented in Table 4.7.M.

Table 6.3.E: Project Alternatives Mitigation Summary

IMPACT	DESCRIPTION	ALL CONVENTIONAL HOUSING
TRAF 1	Potential for unacceptable intersection operations – Existing Plus Approved Project Plus Project Scenario	Less than significant after mitigation.
TRAF 2	Potential for unacceptable interchange operations – Existing Plus Approved Project Plus Project Scenario	Less than significant after mitigation.
TRAF 3	Potential for Unacceptable Operations at Site Access Inter-sections	Less than significant after mitigation.
TRAF 4	Potential for unacceptable intersection operations – Cumulative Conditions	Less than significant after mitigation.
TRAF 5	Potential for unacceptable interchange operations – Cumulative Conditions	No feasible mitigation.
TRAF 6	Inconsistencies with the Eight Mile Road Specific Plan	Less than significant after mitigation.
TRAF 7	Potential for Increase in Transit Demand	Less than significant after mitigation.
TRAF 8	Potential to Conflict with General Plan Policies – Non-Motorized Transportation	Less than significant after mitigation.
TRAF 9	Potential for Inadequate Site Access	Less than significant after mitigation.
TRAF 10	Potential for Inadequate Elementary School Circulation.	Less than significant after mitigation.
TRAF 11	Potential for Lack of Adequate Parking at Marina Site	Less than significant after mitigation.

Source: Fehr & Peers, 2003

Population, Housing, and Socioeconomics

The All Conventional alternative would add 9,410 individuals to the population. This represents 953 more individuals that the Proposed Project. This alternative would increase population growth which is significant and unexpected. Additionally, the All Conventional alternative would not provide any affordable, high density housing which is in conflict with City policies. Due to the increase in population over the Proposed Project, the All Conventional alternative would have more impacts than the Proposed Project and is not environmentally superior.

Comparable Impacts: More than the Proposed Project
Reduces Significant Impacts: No

Public Services

The project will add 953 more individuals to the population than the Proposed Project. Demand for fire, police, parklands, and library services would increase accordingly. Additionally, individuals living in conventional housing are expected to use public services at a higher rate than individuals living in Active Adult communities. Based on City standards, the All Conventional alternative would require 18.8 acres of community parks and 9.4 acres of neighborhood parks. The All Conventional alternative would by 6.5 acres deficient in community parklands. The minimum size acreage of the neighborhood parks would not comply with City standards.

The All Conventional alternative does not provide advantages for public services when compared with the Proposed Project due to the increased demand for libraries, police and fire, and increased deficiency in parklands. For these reasons, the All Conventional alternative is not environmentally superior.

Comparable Impacts: More than the Proposed Project
Reduces Significant Impacts: No

Water Supply Assessment

If the project is approved within 24 months, the Water Supply Assessment indicates that water supplies will be available to serve the proposed project. This impact would be the same for the All Conventional alternative, therefore, the All Conventional alternative is not environmentally superior to the proposed project.

Comparable Impacts: Same to the Proposed Project
Reduces Significant Impacts: No

Utilities and Service Systems

Under the All Conventional alternative, the demand for utilities would likely be increased. However, these increase are not expected to be significant. The All Conventional alternative does not provide significant advantages to the Proposed Project and is not environmentally superior.

Comparable Impacts: Similar to the Proposed Project
Reduces Significant Impacts: No

Aesthetics/Light and Glare

Like the Proposed Project, the All Conventional alternative would change the undeveloped, agricultural nature of the site to a developed, urban condition. The All Conventional alternative would create similar light and shadow conditions when compared with the project. Therefore, the All Conventional alternative is not considered advantageous for aesthetics and light/glare when compared with the Proposed Project and is not environmentally superior.

Comparable Impacts: Same as the Proposed Project
Reduces Significant Impacts: No

Cultural Resources

The All Conventional alternative would create the same impacts to cultural resources as the Proposed Project. This alternative is not considered advantageous with respect to cultural resources when compared with the proposed project. Therefore, this alternative is not environmentally superior.

Comparable Impacts: Same as the Proposed Project
Reduces Significant Impacts: No

Hazardous Materials/Wastes.

The same conditions exist for the All Conventional Alternative as the proposed project. The site would need to be cleared of all potentially hazardous wastes and materials. As part of the proposed project, the materials will need to be removed from the site and disposed at an appropriate facility that handles hazardous materials/wastes.

Development of the All Conventional Alternative will present the same conditions as the proposed project and is not considered advantageous and is not environmentally superior.

Comparable Impacts: Same as the Proposed Project
Reduces Significant Impacts: No

Conclusion

The All Conventional alternative would have more significant impacts than the Proposed Project. Impacts to air quality, public services, and population would be increased due to more individuals and vehicles generated under this alternative. The severity of impacts to land use and traffic, while similar to the Proposed Project, will likely be increased. Overall, the All Conventional alternative is not an environmentally superior alternative due to increased impacts to air quality, public services, and population.

CHAPTER 7.0 IRREVERSIBLE ENVIRONMENTAL CHANGES

A number of irreversible changes will occur with approval of the proposed project. These are summarized as follows:

X Undeveloped agricultural lands will be committed to urban development.

X Permanent dewatering of the site may lower ground water levels.

X Air quality will be incrementally degraded. Project emissions will contribute towards the exceedance of ROG levels over the long term operation of the project. On a cumulative basis, construction will adversely affect fugitive dust levels and construction pollutants, and contribute to the non-attainment status of the County.

X Additional impermeable surfaces and increases in runoff will occur. New sources for potential surface water pollution will be introduced.

X Potential habitat will be lost with implementation of the project. Jurisdictional waters may also be impacted.

X Incremental increases in ambient noise levels will occur.

X Inconsistencies with existing General Plan policies. Agricultural lands will be irretrievably lost.

X Additional traffic will be generated by site land uses, and incremental increases in local and regional congestion will occur.

X A new population base and housing supply will be introduced into an area previously undeveloped.

X Increased levels of public services will be required to serve the proposed project. Community and regional park land shortages will be aggravated by project demand.

X Water supplies for consumption, sewage treatment, and other utility resources will be permanently committed to the project site.

X The current undeveloped, graded character of the site will be committed to mixed use, residential, and support uses. Light effects will incrementally affect the night sky.

X The potential for disturbing potentially unknown historic and prehistoric cultural resources will occur with site development and occupation.

CHAPTER 8.0 UNAVOIDABLE ADVERSE IMPACTS

Implementation of the proposed project will result in a number of potentially significant impacts on the environment. The majority of those potentially significant impacts, with mitigation measures, will be reduced to levels below significance. However, the following impacts cannot be completely mitigated, and the impacts will remain significant and adverse:

X Impacts on air quality due to the exceedance of ROG and NO_x during the long term operation of the project, potential cumulative effects from project construction activity on fugitive dust and pollutant emissions and inconsistency with the Air Quality Attainment Plan.

X The project will present a significant change in land use character and intensity, including agricultural-related issues. Elements of the project are inconsistent with the existing San Joaquin County General Plan.

X The project will generate unexpected population growth .

X The project will aggravate existing community and regional park land shortages. Adequate community parklands are not provided and proposed neighborhood parks do not meet the City's minimum size requirements.

X Feasible mitigation does not exist to offset all traffic-related cumulative impacts.

In light of the adverse impacts identified, a Statement of Overriding Considerations is needed prior to project approval.

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APPENDIX A NOTICE OF PREPARATION (NOP)/INITIAL STUDY, NOP, CORRESPONDENCE, REVISED TRAFFIC ANALYSES DATA

APPENDIX B

Proposed School Site - Stockton Site I

San Joaquin Valley Unified APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Elementary School	800.00	Student	18.50	66,882.70	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	45
Climate Zone	2			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Parcel is 18.5 acres

Grading - Site soil is considered suitable for engineered fill (Mid Pacific Engineering).

Sequestration -

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Mobile Commute Mitigation -

Area Mitigation -

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblLandUse	LotAcreage	1.54	18.50
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblSequestration	NumberOfNewTrees	0.00	20.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.2150	2.0941	1.6448	3.1300e-003	0.2466	0.1009	0.3475	0.1106	0.0939	0.2045	0.0000	273.9541	273.9541	0.0692	0.0000	275.6849
2022	0.6726	1.8583	1.9778	3.6800e-003	0.0453	0.0904	0.1356	0.0122	0.0849	0.0971	0.0000	320.9254	320.9254	0.0668	0.0000	322.5952
Maximum	**0.6726**	**2.0941**	**1.9778**	**3.6800e-003**	**0.2466**	**0.1009**	**0.3475**	**0.1106**	**0.0939**	**0.2045**	**0.0000**	**320.9254**	**320.9254**	**0.0692**	**0.0000**	**322.5952**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.2150	2.0941	1.6448	3.1300e-003	0.1254	0.1009	0.2262	0.0537	0.0939	0.1475	0.0000	273.9538	273.9538	0.0692	0.0000	275.6846
2022	0.6726	1.8583	1.9778	3.6800e-003	0.0453	0.0904	0.1356	0.0122	0.0849	0.0971	0.0000	320.9251	320.9251	0.0668	0.0000	322.5949
Maximum	**0.6726**	**2.0941**	**1.9778**	**3.6800e-003**	**0.1254**	**0.1009**	**0.2262**	**0.0537**	**0.0939**	**0.1475**	**0.0000**	**320.9251**	**320.9251**	**0.0692**	**0.0000**	**322.5949**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**41.54**	**0.00**	**25.10**	**46.40**	**0.00**	**18.89**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	6-1-2021	8-31-2021	1.3913	1.3913
2	9-1-2021	11-30-2021	0.6761	0.6761
3	12-1-2021	2-28-2022	0.6248	0.6248
4	3-1-2022	5-31-2022	0.6144	0.6144
5	6-1-2022	8-31-2022	0.6141	0.6141
6	9-1-2022	9-30-2022	0.2003	0.2003
		Highest	1.3913	1.3913

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3084	7.0000e-005	7.3500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0143	0.0143	4.0000e-005	0.0000	0.0152
Energy	3.4200e-003	0.0311	0.0261	1.9000e-004		2.3600e-003	2.3600e-003		2.3600e-003	2.3600e-003	0.0000	143.5367	143.5367	5.6100e-003	1.6500e-003	144.1675
Mobile	0.2249	2.1935	2.4542	0.0132	0.8417	7.7500e-003	0.8494	0.2263	7.2600e-003	0.2336	0.0000	1,227.3343	1,227.3343	0.0613	0.0000	1,228.8664
Waste						0.0000	0.0000		0.0000	0.0000	29.6367	0.0000	29.6367	1.7515	0.0000	73.4236
Water						0.0000	0.0000		0.0000	0.0000	0.6153	8.1306	8.7458	0.0636	1.5700e-003	10.8023
Total	**0.5367**	**2.2246**	**2.4877**	**0.0134**	**0.8417**	**0.0101**	**0.8518**	**0.2263**	**9.6500e-003**	**0.2360**	**30.2520**	**1,379.0159**	**1,409.2678**	**1.8820**	**3.2200e-003**	**1,457.2750**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3084	7.0000e-005	7.3500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0143	0.0143	4.0000e-005	0.0000	0.0152
Energy	3.4200e-003	0.0311	0.0261	1.9000e-004		2.3600e-003	2.3600e-003		2.3600e-003	2.3600e-003	0.0000	143.5367	143.5367	5.6100e-003	1.6500e-003	144.1675
Mobile	0.2156	2.1089	2.2631	0.0121	0.7573	7.0500e-003	0.7643	0.2036	6.6100e-003	0.2102	0.0000	1,123.1740	1,123.1740	0.0590	0.0000	1,124.6487
Waste						0.0000	0.0000		0.0000	0.0000	22.2275	0.0000	22.2275	1.3136	0.0000	55.0677
Water						0.0000	0.0000		0.0000	0.0000	0.5392	7.4435	7.9827	0.0557	1.3800e-003	9.7862
Total	**0.5274**	**2.1401**	**2.2965**	**0.0123**	**0.7573**	**9.4400e-003**	**0.7667**	**0.2036**	**9.0000e-003**	**0.2126**	**22.7667**	**1,274.1685**	**1,296.9353**	**1.4340**	**3.0300e-003**	**1,333.6854**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**1.72**	**3.80**	**7.68**	**8.43**	**10.02**	**6.90**	**9.99**	**10.03**	**6.74**	**9.89**	**24.74**	**7.60**	**7.97**	**23.80**	**5.90**	**8.48**

2.3 Vegetation

Vegetation

	CO2e
Category	MT
New Trees	14.1600
Total	**14.1600**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2021	6/28/2021	5	20	
2	Site Preparation	Site Preparation	6/29/2021	7/12/2021	5	10	
3	Grading	Grading	7/13/2021	8/23/2021	5	30	
4	Building Construction	Building Construction	8/24/2021	10/17/2022	5	300	
5	Paving	Paving	10/18/2022	11/14/2022	5	20	
6	Architectural Coating	Architectural Coating	11/15/2022	12/12/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 0

Proposed School Site - Stockton Site I - San Joaquin Valley Unified APCD Air District, Annual

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 100,324; Non-Residential Outdoor: 33,441; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	28.00	11.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	6.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0317	0.3144	0.2157	3.9000e-004		0.0155	0.0155		0.0144	0.0144	0.0000	34.0008	34.0008	9.5700e-003	0.0000	34.2400
Total	**0.0317**	**0.3144**	**0.2157**	**3.9000e-004**		**0.0155**	**0.0155**		**0.0144**	**0.0144**	**0.0000**	**34.0008**	**34.0008**	**9.5700e-003**	**0.0000**	**34.2400**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.1000e-004	5.7000e-004	5.7600e-003	2.0000e-005	1.8600e-003	1.0000e-005	1.8800e-003	5.0000e-004	1.0000e-005	5.1000e-004	0.0000	1.6003	1.6003	4.0000e-005	0.0000	1.6013
Total	**8.1000e-004**	**5.7000e-004**	**5.7600e-003**	**2.0000e-005**	**1.8600e-003**	**1.0000e-005**	**1.8800e-003**	**5.0000e-004**	**1.0000e-005**	**5.1000e-004**	**0.0000**	**1.6003**	**1.6003**	**4.0000e-005**	**0.0000**	**1.6013**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0317	0.3144	0.2157	3.9000e-004		0.0155	0.0155		0.0144	0.0144	0.0000	34.0007	34.0007	9.5700e-003	0.0000	34.2400
Total	**0.0317**	**0.3144**	**0.2157**	**3.9000e-004**		**0.0155**	**0.0155**		**0.0144**	**0.0144**	**0.0000**	**34.0007**	**34.0007**	**9.5700e-003**	**0.0000**	**34.2400**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.1000e-004	5.7000e-004	5.7600e-003	2.0000e-005	1.8600e-003	1.0000e-005	1.8800e-003	5.0000e-004	1.0000e-005	5.1000e-004	0.0000	1.6003	1.6003	4.0000e-005	0.0000	1.6013
Total	**8.1000e-004**	**5.7000e-004**	**5.7600e-003**	**2.0000e-005**	**1.8600e-003**	**1.0000e-005**	**1.8800e-003**	**5.0000e-004**	**1.0000e-005**	**5.1000e-004**	**0.0000**	**1.6003**	**1.6003**	**4.0000e-005**	**0.0000**	**1.6013**

3.3 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0194	0.2025	0.1058	1.9000e-004		0.0102	0.0102		9.4000e-003	9.4000e-003	0.0000	16.7179	16.7179	5.4100e-003	0.0000	16.8530
Total	**0.0194**	**0.2025**	**0.1058**	**1.9000e-004**	**0.0903**	**0.0102**	**0.1006**	**0.0497**	**9.4000e-003**	**0.0591**	**0.0000**	**16.7179**	**16.7179**	**5.4100e-003**	**0.0000**	**16.8530**

3.3 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e-004	3.4000e-004	3.4600e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	0.9602	0.9602	2.0000e-005	0.0000	0.9608
Total	**4.9000e-004**	**3.4000e-004**	**3.4600e-003**	**1.0000e-005**	**1.1200e-003**	**1.0000e-005**	**1.1300e-003**	**3.0000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.9602**	**0.9602**	**2.0000e-005**	**0.0000**	**0.9608**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0194	0.2025	0.1058	1.9000e-004		0.0102	0.0102		9.4000e-003	9.4000e-003	0.0000	16.7178	16.7178	5.4100e-003	0.0000	16.8530
Total	**0.0194**	**0.2025**	**0.1058**	**1.9000e-004**	**0.0407**	**0.0102**	**0.0509**	**0.0223**	**9.4000e-003**	**0.0317**	**0.0000**	**16.7178**	**16.7178**	**5.4100e-003**	**0.0000**	**16.8530**

3.3 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e-004	3.4000e-004	3.4600e-003	1.0000e-005	1.1200e-003	1.0000e-005	1.1300e-003	3.0000e-004	1.0000e-005	3.0000e-004	0.0000	0.9602	0.9602	2.0000e-005	0.0000	0.9608
Total	**4.9000e-004**	**3.4000e-004**	**3.4600e-003**	**1.0000e-005**	**1.1200e-003**	**1.0000e-005**	**1.1300e-003**	**3.0000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**0.9602**	**0.9602**	**2.0000e-005**	**0.0000**	**0.9608**

3.4 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0629	0.6960	0.4632	9.3000e-004		0.0298	0.0298		0.0274	0.0274	0.0000	81.7425	81.7425	0.0264	0.0000	82.4034
Total	**0.0629**	**0.6960**	**0.4632**	**9.3000e-004**	**0.1301**	**0.0298**	**0.1599**	**0.0540**	**0.0274**	**0.0814**	**0.0000**	**81.7425**	**81.7425**	**0.0264**	**0.0000**	**82.4034**

3.4 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6300e-003	1.1400e-003	0.0115	4.0000e-005	3.7300e-003	2.0000e-005	3.7500e-003	9.9000e-004	2.0000e-005	1.0100e-003	0.0000	3.2005	3.2005	8.0000e-005	0.0000	3.2026
Total	**1.6300e-003**	**1.1400e-003**	**0.0115**	**4.0000e-005**	**3.7300e-003**	**2.0000e-005**	**3.7500e-003**	**9.9000e-004**	**2.0000e-005**	**1.0100e-003**	**0.0000**	**3.2005**	**3.2005**	**8.0000e-005**	**0.0000**	**3.2026**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0586	0.0000	0.0586	0.0243	0.0000	0.0243	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0629	0.6960	0.4632	9.3000e-004		0.0298	0.0298		0.0274	0.0274	0.0000	81.7424	81.7424	0.0264	0.0000	82.4033
Total	**0.0629**	**0.6960**	**0.4632**	**9.3000e-004**	**0.0586**	**0.0298**	**0.0883**	**0.0243**	**0.0274**	**0.0517**	**0.0000**	**81.7424**	**81.7424**	**0.0264**	**0.0000**	**82.4033**

3.4 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6300e-003	1.1400e-003	0.0115	4.0000e-005	3.7300e-003	2.0000e-005	3.7500e-003	9.9000e-004	2.0000e-005	1.0100e-003	0.0000	3.2005	3.2005	8.0000e-005	0.0000	3.2026
Total	**1.6300e-003**	**1.1400e-003**	**0.0115**	**4.0000e-005**	**3.7300e-003**	**2.0000e-005**	**3.7500e-003**	**9.9000e-004**	**2.0000e-005**	**1.0100e-003**	**0.0000**	**3.2005**	**3.2005**	**8.0000e-005**	**0.0000**	**3.2026**

3.5 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0893	0.8193	0.7790	1.2700e-003		0.0451	0.0451		0.0424	0.0424	0.0000	108.8695	108.8695	0.0263	0.0000	109.5262
Total	**0.0893**	**0.8193**	**0.7790**	**1.2700e-003**		**0.0451**	**0.0451**		**0.0424**	**0.0424**	**0.0000**	**108.8695**	**108.8695**	**0.0263**	**0.0000**	**109.5262**

3.5 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5800e-003	0.0548	9.9500e-003	1.3000e-004	3.1000e-003	1.5000e-004	3.2500e-003	9.0000e-004	1.4000e-004	1.0400e-003	0.0000	12.8228	12.8228	1.0500e-003	0.0000	12.8490
Worker	7.1500e-003	4.9800e-003	0.0505	1.6000e-004	0.0164	1.1000e-004	0.0165	4.3500e-003	1.0000e-004	4.4500e-003	0.0000	14.0397	14.0397	3.6000e-004	0.0000	14.0487
Total	**8.7300e-003**	**0.0598**	**0.0605**	**2.9000e-004**	**0.0195**	**2.6000e-004**	**0.0197**	**5.2500e-003**	**2.4000e-004**	**5.4900e-003**	**0.0000**	**26.8625**	**26.8625**	**1.4100e-003**	**0.0000**	**26.8977**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0893	0.8193	0.7790	1.2700e-003		0.0451	0.0451		0.0424	0.0424	0.0000	108.8694	108.8694	0.0263	0.0000	109.5260
Total	**0.0893**	**0.8193**	**0.7790**	**1.2700e-003**		**0.0451**	**0.0451**		**0.0424**	**0.0424**	**0.0000**	**108.8694**	**108.8694**	**0.0263**	**0.0000**	**109.5260**

3.5 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5800e-003	0.0548	9.9500e-003	1.3000e-004	3.1000e-003	1.5000e-004	3.2500e-003	9.0000e-004	1.4000e-004	1.0400e-003	0.0000	12.8228	12.8228	1.0500e-003	0.0000	12.8490
Worker	7.1500e-003	4.9800e-003	0.0505	1.6000e-004	0.0164	1.1000e-004	0.0165	4.3500e-003	1.0000e-004	4.4500e-003	0.0000	14.0397	14.0397	3.6000e-004	0.0000	14.0487
Total	**8.7300e-003**	**0.0598**	**0.0605**	**2.9000e-004**	**0.0195**	**2.6000e-004**	**0.0197**	**5.2500e-003**	**2.4000e-004**	**5.4900e-003**	**0.0000**	**26.8625**	**26.8625**	**1.4100e-003**	**0.0000**	**26.8977**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1757	1.6084	1.6854	2.7700e-003		0.0833	0.0833		0.0784	0.0784	0.0000	238.6770	238.6770	0.0572	0.0000	240.1065
Total	**0.1757**	**1.6084**	**1.6854**	**2.7700e-003**		**0.0833**	**0.0833**		**0.0784**	**0.0784**	**0.0000**	**238.6770**	**238.6770**	**0.0572**	**0.0000**	**240.1065**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.2100e-003	0.1141	0.0201	2.9000e-004	6.7900e-003	2.8000e-004	7.0700e-003	1.9600e-003	2.7000e-004	2.2300e-003	0.0000	27.8400	27.8400	2.2200e-003	0.0000	27.8954
Worker	0.0145	9.7500e-003	0.1010	3.3000e-004	0.0359	2.3000e-004	0.0361	9.5300e-003	2.1000e-004	9.7400e-003	0.0000	29.6674	29.6674	7.0000e-004	0.0000	29.6849
Total	**0.0177**	**0.1238**	**0.1211**	**6.2000e-004**	**0.0426**	**5.1000e-004**	**0.0432**	**0.0115**	**4.8000e-004**	**0.0120**	**0.0000**	**57.5073**	**57.5073**	**2.9200e-003**	**0.0000**	**57.5803**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1757	1.6084	1.6854	2.7700e-003		0.0833	0.0833		0.0784	0.0784	0.0000	238.6767	238.6767	0.0572	0.0000	240.1062
Total	**0.1757**	**1.6084**	**1.6854**	**2.7700e-003**		**0.0833**	**0.0833**		**0.0784**	**0.0784**	**0.0000**	**238.6767**	**238.6767**	**0.0572**	**0.0000**	**240.1062**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.2100e-003	0.1141	0.0201	2.9000e-004	6.7900e-003	2.8000e-004	7.0700e-003	1.9600e-003	2.7000e-004	2.2300e-003	0.0000	27.8400	27.8400	2.2200e-003	0.0000	27.8954
Worker	0.0145	9.7500e-003	0.1010	3.3000e-004	0.0359	2.3000e-004	0.0361	9.5300e-003	2.1000e-004	9.7400e-003	0.0000	29.6674	29.6674	7.0000e-004	0.0000	29.6849
Total	**0.0177**	**0.1238**	**0.1211**	**6.2000e-004**	**0.0426**	**5.1000e-004**	**0.0432**	**0.0115**	**4.8000e-004**	**0.0120**	**0.0000**	**57.5073**	**57.5073**	**2.9200e-003**	**0.0000**	**57.5803**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0110	0.1113	0.1458	2.3000e-004		5.6800e-003	5.6800e-003		5.2200e-003	5.2200e-003	0.0000	20.0276	20.0276	6.4800e-003	0.0000	20.1895
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0110**	**0.1113**	**0.1458**	**2.3000e-004**		**5.6800e-003**	**5.6800e-003**		**5.2200e-003**	**5.2200e-003**	**0.0000**	**20.0276**	**20.0276**	**6.4800e-003**	**0.0000**	**20.1895**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.6000e-004	5.1000e-004	5.2500e-003	2.0000e-005	1.8600e-003	1.0000e-005	1.8800e-003	5.0000e-004	1.0000e-005	5.1000e-004	0.0000	1.5430	1.5430	4.0000e-005	0.0000	1.5439
Total	**7.6000e-004**	**5.1000e-004**	**5.2500e-003**	**2.0000e-005**	**1.8600e-003**	**1.0000e-005**	**1.8800e-003**	**5.0000e-004**	**1.0000e-005**	**5.1000e-004**	**0.0000**	**1.5430**	**1.5430**	**4.0000e-005**	**0.0000**	**1.5439**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0110	0.1113	0.1458	2.3000e-004		5.6800e-003	5.6800e-003		5.2200e-003	5.2200e-003	0.0000	20.0275	20.0275	6.4800e-003	0.0000	20.1895
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0110**	**0.1113**	**0.1458**	**2.3000e-004**		**5.6800e-003**	**5.6800e-003**		**5.2200e-003**	**5.2200e-003**	**0.0000**	**20.0275**	**20.0275**	**6.4800e-003**	**0.0000**	**20.1895**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.6000e-004	5.1000e-004	5.2500e-003	2.0000e-005	1.8600e-003	1.0000e-005	1.8800e-003	5.0000e-004	1.0000e-005	5.1000e-004	0.0000	1.5430	1.5430	4.0000e-005	0.0000	1.5439
Total	**7.6000e-004**	**5.1000e-004**	**5.2500e-003**	**2.0000e-005**	**1.8600e-003**	**1.0000e-005**	**1.8800e-003**	**5.0000e-004**	**1.0000e-005**	**5.1000e-004**	**0.0000**	**1.5430**	**1.5430**	**4.0000e-005**	**0.0000**	**1.5439**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4650					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0500e-003	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	**0.4671**	**0.0141**	**0.0181**	**3.0000e-005**		**8.2000e-004**	**8.2000e-004**		**8.2000e-004**	**8.2000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	2.0000e-004	2.1000e-003	1.0000e-005	7.5000e-004	0.0000	7.5000e-004	2.0000e-004	0.0000	2.0000e-004	0.0000	0.6172	0.6172	1.0000e-005	0.0000	0.6176
Total	**3.0000e-004**	**2.0000e-004**	**2.1000e-003**	**1.0000e-005**	**7.5000e-004**	**0.0000**	**7.5000e-004**	**2.0000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6172**	**0.6172**	**1.0000e-005**	**0.0000**	**0.6176**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4650					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0500e-003	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	**0.4671**	**0.0141**	**0.0181**	**3.0000e-005**		**8.2000e-004**	**8.2000e-004**		**8.2000e-004**	**8.2000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	2.0000e-004	2.1000e-003	1.0000e-005	7.5000e-004	0.0000	7.5000e-004	2.0000e-004	0.0000	2.0000e-004	0.0000	0.6172	0.6172	1.0000e-005	0.0000	0.6176
Total	**3.0000e-004**	**2.0000e-004**	**2.1000e-003**	**1.0000e-005**	**7.5000e-004**	**0.0000**	**7.5000e-004**	**2.0000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6172**	**0.6172**	**1.0000e-005**	**0.0000**	**0.6176**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Implement School Bus Program

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2156	2.1089	2.2631	0.0121	0.7573	7.0500e-003	0.7643	0.2036	6.6100e-003	0.2102	0.0000	1,123.1740	1,123.1740	0.0590	0.0000	1,124.6487
Unmitigated	0.2249	2.1935	2.4542	0.0132	0.8417	7.7500e-003	0.8494	0.2263	7.2600e-003	0.2336	0.0000	1,227.3343	1,227.3343	0.0613	0.0000	1,228.8664

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Elementary School	1,032.00	0.00	0.00	2,207,874	1,986,551
Total	1,032.00	0.00	0.00	2,207,874	1,986,551

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Elementary School	14.70	6.60	6.60	65.00	30.00	5.00	63	25	12

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Elementary School	0.517262	0.031316	0.171418	0.114437	0.017015	0.004840	0.021467	0.112166	0.001792	0.001507	0.005146	0.000939	0.000694

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	109.7372	109.7372	4.9600e-003	1.0300e-003	110.1672
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	109.7372	109.7372	4.9600e-003	1.0300e-003	110.1672
NaturalGas Mitigated	3.4200e-003	0.0311	0.0261	1.9000e-004		2.3600e-003	2.3600e-003		2.3600e-003	2.3600e-003	0.0000	33.7995	33.7995	6.5000e-004	6.2000e-004	34.0004
NaturalGas Unmitigated	3.4200e-003	0.0311	0.0261	1.9000e-004		2.3600e-003	2.3600e-003		2.3600e-003	2.3600e-003	0.0000	33.7995	33.7995	6.5000e-004	6.2000e-004	34.0004

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Elementary School	633379	3.4200e-003	0.0311	0.0261	1.9000e-004		2.3600e-003	2.3600e-003		2.3600e-003	2.3600e-003	0.0000	33.7995	33.7995	6.5000e-004	6.2000e-004	34.0004
Total		**3.4200e-003**	**0.0311**	**0.0261**	**1.9000e-004**		**2.3600e-003**	**2.3600e-003**		**2.3600e-003**	**2.3600e-003**	**0.0000**	**33.7995**	**33.7995**	**6.5000e-004**	**6.2000e-004**	**34.0004**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Elementary School	633379	3.4200e-003	0.0311	0.0261	1.9000e-004		2.3600e-003	2.3600e-003		2.3600e-003	2.3600e-003	0.0000	33.7995	33.7995	6.5000e-004	6.2000e-004	34.0004
Total		**3.4200e-003**	**0.0311**	**0.0261**	**1.9000e-004**		**2.3600e-003**	**2.3600e-003**		**2.3600e-003**	**2.3600e-003**	**0.0000**	**33.7995**	**33.7995**	**6.5000e-004**	**6.2000e-004**	**34.0004**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Elementary School	377218	109.7372	4.9600e-003	1.0300e-003	110.1672
Total		**109.7372**	**4.9600e-003**	**1.0300e-003**	**110.1672**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Elementary School	377218	109.7372	4.9600e-003	1.0300e-003	110.1672
Total		**109.7372**	**4.9600e-003**	**1.0300e-003**	**110.1672**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3084	7.0000e-005	7.3500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0143	0.0143	4.0000e-005	0.0000	0.0152
Unmitigated	0.3084	7.0000e-005	7.3500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0143	0.0143	4.0000e-005	0.0000	0.0152

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0465					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2612					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.8000e-004	7.0000e-005	7.3500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0143	0.0143	4.0000e-005	0.0000	0.0152
Total	**0.3084**	**7.0000e-005**	**7.3500e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0143**	**0.0143**	**4.0000e-005**	**0.0000**	**0.0152**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0465					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2612					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	6.8000e-004	7.0000e-005	7.3500e-003	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.0143	0.0143	4.0000e-005	0.0000	0.0152
Total	**0.3084**	**7.0000e-005**	**7.3500e-003**	**0.0000**		**3.0000e-005**	**3.0000e-005**		**3.0000e-005**	**3.0000e-005**	**0.0000**	**0.0143**	**0.0143**	**4.0000e-005**	**0.0000**	**0.0152**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Toilet

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	7.9827	0.0557	1.3800e-003	9.7862
Unmitigated	8.7458	0.0636	1.5700e-003	10.8023

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Elementary School	1.93939 / 4.98701	8.7458	0.0636	1.5700e-003	10.8023
Total		**8.7458**	**0.0636**	**1.5700e-003**	**10.8023**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Elementary School	1.69968 / 4.6828	7.9827	0.0557	1.3800e-003	9.7862
Total		**7.9827**	**0.0557**	**1.3800e-003**	**9.7862**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	22.2275	1.3136	0.0000	55.0677
Unmitigated	29.6367	1.7515	0.0000	73.4236

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Elementary School	146	29.6367	1.7515	0.0000	73.4236
Total		**29.6367**	**1.7515**	**0.0000**	**73.4236**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Elementary School	109.5	22.2275	1.3136	0.0000	55.0677
Total		**22.2275**	**1.3136**	**0.0000**	**55.0677**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	14.1600	0.0000	0.0000	14.1600

11.2 Net New Trees

Species Class

	Number of Trees	Total CO2	CH4	N2O	CO2e
		MT			
Miscellaneous	20	14.1600	0.0000	0.0000	14.1600
Total		**14.1600**	**0.0000**	**0.0000**	**14.1600**

APPENDIX C

Preliminary Geologic Hazards
&
Geotechnical Engineering Report

LUSD STOCKON – LAKEVIEW SCHOOL

Stockton, California

MPE No. 04434-01

MID PACIFIC ENGINEERING, INC.

August 15, 2019

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GEOTECHNICAL ENGINEERING | EARTHWORK TESTING | MATERIALS ENGINEERING AND TESTING | SPECIAL INSPECTIONS

Preliminary Geologic Hazards and Geotechnical Engineering Report

LUSD STOCKTON-LAKEVIEW SCHOOL

Regatta Lane and Cosumnes Drive

Stockton, California

MPE No. 04434-01

August 15, 2019

INTRODUCTION

We have completed a Preliminary Geologic Hazards and Geotechnical Engineering investigation for the site of the proposed Lodi Unified School District educational facility to be located south of the intersection of Regatta Lane and Cosumnes Drive in Stockton, California. The purposes of our study have been to investigate the site, soil, geologic and groundwater conditions of the school site, and to prepare Geologic and preliminary Geotechnical Engineering conclusions and recommendations regarding development of the property with a new school. Our work has been performed in general accordance with the conditions of our proposal to the Lodi Unified School District (c/o Petralogix Engineering, Inc.), dated April 10, 2019. This report presents the results of our work.

SCOPE OF SERVICES

Our scope of work included the following:

1. Site reconnaissance;
2. Review of available historic aerial photographs, topographic maps and groundwater information of the area;
3. Review of geologic maps and fault maps;
4. Review of historic seismicity within 100 kilometers of the site;
5. Subsurface exploration, including the following:
   A. Excavating and sampling of eight exploratory test pits to maximum depths of approximately eight feet below the existing ground surface;
   B. Drilling and sampling of four test borings to maximum depths of approximately 26½ feet below the existing ground surface; and,

   C. The completion of two Cone Penetration Test (CPT) soundings to a maximum depth of approximately 50 feet below existing site grades.
6. Collection of bulk samples of near-surface soils;
7. Laboratory testing of selected soil samples;
8. Engineering analyses; and,
9. Preparation of this report.

FIGURES AND ATTACHMENTS

Figure	Title	Figure	Title
1	Topographic Map	11	Unified Soil Classification System
2	Regional Geologic Map	12	Regional Fault Map
3	Site Investigation Map	13	Earthquake Epicenter Map
4-7	Logs of Soil Borings	14	FEMA Flood Map
8-10	Logs of Test Pits		

Appended to this report are:

- Appendix A – General information regarding project concepts; exploratory methods used during our field investigation; and, laboratory test results not included on the boring logs.
- Appendix B – Output files from the EQFAULT/EQSEARCH programs.
- Appendix C – The results of the CPT soundings and the CLiq Liquefaction Analyses.
- Appendix D – A list of references cited.

PROPOSED DEVELOPMENT

Based on discussions with Petralogix Engineering, Inc., we understand the Lodi Unified School District (LUSD) is in their due-diligence period on purchasing the property located south of the intersection of Regatta Lane and Cosumnes Drive in Stockton, California. It is our understanding the LUSD is considering purchasing the land for the construction of a new school. The number of buildings, their sizes and locations, as well as site grading concepts, have not been developed yet.

SITE HISTORY

We reviewed historical aerial photographs of the site from Google Earth, taken in May 1993 through August 2018. In May 1993, the site appeared to be used for agricultural farming. Sometime between August 1998 and May 2002, the site had been stripped of vegetation. From May 2002 to December 2005 the site was left as fallow undeveloped land. Sometime between December 2005 and July 2006, a new subdivision was observed to the east and the site appeared to be used as a stockpile storage location. A detention basin was observed near the southwest corner of the site. Between February 2007 and February 2008, it appears a water line was installed on the eastern side of the site. From February 2008 to August 2018, the site has remained relatively unchanged.

FINDINGS

SITE DESCRIPTION

The proposed improvements encompass a total area of approximately 11 acres and is located at the corner of Regatta Lane and Cosumnes Drive in Stockton, California. The center of the proposed improvements is located at approximately latitude 38.0469° north and longitude 121.3920° west. The site is bounded to the north by fallow undeveloped land; to the east by a residential subdivision; to the west by agricultural fields; and, to the south by a large canal. Topography across the property is relatively flat with the exception of the stockpiles. Topography across the property is relatively flat with an average surface elevation of approximately -3 feet relative to mean sea level (msl), based on the review of the 1997 *United States Geological Survey (USGS) 7.5-Minute Series Topographic Map Terminous Quadrangle, California-San Joaquin Co.* (See Figure 1).

At the time of our investigation on May 2, 3 and 16, 2019, the site supported tall grasses and weeds. A major portion of the site contained soil stockpiles that ranged from 3 to 6 feet in vertical height. Precast concrete pipes were observed at the southern and western ends of site and a detention pond was observed near the southwest corner of the site.

GEOLOGIC STRUCTURE

The project site is located within the Great Valley Geomorphic Province of California (Great Valley), a ~100 million year old sedimentary basin that formed as a low lying region between a subducting oceanic plate to the west and the Sierra Nevada mountain range to the east. The province is approximately 450 miles long and 50 miles wide and is comprised of two northwest to southeast-trending sub-basins: the Sacramento Valley to the northwest and the San Joaquin Valley to the southeast (CEC, *Geologic Hazards and Resources*). Each of these basins is filled by a thick sequence of Mesozoic to Quaternary sediment, whose terrigenous and subaerial depositional sources have been traced to the Sierra Nevada and Coast Range Geomorphic Provinces to the east and west, respectively (Anderson, 1943).

The Great Valley and the Sierra Nevada Geomorphic Province form the Sierran Block, a relatively stable crustal block comprised of a Mesozoic basement (CEC, *Geologic Hazards and Resources)*. The western boundary of the Great Valley is characterized by strike-ridges and valleys associated with the Upper Mesozoic strata of the Coast Ranges Geomorphic Province. These Mesozoic strata dip beneath the alluvium of the Great Valley (California Geological Survey [CGS], Note 36).

Surface elevations within the Great Valley range from several feet below mean sea level (msl) to elevations greater than 1000 feet above msl. Most notably, the Sutter Buttes (a volcanic remnant) rises to an elevation of approximately 1980 feet above the surrounding Sacramento Valley floor.

REGIONAL GEOLOGY

Review of the *Preliminary Geologic Map of the Lodi 30'x60' Quadrangle, California* (CGS, 2009) indicates that the school site is underlain by late Pleistocene-aged alluvium (Map Symbol: Q_{m1}) of the Modesto Formation. These deposits primarily consist of arkosic sands with minor silts and gravels that form terraces, floodplains and alluvial fans along the Mokelumne and Cosumnes Rivers (Dawson, 2009; See Figure 2).

The soil conditions encountered in our borings were generally consistent with the soils typically mapped as the Modesto Formation.

SUBSURFACE SOIL CONDITIONS

The soil stockpiles located at the site were approximately three to six feet in height. The stockpile soils explored in our eight test pits were variable and consisted of clayey sand, clayey silt/silty clay and silty sands. In general, the stockpile soils were generally free of debris, with the exception of TP4 that encountered brick and PVC pipes.

The native surface and near-surface soil conditions encountered by our four test borings, and below the stockpile soils in our eight test pits generally consisted of medium dense clayey sand and very stiff silty clay to approximate depths of 2½ to nine feet below existing grades. The near-surface soils were underlain by medium dense to dense silty and clayey sand, medium dense cohesionless sand, very stiff to hard silty clay and very stiff clayey silt. Loose poorly graded sand was initially encountered in one of our borings (D3) at approximately 23 feet below existing grades.

To supplement our soil borings, two Cone Penetration Test (CPT) soundings were performed to maximum depths of approximately 50 feet below existing site grades. The soil conditions encountered at the CPT locations were generally consistent with those encountered in the soil borings.

For more detail regarding the soil conditions at a specific location, please refer to the Logs of Soil Borings on Figures 4 through 7 and Logs of Test Pits on Figures 8 through 10. The results of the CPT soundings are presented in Appendix C.

Please note that subsurface conditions within the borings are representative of the soil conditions at the time of exploration and at the specific location. It should be expected that soil conditions across the site can and will vary laterally and vertically from the soils encountered during our investigation.

GROUNDWATER

Groundwater was encountered at depths ranging from 7½ to 10 feet below existing site grades within our soil borings and CPT soundings performed on May 3 and 16, 2019, to a maximum depth explored of approximately 26½ and 50 feet below existing grades.

To supplement our groundwater information, we reviewed groundwater elevation data obtained from one nearby California Department of Water Resources (DWR) groundwater monitoring well #380571N1213745W001, located approximately 1½ miles northeast of the subject property. Surface elevation at the well is indicated to be approximately +7 feet above msl. The DWR has periodically measured groundwater elevations in this well from at least March 20, 1989 to March 3, 2004. During this time period, the groundwater elevations have ranged from approximately +1 feet above to -12 feet below msl (about 5 to 19 feet below grade at the well).

Recent measurements taken over the past 20 years by the DWR indicates the groundwater elevation in this area has varied between approximately 5 to 10 feet below existing site grades.

FAULTING

Review of the *Envision Stockton 2040 General Plan Update, Hazard Protection* (adopted December 4, 2018) indicates that the project site is not located within the mapped trace of any known fault. There were no indications of surface rupture or fault-related surface disturbance at the site during our review of aerial photographs, site reconnaissance, or geotechnical investigation.

The project site is not located within a state designated *Alquist-Priolo* Earthquake Hazard Fault Zone (CGS, 2019; Hart and Bryant, 2007). The closest Earthquake Fault Zones is the Greenville fault zone located approximately 26.5 miles/42.6 kilometers, southwest of the project site. The nearest identified fault trace, the Stockton fault, is not considered to be an active fault. A Regional Fault Map (Figure 12) is included with this report.

Using the USGS Earthquake Hazards Program, 2008 National Seismic Hazard Maps-Source Parameters (https://earthquake.usgs.gov/cfusion/hazfaults_2008_search/query_results.cfm) we have prepared Table 1, which contains CGS Class A and B faults and fault systems within 62 miles (100 km) of the site. The identified faults are considered to be capable of producing earthquakes with moment magnitudes (M_w) of 6.4 or greater. The closest active faults to the site are the Great Valley -Segment 7 Fault (22.7 miles/36.6 kilometers), Great Valley - Segment 5/Pittsburg Kirby Hills Fault (24.8 miles/40.0 kilometers), and the Greenville Connected Fault (26.5 miles/42.6 kilometers). The Great Valley - Segment 7 Fault is a 28 mile (45 kilometer) long, northwest to southeast-striking thrust fault, and the Great Valley -

Segment 5, Pittsburg Kirby Hills Fault is a 20 mile (32 kilometer) long, northwest to southeast-striking reverse fault. Both faults are located to the northwest of the project site. The Greenville Connected Fault is a northwest to southeast-trending, strike slip fault that is located to the west of the project site.

Table 1 - Faults Influential to the Site "I" School, Stockton, CA

Fault Name	Maximum Magnitude (M_W)	Distance to Site Miles (km)
Great Valley Fault System (Segment 7)	6.90	22.7 (36.6)
Great Valley Fault System (Segment 5)	6.70	24.8 (40.0)
Greenville Connected	7.00	26.5 (42.6)
Mount Diablo Thrust	6.70	32.2 (51.8)
Green Valley Connected	6.80	34.2 (55.1)
Great Valley Fault System (Segment 4b)	6.80	34.5 (55.5)
Calaveras CN	6.87	37.2 (59.9)
Calaveras CN+CC+CS	7.03	37.2 (59.9)
Calaveras CN+CC	7.00	37.2 (59.9)
Great Valley Fault System (Segment 8)	6.80	44.1 (77.0)
Hayward – Rodgers Creek Fault HN+HS	7.00	45.4 (73.1)
Hayward – Rodgers Creek Fault HS	6.78	45.4 (73.1)
Hayward – Rodgers Creek Fault RC+HN+HS	7.33	45.4 (73.1)
Great Valley Fault System (Segment 4a)	6.60	47.0 (75.7)
West Napa	6.70	47.2 (76.0)
Calaveras CC	6.39	47.3 (76.2)
Calaveras CC+CS	6.50	47.3 (76.2)
Hayward – Rodgers Creek Fault RC+HN	7.19	47.4 (76.3)
Hayward – Rodgers Creek Fault HN	6.60	47.4 (76.3)
Hunting Creek – Berryessa	7.10	52.0 (83.8)
Ortigalita	7.10	53.9 (86.7)
Great Valley Fault System (Segment 3)	7.10	57.0 (91.7)
Hayward – Rodgers Creek Fault RC	7.07	57.0 (91.7)

Review of the *Earthquake Outlook for the San Francisco Bay Region 2014–2043* (https://pubs.usgs.gov/fs/2016/3020/fs20163020.pdf), indicates the Hayward-Rodgers Creek Fault System has the highest probability (33 percent) of producing a magnitude 6.7 or greater earthquake in the next 30 years. The Greenville Fault, Mt. Diablo Thrust Fault, and the Green Valley Fault were assigned a 16 percent probability of producing a magnitude 6.7 or greater earthquake in the next 30 years. Based on supplementary review of USGS fault parameters and EQFault data files, it is our opinion that the Great Valley Fault System should also be considered a potential causative fault system.

HISTORIC SEISMICITY

Seismological data regarding significant historical earthquakes affecting the site was obtained using the commercially available software program EQSEARCH (Blake, 2000; database updated 2019). The EQSEARCH database was developed by extracting records of events equal to or greater than magnitude 5.0 from the DMG Comprehensive Computerized Earthquake Catalog, and supplemented by records from the USGS; University of California, Berkeley; and the California Institute of Technology. A search radius of 62 miles (100 km) was specified for this analysis. A historic earthquake epicenter map showing earthquakes (magnitude 5 or greater) within a 62 mile (100 km) radius of the project site is presented as Figure 14.

A review of the historical earthquake data indicates that the most significant earthquake shaking experienced at the project site occurred during the M_R 6.8 earthquake of October 21, 1868, with an epicenter located approximately 45.4 miles (73.1 kilometers) southwest of the project site. An examination of the tabulated EQSEARCH data suggests that the project site has not experienced a ground shaking equivalent to Modified Mercalli Intensity (MMI) X[1]. The closest earthquake to the site was 27.0 miles (43.5 kilometers) southwest, which measured a MMI of VI.

The largest earthquake to occur within the EQSEARCH radius of 62 miles (100 km) was measured at Mw 6.8, and the largest acceleration experienced at the site was estimated to be 0.091 g. The number of earthquakes greater than Mw 5.5 within a 62 mile (100 km) radius of the site is presented in the following table.

[1] Most masonry and frame structure and their foundations destroyed. Ground badly cracked. Landslides. Wholesale destruction.

TABLE OF MAGNITUDES AND EXCEEDANCES	
Earthquake Magnitude	Number of Times Exceeded
5.5	26
6.0	11
6.5	3
7.0	N/A
7.5	N/A
8.0	N/A

Output files from the EQFAULT/EQSEARCH programs are included in Appendix B.

Coseismic Ground Deformation

The California State Legislature passed the Seismic Hazards Mapping Act (SHMA) in 1990 as a result of earthquake damage caused by the 1987 Whittier Narrows and 1989 Loma Prieta earthquakes. The SHMA was enacted to protect public safety from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and other hazards caused by earthquakes (CGS, Special Publication [SP] 117).

There are currently no State designated Seismic Hazard Zone maps or Earthquake Fault Zone maps for the City of Stockton or San Joaquin County. For both Earthquake Fault Zones and Seismic Hazard Zones, San Joaquin County is currently listed as "not affected", therefore no maps are available. The project site is not located within a designated Seismic Hazard Zone.

PRELIMINARY CONCLUSIONS

California Geologic Survey Review

It is our understanding the Lodi Unified School District is in their Due Diligence period of purchasing the subject property, and that once purchased, the development of a new school is being considered. Site plans were not provided during our fieldwork activities and as a result, it is unknown if the number and locations of our drilled borings meet the

requirements called out in the Note 48 document prepared by the California Geologic Survey (CGS).

Once the site has been purchased and a final site plan is provided, additional borings at the site may be needed to meet CGS requirements for review of a final *Geologic Hazards and Geotechnical Engineering Report* for the development of a new school.

Seismic Hazards

No active or potentially active faults are shown to cross the project site, as indicated on the published geologic maps and aerial photographs reviewed for this report. The project site is not located within an Earthquake Fault Zone or a designated seismic hazard zone. Therefore, a site-specific ground motion analysis is not warranted.

The project site is located within a region of seismic activity. However, building structure designs in conformance with the 2016 edition of the California Building Code (Title 24 of the California Code of Regulations, Chapter 16A) should be sufficient to prevent significant damage from ground shaking during seismic events induced the by movement of any fault or fault system discussed in this report.

Shear Wave Seismic Velocity and Seismic Site Class

Shear wave velocity data was obtained from our seismic CPTs and utilized to determine the average shear wave velocity (ASCE 7-10, Equation 20.4-1). Based on the calculated average shear wave velocity from both CPT's, this area would fall within the range of Site Class D (ASCE 7-10, Table 20.3-1).

Based on the information provided above, it is our opinion that the soils at this site should be designated as Site Class D in determining seismic design forces for this project in accordance with Table 1613A.3.2 of the 2016 CBC.

Seismic Code Parameters

Section 1613 of the 2016 edition of the CBC references ASCE Standard 7-10 for seismic design. The following seismic parameters were determined based on the site latitude and longitude using the web interface (https://seismicmaps.org/) provided by the Structural Engineers

Association of California (SEAOC) in association with the California Office of Statewide Health Planning and Development (OSHPD) that uses the USGS web services to retrieve pertinent seismic design data. The seismic design parameters summarized in the following table may be used for seismic design of the proposed improvements.

2016 CBC/ASCE 7-10 Seismic Design Parameters				
Latitude: 38.0469° N Longitude: 121.3920° W	ASCE 7-10 Table/Figure	2016 CBC Table/Figure	Factor/ Coefficient	Value
Short-Period MCE at 0.2s	Figure 22-1	Figure 1613.3.1(1)	S_S	0.918 g
1.0s Period MCE	Figure 22-2	Figure 1613.3.1(2)	S_1	0.341 g
Soil Class	Table 20.3-1	Section 1613.3.2	Site Class	D
Site Coefficient	Table 11.4-1	Table 1613.3.3(1)	F_a	1.133
Site Coefficient	Table 11.4-2	Table 1613.3.3(2)	F_v	1.717
Adjusted MCE Spectral Response Parameters	Equation 11.4-1	Equation 16-37	S_{MS}	1.040 g
	Equation 11.4-2	Equation 16-38	S_{M1}	0.586 g
Design Spectral Acceleration Parameters	Equation 11.4-3	Equation 16-39	S_{DS}	0.693 g
	Equation 11.4-4	Equation 16-40	S_{D1}	0.391 g
Seismic Design Category	Table 11.6-1	Section 1613.3.5(1)	Risk Category I to IV	D
	Table 11.6-2	Section 1613.3.5(2)	Risk Category I to IV	D

MCE – Maximum Considered Earthquake
g – Acceleration due to gravity

The PGA_M (Equation 11.8-1, ASCE 7-10) for the site is 0.381 g.

SEISMIC SOURCES

Several active and potentially active faults were identified as potential seismic sources within 62 miles (100 km) of the project site. These faults and fault systems include the Great Valley Fault System, the Greenville Connected Fault, the Green Valley Connected Fault, the Mount Diablo Thrust Fault, the Calaveras Fault System, and the Hayward-Rodgers Creek Fault, among others. The closest active faults are Segments 7 and 5 of the Great Valley Fault System located approximately 22.7 miles/36.6 kilometers and 24.8 miles/40 kilometers,

respectively, west of the project site located. Maximum Moment Magnitude Earthquakes (M_w) for faults within 62 miles (100 km) of the project site are listed in the Table 1 within the FAULTING section of this report.

The Great Valley Fault System extends from the southern San Joaquin Valley in Kern County northward into Tehama County, and serves as the boundary between the Coast Range and the Great Valley Geomorphic Provinces of California. It is characterized by a zone of low-angle, or blind thrust, and reverse faults that do not rupture the ground surface during sizable earthquake events. Although not exposed at the surface, regional studies have suggested that the Great Valley Fault System may be comprised of 18 to 25 segments that range in length from 7 to 35 miles (11.2 to 56.3 kilometers) – with most segment lengths measuring between 12 and 19 miles (19.3 to 30.6 kilometers). Several notable earthquake events have occurred along segments of the Great Valley Fault System, including: the 1892 M_w 6.4 and 6.2 Winters-Vacaville earthquakes, 1983 M_W 6.5 Coalinga earthquake, and the 1985 M_W 6.1 Kettleman Hills earthquake.

The Greenville Fault is an active dextral strike slip fault situated within the Diablo Range of California. It, along with the Green Valley Fault, defines the easternmost extent of the San Andreas Fault System in the San Francisco Bay region. Recent studies of the Greenville Fault have determined a long-term creep rate of approximately 2 mm/year along the northern third of the fault system, with diminished aseismic releases in the two southern segments. A lack of large fault surface expressions (greater than 1 kilometer) and significant locking along the southern two-thirds of the Greenville Fault supplement seismic evidence for historic rupture events during the late Holocene. Estimations by Lienkaemper et al. (2013) imply that the resulting strain accumulation along the fault system is sufficient enough to generate a M_W 6.9 earthquake with a mean recurrence of approximately 600 years.

The Central Valley and the Sierra Nevada margin are defined in the region by the Foothills Fault System. This fault zone is less active than the Central Coast area's strike-slip faults and the CRCV boundary located along the west side of the Sacramento and San Joaquin Valley. The Foothills Fault System is regarded as an aerial earthquake source that is based on poorly constrained Quaternary slip rates across the Bear Mountain and Melones Fault Zones (CDMG, 1996; Woodward-Clyde Consultants, 1978). Wakabayashi and Smith (1994) describe the Foothills Fault Zone as lacking evidence of active crustal shorting

and note that deformation along the eastside of the Central Valley is extensional or transtensional.

The Green Valley Fault is an active Holocene dextral strike slip fault. It is characterized by aseismic creep, and has been monitored by Galehouse (1992, 1999) since 1984. Detailed reconnaissance level mapping exists for most of the fault, based on geologic and geomorphic data (Weaver, 1949; Dooley 1973; Sims, and others 1973; Frizzell and Brown, 1976; and Bryant 1982, 1992). Several site-specific studies in compliance with the *Alquist-Priolo Act* (Hart and Bryant, 1997) have documented the location and approximate age of most recent faulting. Preliminary data from the Lopes Ranch paleoseismic project site indicates the Green Valley Fault has produced multiple surface-rupturing events in the last 2700 years, and has a minimum late Holocene dextral slip rate of 3.8 mm/yr to 4.8 mm/yr based on 1.2 – 1.5 meters (3.9 – 4.9 feet) dextral offsets within a 310 year old paleochannel (Baldwin and Lienkaemper, 1999). Geomorphic expressions of the Green Valley Fault include closed depressions, ponded alluvium, dextrally offset drainages, linear troughs, sidehill benches, and scarps in young alluvium (Dooley, 1973; Frizzell and Brown, 1976; Bryant, 1982, 1992). Extensive landslides locally conceal fault traces along the northern extent of the fault in Wooden Valley, and locally obscure fault traces between Suisun Bay and Highway 80. Bryant (1982, 1991) estimated a long-term Quaternary slip rate of 3 mm/yr, based on unconstrained dextral separation of Pliocene Sonoma Volcanics mapped by Sims, et al (1973).

The Hayward-Rodgers Creek fault system is a significant seismic source located in the northern San Francisco Bay area. The Working Group on California Earthquake Probabilities (WGCEP, 2003) defined the Hayward-Rodgers Creek Fault System as having the greatest probability in the San Francisco Bay region of generating an earthquake of M_W 6.7 or greater. Most investigators interpreted the Rodgers Creek Fault as a single fault system capable of generating a M_W 7.1 earthquake, or if it ruptures simultaneously with the northern Hayward Fault, a M_W 7.3 earthquake (WGCEP, 2003). The roughly 37-mile (60 kilometers) long Rodgers Creek Fault, located between San Pablo Bay and Santa Rosa, strikes approximately N35°W, and is characterized by a late Holocene right-lateral slip rate of 6.4 to 10.4 mm/yr (Budding et. al, 1991; Schwartz et. al, 1992). The Rodgers Creek Fault is one fault in a series of right-stepping en echelon faults that include the Hayward fault to the south, and the Healdsburg and Maacama Faults to the north. The surface expression of the Rodgers Creek Fault, as mapped by Randolph and Caskey (2001) and Hart (1992), includes classic fault-

related geomorphic features such as offset drainages, side hill benches, tonal lineaments, sag ponds, and springs.

SURFACE FAULT RUPTURE

No known faults are mapped crossing the immediate vicinity of the site. The site does not lie within an Alquist-Priolo Earthquake Fault Zone as currently designated by the State of California, and no evidence of surface faulting was observed during our historical aerial photography review, site reconnaissance, or geotechnical investigation. It is our opinion that the potential of fault-related surface rupture at the site is low.

SEISMIC RISK

Based on review of the peak site accelerations obtained from EQFAULT analysis, the primary seismic site risks are from earthquakes along the Great Valley Fault System Segment 5. The fault system lies within approximately 19.5 miles (31.4 km) of the project site and is capable of producing large earthquakes. Results of the EQFAULT analysis indicate an Mw 6.5 earthquake on the Great Valley Fault System Segment 5 would result in a site acceleration of 0.148 g, based on the Boore et al (1997) Soil (250) attenuation relation.

LIQUEFACTION

Liquefaction is a soil strength and stiffness loss phenomenon that typically occurs in loose, saturated, cohesionless soils as a result of strong ground shaking during earthquakes. The potential for liquefaction at a site is usually determined based on the results of a subsurface geotechnical investigation and the groundwater conditions beneath the site. Hazards to buildings associated with liquefaction include bearing capacity failure, lateral spreading, and differential settlement of soils below foundations, which can contribute to structural damage or collapse.

We performed our liquefaction analysis for the CPT soundings CPT-1 and CPT-2 using the commercially available software program CLiq (Version 2.0) developed by Geologismiki. The analysis was performed using the Robertson (2009) methodology. Input earthquake ground motion for the liquefaction analysis was 0.38g (*PGA_M, 2016 CBC Section 1803A.5.11 for Site Classification D*); M6.9 earthquake (*USGS Interactive Deaggregations webpage*); and, an in-situ depth to groundwater of about 5 feet determined based on historical groundwater

measurements for wells monitored by DRW located approximately 1½-mile northeast of the site. As required by Note 48, a factor of safety (FS) of 1.3 against liquefaction was used in the analysis. Appendix C of this report includes the output files of our liquefaction analysis. Based on the results of our analyses using the CLiq software program, the upper approximately 50 feet contain soils that may be potentially liquefiable and susceptible to seismic settlements. Analysis using the CLiq software program and the current subsurface data indicates estimated maximum total seismic settlements due to liquefaction could be on the order of approximately 2.5 to 2.7 inches. We estimate differential seismic settlements to be about half of the total seismic settlement. The Liquefaction Potential Index (LPI) value estimate from the analysis ranged from 5.58 to 8.06 for both CPT soundings. LPI values range from zero to 100. Iwasaki et al. (1982) suggested that liquefaction effects are low for $0 < LPI < 5$; moderate for $5 < LPI < 15$; and, major for $LPI > 15$. LPI combines depth, thickness, and factor of safety of liquefiable material inferred from a CPT sounding into a single parameter. The estimated LPI values fall into the moderate risk range. Based on the observed soils profile and the depths at which liquefaction settlement is estimated to occur, we consider the above estimated settlements to be a worst case scenario.

Cyclic Softening

The soils encountered in our borings generally consisted of medium dense clayey sand and very stiff silty clay underlain by medium dense to dense silty and clayey sand, medium dense cohesionless sand, very stiff to hard silty clay and very stiff clayey silt. Low strength clays were not encountered; therefore, it is our opinion the potential for cyclic softening occurring beneath the site is low.

Dry Sand Seismic Settlement

Dry sand seismic settlement can be evaluated using the methodology developed by Robertson and Shao (2010) based on the earlier work by Pradel (1998). The on-site soils above the groundwater surface generally consisted of medium dense clayey sand and very still silty clay. Based on our analyses using the CLiq software program (utilizing Robertson and Shao), the surface sands encountered in CPT-01 and CPT-02 are not susceptible to post-earthquake settlement of dry sands.

VOLCANIC HAZARDS

Review of the USGS Map of Potential Hazards from Future Volcanic Eruptions in California (Miller, 2011), shows there are six volcanic hazard zones in California. The project site does not lie within any of these six recognized volcanic hazard areas. The closest known volcanic center is the Clear Lake area, approximately 62 miles (100 km) northwest of the site. The most recent volcanic eruption from the Clear Lake area occurred approximately 10,000 years ago. Based on the above information, the volcanic hazard potential is low.

LANDSLIDES

Based on site observations and a review of the most recent topographic maps, the site has relatively flat topography. According to the 1997 *United States Geological Survey (USGS) 7.5-Minute Series Topographic Map Terminous Quadrangle, California-San Joaquin Co.,* the average surface elevation across the site is approximately -3 feet mean sea level (msl). There are no slopes in the immediate or general area. Due to the relatively flat topography of the site and general area, potential for landslides is not considered applicable to the site.

SLOPE STABILITY

The project is located on a relatively flat site. The proposed improvements to the site do not incorporate the formation of new slopes. Based on the current and anticipated final site conditions, slope stability is not considered a risk factor in site development.

NATURALLY OCCURRING ASBESTOS (NOA)

Asbestos is the generic term for the naturally occurring fibrous (asbestiform) varieties of six silicate minerals (croicidolite, tremolite, actinolite, anthophyllite, amosite, and chrysotile). These asbestiform minerals are naturally occurring in igneous ultramafic rock formations such as dunite, pyroxenite, peridotite, and hornblendite which form below the Earth's surface at high temperatures and then exposed by uplift and erosion. Chrysotile, the most common asbestos mineral in California, forms fibrous crystals in small veins in the altered metamorphic rock serpentinite. According to the USGS Open-File Report 2011-1188, *Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California* (Van Gosen and Clinkenbeard, 2011), the project site does not lie within an area mapped as containing Naturally Occurring Asbestos (NOA).

RADON GAS

Radon is a naturally occurring, colorless and tasteless gas produced in soil or rock by the decay of uranium and radium; radon is a known cause of lung cancer in the United States. Sections 307 and 309 of the Indoor Radon Abatement Act of 1988 (IRAA) directed EPA to list and identify areas of the U.S. with the potential for elevated indoor radon levels. EPA's Map of Radon Zones assigns each of the 3,141 counties in the U.S. to one of three zones based on radon potential. San Joaquin County and the project site are located in Zone 3 for radon potential. Zone 3 counties have a predicted average indoor radon screening level less than 2 pCi/L and are anticipated to have a low potential for radon.

FLOOD HAZARDS

The site is not located within a Special Flood Hazard Area (SFHA) as designated by the Federal Emergency Management Agency (FEMA). According to the Flood Insurance Rate Map (FIRM) Panel 295, Map Number 06077C0295F, published by the Federal Emergency Management Agency (FEMA), with an effective date of October 16, 2009, the proposed school campus is within a segment of Zone X that is defined as areas of 0.2 percent annual chance flood; areas of one-percent annual-chance flood with averaged depths of less than one foot or with drainage areas less than one square mile; and areas protected by levees from one percent annual chance flood. It is noted by FEMA however, that an overtopping or failure of any levee system is possible.

According to the *City of Stockton General Plan, 2040* (Adopted December 4, 2018), since 1998, flood risks have been reduced significantly through the Locally Constructed Flood Control Project by the San Joaquin Area Flood Control Agency, which includes flood protection facilities on Bear Creek and Pixley Slough located just south of the site. The risk of flooding at the site is considered low to moderate.

DAM INUNDATION

Based on review of the *City of Stockton General Plan, 2040* (adopted December 4, 2018), the school site is located just north of potential dam inundation areas from New Melones Dam and New Hogan Dam. Therefore, the potential of dam inundation at the site is considered low.

TSUNAMIS AND SEICHES

The project site is adjacent to Pixley Slough to the south with Bishop Cut approximately 1.3 miles west of the site. A tsunami by definition is a large ocean wave caused by an underwater earthquake. Based on the distance of the site from a large body of water, the potential for a tsunami hazard at the site is not applicable.

A seiche is a wave that oscillates in a lake, bay, or gulf as a result of seismic disturbance. The adjacent slough and nearby cut are likely too small and shallow to produce significant seiches, therefore, it is our opinion that the potential for seiches influencing the site is very low.

SUBSIDENCE AND HYDROCOLLAPSE

Regional subsidence occurs when large areas of land sink in response to withdrawal of groundwater, petroleum, or natural gas. The site is within the San Joaquin Valley, a region historically subject to subsidence from over pumping of groundwater, petroleum or natural gas withdrawal and peat oxidation. According to a review of the *Areas of Land Subsidence in California Map* (California Water Science Center), the site is not currently located within an area of land subsidence from groundwater pumping, peat loss, or oil extraction, although the site is less than five miles east of an area mapped as subsiding due to peat loss.

According to the *State of California Public Utilities Commission – Lodi Gas Storage Project Area and Map*, the site is located approximately 14 miles (22.5 kms) southwest of the Lodi Gas Field. In our opinion, the site is not located in an area subject to high subsidence, due to the absence of factors and conditions needed to cause subsidence (excessive withdrawal of groundwater, petroleum, or natural gas). In addition, due to the age and composition of the native soils and geologic materials encountered during our field exploration, it is our opinion that subsidence of the on-site soils as the result of groundwater withdrawal is unlikely.

Due to the age and composition of the native soils and geologic materials encountered during our field exploration, it is our opinion that hydrocollapse of the on-site soils as the result of rain or irrigation water percolation is unlikely.

BEARING CAPACITY AND FOUNDATION SUPPORT

Site clearing operations to remove existing stockpiles, vegetation, utilities, rubble, and other deleterious debris will disturb the surface and near-surface soils, creating loose and variable soil conditions. Disturbed areas will require additional processing and recompaction as engineered fill to provide uniform support of the planned improvements. The existing stockpiles of soil will require complete removal to expose undisturbed native soils, and recompaction as engineered fill for support of improvements.

In our opinion, the undisturbed native soils are capable of supporting proposed structures and pavements provided the further recommendations regarding site preparation and soils compaction are followed. Our work also indicates that engineered fill, properly placed and compacted in accordance with the recommendations of this report, will be capable of supporting the proposed improvements.

Specific recommendations for processing and recompaction are presented in the SITE PREPARATION section of this report.

Provided the native soils and soils disturbed during site clearing are processed and recompacted, and foundations are constructed, as recommended, we estimate total settlements (*seismic and static*) will be approximately 3 inches with differential settlements to be about half of the total estimated settlement between adjacent footings, or over the shortest span of the building footprint (subject to change once final plans are developed).

EXPANSIVE SOILS

Laboratory testing on the stockpile soils and near-surface native clays indicates these soils possess a low to high expansion potential, when tested in accordance with ASTM D4829 (See Figures A1 and A2). In our opinion, these near-surface clays are capable of exerting moderate to high expansion pressures on foundations, interior floor slabs and exterior flatwork, if exposed at or near final subgrades. Therefore, we will recommend that imported non-expansive soils be used to construct the upper 12 inches of subgrades supporting buildings and exterior flatwork. Specific recommendations to mitigate the effects of potentially expansive soils are provided in later sections of this report.

As an alternate to 12 inches of granular, non-expansive soils for building pads and flatwork subgrades, lime-treatment may be considered as it can be an effective method of reducing the expansion potential of clay soils and can be used to reduce the moisture content of near-saturated soils to facilitate grading operations.

EXCAVATION CONDITIONS

Based on our field investigation, the native soils on the site should be readily excavatable with conventional earthmoving and trenching equipment typically used in the area. Based on the shallow depth to groundwater, deeper excavations in granular soils likely will be subject to sloughing or caving during excavation, especially if left open for an extended period of time. Excavations entered by workers must conform to current OSHA requirements (i.e., sloped or braced shoring). Based on available groundwater depth information, excavations deeper that about 5 to 7 feet may encounter groundwater requiring dewatering methods to complete construction

GROUNDWATER AND SEASONAL WATER

Based on the relatively shallow depth to groundwater, we conclude that groundwater may be a factor in design and construction of the structures and underground improvements at this site. Dewatering, if needed, should be performed by a qualified and knowledgeable contractor with experience in the area.

During the wet season, infiltrating surface runoff water can create saturated subsurface conditions where drainage is inhibited. Grading operations attempted following the onset of winter rains and prior to prolonged drying periods will be hampered by high soil moisture content. Such soils, intended for use as engineered fill, will require considerable aeration and drying, or chemical-treatment, to reach moisture contents that will permit the soils to be properly compacted.

Perched water may exist seasonally over the top of less permeable soils, especially during or shortly after periods of rainfall. Seepage also may be present within more permeable soil layers at the site.

Seasonal moisture and landscape irrigation will result in high soil moisture contents below interior floor slabs throughout their lifetime. Moisture vapor penetration resistance should be a significant consideration in design and construction of interior floor slabs.

Fill Material Suitability

The stockpile and on-site native soils are considered suitable for use as engineered fill provided the materials are free of roots, asphalt and concrete rubble, organic materials, other deleterious debris and are at a suitable moisture content to achieve the desired degree of compaction. Removal of the roots, rubble and debris from on-site soils may require laborers handpicking the fill materials. Clay soils will not be suitable for use within the upper 12 inches of building pad or flatwork subgrades, unless they are lime treated.

Pavement Subgrade Quality & Support

Laboratory test results indicate the near-surface native clays and stockpile soils are poor to moderate quality materials for the support of asphalt concrete pavements with Resistance ("R") values of 5 and 36, when tested in accordance with California Test (CT) 301 (see Figures A3 and A4). Based on the expansive clays at the site, it is our opinion an R-value of 5 is considered appropriate for design of pavements at this site.

In addition, laboratory test results (see Figures A5 and A6) indicate that lime treatment of the clayey and stockpile soils can result in a substantial improvement to the support characteristics of these soils, and reduce the required thickness of the base materials. Chemical treatment also can be used to reduce the moisture content of near-saturated soils to facilitate grading operations.

It will be important that the subgrade soils be tested and evaluated after initial grading to determine the most appropriate treatment options based on the exposed soil conditions. An experienced soil stabilization contractor should be retained to help facilitate selecting the most appropriate products for treatment.

The performance of chemically stabilized soils is very dependent on an adequate and uniform mixing of the selected products into the subgrade soils, and providing a proper curing period following compaction. An experienced soil stabilization contractor combined

with a comprehensive quality control program is essential to achieve the best results with chemically treated subgrades.

Preliminary recommendations for chemical-treatment are presented in the LIME-TREATMENT ALTERNATIVE section of this report. Additional laboratory testing to further evaluate the feasibility of chemical-treatment is needed prior to final design.

SOIL CORROSION POTENTIAL

Two representative sample of the native soils and one sample of the stockpile soils (total of three samples) were submitted to Sunland Analytical to determine soil pH, minimum resistivity, chloride and sulfate concentrations to help evaluate potential for corrosive attack upon reinforced concrete and exposed buried metal. The results of the corrosivity testing are summarized in the table on the following page.

Soil Corrosivity Testing				
Analyte	Test Method	Sample Identification		
		TP4 (1-2')	D2-3II (8')	D4-2II (3½')
pH	CA DOT Test #643 Modified (Sm. Cell)	7.03	7.33	7.59
Minimum Resistivity		2,410 Ω-cm	1,980 Ω-cm	1,210 Ω-cm
Chloride	CA DOT 417	2.0 ppm	8.4 ppm	10.4 ppm
Sulfate	CA DOT 422	38.7 ppm	23.6 ppm	52.3 ppm

Ω-cm = Ohm-centimeters ppm = Parts per million

The California Department of Transportation Corrosion Technology Section, Office of Materials and Foundations, Corrosion Guidelines Version 3.0, March 2018, considers a site to be corrosive to foundation elements if one or more of the following conditions exists for the representative soil and/or water samples taken: has a chloride concentration greater than or equal to 500 ppm, sulfate concentration greater than or equal to 1500 ppm, or the pH is 5.5 or less. Based on this criterion, the on-site soils are not considered corrosive to steel reinforcement properly embedded within Portland cement concrete for the samples tested.

Table 19.3.1.1 – *Exposure Categories and Classes*, American Concrete Institute (ACI) 318-14, Section 19.3, as referenced in Section 1904.1 of the 2016 CBC, indicates the severity of sulfate exposure for the samples tested is "not a concern". Ordinary Type I-II Portland cement is considered suitable for use on this project, assuming a minimum concrete cover is maintained over the reinforcement.

Mid Pacific Engineering, Inc. are not corrosion engineers. Therefore, to further define the soil corrosion potential at the site, or to determine the need or design parameters for cathodic protection or grounding systems, a corrosion engineer should be consulted.

Import fills, if used for construction, should be sampled and tested to verify the materials have corrosion characteristics within acceptable limits and generally should be similar to the tested on-site soils.

PRELIMINARY RECOMMENDATIONS

The recommendations contained here are preliminary in nature and are subject to revision. Our recommendations are based on the assumption that this site will be developed for support of a new school.

A major portion of the site contained soil stockpiles that ranged from 3 to 6 feet in vertical height. These materials will require complete removal to expose undisturbed native soils prior to further earthwork operations. Specific recommendations for removal of these piles as well as additional processing and recompaction of the near-surface soils, and those disturbed by site clearing operations, are presented below to promote more uniform support for the planned structures.

Based on the results of our subsurface exploration, the soils within the proposed structural areas may likely consist of clays which we anticipate could exert moderate expansion pressures on building foundations and interior and exterior concrete slabs-on-grade. Therefore, to reduce the potentially adverse effects of expansive clays within subgrades supporting buildings and slabs-on-grade, we recommend that the upper 12 inches of building pads and subgrades supporting exterior flatwork be constructed with non-expansive, granular soils (or aggregate base). Alternatively, consideration also may be given to lime-treating the upper 12 inches of the subgrades.

The recommendations presented below are appropriate for typical construction in the late spring through fall months. The on-site soils likely will be saturated by rainfall in the winter and spring months, and will not be compactable without drying by aeration or the addition of lime (or a similar product) to dry the soils. Should the construction schedule require work to continue during the wet months, additional recommendations should be provided by the Geotechnical Engineer retained to provide services during construction.

SITE CLEARING

Initially the site should be cleared of vegetation, rubble, debris, and other deleterious materials to expose undisturbed native soil as identified by our on-site representative. Our review of available literature and historical photographs provide a limited site history. Therefore, unknown buried structures (foundations, septic tanks, utility lines, etc.) may be present on-site and may be encountered during construction. If encountered, these structures should be removed and the resulting cavities or holes should be backfilled with properly moisture conditioned and compacted engineered fill as described in this report.

If the detention pond observed to the southwest of the site is located within the limits of the proposed improvements, the bottom of the pond should be stripped of all vegetation, and cleaned out to a depth where firm, undisturbed soils, as identified by our representative, are exposed.

A majority of the site contains soil stockpiles that ranged from 3 to 6 feet in vertical height. The existing soil stockpiles, as well as other identified fills, should be completely removed to expose firm, undisturbed native soils, as identified by our representative. If rubble, refuse, debris, or organics are exposed during the removal of the stockpiles, those items should be removed prior to being used as engineered fill.

The test pits outside of the stockpiles were backfilled with the native soils to the extent possible using the excavator bucket; however, the soils were not compacted to engineered fill specifications. The test pits should be identified and located in the field, and the backfill removed and re-compacted as engineered fill.

Where practical, the clearing should extend a minimum of five feet beyond the limits of the proposed structural areas of the site. Existing underground utilities, if encountered, located within the proposed building pad should be completely removed and/or rerouted as

necessary. Utilities located outside the building area should be properly abandoned (i.e., fully grouted provided the abandoned utility is situated at least 2½ feet below the final subgrade level to reduce the potential for localized "hard spots"). All trees/large brush designated for removal should include the rootballs and roots ½ inch or larger in size.

Remaining areas should be stripped of surface vegetation and organically contaminated topsoil; strippings may be stockpiled for later use or disposed of off-site. *If used, on-site strippings may be placed in landscaped areas, provided they are kept at least five feet from the building pad, moisture conditioned and compacted. Strippings should not be used in landscaped berms that will support either retaining walls or concrete flatwork.*

All depressions resulting from the removal of such items, as well as all loose, disturbed or saturated soils in areas of clearing operations or tree removal, should be cleaned out to firm, undisturbed soil, as determined by our representative and should be restored to grade with engineered fill compacted in accordance with the recommendations of this report. It is considered essential that our office be notified prior to site clearing operations to schedule periodic site visits. If clearing is not performed under our direct observation, it is important that excavations resulting from clearing operations be left as shallow dish-shaped depressions for proper location and to allow proper access with compaction equipment during grading operations. If this is not the case, deeper sub-excavations will be required.

SUBEXCAVATION

Some sub-excavation and recompaction could be needed for foundation support based on the final building types and loading, and results of any additional investigation.

DIFFERENTIAL FILL DEPTHS

Buildings should not be supported upon differential fill depths greater than five feet. This is especially important in areas where new construction will span onto or across the backfill of the pond or sub-excavated areas. Our office should review the final grading plans after the site has been cleared to identify any lots that may require additional sub-excavation.

SITE PREPARATION

All structural subgrade areas designated to receive fill, remain at-grade, or achieved by excavation, including areas that may be sub excavated, should be scarified to a depth of at least 12 inches, thoroughly moisture conditioned to at least two percent above the optimum moisture content, and uniformly compacted to not less than 90 percent of the ASTM D1557 maximum dry density.

Compaction operations should be undertaken with a heavy, self-propelled, compactor and should be performed in the presence of our representative who will evaluate the performance of the subgrade under compactive load and identify loose or unstable soils that could require additional excavation and/or compaction. Loose, soft, or unstable soils, as identified by our representative in the field, should be cleaned out to firm, undisturbed and stable soils, as determined by our representative, and should be restored to grade with engineered fill compacted in accordance with the recommendations of this report. Difficulty in achieving subgrade compaction or unusual soil instability may be indications of loose fill associated with past site usages or subsurface items. Should these conditions exist, the materials should be excavated to check for subsurface structures and the excavations backfilled with engineered fill. We recommend construction bid documents contain a unit price (price per cubic yard) for all excess excavation due to loose, soft, or unstable materials and replacement with engineered fill.

ENGINEERED FILL CONSTRUCTION

Engineered fill should be placed in horizontal lifts not exceeding six inches in compacted thickness. Each lift should be thoroughly moisture conditioned to at least two percent above the optimum moisture content and uniformly compacted to at least 90 percent of the ASTM D1557 maximum dry density. Engineered fill at depths greater than five feet should be compacted to 95 percent of the maximum dry density, as defined above. Each lift of engineered fill should be property benched into adjacent side slopes to remove loose soils and promote uniformity.

Engineered fill should be properly benched into the existing slopes of the detention pond to remove loose surficial soils. Each bench should consist of a level terrace excavated at least 12 inches into the slope. For every three feet of vertical height of fill, a larger bench should be constructed, extending at least five feet into the existing slope. Taller slopes will require

a wider bench placed at mid-slope height. Our representative should observe the benching of the slopes to evaluate the need for additional or larger benches into the hillside, based on exposed conditions.

The native and stockpiled on-site soils will be suitable for use as engineered fill if the materials are at a workable moisture content and free of rubbish, rubble, debris, roots and concentrations of organics, and have a maximum particle size of three inches or less. Removal of roots, organics, rubble and debris from the on-site soils may require laborers handpicking the fill materials to properly clean the soils prior to allowing their use as engineered fill.

Imported fill material, if required, should consist of granular soils or well graded aggregates with a Plasticity Index of 15 or less, an Expansion Index of 20 or less, and should have no particles greater than three inches in maximum dimension. Clean, open graded gravels (such as crushed rock or pea gravel) and other such materials are *not* acceptable for fill construction. The contractor also should supply appropriate documentation for imported fill materials indicating the materials are free of known contamination and have corrosion characteristics within acceptable limits. The imported materials should be sampled, tested, and approved well in advance (at least one week) of being transported to the project site.

The upper 12 inches of final building pad and exterior flatwork subgrades should consist of properly compacted imported non-expansive, granular soils or aggregate base. Clays should not be used within the upper 12 inches of building pad or exterior flatwork fills, unless they are chemically treated with lime.

Buildings should not be supported upon differential fill depths greater than five feet. This is especially important in areas where new construction will span onto or across the backfill of over-excavated areas.

The upper six inches of pavement subgrades and exterior slab subgrades supporting vehicle loadings should be scarified, moisture conditioned to at least the optimum moisture content, processed, and uniformly compacted to at least 95 percent of the maximum dry density, regardless of whether final grade is completed by excavation, filling, or left at existing grade. Final pavement subgrade preparation and compaction should be performed just prior to placement of aggregate base, after construction of underground utilities is

complete. The completed pavement subgrades must be stable under construction traffic prior to placement of aggregate base.

Permanent excavation and fill slopes should be constructed no steeper than two horizontal to one vertical (2:1) and should be vegetated as soon as practical following grading to minimize erosion. As a minimum, erosion control measures including placement of straw bale sediment barriers or construction of silt filter fences in areas where surface run-off may be concentrated would be prudent. Slopes should be over-built and cutback to design grades and inclinations.

Site preparation should be accomplished in accordance with the recommendations of this section. It is essential that a representative of the Geotechnical Engineer be present on a nearly full-time basis during site clearing and preparation and all grading operations to identify unstable soil deposits, observe the earthwork construction, perform compaction testing and verify compliance with our recommendations and the job specifications.

Preliminary Stabilization Recommendations

The subgrades soils located adjacent to landscaped areas, and soils removed from excavations, may be in an over optimum or wet moisture condition, and too wet or unstable to properly compact. If such conditions are exposed, alternate stabilization recommendations will be needed to allow pavement subgrade construction to proceed. The following are preliminary options to help facilitate pavement construction. Final recommendations can be provided at the time of grading based on the actual field conditions exposed at the time. Soils removed from utility trench excavations and proposed for use as trench backfill may be too wet to compact, depending on exposed conditions, and may require drying methods prior to use as backfill.

Aeration

The first option would be to aerate the wet soils to dry them back to a compactable moisture content. This would involve near continuous scarification and aeration of the upper 12 inches of soils and exposure to the sun and wind for an extended period of time, to provide a better opportunity for drying. Factors influencing the usefulness and applicability of aeration include the depth of saturation and instability, and construction schedule constraints.

Removal and Replacement

Another acceptable alternative would be to completely remove the saturated/unstable soils to expose a firm, stable base and replace them to design soil subgrade elevation with dry, on-site or imported granular soils or Class 2 aggregate base (AB) (or on-site pavement grindings, where applicable) placed and properly compacted as engineered fill. The actual lateral extent and depth of excavation needed for stabilization will depend upon the observed soil conditions at the time of excavation and should be anticipated to be variable.

Mechanical Stabilization (Geogrid)

An alternative to complete removal of the unstable soils within pavement areas would be to excavate, as a minimum, an additional 12 to 18 inches of soils below the soil subgrade elevation, place a geogrid soil reinforcement (Tensar BX1100 or better) over the exposed soils and backfill to the design AB grades with Class 2 aggregate base. During excavation it is essential that our representative be present to help identify isolated areas of obviously deeper deposits of wet and very unstable soils that may require deeper sub-excavation, prior to placing geogrid.

Aggregate base used for stabilization should be compacted in thin lifts to at least 95 percent of the ASTM D1557 maximum dry density at a uniform moisture content near the optimum.

Chemical Stabilization

In our opinion, the native clay soils are likely to react favorably with the addition of quicklime (either dolomitic or high-calcium), which can be an effective method for enhancing the subgrade support quality of the native clays and to reduce the moisture content of near-saturated or unstable soils to facilitate grading operations.

The following sections of this report contain preliminary lime-treatment recommendations for spread rates and mixing depths, based on experience.

LIME-TREATMENT ALTERNATIVE

It will be important that the subgrade soils be observed and evaluated after site clearing to determine the most appropriate treatment options based on the exposed soil conditions.

The following are *preliminary* recommendations for clay soil subgrades. Revised recommendations will be needed if sands and silts are exposed at pavement subgrade elevations.

If lime-treatment is selected for pavement subgrades and/or building pad/flatwork subgrades, site preparation should be performed in accordance with the following recommendations. Following the site preparation, as recommended above, the upper 12 inches of the building pad, exterior flatwork grades and/or pavement subgrades should be treated with at least four percent high-calcium or dolomitic quicklime, as measured by dry unit weight of the untreated soil.

A large self-propelled rotary mixer should be used for mixing and remixing. Lime should be thoroughly mixed and remixed, as necessary, to a minimum depth of 12 inches at a minimum spread rate of at least 4½ pounds of lime per square foot based on a 12-inch mixing depth. This spread rate is provided for preliminary estimation purposes only as the actual amount of product can only be determined at the time of construction based upon the prevailing site, soil and moisture conditions. The contractor should include an add/deduct unit price for lime to account for variations in the quantities of product used.

It is emphasized that higher spread rates and/or deeper mixing depths with proportionately higher spread rates will needed for areas exposing the wet and/or unstable soils.

Initial mixing of lime should be followed by remixing the next day. Additional remix passes should be performed to provide a uniform soil-lime mixture. Lime stabilized soils should be compacted to at least 95 percent of the ASTM D1557 maximum dry density at a moisture content of at least two percent above the optimum moisture content. The moisture content of the treated soils should be maintained in the soil until the treated soil is covered by aggregate base or slabs. Compaction operations should be undertaken with a heavy, self-propelled, compactor and should be performed in the presence of our representative who will evaluate the performance of the subgrade under compactive load. No equipment or vehicle traffic should be allowed on the lime-treated materials during the first three days after treatment is completed.

If the lime-treatment alternate is selected, we recommend that additional laboratory testing be performed to further define the amount of lime required to produce the desired results.

A contractor experienced in such work should perform lime-treatment as specified in Chapter 24 of the Caltrans Standard Specifications.

UTILITY TRENCH BACKFILL

Utility trench backfill within structural areas should be mechanically compacted as engineered fill in accordance with the following recommendations. We recommend that native soil be used as trench backfill within the perimeter of the building foundations to help minimize soil moisture variations beneath the structures. The native soil backfill should extend at least three feet horizontally beyond perimeter foundation lines. Utility trench backfill should be placed in maximum six-inch lifts, moisture conditioned to at least two percent above the optimum moisture content, and mechanically compacted to at least 90 percent of the maximum dry density as determined by ASTM D1557.

The upper 12 inches of backfill material for trenches within the building pad should match the materials used in the pad. If granular soils or AB were utilized, the upper 12 inches should be imported granular soils or AB. If the building pad was lime-treated, the upper 12 inches of materials should be either newly lime-treated materials, or imported Class 2 aggregate base. The upper 12 inches of trench backfill in lime-treated pavement areas should consist of aggregate base compacted to at least 95 percent of the maximum dry density.

We recommend that underground utility trenches that are aligned nearly parallel with foundations be at least three feet laterally from the outer edge of foundations, wherever possible. As a general rule, trenches should not encroach into the zone extending outward at a 1:1 inclination below the bottom of the foundations. Additionally, trenches parallel to foundations should not remain open longer than 72 hours. The intent of these recommendations is to prevent loss of both lateral and vertical support of foundations, resulting in possible settlement.

The soils removed from trench excavations, may be in an over optimum or wet moisture condition, and too wet or unstable to properly compact. If such conditions are exposed, additional stabilization recommendations may be needed to allow trench backfill to proceed. Such recommendations could include aeration and/or lime-treatment of spoils.

FOUNDATION DESIGN

We are providing design soil values for the analysis of the foundations, and suggested minimums for dimensions, but only from a Geotechnical Engineering perspective. The project Structural Engineer should determine final foundation width and depth dimensions, and concrete strength and reinforcement requirements, based on their specific structural design which should include an appropriate factor of safety applied to the overall design.

We estimate total settlements (*seismic and static*) will be approximately 3 inches with differential settlements to be about half of the total estimated settlement between adjacent footings, or over the shortest span of the building footprint (subject to change once final plans are developed).

It is essential that our office review the plans and project information, when available, to verify the applicability of the following recommendations.

Conventional Foundations (Subject to change once final plans are developed)

We anticipate that smaller, light-weight single- story classroom buildings can be supported on conventional shallow foundations extending *at least* 18 inches below building pad soil subgrade, or lowest adjacent soils grade, whichever is deeper. We anticipate larger, heavier auditorium or gymnasium buildings can be supported on conventional shallow foundations extending at least 24 inches deep into the pad. For this project, the building pad soil subgrade shall be defined as the surface on which the capillary break gravel is placed. Continuous foundations should be at least 18 inches wide and isolated spread foundations should be at least 24 inches wide.

Foundations so established may be sized for a maximum allowable soil bearing pressures of 2000 pounds per square foot (psf) for dead plus live load, with a 1/3 increase to include wind or seismic forces. The weight of foundation concrete extending below adjacent grade may be disregarded in sizing computations.

Foundations must be continuous around the perimeter of the building to help minimize moisture migration beneath the structures.

We recommend that all foundations be adequately reinforced to provide structural continuity, mitigate cracking and permit spanning of local soil irregularities. The structural engineer should determine final foundation reinforcing requirements. However, *as a minimum,* we recommend that continuous foundations be reinforced with four No. 4 steel reinforcing bars, placed two each near the top and bottom of the foundations. As a minimum, continuous foundations also should be provided with No. 4 slab tie reinforcing bars, positioned at least every 54 inches and penetrating at least two feet horizontally into the floor slab. The project engineer should evaluate the need for additional reinforcement.

Resistance to lateral displacement of shallow foundations may be computed using an allowable friction factor of 0.25 multiplied by the effective vertical load on each foundation. Additional lateral resistance may be achieved using an allowable passive earth pressure against the vertical projection of the foundation equal to an equivalent fluid pressure of 250 psf per foot of depth. These two modes of resistance should not be added unless the frictional component is reduced by 50 percent since mobilization of the passive resistance requires some horizontal movement, effectively reducing the frictional resistance.

Uplift resistance of the foundations can be provided by weight of the concrete extending below soil grade (150 pcf) and a friction value of 200 psf applied to the sides of the foundations in contact with the soils below lowest adjacent grade.

Post-Tensioned Slab Foundations (Subject to change once final plans are developed)

It is our opinion that post-tensioned (PT) foundations could be utilized as an option, depending on building types, sizes and structural loadings. Once final plans are completed, if PT foundations are considered, additional laboratory testing would need to be completed.

INTERIOR FLOOR SLAB SUPPORT (CONVENTIONAL FOUNDATIONS OPTION ONLY)

Interior concrete slab-on-grade floors should be supported upon subgrades consisting of at least 12 inches of uniformly moisture conditioned and properly compacted imported non-expansive soil, or Class 2 aggregate base, maintained at or near optimum conditions. Clays should be removed and replaced with nonexpansive engineered fill where present at or near subgrade elevation, or the clay subgrades should be lime-treated.

Interior concrete slab-on-grade floors should be at least four inches thick and, as a minimum, should be reinforced with chaired No. 3 reinforcing bars on 18-inch center-to-center spacing, located at mid-slab depth. This slab thickness and reinforcement is suggested as a guide "minimum" only; final concrete slab thickness, compressive strength, reinforcement and joint spacing should be determined by the Architect or Structural Engineer based on anticipated slab loading.

It is emphasized that thicker slabs with greater reinforcing will be needed in areas supporting higher loads or where increased performance is desired. *The Architect or Structural Engineer should determine the final thickness, strength, reinforcement, and joint spacing of slab-on-grade concrete based on anticipated slab loadings, proposed uses and desired performance.* Temporary loads exerted during construction should be considered in the design of the slab-on-grade floors. Proper and consistent location of the reinforcement at mid-slab is essential to its performance. The risk of uncontrolled shrinkage cracking is increased if the reinforcement is not properly located within the slab.

Floor slabs that will receive moisture sensitive floor covering may be underlain by a layer of free-draining crushed rock, serving as a deterrent to migration of capillary moisture. The crushed rock layer should be at least four inches thick and graded such that 100 percent passes a one-inch sieve and none passes a No. 4 sieve. Additional moisture protection may be provided by placing a plastic water vapor retarder (at least 10-mils thick) directly over the crushed rock. The plastic water vapor retarder should meet or exceed the minimum specifications as outlined in ASTM E1745. Consideration should be given to using a thicker, higher quality membrane for additional moisture protection such as a 15-mil thick Stego vapor barrier or other product. The membrane should be installed so that there are no holes or uncovered areas. All seams should overlap and be sealed with manufacturer-approved tape, continuous at the laps to create vapor tight conditions. All perimeter edges of the membrane, such as pipe penetrations, interior and exterior footings, joints, etc., should be sealed or caulked per manufacturer's recommendations. An optional, thin layer of clean sand above the membrane is acceptable, as an aid to curing of the slab concrete.

Floor slab construction over the past 25 years or more has included placement of a thin layer of sand over the vapor retarder membrane. The intent of the sand is to aid in the proper curing of the slab concrete. However, recent debate over excessive moisture vapor emissions from floor slabs includes concern for water trapped within the sand. As a

consequence, we consider the use of the sand layer as optional. The concrete curing benefits should be weighed against efforts to reduce slab moisture vapor transmission.

The recommendations presented above are intended to mitigate any significant soils-related cracking of the slab-on-grade floors. More important to the performance and appearance of a Portland cement concrete slab is the quality of the concrete, the workmanship of the concrete contractor, the curing techniques utilized and the spacing of control joints.

Floor Slab Moisture Penetration Resistance

It is considered likely that floor slab subgrade soils will become wet to near-saturated at some time during the life of the structures. This is a certainty when slabs are constructed during the wet seasons or when constantly wet ground or poor drainage conditions exist adjacent to structures. For this reason, it should be assumed that all slabs in occupied areas, as well as those intended for moisture-sensitive floor coverings or materials, require protection against moisture or moisture vapor penetration. Standard practice includes the gravel and water vapor retarder as suggested above. However, the gravel and plastic membrane offer only a limited, first-line of defense against soil-related moisture. Recommendations contained in this report concerning foundation and floor slab design are presented as *minimum* requirements, only from the Geotechnical Engineering standpoint.

It is emphasized that the use of sub-slab crushed rock and water vapor retarder will not "moisture proof" the slab, nor does it assure that slab moisture transmission levels will be low enough to prevent damage to floor coverings or other building components. If increased protection against moisture vapor penetration of slabs is desired, a concrete moisture protection specialist should be consulted. The architect and design team should consider all available measures for slab moisture protection. It is commonly accepted that maintaining the lowest practical water-cement ratio in the slab concrete is an effective way to help reduce future moisture vapor penetration of the completed slabs.

EXTERIOR FLATWORK (NON-PAVEMENT AREAS)

Subgrades to receive exterior concrete flatwork should consist of 12 inches of imported, non-expansive soils, or Class 2 AB, moisture conditioned to at least the optimum moisture content and uniformly compacted to not less than 90 percent relative compaction, prior to the placement of the concrete. In lieu of 12 inches of granular fill, subgrades may be lime-treated. Expansion joints should be provided to allow for minor seasonal vertical movements of the flatwork.

The Architect or Structural Engineer should determine the final thickness, strength, reinforcement, and joint spacing of exterior slab-on-grade concrete; however, we offer the following suggested minimum guidelines. Exterior flatwork should be at least four inches thick and be constructed independent of perimeter building foundations and isolated column foundations by the placement of a layer of felt material between the flatwork and the foundation. Reinforcement should consist of at least heavy duty welded wire fabric (flat sheets), or equivalent steel reinforcing bars, placed mid-depth of the slab.

Slabs receiving wheeled traffic should be designed as pavements and be appropriately reinforced. For increased support and performance, the exterior slabs may be underlain by a minimum four inches of Class 2 aggregate compacted to 95 percent relative compaction.

Consideration should be given to thickening the outer edges of sidewalks to at least twice the slab thickness. Grades adjacent to flatwork must not be allowed to remain fallow due to the shrink/swell potential of the on-site native soils.

Proper and thorough moisture conditioning of subgrade soils is important to reduce the risk of non-uniform moisture withdrawal from the concrete and the possibility of plastic shrinkage cracks. Practices recommended by the Portland Cement Association (PCA) and the American Concrete Institute (ACI) for proper placement and curing of concrete, as well as for joint spacing and construction, should be followed during exterior concrete slab construction.

SITE DRAINAGE

Site drainage should be accomplished to provide positive drainage of surface water away from the building and prevent ponding of water adjacent to structures. The grade adjacent to the structure should be sloped away from foundations at a minimum two percent. Proper control of surface water drainage is essential to the performance of foundations, slabs-on-grade and pavements. We recommend using full-roof gutters, with downspouts from roof drains connected to rigid non-perforated piping directed to an appropriate drainage point away from the structures, or discharging onto paved surfaces leading away from the structures and foundations. Concentrated storm water discharge collected from roof downspouts or surface drains should not be allowed to drain on unprotected slopes adjacent to structures. Finished grades should be graded to drain positively away from all pavement and building structures. Ponding of surface water should be avoided near foundations and pavements. Landscape berms, if planned, should be constructed in such a manner as to promote drainage away from the buildings. All excavations should be protected from concentrated storm water run-off to minimize potential erosion. Ponding of surface water or allowing sheet flow of water over any open excavation must be avoided.

PAVEMENT DESIGN

Based on the anticipated traffic loads, we are providing pavement designs for Traffic Indices (TI's) of 4.5, 6.0 and 7.0. The following pavement sections presented in the table on the following page have been calculated based on an R-value of 5 for untreated subgrades and 50 for lime treated subgrade, the assumed TI's, and the procedures contained within Chapters 600 to 670 of the 6th Edition of the California Highway Design Manual. The project civil engineer should determine the appropriate traffic index based on anticipated traffic conditions. Additional pavement sections can be provided upon request.

ASPHALT CONCRETE PAVEMENT DESIGN ALTERNATIVES

Traffic Index (TI)	Traffic Condition	Untreated Pavement Subgrade R-value = 5		Lime-treated Pavement Subgrade R-value = 50 (a)	
		Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
4.5	Automobile Parking Only	2½*	10	2½*	4
6.0	Driveways / Fire Lanes	2½	15	2½	6
		3½*	13	3½*	4
7.0	Bus Lanes	3	18	3	7
		4*	16	4*	5

* = Asphalt concrete thickness includes the Caltrans Safety Factor.
(a) = Lime-treated subgrade should be at least 12 inches thick and possess a minimum R-value of 50 when testing in accordance with CTM 301 and minimum of 300 psi compressive strength (CT373)

We emphasize that the performance of pavements is critically dependent upon adequate and uniform compaction of the subgrade soils, including utility trench backfill within the limits of the pavements. It has been our experience that pavement failures may occur where a non-uniform or disturbed subgrade soil condition is created. Subgrade disturbances can result if pavement subgrade preparation is performed prior to underground utility construction and/or if a significant time period passes between subgrade preparation and placement of aggregate base. Therefore, we recommend that pavement subgrade preparation, i.e. scarification, moisture conditioning and compaction, be performed just prior to aggregate base placement.

The upper six inches of untreated or upper 12 inches of lime-treated final pavement subgrades should be uniformly moisture conditioned to at least two percent above the optimum moisture content and compacted to at least 95 percent relative compaction. Pavement subgrades should be proof-rolled with a loaded water truck and must be stable under construction traffic prior to placement of aggregate base. All aggregate base (AB) should be compacted to at least 95 percent of the maximum dry density. The AB should be proof rolled with a loaded water truck. Any areas of observed instability should be stabilized and recompacted as necessary to achieve the compaction requirements above. Earthwork

construction within the limits of the pavements should be performed in accordance with the recommendation contained within this report. Material quality and construction of the structural section should conform to the applicable provisions of the Caltrans Standard Specifications, latest editions.

In the summer heat, high axle loads coupled with shear stresses induced by sharply turning tire movements can lead to failure in asphalt concrete pavements. Therefore, we recommend that consideration be given to using a Portland cement concrete (PCC) section in areas subjected to concentrated heavy wheel loading, such as entry driveways, truck or bus maneuvering areas, and in front of trash enclosures. At the time this report was prepared, the need for, and locations of, PCC pavements had not yet been determined. Therefore, when more information is available regarding uses, loading and potential subgrade conditions, we should review the information and provide specific thicknesses as applicable.

For preliminary purposes, it may be assumed that Portland cement concrete slabs in areas of entry driveways, truck maneuvering areas, and in front of trash enclosures should be at least 6 inches thick and be underlain by at least 6 inches of 95 percent compacted Class 2 aggregate base. Thicker slabs will be needed in areas of frequent bus traffic, in heavy duty areas, or areas subjected to high traffic frequencies by heavy trucks or equipment. In these areas, Portland cement concrete slabs with a minimum thickness of 7 inches and underlain by at least 6 inches of 95 percent compacted Class 2 aggregate base may be needed. These sections are preliminary and subject to revision based on review of additional information regarding loadings and traffic frequencies.

We suggest the concrete slabs be constructed with thickened edges in accordance with American Concrete Institute (ACI) design standards. Reinforcing for crack control, if desired, should consist of No. 4 reinforcing bars placed on maximum 24-inch centers each way throughout the slab. Reinforcement must be located at mid-slab depth to be effective. Construction of Portland cement concrete pavements should be performed in accordance with applicable American Concrete Institute (ACI) or PCA standards. Portland cement concrete utilized in pavements should attain a compressive strength of at least 3500 psi at 28 days.

Pavement Drainage

Efficient drainage of all surface water to avoid infiltration and saturation of the supporting aggregate base and subgrade soils is important to pavement performance. Consideration should be given to using full-depth curbs between landscaped areas and pavements to serve as a cut off for water that could migrate into the pavement base materials or subgrade soils. Geotextile water barriers also could be used to prevent migration of water into pavement base materials, if extruded curbs are used. Proprietary geotextile moisture barriers and curb details should be reviewed and approved by our office prior to construction. Weep holes are recommended in parking lot drop inlets to allow accumulating water moving through the aggregate base to drain from beneath the pavements.

Earthwork construction within the limits of the pavements should be performed in accordance with the recommendation contained within this report.

EARTHWORK TESTING AND OBSERVATION

Site preparation should be accomplished in accordance with the recommendations of this report. Representatives of Mid Pacific Engineering, Inc. must be present during site preparation and all grading operations to observe and test the fills to verify compliance with our recommendations and the job specifications. In the event that MPE is not retained to provide geotechnical engineering observation and testing services during construction, the Geotechnical Engineer retained to provide this service should indicate in writing that they agree with the recommendations of this report, and prepare supplemental recommendations as necessary.

A final report by the "Geotechnical Engineer" should be prepared upon completion of the project indicating compliance with or deviations from this report and the project plans and specifications. Please be aware that the title Geotechnical Engineer is restricted in the State of California to a Civil Engineer authorized by the State of California to use the title "Geotechnical Engineer."

FUTURE SERVICES

We recommend that our firm be given the opportunity to review the final plans and specifications to verify that the intent of our recommendations has been implemented in those documents. Testing and approval of proposed import sources is an essential requirement to qualify the proposed soils for use as engineered fill for this project. This

sampling and testing should be completed well in advance of the proposed start of construction.

LIMITATIONS

Our recommendations are preliminary in nature and subject to revision based on additional investigation and analyses. We are providing preliminary conclusions and recommendations based upon the information provided regarding the proposed construction, combined with our analysis of site conditions revealed by the field exploration and laboratory testing programs. Additional subsurface exploration testing and analyses is a needed to prepare a final design-level report. We have used our best engineering judgment based upon the information provided and the data generated from our investigation. This report has been prepared in accordance with generally accepted standards of practice existing in northern California at the time of the report. No warranty, either express or implied, is provided.

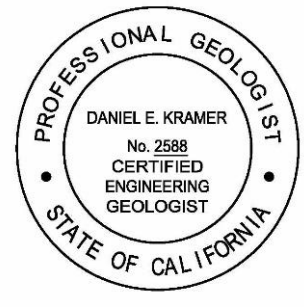
If the proposed construction is modified or re-sited; or, if it is found during construction that subsurface conditions differ from those we encountered at the boring locations, we should be afforded the opportunity to review the new information or changed conditions to determine if our conclusions and recommendations must be modified. Mid Pacific Engineering, Inc., should be retained to review the final plans and specifications to verify that the intent of our recommendations has been implemented in those documents.

We emphasize that this report is applicable only to the proposed construction and the investigated site and should not be utilized for construction on any other site. The conclusions and recommendations of this report are considered valid for a period of two years. If design is not completed and construction has not started within two years of the date of this report, the report must be reviewed and updated, as necessary.

Mid Pacific Engineering, Inc.



Martin S. Osier, PE
Project Engineer

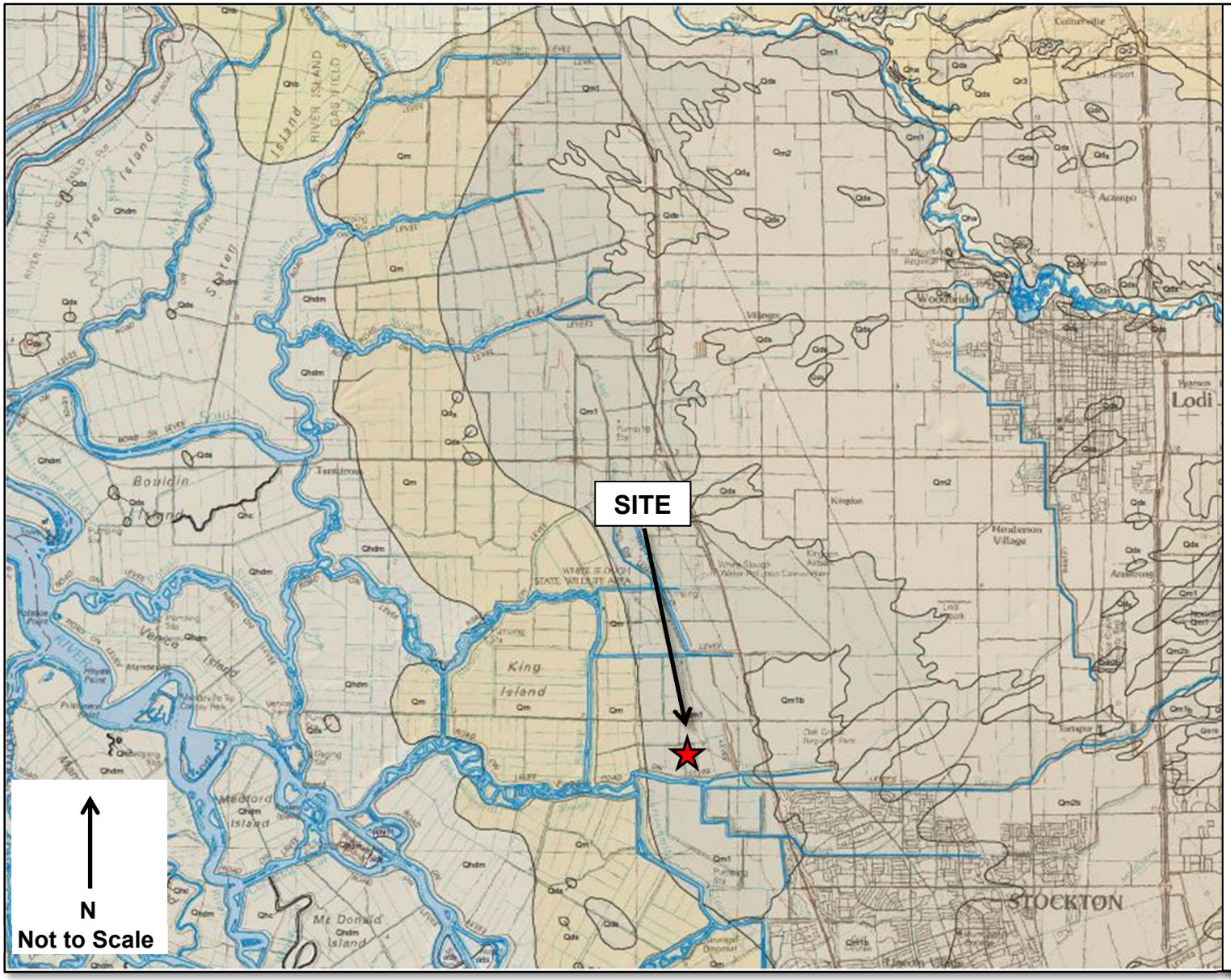


Daniel E. Kramer, CEG
Engineering Geologist



Daniel C. Smith, GE
Principal Engineer

FIGURES



EXPLANATION

Surficial Deposits

- af - Artificial fill
- Qhc - Stream channel deposits
- Qhbm - Estuarine deposits
- Qha - Holocene Alluvium, undivided
- Qa - Alluvium
- Qhf- Alluvial fan deposits
- Qls - Landslide deposits

Modesto Formation

- Qm - Undivided
- Qm2 - Upper member, undivided alluvium
- Qm2b – Upper member, fine-grained
- Qm1 – Lower member, undivided alluvium
- Qm1b - Lower member, fine-grained

Riverbank Formation

- Qr - Undivided
- Qr3 - Upper unit
- Qr2 - Middle unit
- Qr1 - Lower unit

GEOLOGIC MAP SYMBOLS

- Geologic contact
- Fault

Adapted from the *Preliminary Geologic Map of the Lodi 30 x 60 Minute Quadrangle, California* (Timothy E. Dawson, CGS, 2009).

MPE
MID PACIFIC ENGINEERING, INC.

REGIONAL GEOLOGIC MAP

LUSD STOCKTON – LAKEVIEW SCHOOL
Regatta Lane and Cosumnes Drive
Stockton, California

FIGURE 2
Date: 08/19
MPE No. 04434-01



NOTES: Adapted from *Google Earth, dated 08/31/2018*

MPE
MID PACIFIC ENGINEERING, INC.

SITE INVESTIGATION MAP

LUSD STOCKTON-LAKEVIEW SCHOOL
Regatta Lane and Cosumnes Drive
Stockton, California

FIGURE 2
Date: 08/19
MPE No. 04434-01

Project: LUSD Stockton-Lakeview School	LOG OF SOIL BORING D1
Project Location: Regatta Land & Cosumnes Drive, Stockton, CA	
MPE Number: 04434-01	Sheet 1 of 1

Date(s) Drilled: 5/3/2019	Logged By: PJP	Checked By: MSO
Drilling Method: Solid Flight Auger	Drilling Contractor: V&W Drilling	Total Depth of Drill Hole, feet: 26½ Feet
Drill Rig Type: CME-75	Diameter(s) of Hole, inches: 6 Inches	Approx. Surface Elevation, ft MSL: - 3 Feet
Groundwater Depth [Elevation], feet: 7½ Feet	Sampling Method(s): 140 Lb Hammer/30" Drop	Drill Hole Backfill: Neat Cement
Remarks		

ELEVATION, feet	DEPTH, feet	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE	SAMPLE NUMBER	BLOWS PER FOOT	MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
		Brown with gray and orange, moist, medium dense, clayey fine sand (SC)		D1-1	28	11.0	110	
-8	5	Brown, moist, medium dense, silty fine sand (SM)		D1-2	16	18.1	110	
		▽						
		Brown, wet, medium dense, clayey fine sand (SC)						
-13	10			D1-3	33			
-18	15			D1-4	31			
		Light brown, wet, very stiff, silty clay (CL)						
		hard drilling						
-23	20	Brown, wet, dense, silty fine to medium sand (SM)		D1-5	50/6"			%-200 19.9
		Brown/Black, wet, medium dense, poorly graded fine to medium sand with silt (SP-SM)						
-28	25			D1-6	37	21.9	101	%-200 7.7

MPE *Mid Pacific Engineering, Inc .*

FIGURE 4

Project: LUSD Stockton-Lakeview School	LOG OF SOIL BORING D2
Project Location: Regatta Land & Cosumnes Drive, Stockton, CA	
MPE Number: 04434-01	Sheet 1 of 1

Date(s) Drilled: 5/3/2019	Logged By: PJP	Checked By: MSO
Drilling Method: Solid Flight Auger	Drilling Contractor: V&W Drilling	Total Depth of Drill Hole, feet: 24½ Feet
Drill Rig Type: CME-75	Diameter(s) of Hole, inches: 6 Inches	Approx. Surface Elevation, ft MSL: - 3 Feet
Groundwater Depth [Elevation], feet: 8 Feet	Sampling Method(s): 140 Lb Hammer/30" Drop	Drill Hole Backfill: Neat Cement
Remarks:		

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	BLOWS PER FOOT	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Light brown, slightly moist, very stiff, fine sandy clay (CL/CH)		D2-1	21	7.6	102	
			Dark brown, slightly moist, very stiff, silty clay (CL)		D2-2	23			
-8	5		Brown, slightly moist, medium dense, clayey fine sand (SC)						
			brown/orange/light brown, wet		D2-3	32	15.0	118	%-200 39.2
-13	10								
					D2-4	19	18.8	112	UCC 1.4 tsf
-18	15		Light brown, wet, very stiff, silty clay (CL)						
			Brown, wet, medium dense, silty fine sand (SM)		D2-5	25			
-23	20		Light brown with orange mottling, wet, very stiff, silty clay (CL)						
			Light brown, wet, very stiff, clayey silt (ML)		D2-6	22			
-28	25								

Project: LUSD Stockton-Lakeview School	LOG OF SOIL BORING D3
Project Location: Regatta Land & Cosumnes Drive, Stockton, CA	
MPE Number: 04434-01	Sheet 1 of 1

Date(s) Drilled: 5/3/2019	Logged By: PJP	Checked By: MSO
Drilling Method: Solid Flight Auger	Drilling Contractor: V&W Drilling	Total Depth of Drill Hole, feet: 26½ Feet
Drill Rig Type: CME-75	Diameter(s) of Hole, inches: 6 Inches	Approx. Surface Elevation, ft MSL: - 3 Feet
Groundwater Depth [Elevation], feet: 10 Feet	Sampling Method(s): 140 Lb Hammer/30" Drop	Drill Hole Backfill: Neat Cement
Remarks		

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	BLOWS PER FOOT	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Dark brown, slightly moist, very stiff, silty clay (CL/CH)						
					D3-1	19	14.8	110	UCC 2.3 tsf; TRIAX Φ=26 C=50
-8	5		Light brown, moist, medium dense, clayey fine sand (SC)						
			less clayey		D3-2	20			
			Brown, wet, very stiff, silty clay (CL) ▽						
-13	10				D3-3	28	17.2	112	UCC 2.2 tsf
			Gray, wet, medium dense, clayey fine sand (SC)						
-18	15				D3-4	27			
			Gray, wet, very stiff, silty clay (CL)						
-23	20		gray/brown, with black and orange mottling, hard slightly sandy		D3-5	45			
			Brown, wet, loose, poorly graded fine sand (SP)						
-28	25				D3-6	7	17.0	99	%-200 4.5

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FIGURE 6

Project: LUSD Stockton-Lakeview School	LOG OF SOIL BORING D4
Project Location: Regatta Land & Cosumnes Drive, Stockton, CA	
MPE Number: 04434-01	Sheet 1 of 1

Date(s) Drilled: 5/3/2019	Logged By: PJP	Checked By: MSO
Drilling Method: Solid Flight Auger	Drilling Contractor: V&W Drilling	Total Depth of Drill Hole, feet: 24½ Feet
Drill Rig Type: CME-75	Diameter(s) of Hole, inches: 6 Inches	Approx. Surface Elevation, ft MSL: - 3 Feet
Groundwater Depth [Elevation], feet: 8 Feet	Sampling Method(s): 140 Lb Hammer/30" Drop	Drill Hole Backfill: Neat Cement
Remarks		

ELEVATION, feet	DEPTH, feet	GRAPHIC LOG	ENGINEERING CLASSIFICATION AND DESCRIPTION	SAMPLE DATA: SAMPLE	SAMPLE NUMBER	BLOWS PER FOOT	TEST DATA: MOISTURE CONTENT, %	DRY UNIT WEIGHT, pcf	ADDITIONAL TESTS
			Dark brown, slightly moist, very stiff, silty clay (CL/CH)						
					D4-1	19	11.9	110	UCC 2.9 tsf
			light brown						
			less clayey		D4-2	22	27.3	93	UCC 1.8 tsf
-8	5								
			wet						
			Brown, wet, medium dense, silty fine sand (SM)		D4-3	21			
-13	10		Light brown, wet, very stiff, silty clay (CL)						
			hard		D4-4	48			
-18	15		Brown, wet, dense, silty fine sand (SM)						
			fine to medium sand		D4-5	59	24.3	101	%-200 18.2
-23	20								
			Brown, wet, dense, clayey fine sand (SC)						
			Light brown/Gray, wet, hard, silty clay (CL)		D4-6	50/5"			
			Brown, wet, dense, clayey fine sand (SC)						
-28	25								

LOGS OF TEST PITS

Excavated on: May 2, 2019
Kubota U27 with an 18-inch bucket
Logged by: P. Porata

Test Pit 1

	Stockpile
0' – 1'	Light brown, slightly moist, clayey silt/silty clay (ML/CL-FILL)
1' – 5'	Brown, slightly moist, silty fine sand (SM-FILL)
	slightly clayey with depth
	Native Soil
5' – 5½'	Black/Dark brown, moist, silty clay (CL/CH)

Bottom of Test Pit at 5½ feet.

Test Pit 2

	Stockpile
0' – 1'	Light brown, slightly moist, clayey silt/silty clay (CL/ML-FILL)
1' – 4'	Brown, slightly moist, silty fine sand (SM-FILL)
	Native Soil
4' – 4½'	Black/Dark Brown, moist, silty clay (CL/CH)

Bottom of Test Pit at 4½ feet.

Test Pit 3

	Stockpile
0' – ½'	Light brown, slightly moist, clayey silt/silty clay (ML/CL-FILL)
½' – 4'	Brown, moist, silty fine sand (SM-FILL)
	Native Soil
4' – 6'	Black/Dark brown, moist, silty clay (CL/CH)
6' – 8'	Grayish brown, moist, clayey fine sand (SC)

Bottom of Test Pit at 8 feet.

LOGS OF TEST PITS

Excavated on: May 2, 2019
Kubota U27 with an 18-inch bucket
Logged by: P. Porata

Test Pit 4

	Stockpile
0' – 4½'	Light brown, slightly moist, clayey fine sand (SC-FILL)
	bricks and PVC pipe encountered
	Native Soil
4½' – 5'	Black/Dark brown, moist, silty clay (CL/CH)
	Bottom of Test Pit at 5 feet.

Test Pit 5

	Stockpile
0' – 6'	Light brown, slightly moist, clayey silt/silty clay (CL/ML-FILL)
	Native Soil
6' – 6½'	Black/Dark brown, moist, silty clay (CL)
	Bottom of Test Pit at 6½ feet.

Test Pit 6

	Stockpile
0' – 1'	Dark brown, slightly moist, clayey silt (ML-FILL)
1' – 5'	Light brown, slightly moist, silty fine sand (SM-FILL)
	Native Soil
5' – 5½'	Black/Dark brown, moist, silty clay (CL/CH)
	Bottom of Test Pit at 5½ feet.

LOGS OF TEST PITS

Excavated on: May 2, 2019
Kubota U27 with an 18-inch bucket
Logged by: P. Porata

Test Pit 7

	Stockpile
0' – 1½'	Light brown, slightly moist, silty fine sand (SM-FILL)
	Native Soil
1½' – 3'	Black/Dark brown, moist, silty clay (CL)
3' – 4'	Brown, moist, silty fine sand (SM)

Bottom of Test Pit at 4 feet.

Test Pit 8

	Stockpile
0' – 5½'	Light brown, slightly moist, clayey fine sand (SC-FILL)
	Native Soil
5½' – 6'	Black/Dark brown, moist, silty clay (CL/CH)

Bottom of Test Pit at 6 feet.

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS		SYMBOL	CODE	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of soil > no. 200 sieve size)	GRAVELS (More than 50% of coarse fraction > no. 4 sieve size)	GW		Well graded gravels or gravel - sand mixtures, little or no fines
		GP		Poorly graded gravels or gravel - sand mixtures, little or no fines
		GM		Silty gravels, gravel - sand - silt mixtures
		GC		Clayey gravels, gravel - sand - silt mixtures
	SANDS (50% or more of coarse fraction < no. 4 sieve size)	SW		Well graded sands or gravelly sands, little or no fines
		SP		Poorly graded sands or gravelly sands, little or no fines
		SM		Silty sands, sand - silt mixtures
		SC		Clayey sands, sand clay mixtures
FINE GRAINED SOILS (More than 50% of soil < no. 200 sieve size)	SILTS & CLAYS LL< 50	ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
		CL		Inorganic clays of low to medium plasticity, gravely clays, sandy clays, silty clays, lean clays
		OL		Organic silts and organic silty clays of low plasticity
	SILTS & CLAYS LL ≥ 50	MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH		Inorganic clays of high plasticity, fat clays
		OH		Organic clays of medium to high plasticity, organic silty clays, organic silts
HIGHLY ORGANIC SOILS		Pt		Peat and other highly organic soils
ROCK		RX		Rocks, weathered to fresh
FILL		FILL		Artificially placed fill material

OTHER SYMBOLS

= Drive Sample: 2-1/2" O.D. Modified California sampler

= Hand Driven Sample

=SPT Sampler

= Initial Water Level

= Final Water Level

= Estimated or gradational material change line

= Observed material change line

Laboratory Tests

PI = Plasticity Index
EI =Expansive Index
UCC = Unconfined Compression Test
TR = Triaxial Compression Test
GR = Gradation Analysis (Sieve)
K = Permeability Test

GRAIN SIZE CLASSIFICATION

CLASSIFICATION	RANGE OF GRAIN SIZES	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVEL coarse (c) fine (f)	3" to No. 4 3" to 3/4" 3/4" to No. 4	76.2 to 4.76 76.2 to 19.1 19.1 to 4.76
SAND coarse (c) Medium (m) fine (f)	No. 4 to No. 200 No. 4 to No. 10 No. 10 to No. 40 No. 40 to No. 200	4.76 to 0.074 4.76 to 2.00 2.00 to 0.420 0.420 to 0.074
SILT & CLAY	Below No. 200	Below 0.074

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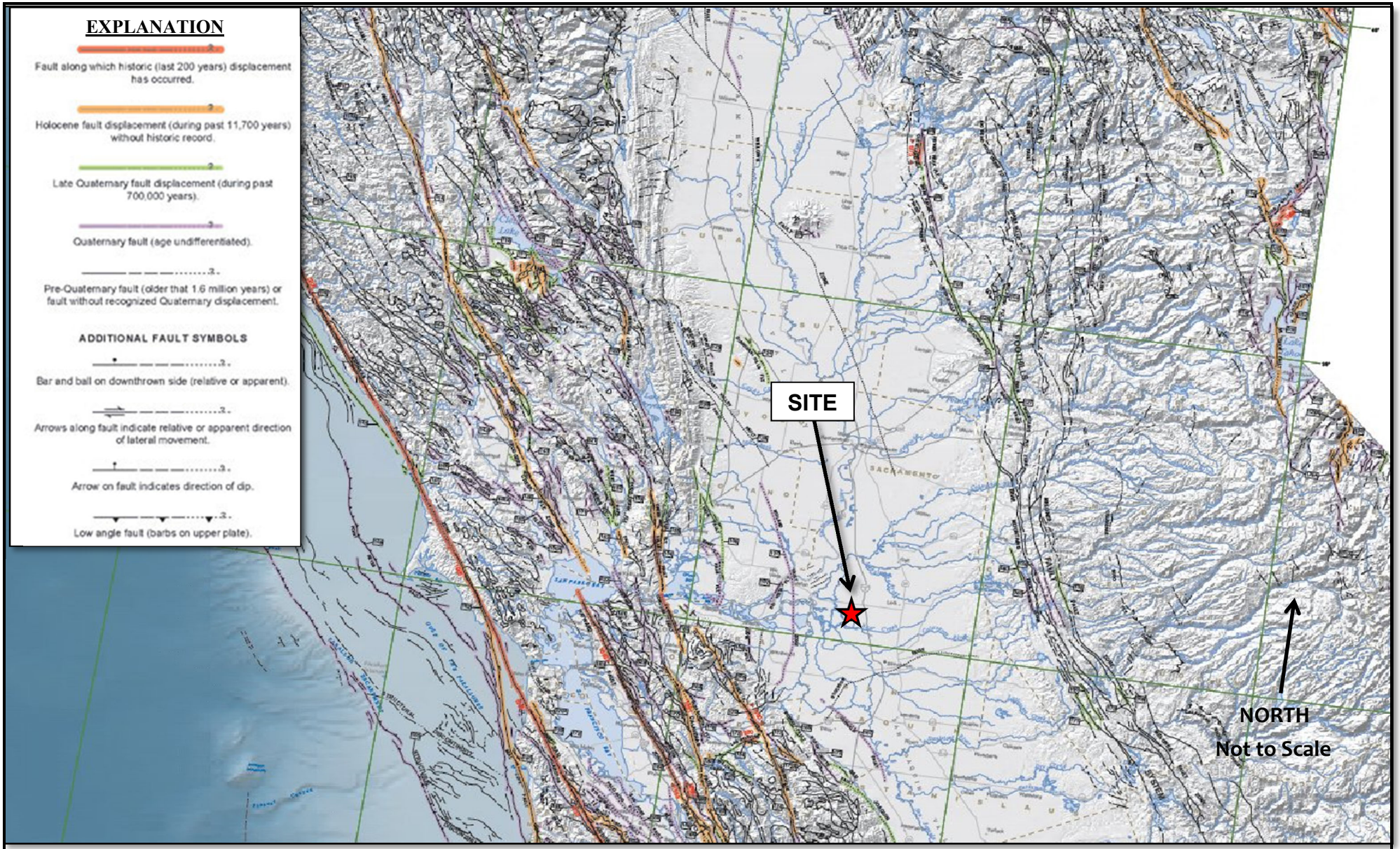
UNIFIED SOIL CLASSIFICATION SYSTEM
LUSD STOCKTON-LAKEVIEW SHCOOL
Regatta Lane and Cosumnes Drive
Stockton, California

FIGURE 11
Date: 08/19
MPE No. 04434-01



Adapted from: *Fault Activity Map of California 2010.* California Geological Survey, Geologic Data Map No. 6. Compilation and Interpretation by C.W. Jennings and W.A. Bryant

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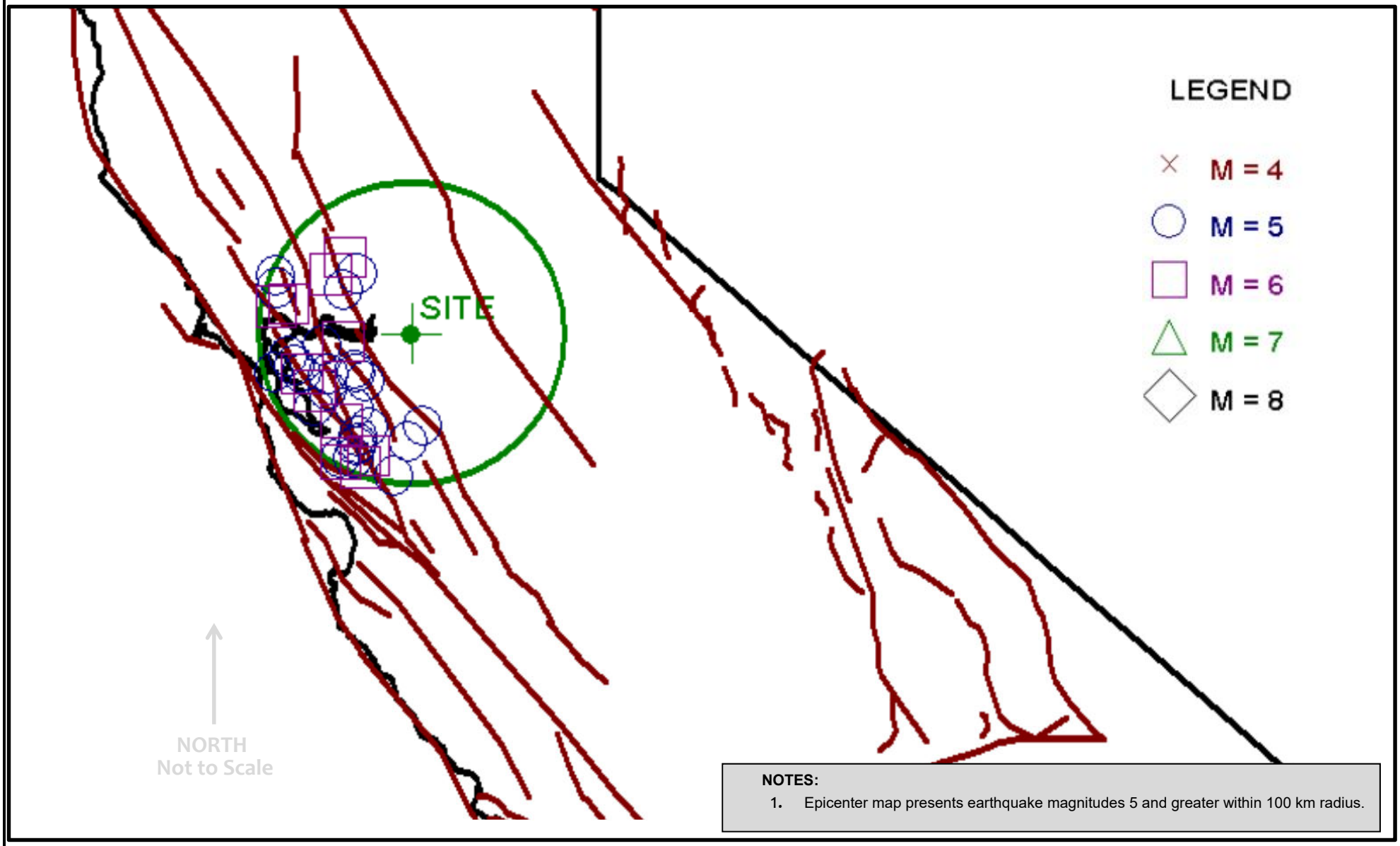
REGIONAL FAULT MAP

LUSD STOCKTON – LAKEVIEW SCHOOL
Regatta Lane and Cosumnes Drive
Stockton, California

FIGURE 13
Date: 08/19
MPE No. 04434-01



NOTES:

1. Epicenter map presents earthquake magnitudes 5 and greater within 100 km radius.

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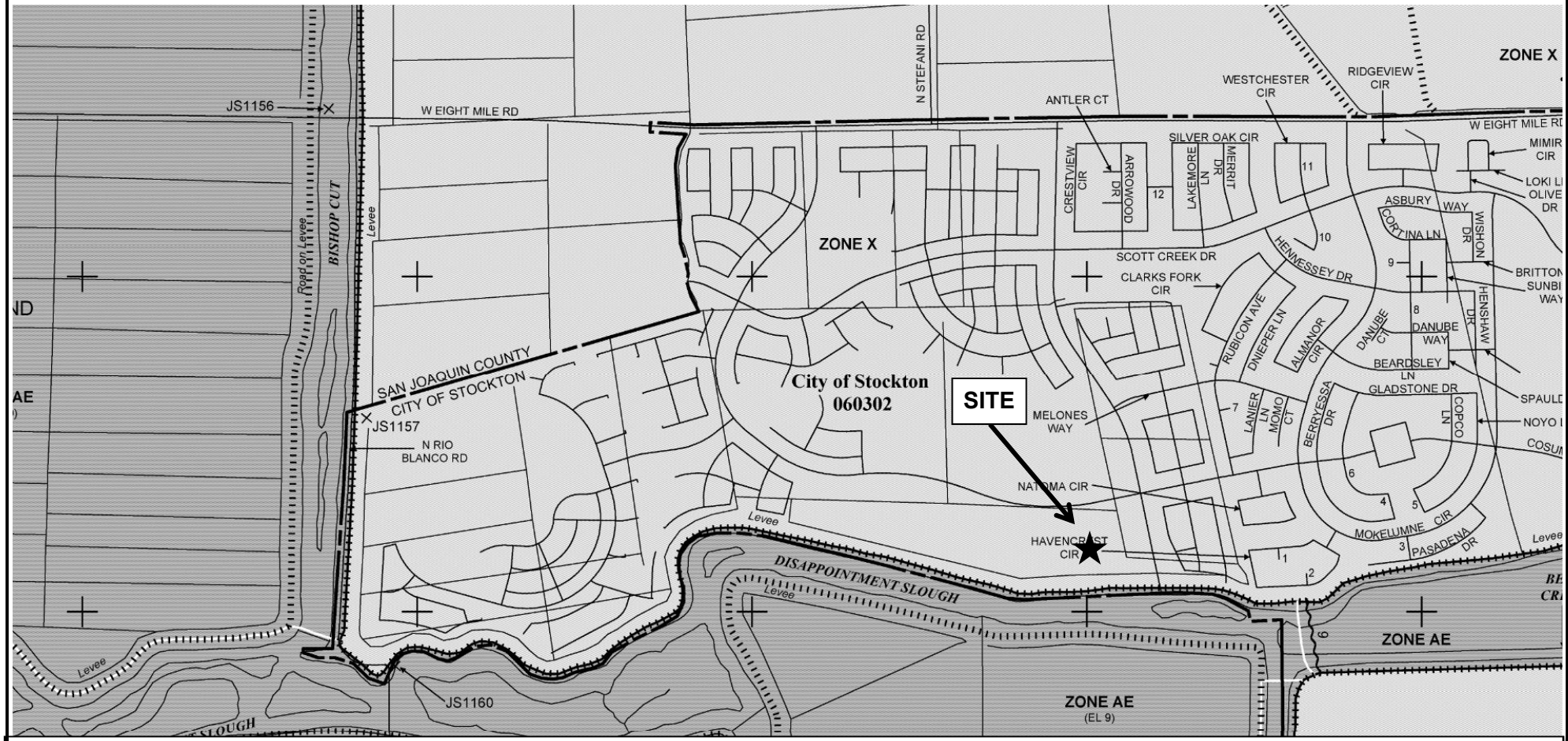
EARTHQUAKE EPICENTER MAP

LUSD STOCKTON – LAKEVIEW SCHOOL
Regatta Lane and Cosumnes Drive
Stockton, California

FIGURE 14
Date: 08/19
MPE No. 04434-01



FLOOD HAZARDS

ZONE X – Site shown as being protected from the 1-percent chance flood hazard by a levee system.
Overtopping or failure of any levee system is possible.
ZONE AE – Base Flood Elevations Determined

N
Not to Scale

Adapted from: Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FIRM), Map Number 06077C0295F, dated October 16, 2009

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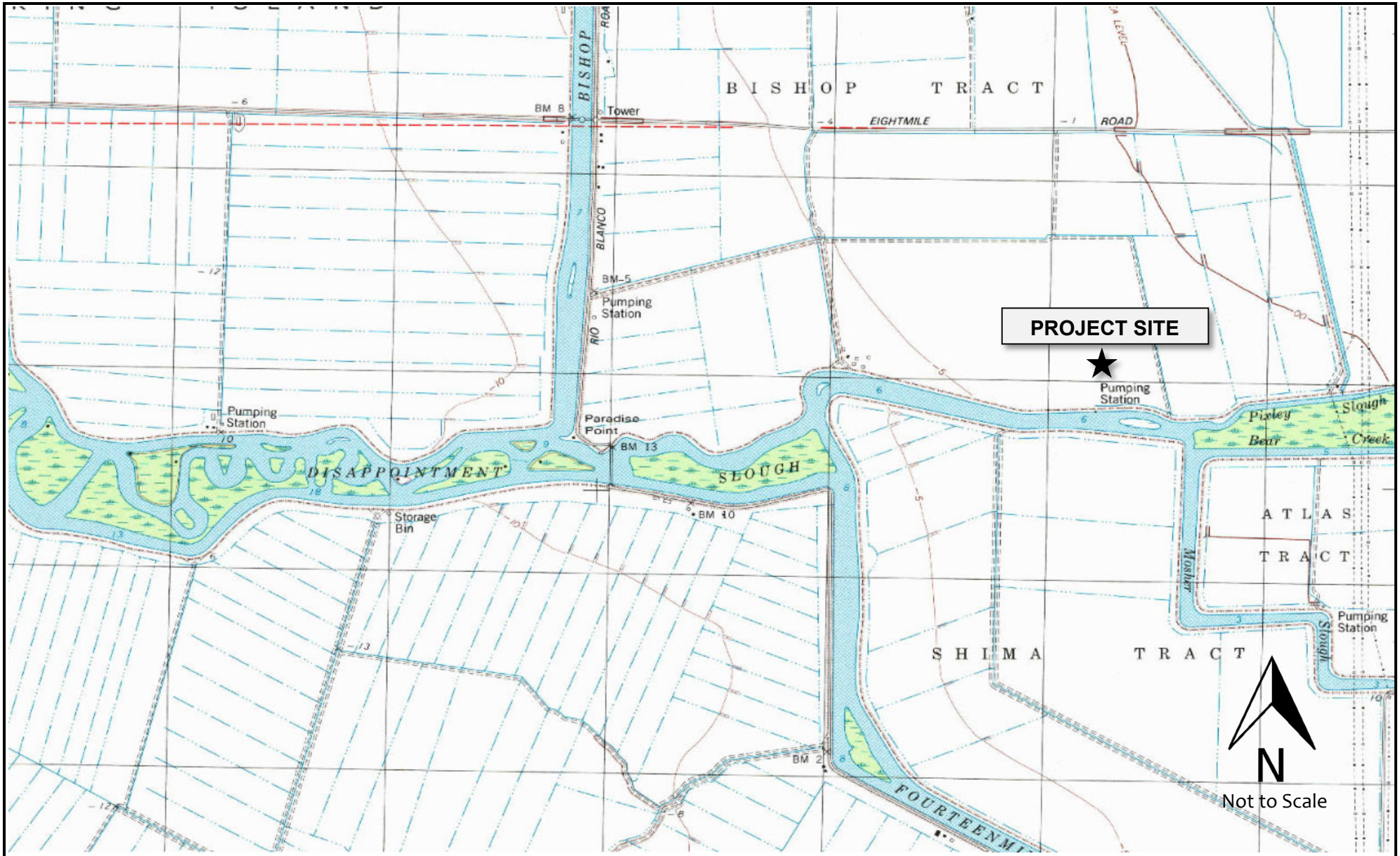
FEMA FLOOD MAP

LUSD STOCKTON – LAKEVIEW SCHOOL
Regatta Lane and Cosumnes Drive
Stockton, California

FIGURE 15
Date: 08/19
MPE No. 04434-01



NOTES: Adapted from USGS National Topographic Map, *Terminous Quadrangle, California – San Joaquin County,* 7.5-Minute Series, 1997.

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VICINITY MAP

LUSD STOCKTON-LAKEVIEW SCHOOL

Regatta Lane and Cosumnes Drive
Stockton, California

FIGURE 1

Date: 08/19

MPE No. 04434-01

APPENDICES

APPENDIX A

APPENDIX A

A. GENERAL INFORMATION

The performance of a Preliminary Geologic Hazards and Geotechnical Engineering Investigation for the proposed improvements at the site located southwest of the intersection of Regatta Lane and Cosumnes Drive in Stockton, California, was authorized by the Vickie Brum with the Lodi Unified School District. Authorization was for an investigation as described in our proposal letter of April 10, 2019, sent to our client, Lodi Unified School District (c/o Petralogix Engineering, Inc.), whose mailing address is 26675 Bruella Road, Galt, California 95687; telephone (209) 331-7223.

B. FIELD EXPLORATION

A total of four soil borings and eight test pits were drilled/excavated at the approximate locations indicated on Figure 3.

The drilled soil borings utilized a CME-55 truck-mounted drill rig equipped with eight-inch diameter, hollow-stem helical flight augers. The borings were drilled to maximum depths of approximately 14 to 25 feet below existing site grades. Exploratory test pits were excavated to a maximum depth of approximately 8 feet below existing site grades using a Kubota U27 Mini-Excavator equipped with a 18-inch wide bucket

In addition, two Cone Penetration Test (CPT) soundings were performed at the approximate locations indicated on Figure 3, utilizing a 25-ton truck-mounted CPT rig to a maximum depth of approximately 50 feet below existing site grades.

At various intervals, relatively undisturbed soil samples were recovered from the drilled soil borings with a 2½-inch O.D., 2-inch I.D. Modified California sampler (ASTM D3550) driven by an automatic 140-pound hammer freely falling 30 inches. The number of blows of the hammer required to drive the 18-inch long sampler each 6-inch interval was recorded with the sum of the blows required to drive the sampler the lower 12-inch interval being designated the penetration resistance or "blow count" for that particular drive.

The samples obtained with the modified California sampler were retained in 2-inch diameter by 6-inch long, thin-walled brass tubes contained within the sampler. Immediately after recovery, the field engineer visually classified the soil in the tubes and the ends of the tubes were sealed to preserve the natural moisture contents. Disturbed bulk samples of the surface materials also were obtained at various locations and depths. At various elevations, bulk samples of the near-surface soils

and geologic materials were collected from our excavations. Soil samples were taken to our laboratory for additional classification (ASTM D2488) and selection of samples for testing.

The Logs of Soil Borings and Test Pits, Figures 4 through 10, contain descriptions of the soils encountered in each boring and excavation. A Legend explaining the Unified Soil Classification System and the symbols used on the logs is contained on Figure 11. The results of the CPT soundings are attached in Appendix C.

C. LABORATORY TESTING

Selected undisturbed samples of the soils were tested to determine dry unit weight (ASTM D2937), natural moisture content (ASTM D2216), direct shear testing (ASTM D3080) and percent passing the 200 sieve (ASTM D1140). The results of these tests are included on the boring logs at the depth each sample was obtained.

Two bulk samples of the near-surface and stockpile soils were subjected to Expansion Index testing (ASTM D4829). The results of this testing are presented on Figure A1 and A2.

Four bulk samples of the anticipated native pavement subgrade soils and existing stockpile soils were subjected to Resistance ("R-") value testing, which were used in the pavement design, are presented on Figures A3 through A6.

Three samples of near-surface soils were submitted to Sunland Analytical in Rancho Cordova, California, for corrosivity testing in accordance with No. 643 (Modified Small Cell), CT 532, CT 422, and CT 417. The analytical results are presented in the text of the report.

/

EXPANSION INDEX TEST RESULTS
(ASTM D4829)
(UBC 18-2)

Material Description: Black/Dark brown, silty clay (CL/CH)
Location: TP3 @ 4’

Sample Number	Pre-Test Moisture (%)	Post-Test Moisture (%)	Dry Density (pcf)	Expansion Index
TP3 @ 4’	11.6	28.5	100	106

CLASSIFICATION OF EXPANSIVE SOIL

EXPANSION INDEX	POTENTIAL EXPANSION
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
Above 130	Very High

MPE	**EXPANSION INDEX TEST RESULTS** **LUSD STOCKTON-LAKEVIEW SHCOOL** Regatta Lane and Cosumnes Drive Stockton, California	**FIGURE A1** Date: 05/19 MPE No. 04434-01

EXPANSION INDEX TEST RESULTS
(ASTM D4829)
(UBC 18-2)

Material Description: Light brown, clayey fine sand (SC)
Location: TP4 @ 1'-2'

Sample Number	Pre-Test Moisture (%)	Post-Test Moisture (%)	Dry Density (pcf)	Expansion Index
TP4 @ 1'-2'	9.3	18.2	112	32

CLASSIFICATION OF EXPANSIVE SOIL

EXPANSION INDEX	POTENTIAL EXPANSION
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
Above 130	Very High

MPE	**EXPANSION INDEX TEST RESULTS** **LUSD STOCKTON-LAKEVIEW SHCOOL** Regatta Lane and Cosumnes Drive Stockton, California	**FIGURE A2** Date: 08/19 MPE No. 04434-01

RESISTANCE VALUE TEST RESULTS
(California Test 301)

Material Description: Light brown, clayey fine sand (SC)

Location: Stockpile: TP4 (1' – 2')

Specimen No.	Dry Unit Weight (pcf)	Moisture at Compaction (%)	Exudation Pressure (psi)	Expansion Pressure (psf)	R-Value
1	121.9	12.5	761	173	56
2	114.0	15.4	222	48	26
3	117.4	13.5	206	65	31
4	119.5	13.0	406	78	46

R-value at 300 psi exudation pressure = 36

MPE	**RESISTANCE VALUE TEST RESULTS** **LUSD STOCKTON-LAKEVIEW SCHOOL** Regatta Lane and Cosumnes Drive Stockton, California	**FIGURE A3** Date: 08/19 MPE No. 04434-01

RESISTANCE VALUE TEST RESULTS
(California Test 301)

Material Description: Black/Dark brown, silty clay (CL/CH)

Location: Native: TP3 @ 4’

Specimen No.	Dry Unit Weight (pcf)	Moisture at Compaction (%)	Exudation Pressure (psi)	Expansion Pressure (psf)	R-Value
1		22.6	421		

Sample Extruded During Test, R-Value = 5

MPE	**RESISTANCE VALUE TEST RESULTS** **LUSD STOCKTON-LAKEVIEW SCHOOL** Regatta Lane and Cosumnes Drive Stockton, California	**FIGURE A4** Date: 08/19 MPE No. 04434-01

RESISTANCE VALUE TEST RESULTS
(California Test 301)

Material Description: Light Brown, silty fine sand (SM), with 4% lime by dry weight

Location: Stockpile: TP6 (1' - 2')

Specimen No.	Dry Unit Weight (pcf)	Moisture at Compaction (%)	Exudation Pressure (psi)	Expansion Pressure (psf)	R-Value
1	111.2	14.9	443	9	90
2	108.7	17.8	189	17	68
3	110.8	16.6	263	9	80
4	110.8	16.3	245	22	83

R-value at 300 psi exudation pressure = 82

MPE	**RESISTANCE VALUE TEST RESULTS** **LUSD STOCKTON-LAKEVIEW SCHOOL** Regatta Lane and Cosumnes Drive Stockton, California	**FIGURE A5** Date: 08/19 MPE No. 04434-01

APPENDIX B

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*    E Q F A U L T   *
*                    *
*    Version 3.00    *
*                    *
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DETERMINISTIC ESTIMATION OF
PEAK ACCELERATION FROM DIGITIZED FAULTS

JOB NUMBER: 04434-01

DATE: 06-19-2019

JOB NAME: LUSD-STOCKTON

CALCULATION NAME: NEHRP D

FAULT-DATA-FILE NAME: C:\Program Files\EQFAULT1\CGSFLTE.DAT

SITE COORDINATES:
SITE LATITUDE: 38.0467
SITE LONGITUDE: 121.3919

SEARCH RADIUS: 62 mi

ATTENUATION RELATION: 3) Boore et al. (1997) Horiz. - NEHRP D (250)
UNCERTAINTY (M=Median, S=Sigma): M Number of Sigmas: 0.0
DISTANCE MEASURE: cd_2drp
SCOND: 0
Basement Depth: 2.00 km Campbell SSR: Campbell SHR:
COMPUTE PEAK HORIZONTAL ACCELERATION

FAULT-DATA FILE USED: C:\Program Files\EQFAULT1\CGSFLTE.DAT

MINIMUM DEPTH VALUE (km): 0.0

EQFAULT SUMMARY

DETERMINISTIC SITE PARAMETERS

Page 1

ABBREVIATED FAULT NAME	APPROXIMATE DISTANCE mi (km)	ESTIMATED MAX. EARTHQUAKE EVENT: MAXIMUM EARTHQUAKE MAG.(Mw)	ESTIMATED MAX. EARTHQUAKE EVENT: PEAK SITE ACCEL. g	ESTIMATED MAX. EARTHQUAKE EVENT: EST. SITE INTENSITY MOD.MERC.
GREAT VALLEY 5	19.5(31.4)	6.5	0.148	VIII
GREAT VALLEY 7	22.7(36.6)	6.7	0.147	VIII
MOUNT DIABLO (MTD)	25.7(41.4)	6.7	0.130	VIII
GREENVILLE (GN)	26.3(42.4)	6.7	0.106	VII
GREENVILLE (GS+GN)	29.0(46.7)	6.9	0.114	VII
GREENVILLE (GS)	29.0(46.7)	6.6	0.095	VII
GREENVILLE (FLOATING)	29.0(46.7)	6.2	0.077	VII
FOOTHILLS FAULT SYSTEM 1	31.4(50.5)	6.5	0.103	VII
GREAT VALLEY 4	32.2(51.9)	6.6	0.106	VII
CONCORD/GV (CON+GVS)	34.1(54.8)	6.6	0.083	VII
CONCORD/GV (FLOATING)	34.1(54.8)	6.2	0.068	VI
CONCORD/GV (CON+GVS+GVN)	34.1(54.8)	6.7	0.089	VII

EQFAULT - NEHRP D

CONCORD/GV (CON)	34.1(54.8)	6.3	0.070	VI
CALAVERAS (CS+CC+CN)	37.1(59.7)	6.9	0.094	VII
CALAVERAS (FLOATING)	37.1(59.7)	6.2	0.064	VI
CALAVERAS (CN)	37.1(59.7)	6.8	0.086	VII
CALAVERAS (CC+CN)	37.1(59.7)	6.2	0.065	VI
CONCORD/GV (GVS)	37.3(60.0)	6.2	0.065	VI
CONCORD/GV (GVS+GVN)	37.3(60.0)	6.5	0.073	VII
FOOTHILLS FAULT SYSTEM 2	40.0(64.4)	6.5	0.086	VII
CONCORD/GV (GVN)	43.6(70.1)	6.0	0.051	VI
GREAT VALLEY 8	44.2(71.1)	6.6	0.084	VII
FOOTHILLS FAULT SYSTEM 3	44.5(71.6)	6.5	0.079	VII
HAYWARD (FLOATING)	45.3(72.9)	6.9	0.079	VII
HAYWARD (HS+HN+RC)	45.3(72.9)	7.3	0.095	VII
HAYWARD (HS)	45.3(72.9)	6.7	0.070	VI
HAYWARD (HS+HN)	45.3(72.9)	6.9	0.079	VII
WEST NAPA	47.1(75.8)	6.5	0.062	VI
HAYWARD (HN+RC)	47.2(75.9)	7.1	0.085	VII
HAYWARD (HN)	47.2(75.9)	6.5	0.062	VI
CALAVERAS (CS+CC)	47.3(76.1)	6.4	0.057	VI
CALAVERAS (CC)	47.3(76.1)	6.2	0.054	VI
CALAVERAS (CS+CC FLOATING)	47.3(76.1)	6.2	0.053	VI
HUNTING CREEK - BERRYESSA	52.0(83.7)	7.1	0.079	VII
ORTIGALITA	54.0(86.9)	7.1	0.077	VII
GREAT VALLEY 3	54.6(87.8)	6.9	0.083	VII
HAYWARD (RC)	56.8(91.4)	7.0	0.070	VI

****

-END OF SEARCH- 37 FAULTS FOUND WITHIN THE SPECIFIED SEARCH RADIUS.

THE GREAT VALLEY 5 FAULT IS CLOSEST TO THE SITE.
IT IS ABOUT 19.5 MILES (31.4 km) AWAY.

LARGEST MAXIMUM-EARTHQUAKE SITE ACCELERATION: 0.1482 g

EQSEARCH - NEHRP D

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*                      *
*    E Q S E A R C H   *
*                      *
*     Version 3.00     *
*                      *
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ESTIMATION OF
PEAK ACCELERATION FROM
CALIFORNIA EARTHQUAKE CATALOGS

JOB NUMBER: 04434-01

DATE: 06-19-2019

JOB NAME: LUSD-STOCKTON

EARTHQUAKE-CATALOG-FILE NAME: ALLQUAKE.DAT

MAGNITUDE RANGE:
MINIMUM MAGNITUDE: 5.00
MAXIMUM MAGNITUDE: 9.00

SITE COORDINATES:
SITE LATITUDE: 38.0467
SITE LONGITUDE: 121.3919

SEARCH DATES:
START DATE: 1800
END DATE: 2018

SEARCH RADIUS:
62.0 mi
99.8 km

ATTENUATION RELATION: 3) Boore et al. (1997) Horiz. - NEHRP D (250)
UNCERTAINTY (M=Median, S=Sigma): M Number of Sigmas: 0.0
ASSUMED SOURCE TYPE: BT [SS=Strike-slip, DS=Reverse-slip, BT=Blind-thrust]
SCOND: 0 Depth Source: A
Basement Depth: 2.00 km Campbell SSR: Campbell SHR:
COMPUTE PEAK HORIZONTAL ACCELERATION

MINIMUM DEPTH VALUE (km): 0.0

EARTHQUAKE SEARCH RESULTS

Page 1

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
BRK	37.7600	121.7300	01/27/1980	23336.0	0.0	5.40	0.065	VI	27.0(43.5)
BRK	37.8100	121.7900	01/24/1980	19 1 2.0	0.0	5.10	0.055	VI	27.1(43.7)
BRK	37.8300	121.8100	01/24/1980	19 0 9.0	0.0	5.80	0.080	VII	27.2(43.8)
DMG	38.0000	121.9000	05/19/1889	1110 0.0	0.0	6.00	0.087	VII	27.8(44.8)
DMG	38.3000	121.9000	05/19/1902	1831 0.0	0.0	5.50	0.059	VI	32.7(52.5)
DMG	38.4000	121.8000	04/30/1892	0 9 0.0	0.0	5.50	0.059	VI	32.9(53.0)
DMG	37.9700	122.0500	10/24/1955	41044.0	0.0	5.40	0.052	VI	36.2(58.2)
DMG	37.8000	122.0000	07/04/1861	011 0.0	0.0	5.60	0.056	VI	37.2(59.9)
DMG	37.6000	121.8000	06/11/1903	1312 0.0	0.0	5.50	0.053	VI	38.0(61.2)
DMG	37.5000	121.3000	07/15/1866	630 0.0	0.0	5.80	0.061	VI	38.1(61.3)
DMG	37.7000	122.0000	03/05/1864	1649 0.0	0.0	5.70	0.055	VI	40.9(65.8)
DMG	38.4000	122.0000	04/19/1892	1050 0.0	0.0	6.40	0.080	VII	41.0(66.0)
DMG	38.5000	121.9000	04/21/1892	1743 0.0	0.0	6.20	0.071	VI	41.7(67.1)

GSB	37.4830	121.6900	03/31/1986	115540.0	8.0	5.70	0.054	VI	42.2(67.9)
DMG	37.4000	121.4000	04/10/1881	10 0 0.0	0.0	5.90	0.057	VI	44.6(71.9)
DMG	37.7000	122.1000	10/21/1868	1553 0.0	0.0	6.80	0.091	VII	45.4(73.1)
DMG	37.5000	121.9000	11/26/1858	835 0.0	0.0	6.10	0.061	VI	46.8(75.4)
GSB	37.4340	121.7740	10/31/2007	030454.8	10.0	5.50	0.044	VI	47.2(75.9)
DMG	37.8000	122.2000	07/31/1889	1247 0.0	0.0	5.20	0.038	V	47.2(75.9)
DMG	37.8000	122.2000	06/10/1836	1530 0.0	0.0	6.80	0.088	VII	47.2(75.9)
MGI	37.8500	122.2500	09/10/1935	2355 0.0	0.0	5.00	0.033	V	48.7(78.3)
DMG	37.6000	122.1000	05/21/1864	2 1 0.0	0.0	5.30	0.039	V	49.4(79.5)
GSB	37.3850	121.7720	06/13/1988	014536.8	7.0	5.40	0.040	V	50.2(80.8)
DMG	37.9000	122.3000	04/02/1870	1948 0.0	0.0	5.30	0.038	V	50.4(81.2)
DMG	37.3700	121.7800	09/05/1955	2 118.0	0.0	5.50	0.042	VI	51.3(82.6)
GSB	38.2152	122.3123	08/24/2014	102044.1	11.1	6.02	0.055	VI	51.3(82.6)
GSB	37.3200	121.6980	04/24/1984	211519.0	8.0	6.20	0.059	VI	52.9(85.1)
DMG	38.2000	122.4000	03/31/1898	743 0.0	0.0	6.20	0.056	VI	55.8(89.7)
DMG	37.3000	121.8000	01/02/1891	20 0 0.0	0.0	5.50	0.039	V	56.2(90.4)
DMG	37.3000	121.8000	08/03/1903	649 0.0	0.0	5.50	0.039	V	56.2(90.4)
DMG	38.3000	122.4000	10/12/1891	628 0.0	0.0	5.50	0.038	V	57.4(92.4)
MGI	37.8000	122.4000	05/15/1851	1610 0.0	0.0	5.00	0.029	V	57.5(92.5)
MGI	37.8000	122.4000	10/05/1859	2016 0.0	0.0	5.00	0.029	V	57.5(92.5)
DMG	37.2500	121.7500	07/01/1911	22 0 0.0	0.0	6.60	0.067	VI	58.4(94.0)
DMG	37.3000	121.9000	10/08/1865	2046 0.0	0.0	6.30	0.057	VI	58.6(94.2)
MGI	37.3000	121.9000	05/28/1927	1739 0.0	0.0	5.00	0.029	V	58.6(94.2)
DMG	37.2000	121.5000	07/06/1899	2010 0.0	0.0	5.80	0.044	VI	58.8(94.6)
GSB	38.3790	122.4130	09/03/2000	083630.1	10.0	5.00	0.028	V	60.0(96.5)

****

-END OF SEARCH- 38 EARTHQUAKES FOUND WITHIN THE SPECIFIED SEARCH AREA.

TIME PERIOD OF SEARCH: 1800 TO 2018

LENGTH OF SEARCH TIME: 219 years

THE EARTHQUAKE CLOSEST TO THE SITE IS ABOUT 27.0 MILES (43.5 km) AWAY.

LARGEST EARTHQUAKE MAGNITUDE FOUND IN THE SEARCH RADIUS: 6.8

LARGEST EARTHQUAKE SITE ACCELERATION FROM THIS SEARCH: 0.091 g

COEFFICIENTS FOR GUTENBERG & RICHTER RECURRENCE RELATION:
  a-value= 0.340
  b-value= 0.248
  beta-value= 0.572

TABLE OF MAGNITUDES AND EXCEEDANCES:

EQSEARCH - NEHRP D

Earthquake Magnitude	Number of Times Exceeded	Cumulative No. / Year
4.0	38	0.17352
4.5	38	0.17352
5.0	38	0.17352
5.5	26	0.11872
6.0	11	0.05023
6.5	3	0.01370

APPENDIX C

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GeoLogismiki
Geotechnical Engineers
Merarhias 56
http://www.geologismiki.gr

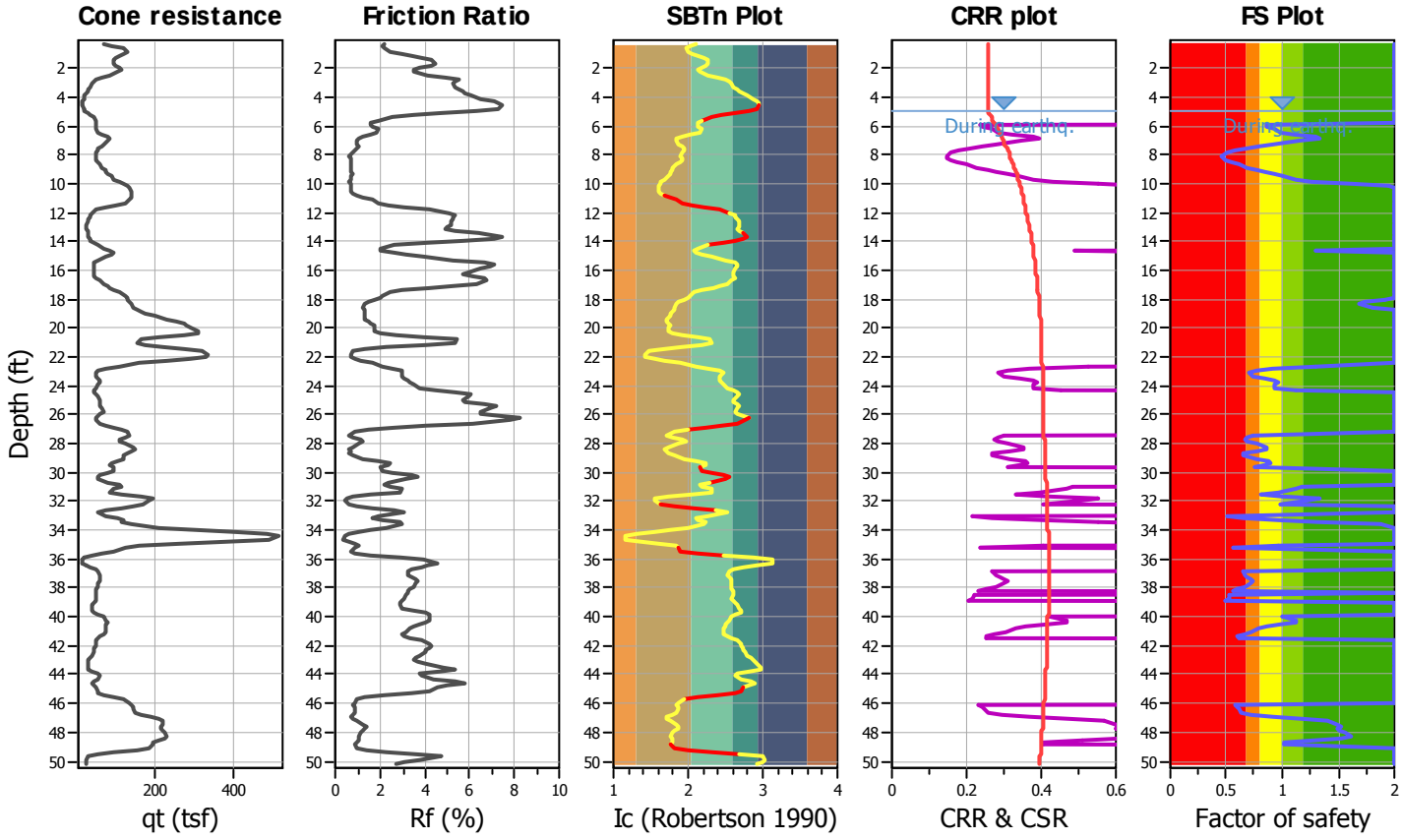
LIQUEFACTION ANALYSIS REPORT

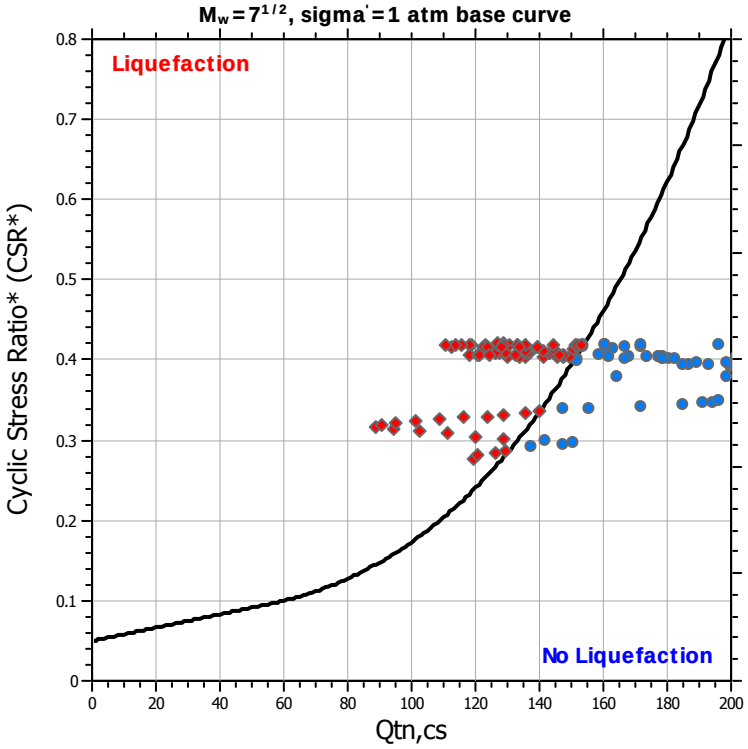
Project title : **Location :**

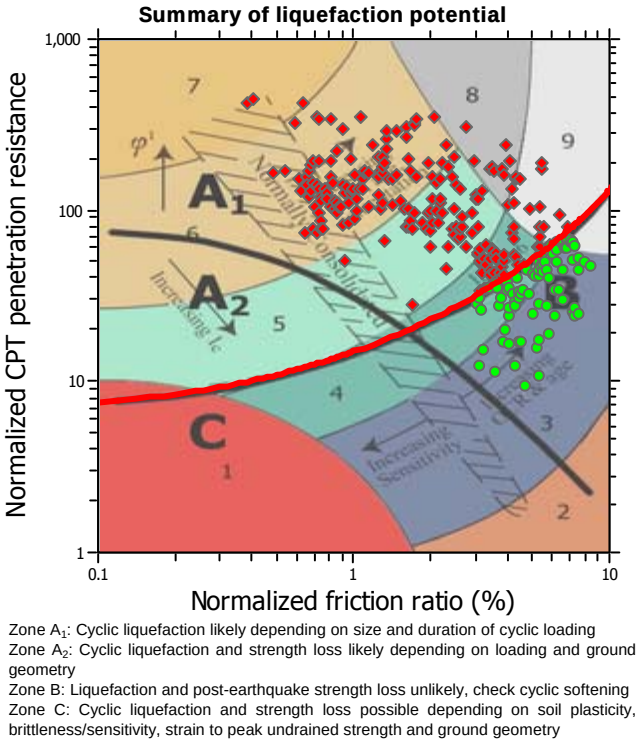
CPT file : CPT-01

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	5.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	5.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.90	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.38	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

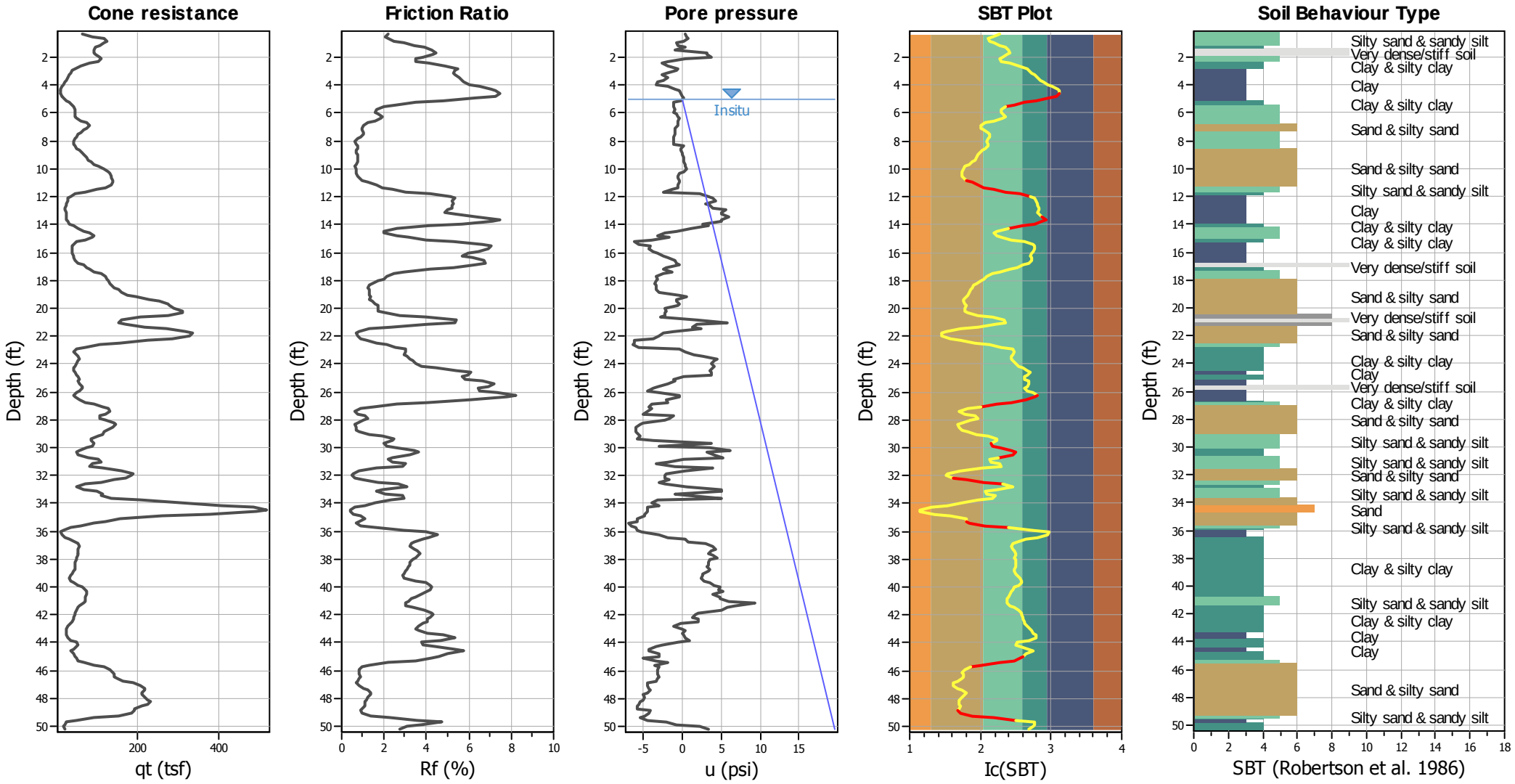






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



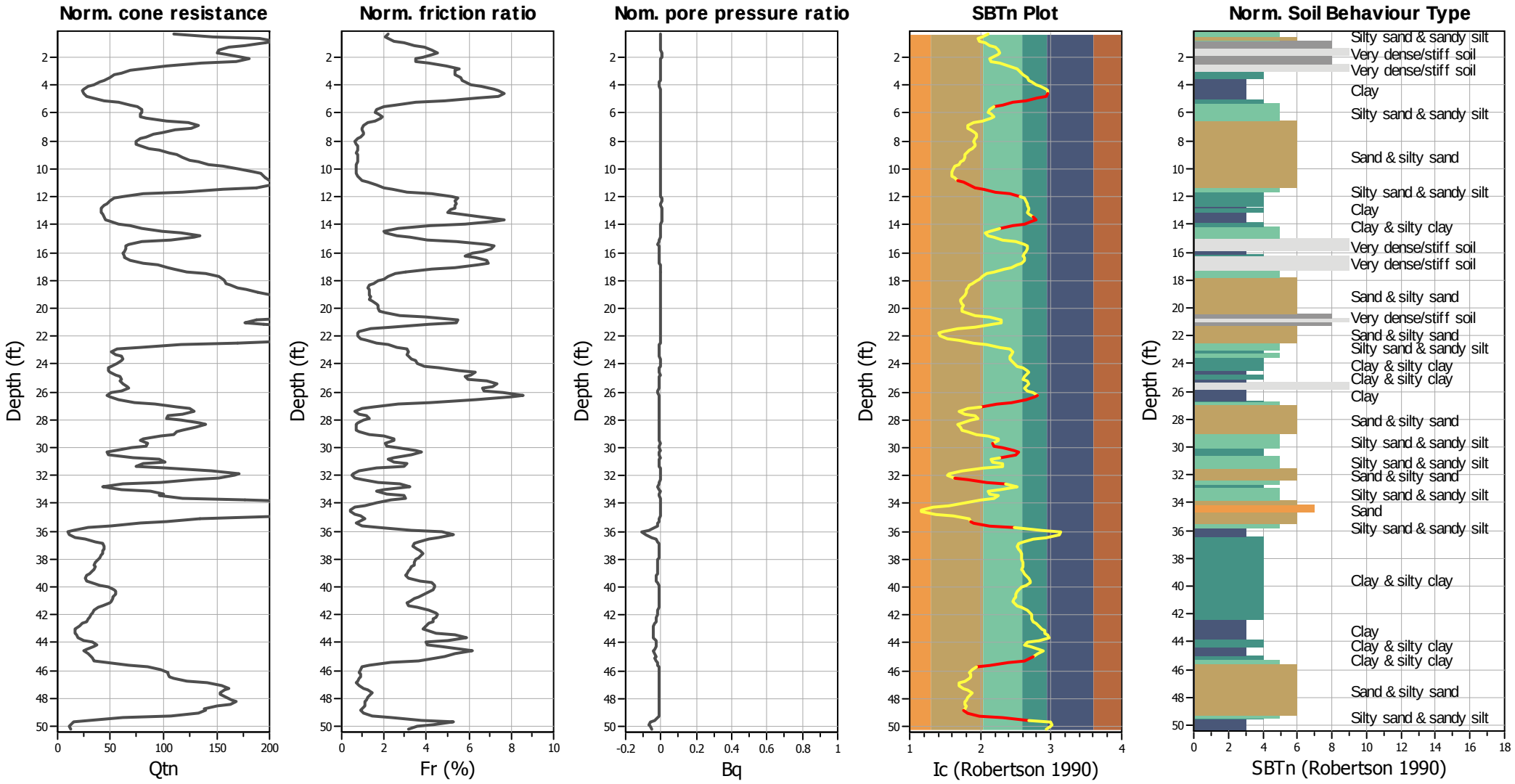
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.90	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.38	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	5.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



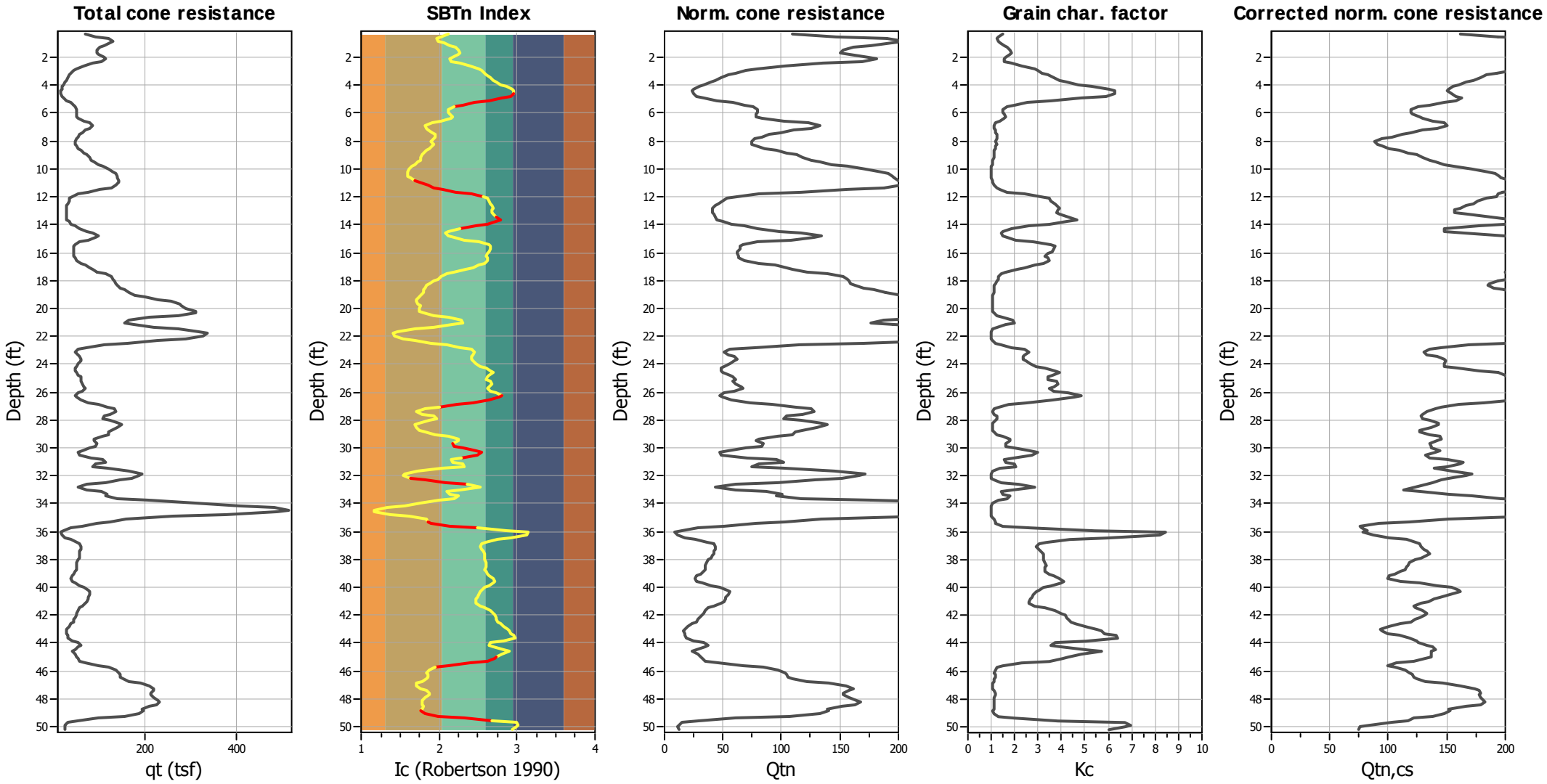
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.90	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.38	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	5.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

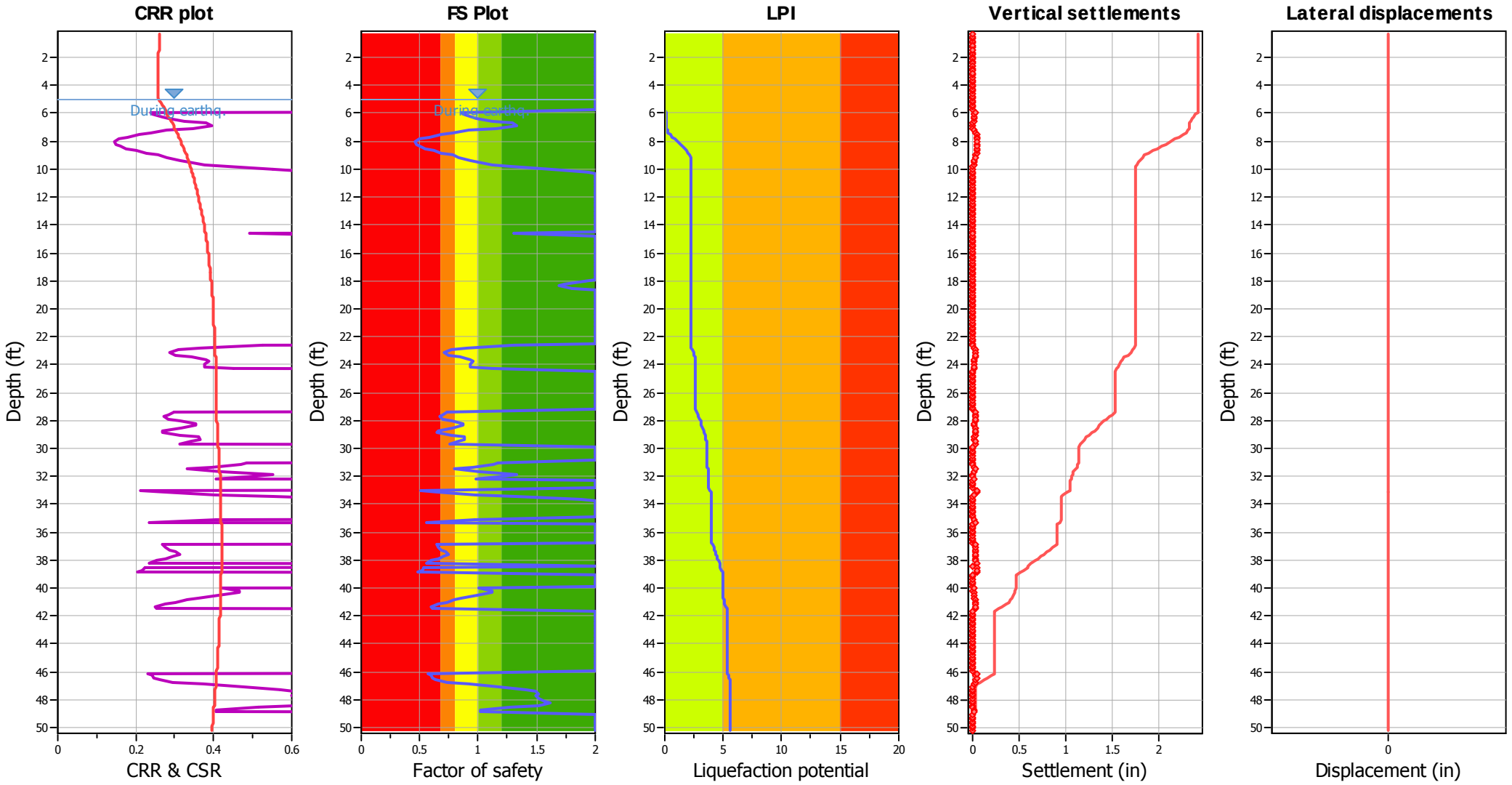
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.90	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.38	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	5.00 ft	Fill height:	N/A	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.90	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.38	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	5.00 ft	Fill height:	N/A	Limit depth:	N/A

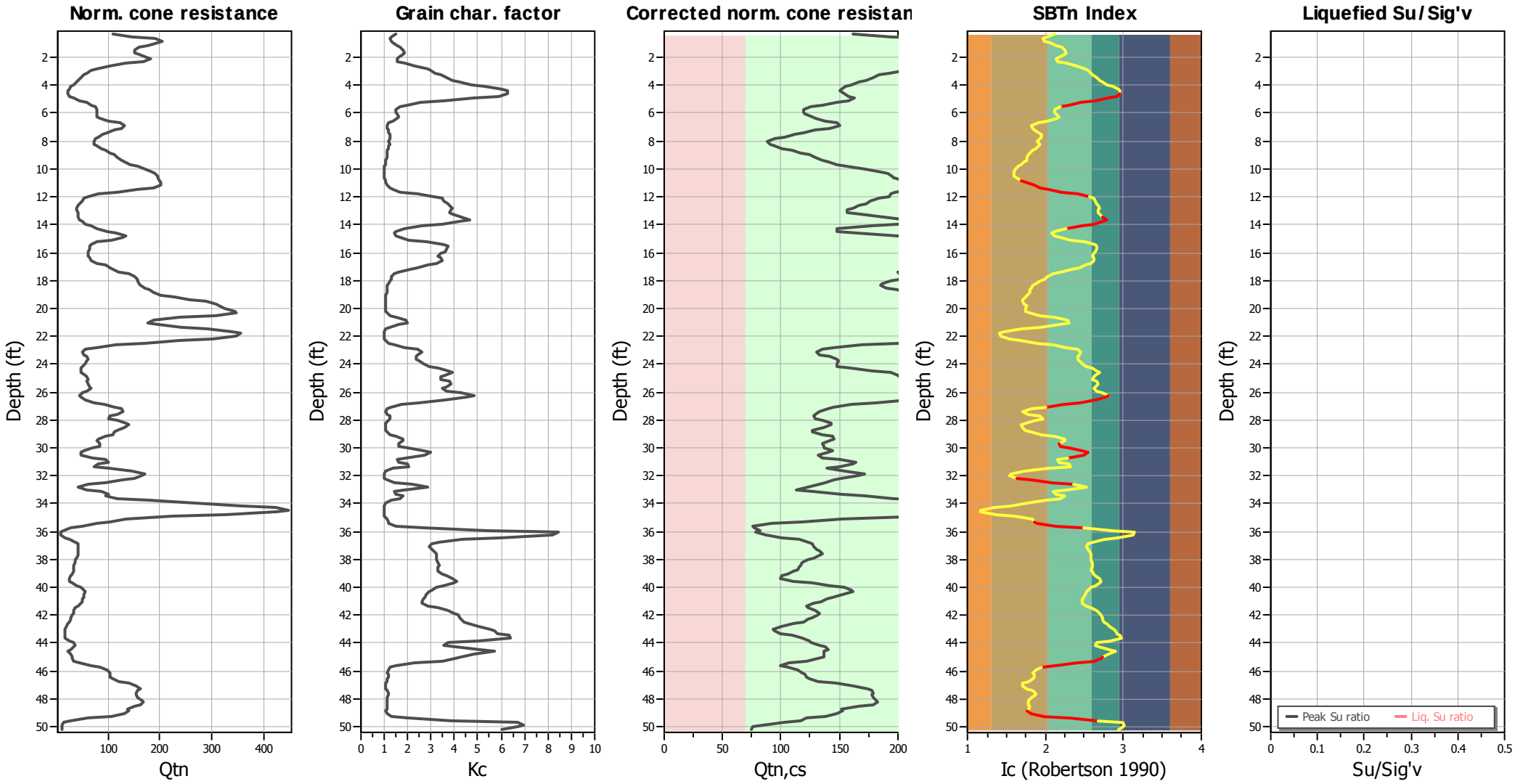
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

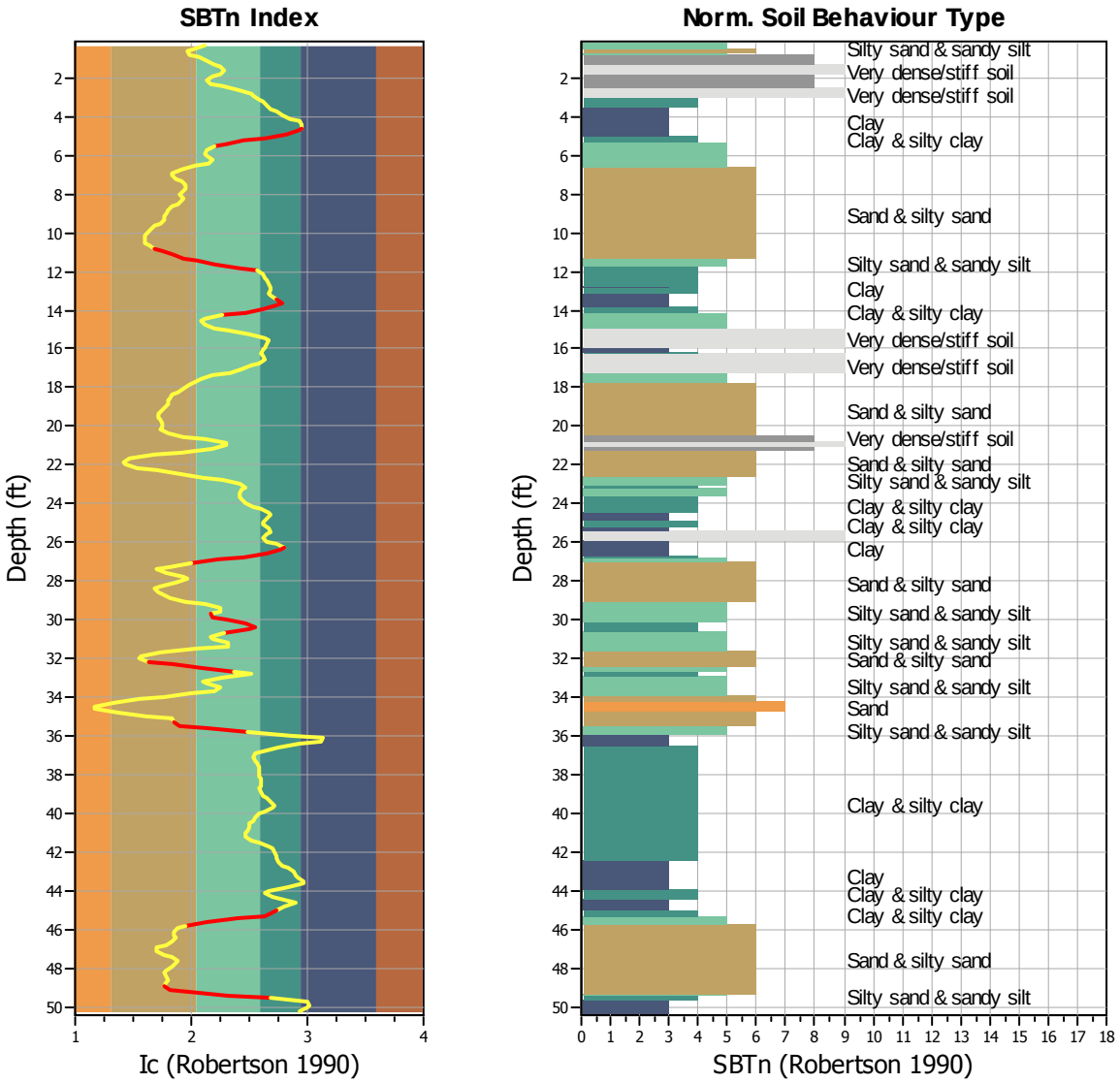
Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.90	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.38	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	5.00 ft	Fill height:	N/A	Limit depth:	N/A

TRANSITION LAYER DETECTION ALGORITHM REPORT
Summary Details & Plots

Short description

The software will delete data when the cone is in transition from either clay to sand or vise-versa. To do this the software requires a range of I_c values over which the transition will be defined (typically somewhere between $1.80 < I_c < 3.0$) and a rate of change of I_c. Transitions typically occur when the rate of change of I_c is fast (i.e. delta I_c is small).

The SBT_n plot below, displays in red the detected transition layers based on the parameters listed below the graphs.



Transition layer algorithm properties	
I_c minimum check value:	1.70
I_c maximum check value:	3.00
I_c change ratio value:	0.0250
Minimum number of points in layer:	4

General statistics	
Total points in CPT file:	305
Total points excluded:	54
Exclusion percentage:	17.70%
Number of layers detected:	10

Transition layer No	Number of points	Depth	SBT_n number	SBT_n description
Transition layer 1	7	Start depth: 4.76 (ft)	3	Clay
		End depth: 5.74 (ft)	5	Silty sand & sandy silt
Transition layer 2	8	Start depth: 10.99 (ft)	6	Sand & silty sand
		End depth: 12.14 (ft)	4	Clay & silty clay
Transition layer 3	6	Start depth: 13.62 (ft)	3	Clay
		End depth: 14.44 (ft)	5	Silty sand & sandy silt
Transition layer 4	6	Start depth: 26.41 (ft)	3	Clay
		End depth: 27.23 (ft)	6	Sand & silty sand
Transition layer 5	4	Start depth: 29.86 (ft)	5	Silty sand & sandy silt
		End depth: 30.35 (ft)	4	Clay & silty clay
Transition layer 6	4	Start depth: 30.35 (ft)	4	Clay & silty clay
		End depth: 30.84 (ft)	5	Silty sand & sandy silt
Transition layer 7	4	Start depth: 32.32 (ft)	6	Sand & silty sand
		End depth: 32.81 (ft)	4	Clay & silty clay
Transition layer 8	4	Start depth: 35.43 (ft)	6	Sand & silty sand
		End depth: 35.93 (ft)	3	Clay
Transition layer 9	6	Start depth: 45.11 (ft)	4	Clay & silty clay
		End depth: 45.93 (ft)	6	Sand & silty sand
Transition layer 10	5	Start depth: 49.05 (ft)	6	Sand & silty sand
		End depth: 49.71 (ft)	3	Clay

Start depth: Depth where the transition layer begins
End depth: Depth where the transition layer ends

:: Field input data ::

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
1	0.33	54.10	1.20	0.30	16.24	123.36
2	0.49	95.40	2.00	0.50	13.44	125.97
3	0.66	123.80	2.50	0.70	12.10	129.00
4	0.82	136.20	3.40	0.10	12.61	130.53
5	0.98	122.90	3.60	-0.70	14.67	131.36
6	1.15	106.10	3.80	-0.60	17.03	131.44
7	1.31	100.70	3.90	0.40	19.23	131.47
8	1.48	94.20	4.00	-0.90	20.86	131.65
9	1.64	90.50	4.30	3.20	21.61	131.84
10	1.80	96.30	4.30	3.10	20.69	132.09
11	1.97	109.10	4.20	3.80	18.36	132.09
12	2.13	119.90	3.90	0.30	17.02	131.82
13	2.30	109.50	3.70	-1.80	17.70	131.20
14	2.46	85.90	3.50	-2.60	21.52	130.18
15	2.62	57.20	3.20	-1.80	26.56	128.77
16	2.79	49.20	2.70	-0.50	31.26	127.15
17	2.95	42.60	2.30	-0.80	32.56	125.55
18	3.12	37.70	1.90	-2.10	34.17	124.21
19	3.28	33.40	1.80	-2.60	35.85	123.16
20	3.45	30.60	1.70	-1.90	38.08	122.50
21	3.61	27.90	1.60	-2.50	40.01	121.65
22	3.77	24.50	1.40	-3.20	42.07	120.74
23	3.94	22.20	1.30	-3.40	45.42	119.67
24	4.10	17.80	1.20	-1.80	49.32	118.73
25	4.27	15.70	1.10	-0.90	53.91	117.95
26	4.43	14.60	1.10	-0.30	55.47	117.60
27	4.59	15.30	1.10	-0.20	55.69	118.09
28	4.76	16.80	1.30	0.00	53.35	118.71
29	4.92	18.80	1.30	0.20	46.58	119.81
30	5.09	27.70	1.40	-0.20	37.18	120.49
31	5.25	37.20	1.30	-1.10	28.65	120.78
32	5.41	44.70	1.10	-1.20	22.76	120.15
33	5.58	47.70	0.90	-1.10	18.89	119.19
34	5.74	50.30	0.80	-1.00	16.59	118.16
35	5.91	50.80	0.70	-1.20	16.41	118.18
36	6.07	49.20	0.90	-0.80	17.08	118.45
37	6.23	48.00	0.90	-0.50	18.41	119.24
38	6.40	49.00	1.00	-0.40	17.24	119.69
39	6.56	60.70	1.00	-0.60	13.88	120.42
40	6.73	82.60	1.00	-0.60	10.59	120.63
41	6.89	88.50	0.90	-0.60	8.75	120.01
42	7.05	79.00	0.70	-0.90	8.76	118.97
43	7.22	68.40	0.70	-1.00	9.57	117.65
44	7.38	61.40	0.60	-0.90	10.93	117.00
45	7.55	56.30	0.60	-1.00	11.61	115.95
46	7.71	51.70	0.50	-1.10	11.55	114.34
47	7.87	48.30	0.30	-1.10	11.04	112.41
48	8.04	46.20	0.30	-1.10	10.41	110.85

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
49	8.20	46.30	0.30	-1.20	11.03	111.62
50	8.37	48.30	0.40	0.20	10.81	112.45
51	8.53	53.90	0.40	-0.10	10.03	113.30
52	8.69	60.00	0.40	-0.10	8.97	114.15
53	8.86	66.90	0.50	0.00	8.14	114.94
54	9.02	72.90	0.50	0.00	7.93	116.10
55	9.19	76.20	0.60	0.10	7.56	116.70
56	9.35	80.70	0.60	0.20	7.45	117.66
57	9.51	87.60	0.70	0.20	6.64	117.85
58	9.68	95.70	0.60	0.30	5.93	118.45
59	9.84	106.60	0.70	0.40	5.10	119.07
60	10.01	120.70	0.80	0.60	4.69	120.30
61	10.17	130.70	0.90	0.20	4.31	121.08
62	10.34	135.60	0.90	-0.30	4.27	121.72
63	10.50	137.00	1.00	-0.50	4.41	122.28
64	10.66	139.30	1.10	-0.50	4.93	123.22
65	10.83	141.00	1.30	-0.40	5.80	124.62
66	10.99	141.50	1.70	-0.30	7.18	126.36
67	11.16	138.80	2.20	-0.50	9.17	128.15
68	11.32	130.50	2.80	-0.60	11.11	128.55
69	11.48	105.00	2.30	-1.30	14.31	128.04
70	11.65	68.80	2.20	-2.40	19.26	126.64
71	11.81	47.10	2.20	2.20	27.22	125.41
72	11.98	37.10	2.00	3.30	33.63	124.29
73	12.14	33.00	1.80	3.90	36.56	123.15
74	12.30	30.60	1.60	4.20	37.06	122.45
75	12.47	31.70	1.60	2.90	38.25	121.83
76	12.63	26.70	1.50	3.50	38.94	121.21
77	12.80	25.90	1.30	3.90	40.00	120.53
78	12.96	26.20	1.30	5.60	39.43	120.15
79	13.12	26.10	1.30	5.10	38.81	120.20
80	13.29	27.40	1.30	5.10	39.95	121.14
81	13.45	28.30	1.80	5.90	42.54	122.71
82	13.62	28.40	2.30	5.10	45.07	123.99
83	13.78	28.80	2.30	5.00	42.30	124.71
84	13.94	38.40	2.20	2.70	36.42	124.49
85	14.11	42.80	1.80	3.30	29.06	124.14
86	14.27	54.40	1.60	1.20	21.49	122.68
87	14.44	67.70	0.90	-0.80	16.48	123.11
88	14.60	89.40	1.70	-2.30	15.08	124.97
89	14.76	96.40	2.50	-3.10	16.37	128.12
90	14.93	104.00	3.30	-1.70	18.88	129.09
91	15.09	75.30	2.90	-4.00	23.38	128.86
92	15.26	47.70	2.80	-6.20	30.80	127.83
93	15.42	41.60	3.00	-5.60	36.94	127.59
94	15.58	45.80	3.20	-4.10	38.30	127.77
95	15.75	44.50	3.10	-4.20	38.07	127.61
96	15.91	41.50	2.80	-3.80	37.28	126.99

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
97	16.08	44.00	2.50	-3.10	36.13	126.46
98	16.24	44.80	2.50	-2.50	35.20	126.32
99	16.40	44.30	2.60	-1.80	36.18	127.01
100	16.57	46.20	3.20	-0.90	36.74	128.31
101	16.73	54.40	3.90	-0.70	34.68	130.12
102	16.90	72.40	4.60	-0.40	31.48	131.39
103	17.06	80.90	4.60	-2.00	27.61	131.15
104	17.23	79.20	3.00	-2.40	24.00	130.22
105	17.39	89.60	2.90	-1.30	18.66	129.01
106	17.55	118.10	2.60	-2.40	15.56	129.22
107	17.72	127.60	2.80	-3.30	13.44	129.21
108	17.88	127.50	2.60	-3.20	12.60	129.02
109	18.05	131.10	2.30	-3.30	11.33	128.15
110	18.21	134.90	1.90	-3.50	9.92	127.17
111	18.37	137.60	1.70	-3.40	8.86	126.61
112	18.54	145.40	1.80	-3.40	8.40	126.86
113	18.70	154.70	2.00	-3.30	8.29	127.63
114	18.87	162.60	2.20	-2.90	8.00	128.25
115	19.03	173.40	2.20	-0.40	7.53	128.99
116	19.19	195.10	2.50	0.50	7.17	130.35
117	19.36	225.30	3.30	-0.80	6.33	131.64
118	19.52	266.10	3.30	-0.80	6.42	133.43
119	19.69	276.10	4.60	-0.30	6.73	134.81
120	19.85	281.10	5.30	-0.60	7.20	135.48
121	20.01	277.20	4.50	-2.20	6.97	135.83
122	20.18	311.50	5.10	-2.00	6.82	136.60
123	20.34	339.80	6.60	-2.20	7.98	137.28
124	20.51	285.00	7.50	-2.30	11.11	137.28
125	20.67	195.90	8.40	-2.80	16.49	137.28
126	20.83	145.40	8.80	1.80	22.27	137.28
127	21.00	147.20	9.20	5.80	22.68	137.28
128	21.16	168.70	6.70	1.80	18.34	137.11
129	21.33	202.40	5.20	1.40	10.99	135.23
130	21.49	284.30	3.20	2.40	5.78	133.39
131	21.65	330.60	2.50	-1.20	2.47	131.32
132	21.82	341.10	2.10	-2.50	1.73	130.86
133	21.98	333.50	2.60	-2.90	1.86	130.70
134	22.15	308.40	2.40	-3.70	3.41	131.07
135	22.31	220.50	2.80	-6.20	5.97	130.68
136	22.47	153.50	2.80	-6.10	10.41	129.73
137	22.64	106.30	2.30	-6.30	15.73	127.91
138	22.80	66.90	1.90	-5.60	21.50	125.31
139	22.97	46.30	1.40	-0.40	27.43	123.21
140	23.13	44.20	1.40	0.30	29.01	122.32
141	23.30	51.80	1.50	1.50	27.70	123.02
142	23.46	58.80	1.70	2.70	26.89	124.14
143	23.62	59.30	2.00	4.40	27.02	124.92
144	23.79	59.10	2.00	4.10	28.09	124.97

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
145	23.95	53.50	1.80	3.80	29.54	124.55
146	24.12	47.80	1.80	4.10	32.03	124.18
147	24.28	44.40	1.90	3.90	35.17	124.95
148	24.44	47.10	2.50	3.60	38.30	126.33
149	24.61	47.50	3.10	3.70	39.78	127.60
150	24.77	49.90	3.20	3.70	37.66	128.51
151	24.94	64.50	3.30	0.10	36.04	128.82
152	25.10	58.50	3.30	-1.20	35.91	129.35
153	25.26	56.70	3.80	-1.00	38.74	130.07
154	25.43	59.20	4.50	-1.90	39.38	131.08
155	25.59	67.10	4.80	-3.20	37.80	131.60
156	25.76	71.20	4.40	-3.70	36.41	131.26
157	25.92	62.90	3.80	-4.40	38.09	130.37
158	26.08	48.20	3.70	-3.00	42.60	129.75
159	26.25	45.50	4.00	-0.40	46.33	129.72
160	26.41	49.50	4.10	-0.40	44.34	129.86
161	26.58	56.70	3.70	-2.10	37.63	129.67
162	26.74	72.00	3.10	-1.90	28.15	129.02
163	26.90	97.80	2.40	-3.90	19.96	128.11
164	27.07	118.00	2.00	-4.20	12.93	126.04
165	27.23	134.60	0.90	-3.90	8.43	123.50
166	27.40	141.20	0.70	-4.40	6.11	120.90
167	27.56	128.90	0.90	-5.10	7.92	121.78
168	27.72	102.60	1.30	-1.20	11.16	123.28
169	27.89	100.20	1.50	-1.60	12.27	123.98
170	28.05	122.20	1.30	-2.20	9.65	123.76
171	28.22	150.20	1.00	-5.10	6.92	123.08
172	28.38	157.40	1.00	-5.50	5.80	122.23
173	28.54	139.50	0.90	-5.90	6.37	121.82
174	28.71	122.70	0.90	-6.00	6.96	120.75
175	28.87	119.20	0.70	-5.90	8.63	121.97
176	29.04	121.30	1.40	-5.60	11.74	124.88
177	29.20	114.50	2.40	-5.50	16.36	126.83
178	29.36	81.20	2.30	-5.70	20.70	126.86
179	29.53	70.10	1.80	-3.70	20.67	126.47
180	29.69	109.10	2.10	3.70	17.99	125.91
181	29.86	102.10	1.70	-3.00	18.70	126.13
182	30.02	65.80	2.00	3.60	22.72	125.84
183	30.19	65.50	2.20	6.10	29.55	125.75
184	30.35	53.60	2.10	3.20	32.62	124.94
185	30.51	42.20	1.60	4.10	30.43	124.22
186	30.68	69.70	1.60	5.30	21.89	125.80
187	30.84	129.70	2.60	0.20	17.68	127.88
188	31.01	123.40	2.80	-1.90	18.20	129.28
189	31.17	90.80	2.90	-3.40	23.02	128.75
190	31.33	62.80	2.60	-0.90	23.43	127.62
191	31.50	102.00	1.80	3.90	14.36	126.42
192	31.66	181.30	1.20	0.40	6.79	124.80

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
193	31.83	204.80	1.00	-2.10	3.75	123.34
194	31.99	190.50	0.90	-2.20	3.46	122.26
195	32.15	165.80	0.80	-2.20	4.93	123.06
196	32.32	157.50	1.40	-1.70	8.68	125.07
197	32.48	116.00	2.10	-2.90	15.18	126.48
198	32.65	63.40	2.20	-2.20	24.91	125.55
199	32.81	38.70	1.50	0.60	31.57	123.35
200	32.97	54.30	1.10	5.10	21.40	123.18
201	33.14	124.10	1.60	5.10	15.81	125.30
202	33.30	129.30	2.30	-1.00	16.74	128.41
203	33.47	100.20	3.40	0.90	20.70	130.48
204	33.63	111.80	4.10	5.10	19.06	132.69
205	33.79	205.80	4.90	-3.10	13.03	134.71
206	33.96	303.70	5.30	-4.00	7.53	135.91
207	34.12	410.20	4.60	-2.90	3.60	135.66
208	34.29	507.50	3.10	-4.50	0.69	133.55
209	34.45	536.60	1.50	-4.40	0.00	130.81
210	34.61	501.40	1.60	-4.40	0.00	129.95
211	34.78	432.10	2.50	-4.90	1.22	130.52
212	34.94	201.80	2.50	-4.90	4.53	129.72
213	35.11	148.10	1.70	-5.70	8.95	126.52
214	35.27	128.40	0.90	-5.70	9.36	122.26
215	35.43	94.80	0.50	-6.90	10.40	118.02
216	35.60	60.10	0.50	-6.50	16.66	116.23
217	35.76	35.40	0.70	-5.90	30.01	115.37
218	35.93	17.20	0.60	-5.80	50.24	114.43
219	36.09	12.70	0.60	-5.20	68.32	112.60
220	36.26	13.10	0.50	-2.90	67.05	114.78
221	36.42	22.70	1.10	-1.90	53.77	118.04
222	36.58	36.70	1.40	0.40	43.07	121.50
223	36.75	49.70	1.70	0.70	35.81	123.48
224	36.91	59.20	1.90	3.00	32.83	124.52
225	37.08	58.60	1.90	3.90	32.00	124.89
226	37.24	57.50	1.90	4.20	32.82	125.12
227	37.40	57.60	2.10	3.70	33.80	125.33
228	37.57	56.20	2.10	3.40	34.48	125.56
229	37.73	56.70	2.10	3.90	34.52	125.28
230	37.90	55.10	1.90	4.50	34.37	124.73
231	38.06	52.00	1.70	3.50	34.77	123.92
232	38.22	48.20	1.60	3.30	35.18	123.22
233	38.39	47.90	1.50	3.40	35.61	123.02
234	38.55	48.90	1.60	3.20	35.09	122.88
235	38.72	49.40	1.50	3.50	34.89	122.71
236	38.88	47.60	1.40	3.30	35.10	122.12
237	39.04	43.80	1.30	2.70	36.33	121.20
238	39.21	38.60	1.10	2.60	37.79	120.16
239	39.37	36.50	1.00	2.40	39.75	119.78
240	39.54	36.10	1.20	2.80	41.20	121.51

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
241	39.70	44.90	1.90	3.60	40.37	124.04
242	39.86	56.40	2.40	4.10	37.22	126.42
243	40.03	68.60	2.80	4.80	34.73	128.14
244	40.19	75.40	3.30	4.60	32.88	129.15
245	40.36	79.80	3.30	5.30	31.85	129.33
246	40.52	78.00	2.90	4.00	30.97	128.65
247	40.68	72.50	2.50	4.80	30.46	127.77
248	40.85	71.90	2.40	4.90	29.81	127.26
249	41.01	76.20	2.40	6.00	29.24	126.71
250	41.18	69.60	2.00	9.30	29.43	125.92
251	41.34	61.50	1.80	6.80	31.58	124.88
252	41.50	53.00	1.80	5.70	34.94	124.63
253	41.67	51.20	2.00	5.10	38.45	124.96
254	41.83	50.20	2.20	2.00	40.47	125.23
255	42.00	48.00	2.10	1.60	41.54	125.03
256	42.16	46.10	1.90	1.30	42.12	124.43
257	42.32	43.90	1.80	2.10	42.35	123.82
258	42.49	43.00	1.70	2.10	43.52	123.27
259	42.65	39.00	1.60	-0.20	44.87	121.76
260	42.82	31.00	1.00	-1.10	47.69	119.87
261	42.98	26.70	0.90	0.00	50.76	118.13
262	43.15	25.70	1.00	0.30	52.18	118.34
263	43.31	29.60	1.10	0.00	53.04	119.34
264	43.47	29.50	1.30	0.20	55.89	120.95
265	43.64	28.00	1.80	0.30	56.32	122.39
266	43.80	35.60	1.90	0.90	47.67	123.83
267	43.97	56.20	1.90	-0.60	38.59	124.86
268	44.13	64.50	2.10	-2.60	36.97	126.05
269	44.29	53.40	2.70	-3.30	40.59	126.30
270	44.46	43.70	2.30	-4.30	47.93	125.95
271	44.62	37.50	2.20	-4.20	51.96	125.36
272	44.79	38.90	2.40	-3.00	46.21	125.70
273	44.95	61.80	2.30	-2.90	42.68	126.05
274	45.11	52.00	2.30	-5.00	40.83	125.68
275	45.28	42.70	2.00	-3.40	36.69	124.74
276	45.44	70.10	1.40	-1.90	26.50	123.75
277	45.61	96.00	1.20	-3.60	16.58	122.93
278	45.77	121.30	1.10	-2.90	11.72	122.61
279	45.93	137.80	1.00	-3.10	9.90	123.14
280	46.10	143.80	1.30	-3.20	9.07	123.27
281	46.26	144.40	1.10	-3.10	9.40	123.93
282	46.43	144.40	1.30	-2.90	9.50	124.14
283	46.59	146.60	1.40	-3.20	8.90	124.24
284	46.75	162.70	1.10	-3.30	7.64	124.46
285	46.92	187.00	1.30	-4.40	6.19	125.17
286	47.08	218.50	1.60	-4.40	6.20	127.04
287	47.25	222.60	2.10	-4.20	7.29	129.19
288	47.41	217.80	2.90	-4.10	8.78	130.57

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
289	47.57	211.50	3.00	-4.40	9.86	131.31
290	47.74	211.40	3.00	-5.10	9.61	131.06
291	47.90	217.80	2.60	-4.90	8.75	130.69
292	48.07	230.30	2.50	-5.10	7.94	130.40
293	48.23	233.40	2.60	-5.50	7.59	130.35
294	48.39	231.20	2.50	-5.60	7.77	130.10
295	48.56	212.90	2.30	-5.70	8.10	129.19
296	48.72	186.70	1.90	-5.80	7.85	127.41
297	48.89	180.30	1.20	-4.10	7.49	127.16
298	49.05	218.80	2.10	-4.30	8.50	127.46
299	49.22	160.80	2.20	-4.80	12.71	128.24
300	49.38	87.40	2.20	-5.40	23.04	127.06
301	49.54	40.30	2.10	-4.50	39.61	124.49
302	49.71	29.20	1.30	-2.10	58.26	121.00
303	49.87	19.50	0.80	-0.80	59.83	117.26
304	50.04	23.60	0.60	2.30	58.38	115.27
305	50.20	24.80	0.70	3.40	54.07	115.10

Abbreviations

Depth: Depth from free surface, at which CPT was performed (ft)
q_c: Measured cone resistance (tsf)
f_s: Sleeve friction resistance (tsf)
u: Pore pressure (tsf)
Fines content: Percentage of fines in soil (%)
Unit weight: Bulk soil unit weight (pcf)

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data ::

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR_{eq}	K_σ	User FS	CSR^*	Belongs to transition
1	0.33	0.02	0.00	0.02	1.00	0.247	1.24	0.200	1.00	1.30	2.000	No
2	0.49	0.03	0.00	0.03	1.00	0.247	1.24	0.200	1.00	1.30	2.000	No
3	0.66	0.04	0.00	0.04	1.00	0.247	1.24	0.200	1.00	1.30	2.000	No
4	0.82	0.05	0.00	0.05	1.00	0.247	1.24	0.200	1.00	1.30	2.000	No
5	0.98	0.06	0.00	0.06	1.00	0.247	1.24	0.200	1.00	1.30	2.000	No
6	1.15	0.07	0.00	0.07	1.00	0.247	1.24	0.199	1.00	1.30	2.000	No
7	1.31	0.08	0.00	0.08	1.00	0.247	1.24	0.199	1.00	1.30	2.000	No
8	1.48	0.10	0.00	0.10	1.00	0.247	1.24	0.199	1.00	1.30	2.000	No
9	1.64	0.11	0.00	0.11	1.00	0.247	1.24	0.199	1.00	1.30	2.000	No
10	1.80	0.12	0.00	0.12	1.00	0.246	1.24	0.199	1.00	1.30	2.000	No
11	1.97	0.13	0.00	0.13	1.00	0.246	1.24	0.199	1.00	1.30	2.000	No
12	2.13	0.14	0.00	0.14	1.00	0.246	1.24	0.199	1.00	1.30	2.000	No
13	2.30	0.15	0.00	0.15	1.00	0.246	1.24	0.199	1.00	1.30	2.000	No
14	2.46	0.16	0.00	0.16	1.00	0.246	1.24	0.199	1.00	1.30	2.000	No
15	2.62	0.17	0.00	0.17	1.00	0.246	1.24	0.199	1.00	1.30	2.000	No
16	2.79	0.18	0.00	0.18	1.00	0.246	1.24	0.199	1.00	1.30	2.000	No
17	2.95	0.19	0.00	0.19	1.00	0.246	1.24	0.199	1.00	1.30	2.000	No
18	3.12	0.20	0.00	0.20	0.99	0.246	1.24	0.199	1.00	1.30	2.000	No
19	3.28	0.21	0.00	0.21	0.99	0.246	1.24	0.198	1.00	1.30	2.000	No
20	3.45	0.22	0.00	0.22	0.99	0.245	1.24	0.198	1.00	1.30	2.000	No
21	3.61	0.23	0.00	0.23	0.99	0.245	1.24	0.198	1.00	1.30	2.000	No
22	3.77	0.24	0.00	0.24	0.99	0.245	1.24	0.198	1.00	1.30	2.000	No
23	3.94	0.25	0.00	0.25	0.99	0.245	1.24	0.198	1.00	1.30	2.000	No
24	4.10	0.26	0.00	0.26	0.99	0.245	1.24	0.198	1.00	1.30	2.000	No
25	4.27	0.27	0.00	0.27	0.99	0.245	1.24	0.198	1.00	1.30	2.000	No
26	4.43	0.28	0.00	0.28	0.99	0.245	1.24	0.198	1.00	1.30	2.000	No
27	4.59	0.29	0.00	0.29	0.99	0.245	1.24	0.198	1.00	1.30	2.000	No
28	4.76	0.30	0.00	0.30	0.99	0.245	1.24	0.198	1.00	1.30	2.000	Yes
29	4.92	0.31	0.00	0.31	0.99	0.245	1.24	0.198	1.00	1.30	2.000	Yes
30	5.09	0.32	0.00	0.32	0.99	0.247	1.24	0.199	1.00	1.30	2.000	Yes
31	5.25	0.33	0.01	0.32	0.99	0.250	1.24	0.202	1.00	1.30	2.000	Yes
32	5.41	0.34	0.01	0.33	0.99	0.254	1.24	0.205	1.00	1.30	2.000	Yes
33	5.58	0.35	0.02	0.33	0.99	0.258	1.24	0.208	1.00	1.30	2.000	Yes
34	5.74	0.36	0.02	0.34	0.99	0.261	1.24	0.211	1.00	1.30	2.000	Yes
35	5.91	0.37	0.03	0.34	0.99	0.264	1.24	0.214	1.00	1.30	0.278	No
36	6.07	0.38	0.03	0.34	0.99	0.268	1.24	0.216	1.00	1.30	0.281	No
37	6.23	0.39	0.04	0.35	0.99	0.271	1.24	0.219	1.00	1.30	0.284	No
38	6.40	0.40	0.04	0.35	0.99	0.274	1.24	0.221	1.00	1.30	0.288	No
39	6.56	0.41	0.05	0.36	0.99	0.277	1.24	0.224	1.00	1.30	0.291	No
40	6.73	0.42	0.05	0.36	0.99	0.280	1.24	0.226	1.00	1.30	0.294	No
41	6.89	0.43	0.06	0.37	0.99	0.283	1.24	0.228	1.00	1.30	0.297	No
42	7.05	0.44	0.06	0.37	0.99	0.285	1.24	0.230	1.00	1.30	0.300	No
43	7.22	0.45	0.07	0.38	0.99	0.288	1.24	0.233	1.00	1.30	0.303	No
44	7.38	0.46	0.07	0.38	0.98	0.291	1.24	0.235	1.00	1.30	0.305	No
45	7.55	0.47	0.08	0.39	0.98	0.293	1.24	0.237	1.00	1.30	0.308	No
46	7.71	0.47	0.08	0.39	0.98	0.296	1.24	0.239	1.00	1.30	0.311	No
47	7.87	0.48	0.09	0.39	0.98	0.298	1.24	0.241	1.00	1.30	0.313	No
48	8.04	0.49	0.09	0.40	0.98	0.301	1.24	0.243	1.00	1.30	0.316	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR_{eq}	K_σ	User FS	CSR^*	Belongs to transition
49	8.20	0.50	0.10	0.40	0.98	0.303	1.24	0.245	1.00	1.30	0.318	No
50	8.37	0.51	0.11	0.41	0.98	0.305	1.24	0.247	1.00	1.30	0.321	No
51	8.53	0.52	0.11	0.41	0.98	0.308	1.24	0.249	1.00	1.30	0.323	No
52	8.69	0.53	0.12	0.41	0.98	0.310	1.24	0.250	1.00	1.30	0.325	No
53	8.86	0.54	0.12	0.42	0.98	0.312	1.24	0.252	1.00	1.30	0.328	No
54	9.02	0.55	0.13	0.42	0.98	0.314	1.24	0.254	1.00	1.30	0.330	No
55	9.19	0.56	0.13	0.43	0.98	0.316	1.24	0.256	1.00	1.30	0.332	No
56	9.35	0.57	0.14	0.43	0.98	0.318	1.24	0.257	1.00	1.30	0.334	No
57	9.51	0.58	0.14	0.44	0.98	0.320	1.24	0.259	1.00	1.30	0.336	No
58	9.68	0.59	0.15	0.44	0.98	0.322	1.24	0.260	1.00	1.30	0.338	No
59	9.84	0.60	0.15	0.45	0.98	0.324	1.24	0.262	1.00	1.30	0.340	No
60	10.01	0.61	0.16	0.45	0.98	0.326	1.24	0.263	1.00	1.30	0.342	No
61	10.17	0.62	0.16	0.46	0.98	0.327	1.24	0.264	1.00	1.30	0.344	No
62	10.34	0.63	0.17	0.46	0.98	0.329	1.24	0.266	1.00	1.30	0.346	No
63	10.50	0.64	0.17	0.47	0.98	0.331	1.24	0.267	1.00	1.30	0.347	No
64	10.66	0.65	0.18	0.47	0.98	0.332	1.24	0.268	1.00	1.30	0.349	No
65	10.83	0.66	0.18	0.48	0.98	0.334	1.24	0.270	1.00	1.30	0.350	No
66	10.99	0.67	0.19	0.48	0.98	0.335	1.24	0.271	1.00	1.30	2.000	Yes
67	11.16	0.68	0.19	0.49	0.98	0.336	1.24	0.272	1.00	1.30	2.000	Yes
68	11.32	0.69	0.20	0.49	0.98	0.338	1.24	0.273	1.00	1.30	2.000	Yes
69	11.48	0.70	0.20	0.50	0.98	0.339	1.24	0.274	1.00	1.30	2.000	Yes
70	11.65	0.71	0.21	0.50	0.98	0.340	1.24	0.275	1.00	1.30	2.000	Yes
71	11.81	0.72	0.21	0.51	0.98	0.342	1.24	0.276	1.00	1.30	2.000	Yes
72	11.98	0.73	0.22	0.51	0.97	0.343	1.24	0.277	1.00	1.30	2.000	Yes
73	12.14	0.74	0.22	0.52	0.97	0.344	1.24	0.278	1.00	1.30	2.000	Yes
74	12.30	0.75	0.23	0.52	0.97	0.345	1.24	0.279	1.00	1.30	0.363	No
75	12.47	0.76	0.23	0.53	0.97	0.347	1.24	0.280	1.00	1.30	0.364	No
76	12.63	0.77	0.24	0.53	0.97	0.348	1.24	0.281	1.00	1.30	0.366	No
77	12.80	0.78	0.24	0.54	0.97	0.349	1.24	0.282	1.00	1.30	0.367	No
78	12.96	0.79	0.25	0.54	0.97	0.350	1.24	0.283	1.00	1.30	0.368	No
79	13.12	0.80	0.25	0.55	0.97	0.352	1.24	0.284	1.00	1.30	0.369	No
80	13.29	0.81	0.26	0.55	0.97	0.353	1.24	0.285	1.00	1.30	0.371	No
81	13.45	0.82	0.26	0.56	0.97	0.354	1.24	0.286	1.00	1.30	0.372	No
82	13.62	0.83	0.27	0.56	0.97	0.355	1.24	0.287	1.00	1.30	2.000	Yes
83	13.78	0.84	0.27	0.57	0.97	0.356	1.24	0.288	1.00	1.30	2.000	Yes
84	13.94	0.85	0.28	0.57	0.97	0.357	1.24	0.288	1.00	1.30	2.000	Yes
85	14.11	0.86	0.28	0.58	0.97	0.358	1.24	0.289	1.00	1.30	2.000	Yes
86	14.27	0.87	0.29	0.58	0.97	0.359	1.24	0.290	1.00	1.30	2.000	Yes
87	14.44	0.88	0.29	0.59	0.97	0.360	1.24	0.291	1.00	1.30	2.000	Yes
88	14.60	0.89	0.30	0.59	0.97	0.361	1.24	0.291	1.00	1.30	0.379	No
89	14.76	0.90	0.30	0.60	0.97	0.361	1.24	0.292	1.00	1.30	0.380	No
90	14.93	0.91	0.31	0.60	0.97	0.362	1.24	0.293	1.00	1.30	0.381	No
91	15.09	0.92	0.31	0.61	0.97	0.363	1.24	0.293	1.00	1.30	0.381	No
92	15.26	0.93	0.32	0.61	0.97	0.364	1.24	0.294	1.00	1.30	0.382	No
93	15.42	0.94	0.33	0.62	0.97	0.365	1.24	0.295	1.00	1.30	0.383	No
94	15.58	0.95	0.33	0.62	0.97	0.365	1.24	0.295	1.00	1.30	0.384	No
95	15.75	0.97	0.34	0.63	0.97	0.366	1.24	0.296	1.00	1.30	0.385	No
96	15.91	0.98	0.34	0.63	0.97	0.367	1.24	0.296	1.00	1.30	0.385	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR_{eq}	K_σ	User FS	CSR^*	Belongs to transition
97	16.08	0.99	0.35	0.64	0.97	0.367	1.24	0.297	1.00	1.30	0.386	No
98	16.24	1.00	0.35	0.65	0.97	0.368	1.24	0.298	1.00	1.30	0.387	No
99	16.40	1.01	0.36	0.65	0.97	0.369	1.24	0.298	1.00	1.30	0.387	No
100	16.57	1.02	0.36	0.66	0.97	0.370	1.24	0.299	1.00	1.30	0.388	No
101	16.73	1.03	0.37	0.66	0.96	0.370	1.24	0.299	1.00	1.30	0.389	No
102	16.90	1.04	0.37	0.67	0.96	0.371	1.24	0.300	1.00	1.30	0.389	No
103	17.06	1.05	0.38	0.67	0.96	0.371	1.24	0.300	1.00	1.30	0.390	No
104	17.23	1.06	0.38	0.68	0.96	0.372	1.24	0.300	1.00	1.30	0.391	No
105	17.39	1.07	0.39	0.68	0.96	0.372	1.24	0.301	1.00	1.30	0.391	No
106	17.55	1.08	0.39	0.69	0.96	0.373	1.24	0.301	1.00	1.30	0.392	No
107	17.72	1.09	0.40	0.70	0.96	0.373	1.24	0.302	1.00	1.30	0.392	No
108	17.88	1.10	0.40	0.70	0.96	0.374	1.24	0.302	1.00	1.30	0.393	No
109	18.05	1.11	0.41	0.71	0.96	0.375	1.24	0.303	1.00	1.30	0.393	No
110	18.21	1.12	0.41	0.71	0.96	0.375	1.24	0.303	1.00	1.30	0.394	No
111	18.37	1.13	0.42	0.72	0.96	0.376	1.24	0.303	1.00	1.30	0.395	No
112	18.54	1.14	0.42	0.72	0.96	0.376	1.24	0.304	1.00	1.30	0.395	No
113	18.70	1.15	0.43	0.73	0.96	0.377	1.24	0.304	1.00	1.30	0.396	No
114	18.87	1.17	0.43	0.73	0.96	0.377	1.24	0.305	1.00	1.30	0.396	No
115	19.03	1.18	0.44	0.74	0.96	0.378	1.24	0.305	1.00	1.30	0.397	No
116	19.19	1.19	0.44	0.74	0.96	0.378	1.24	0.305	1.00	1.30	0.397	No
117	19.36	1.20	0.45	0.75	0.96	0.378	1.24	0.306	1.00	1.30	0.397	No
118	19.52	1.21	0.45	0.75	0.96	0.379	1.24	0.306	1.00	1.30	0.398	No
119	19.69	1.22	0.46	0.76	0.96	0.379	1.24	0.306	1.00	1.30	0.398	No
120	19.85	1.23	0.46	0.77	0.96	0.379	1.24	0.306	1.00	1.30	0.398	No
121	20.01	1.24	0.47	0.77	0.96	0.380	1.24	0.307	1.00	1.30	0.399	No
122	20.18	1.25	0.47	0.78	0.96	0.380	1.24	0.307	1.00	1.30	0.399	No
123	20.34	1.26	0.48	0.79	0.96	0.380	1.24	0.307	1.00	1.30	0.399	No
124	20.51	1.28	0.48	0.79	0.96	0.380	1.24	0.307	1.00	1.30	0.400	No
125	20.67	1.29	0.49	0.80	0.96	0.381	1.24	0.308	1.00	1.30	0.400	No
126	20.83	1.30	0.49	0.80	0.95	0.381	1.24	0.308	1.00	1.30	0.400	No
127	21.00	1.31	0.50	0.81	0.95	0.381	1.24	0.308	1.00	1.30	0.400	No
128	21.16	1.32	0.50	0.82	0.95	0.381	1.24	0.308	1.00	1.30	0.400	No
129	21.33	1.33	0.51	0.82	0.95	0.381	1.24	0.308	1.00	1.30	0.401	No
130	21.49	1.34	0.51	0.83	0.95	0.382	1.24	0.308	1.00	1.30	0.401	No
131	21.65	1.35	0.52	0.83	0.95	0.382	1.24	0.309	1.00	1.30	0.401	No
132	21.82	1.36	0.52	0.84	0.95	0.382	1.24	0.309	1.00	1.30	0.401	No
133	21.98	1.37	0.53	0.84	0.95	0.382	1.24	0.309	1.00	1.30	0.402	No
134	22.15	1.39	0.54	0.85	0.95	0.383	1.24	0.309	1.00	1.30	0.402	No
135	22.31	1.40	0.54	0.86	0.95	0.383	1.24	0.309	1.00	1.30	0.402	No
136	22.47	1.41	0.55	0.86	0.95	0.383	1.24	0.310	1.00	1.30	0.403	No
137	22.64	1.42	0.55	0.87	0.95	0.383	1.24	0.310	1.00	1.30	0.403	No
138	22.80	1.43	0.56	0.87	0.95	0.384	1.24	0.310	1.00	1.30	0.403	No
139	22.97	1.44	0.56	0.88	0.95	0.384	1.24	0.310	1.00	1.30	0.403	No
140	23.13	1.45	0.57	0.88	0.95	0.384	1.24	0.311	1.00	1.30	0.404	No
141	23.30	1.46	0.57	0.89	0.95	0.385	1.24	0.311	1.00	1.30	0.404	No
142	23.46	1.47	0.58	0.89	0.95	0.385	1.24	0.311	1.00	1.30	0.404	No
143	23.62	1.48	0.58	0.90	0.95	0.385	1.24	0.311	1.00	1.30	0.405	No
144	23.79	1.49	0.59	0.90	0.95	0.385	1.24	0.311	1.00	1.30	0.405	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR_{eq}	K_σ	User FS	CSR^*	Belongs to transition
145	23.95	1.50	0.59	0.91	0.95	0.386	1.24	0.312	1.00	1.30	0.405	No
146	24.12	1.51	0.60	0.91	0.94	0.386	1.24	0.312	1.00	1.30	0.405	No
147	24.28	1.52	0.60	0.92	0.94	0.386	1.24	0.312	1.00	1.30	0.406	No
148	24.44	1.53	0.61	0.92	0.94	0.386	1.24	0.312	1.00	1.30	0.406	No
149	24.61	1.54	0.61	0.93	0.94	0.387	1.24	0.312	1.00	1.30	0.406	No
150	24.77	1.55	0.62	0.93	0.94	0.387	1.24	0.312	1.00	1.30	0.406	No
151	24.94	1.56	0.62	0.94	0.94	0.387	1.24	0.313	1.00	1.30	0.406	No
152	25.10	1.57	0.63	0.94	0.94	0.387	1.24	0.313	1.00	1.30	0.407	No
153	25.26	1.58	0.63	0.95	0.94	0.387	1.24	0.313	1.00	1.30	0.407	No
154	25.43	1.59	0.64	0.96	0.94	0.387	1.24	0.313	1.00	1.30	0.407	No
155	25.59	1.60	0.64	0.96	0.94	0.387	1.24	0.313	1.00	1.30	0.407	No
156	25.76	1.61	0.65	0.97	0.94	0.387	1.24	0.313	1.00	1.30	0.407	No
157	25.92	1.63	0.65	0.97	0.94	0.387	1.24	0.313	1.00	1.30	0.407	No
158	26.08	1.64	0.66	0.98	0.94	0.387	1.24	0.313	1.00	1.30	0.407	No
159	26.25	1.65	0.66	0.98	0.94	0.388	1.24	0.313	1.00	1.30	0.407	No
160	26.41	1.66	0.67	0.99	0.94	0.388	1.24	0.313	1.00	1.30	2.000	Yes
161	26.58	1.67	0.67	0.99	0.94	0.388	1.24	0.313	1.00	1.30	2.000	Yes
162	26.74	1.68	0.68	1.00	0.94	0.388	1.24	0.313	1.00	1.30	2.000	Yes
163	26.90	1.69	0.68	1.01	0.93	0.388	1.24	0.313	1.00	1.30	2.000	Yes
164	27.07	1.70	0.69	1.01	0.93	0.388	1.24	0.313	1.00	1.30	2.000	Yes
165	27.23	1.71	0.69	1.02	0.93	0.388	1.24	0.314	1.00	1.30	2.000	Yes
166	27.40	1.72	0.70	1.02	0.93	0.388	1.24	0.314	1.00	1.30	0.408	No
167	27.56	1.73	0.70	1.03	0.93	0.388	1.24	0.314	1.00	1.30	0.408	No
168	27.72	1.74	0.71	1.03	0.93	0.388	1.24	0.314	1.00	1.30	0.408	No
169	27.89	1.75	0.71	1.04	0.93	0.388	1.24	0.314	1.00	1.30	0.408	No
170	28.05	1.76	0.72	1.04	0.93	0.388	1.24	0.314	1.00	1.30	0.408	No
171	28.22	1.77	0.72	1.05	0.93	0.388	1.24	0.314	1.00	1.30	0.408	No
172	28.38	1.78	0.73	1.05	0.93	0.389	1.24	0.314	1.00	1.30	0.408	No
173	28.54	1.79	0.73	1.05	0.93	0.389	1.24	0.314	1.00	1.30	0.408	No
174	28.71	1.80	0.74	1.06	0.93	0.389	1.24	0.314	1.00	1.30	0.408	No
175	28.87	1.81	0.74	1.06	0.93	0.389	1.24	0.314	1.00	1.30	0.409	No
176	29.04	1.82	0.75	1.07	0.93	0.389	1.24	0.314	1.00	1.30	0.409	No
177	29.20	1.83	0.76	1.08	0.92	0.389	1.24	0.314	1.00	1.30	0.410	No
178	29.36	1.84	0.76	1.08	0.92	0.389	1.24	0.314	1.00	1.30	0.410	No
179	29.53	1.85	0.77	1.09	0.92	0.389	1.24	0.314	0.99	1.30	0.411	No
180	29.69	1.86	0.77	1.09	0.92	0.389	1.24	0.314	0.99	1.30	0.411	No
181	29.86	1.87	0.78	1.10	0.92	0.389	1.24	0.314	0.99	1.30	2.000	Yes
182	30.02	1.88	0.78	1.10	0.92	0.389	1.24	0.314	0.99	1.30	2.000	Yes
183	30.19	1.89	0.79	1.11	0.92	0.388	1.24	0.314	0.99	1.30	2.000	Yes
184	30.35	1.90	0.79	1.11	0.92	0.388	1.24	0.314	0.99	1.30	2.000	Yes
185	30.51	1.91	0.80	1.12	0.92	0.388	1.24	0.314	0.99	1.30	2.000	Yes
186	30.68	1.92	0.80	1.12	0.92	0.388	1.24	0.314	0.99	1.30	2.000	Yes
187	30.84	1.93	0.81	1.13	0.92	0.388	1.24	0.314	0.99	1.30	2.000	Yes
188	31.01	1.94	0.81	1.13	0.92	0.388	1.24	0.314	0.98	1.30	0.414	No
189	31.17	1.95	0.82	1.14	0.91	0.388	1.24	0.313	0.98	1.30	0.414	No
190	31.33	1.97	0.82	1.14	0.91	0.388	1.24	0.313	0.98	1.30	0.415	No
191	31.50	1.98	0.83	1.15	0.91	0.388	1.24	0.313	0.98	1.30	0.415	No
192	31.66	1.99	0.83	1.15	0.91	0.388	1.24	0.313	0.98	1.30	0.415	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR_{eq}	K_σ	User FS	CSR^*	Belongs to transition
193	31.83	2.00	0.84	1.16	0.91	0.387	1.24	0.313	0.98	1.30	0.416	No
194	31.99	2.01	0.84	1.16	0.91	0.387	1.24	0.313	0.98	1.30	0.416	No
195	32.15	2.02	0.85	1.17	0.91	0.387	1.24	0.313	0.98	1.30	0.416	No
196	32.32	2.03	0.85	1.17	0.91	0.387	1.24	0.313	0.98	1.30	2.000	Yes
197	32.48	2.04	0.86	1.18	0.91	0.387	1.24	0.313	0.98	1.30	2.000	Yes
198	32.65	2.05	0.86	1.18	0.91	0.387	1.24	0.312	0.97	1.30	2.000	Yes
199	32.81	2.06	0.87	1.19	0.90	0.387	1.24	0.312	0.97	1.30	2.000	Yes
200	32.97	2.07	0.87	1.19	0.90	0.386	1.24	0.312	0.97	1.30	0.417	No
201	33.14	2.08	0.88	1.20	0.90	0.386	1.24	0.312	0.97	1.30	0.418	No
202	33.30	2.09	0.88	1.20	0.90	0.386	1.24	0.312	0.97	1.30	0.418	No
203	33.47	2.10	0.89	1.21	0.90	0.386	1.24	0.312	0.97	1.30	0.418	No
204	33.63	2.11	0.89	1.22	0.90	0.385	1.24	0.311	0.97	1.30	0.418	No
205	33.79	2.12	0.90	1.22	0.90	0.385	1.24	0.311	0.97	1.30	0.418	No
206	33.96	2.13	0.90	1.23	0.90	0.385	1.24	0.311	0.97	1.30	0.418	No
207	34.12	2.14	0.91	1.23	0.90	0.384	1.24	0.311	0.97	1.30	0.418	No
208	34.29	2.15	0.91	1.24	0.90	0.384	1.24	0.310	0.96	1.30	0.419	No
209	34.45	2.16	0.92	1.25	0.89	0.384	1.24	0.310	0.96	1.30	0.419	No
210	34.61	2.18	0.92	1.25	0.89	0.384	1.24	0.310	0.96	1.30	0.419	No
211	34.78	2.19	0.93	1.26	0.89	0.383	1.24	0.310	0.96	1.30	0.419	No
212	34.94	2.20	0.93	1.26	0.89	0.383	1.24	0.309	0.96	1.30	0.419	No
213	35.11	2.21	0.94	1.27	0.89	0.383	1.24	0.309	0.96	1.30	0.419	No
214	35.27	2.22	0.94	1.27	0.89	0.382	1.24	0.309	0.96	1.30	0.419	No
215	35.43	2.23	0.95	1.28	0.89	0.382	1.24	0.309	0.96	1.30	2.000	Yes
216	35.60	2.24	0.95	1.28	0.89	0.382	1.24	0.309	0.96	1.30	2.000	Yes
217	35.76	2.25	0.96	1.29	0.89	0.382	1.24	0.309	0.96	1.30	2.000	Yes
218	35.93	2.26	0.97	1.29	0.88	0.382	1.24	0.308	0.96	1.30	2.000	Yes
219	36.09	2.26	0.97	1.29	0.88	0.381	1.24	0.308	0.95	1.30	0.420	No
220	36.26	2.27	0.98	1.30	0.88	0.381	1.24	0.308	0.95	1.30	0.420	No
221	36.42	2.28	0.98	1.30	0.88	0.381	1.24	0.308	0.95	1.30	0.420	No
222	36.58	2.29	0.99	1.31	0.88	0.381	1.24	0.308	0.95	1.30	0.420	No
223	36.75	2.30	0.99	1.31	0.88	0.380	1.24	0.307	0.95	1.30	0.420	No
224	36.91	2.31	1.00	1.32	0.88	0.380	1.24	0.307	0.95	1.30	0.420	No
225	37.08	2.32	1.00	1.32	0.88	0.380	1.24	0.307	0.95	1.30	0.420	No
226	37.24	2.33	1.01	1.33	0.87	0.379	1.24	0.307	0.95	1.30	0.420	No
227	37.40	2.34	1.01	1.33	0.87	0.379	1.24	0.306	0.95	1.30	0.420	No
228	37.57	2.36	1.02	1.34	0.87	0.379	1.24	0.306	0.95	1.30	0.420	No
229	37.73	2.37	1.02	1.34	0.87	0.378	1.24	0.306	0.95	1.30	0.420	No
230	37.90	2.38	1.03	1.35	0.87	0.378	1.24	0.305	0.95	1.30	0.420	No
231	38.06	2.39	1.03	1.35	0.87	0.377	1.24	0.305	0.94	1.30	0.420	No
232	38.22	2.40	1.04	1.36	0.87	0.377	1.24	0.305	0.94	1.30	0.420	No
233	38.39	2.41	1.04	1.36	0.86	0.377	1.24	0.304	0.94	1.30	0.420	No
234	38.55	2.42	1.05	1.37	0.86	0.376	1.24	0.304	0.94	1.30	0.419	No
235	38.72	2.43	1.05	1.37	0.86	0.376	1.24	0.304	0.94	1.30	0.419	No
236	38.88	2.44	1.06	1.38	0.86	0.376	1.24	0.303	0.94	1.30	0.419	No
237	39.04	2.45	1.06	1.38	0.86	0.375	1.24	0.303	0.94	1.30	0.419	No
238	39.21	2.46	1.07	1.39	0.86	0.375	1.24	0.303	0.94	1.30	0.419	No
239	39.37	2.47	1.07	1.39	0.86	0.374	1.24	0.303	0.94	1.30	0.419	No
240	39.54	2.48	1.08	1.40	0.86	0.374	1.24	0.302	0.94	1.30	0.419	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR_{eq}	K_σ	User FS	CSR^*	Belongs to transition
241	39.70	2.49	1.08	1.40	0.85	0.374	1.24	0.302	0.94	1.30	0.419	No
242	39.86	2.50	1.09	1.41	0.85	0.373	1.24	0.301	0.94	1.30	0.419	No
243	40.03	2.51	1.09	1.41	0.85	0.373	1.24	0.301	0.94	1.30	0.418	No
244	40.19	2.52	1.10	1.42	0.85	0.372	1.24	0.301	0.93	1.30	0.418	No
245	40.36	2.53	1.10	1.42	0.85	0.372	1.24	0.300	0.93	1.30	0.418	No
246	40.52	2.54	1.11	1.43	0.85	0.371	1.24	0.300	0.93	1.30	0.418	No
247	40.68	2.55	1.11	1.44	0.84	0.371	1.24	0.299	0.93	1.30	0.418	No
248	40.85	2.56	1.12	1.44	0.84	0.370	1.24	0.299	0.93	1.30	0.417	No
249	41.01	2.57	1.12	1.45	0.84	0.370	1.24	0.299	0.93	1.30	0.417	No
250	41.18	2.58	1.13	1.45	0.84	0.369	1.24	0.298	0.93	1.30	0.417	No
251	41.34	2.59	1.13	1.46	0.84	0.369	1.24	0.298	0.93	1.30	0.417	No
252	41.50	2.60	1.14	1.46	0.84	0.368	1.24	0.297	0.93	1.30	0.416	No
253	41.67	2.61	1.14	1.47	0.84	0.368	1.24	0.297	0.93	1.30	0.416	No
254	41.83	2.62	1.15	1.47	0.83	0.367	1.24	0.297	0.93	1.30	0.416	No
255	42.00	2.63	1.15	1.48	0.83	0.366	1.24	0.296	0.93	1.30	0.416	No
256	42.16	2.64	1.16	1.48	0.83	0.366	1.24	0.296	0.93	1.30	0.415	No
257	42.32	2.65	1.16	1.49	0.83	0.365	1.24	0.295	0.92	1.30	0.415	No
258	42.49	2.66	1.17	1.49	0.83	0.365	1.24	0.295	0.92	1.30	0.415	No
259	42.65	2.67	1.17	1.50	0.83	0.364	1.24	0.294	0.92	1.30	0.415	No
260	42.82	2.68	1.18	1.50	0.83	0.364	1.24	0.294	0.92	1.30	0.414	No
261	42.98	2.69	1.18	1.51	0.82	0.363	1.24	0.294	0.92	1.30	0.414	No
262	43.15	2.70	1.19	1.51	0.82	0.363	1.24	0.293	0.92	1.30	0.414	No
263	43.31	2.71	1.20	1.52	0.82	0.362	1.24	0.293	0.92	1.30	0.414	No
264	43.47	2.72	1.20	1.52	0.82	0.362	1.24	0.292	0.92	1.30	0.413	No
265	43.64	2.73	1.21	1.53	0.82	0.361	1.24	0.292	0.92	1.30	0.413	No
266	43.80	2.74	1.21	1.53	0.82	0.361	1.24	0.292	0.92	1.30	0.413	No
267	43.97	2.75	1.22	1.54	0.81	0.360	1.24	0.291	0.92	1.30	0.412	No
268	44.13	2.76	1.22	1.54	0.81	0.360	1.24	0.291	0.92	1.30	0.412	No
269	44.29	2.77	1.23	1.55	0.81	0.359	1.24	0.290	0.92	1.30	0.412	No
270	44.46	2.78	1.23	1.55	0.81	0.358	1.24	0.290	0.92	1.30	0.411	No
271	44.62	2.79	1.24	1.56	0.81	0.358	1.24	0.289	0.92	1.30	0.411	No
272	44.79	2.80	1.24	1.56	0.81	0.357	1.24	0.289	0.91	1.30	0.410	No
273	44.95	2.81	1.25	1.57	0.80	0.357	1.24	0.288	0.91	1.30	0.410	No
274	45.11	2.82	1.25	1.57	0.80	0.356	1.24	0.288	0.91	1.30	2.000	Yes
275	45.28	2.83	1.26	1.58	0.80	0.355	1.24	0.287	0.91	1.30	2.000	Yes
276	45.44	2.84	1.26	1.58	0.80	0.355	1.24	0.287	0.91	1.30	2.000	Yes
277	45.61	2.85	1.27	1.59	0.80	0.354	1.24	0.286	0.91	1.30	2.000	Yes
278	45.77	2.86	1.27	1.59	0.80	0.354	1.24	0.286	0.91	1.30	2.000	Yes
279	45.93	2.87	1.28	1.60	0.79	0.353	1.24	0.285	0.91	1.30	2.000	Yes
280	46.10	2.88	1.28	1.60	0.79	0.352	1.24	0.285	0.91	1.30	0.407	No
281	46.26	2.89	1.29	1.61	0.79	0.352	1.24	0.284	0.91	1.30	0.407	No
282	46.43	2.90	1.29	1.61	0.79	0.351	1.24	0.284	0.91	1.30	0.406	No
283	46.59	2.91	1.30	1.62	0.79	0.351	1.24	0.283	0.91	1.30	0.406	No
284	46.75	2.92	1.30	1.62	0.79	0.350	1.24	0.283	0.91	1.30	0.406	No
285	46.92	2.94	1.31	1.63	0.78	0.349	1.24	0.282	0.91	1.30	0.405	No
286	47.08	2.95	1.31	1.63	0.78	0.349	1.24	0.282	0.91	1.30	0.405	No
287	47.25	2.96	1.32	1.64	0.78	0.348	1.24	0.281	0.90	1.30	0.404	No
288	47.41	2.97	1.32	1.64	0.78	0.347	1.24	0.281	0.90	1.30	0.404	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR_{eq}	K_σ	User FS	CSR^*	Belongs to transition
289	47.57	2.98	1.33	1.65	0.78	0.347	1.24	0.280	0.90	1.30	0.403	No
290	47.74	2.99	1.33	1.65	0.78	0.346	1.24	0.280	0.90	1.30	0.403	No
291	47.90	3.00	1.34	1.66	0.77	0.345	1.24	0.279	0.90	1.30	0.402	No
292	48.07	3.01	1.34	1.67	0.77	0.345	1.24	0.279	0.90	1.30	0.402	No
293	48.23	3.02	1.35	1.67	0.77	0.344	1.24	0.278	0.90	1.30	0.401	No
294	48.39	3.03	1.35	1.68	0.77	0.343	1.24	0.277	0.90	1.30	0.401	No
295	48.56	3.04	1.36	1.68	0.77	0.343	1.24	0.277	0.90	1.30	0.400	No
296	48.72	3.05	1.36	1.69	0.77	0.342	1.24	0.276	0.90	1.30	0.400	No
297	48.89	3.06	1.37	1.69	0.76	0.341	1.24	0.276	0.90	1.30	0.400	No
298	49.05	3.07	1.37	1.70	0.76	0.341	1.24	0.275	0.90	1.30	2.000	Yes
299	49.22	3.08	1.38	1.70	0.76	0.340	1.24	0.275	0.90	1.30	2.000	Yes
300	49.38	3.09	1.38	1.71	0.76	0.339	1.24	0.274	0.90	1.30	2.000	Yes
301	49.54	3.10	1.39	1.71	0.76	0.339	1.24	0.274	0.89	1.30	2.000	Yes
302	49.71	3.11	1.39	1.72	0.76	0.338	1.24	0.273	0.89	1.30	2.000	Yes
303	49.87	3.12	1.40	1.72	0.75	0.338	1.24	0.273	0.89	1.30	0.397	No
304	50.04	3.13	1.41	1.73	0.75	0.337	1.24	0.272	0.89	1.30	0.396	No
305	50.20	3.14	1.41	1.73	0.75	0.336	1.24	0.272	0.89	1.30	0.396	No

Abbreviations

Depth: Depth from free surface, at which CPT was performed (ft)
σ_v: Total overburden pressure at test point (tsf)
u_0: Water pressure at test point (tsf)
σ_v': Effective overburden pressure based on GWT during earthquake (tsf)
r_d: Nonlinear shear mass factor
CSR: Cyclic Stress Ratio
MSF: Magnitude Scaling Factor
CSR_{eq}: CSR adjusted for M=7.5
K_σ: Effective overburden stress factor
CSR^*: CSR fully adjusted

:: Cyclic Resistance Ratio (CRR) calculation data ::

Point ID	Depth (ft)	q_t (tsf)	I_c	Fr (%)	n	Q_{tn}	K_c	$Q_{tn,cs}$	$CRR_{7.5}$	Belongs to trans. layer	Clay-like behaviour	FS
1	0.33	67.87	2.11	2.16	0.68	109.01	1.48	161.44	4.000	No	No	2.00
2	0.49	91.11	2.02	2.09	0.64	146.33	1.32	193.74	4.000	No	No	2.00
3	0.66	118.47	1.97	2.22	0.62	190.28	1.26	239.83	4.000	No	No	2.00
4	0.82	127.63	1.99	2.48	0.63	204.98	1.28	263.14	4.000	No	No	2.00
5	0.98	121.73	2.06	2.96	0.66	195.47	1.39	271.53	4.000	No	No	2.00
6	1.15	109.90	2.14	3.43	0.69	176.44	1.53	270.14	4.000	No	No	2.00
7	1.31	100.33	2.21	3.89	0.72	161.06	1.68	271.28	4.000	No	No	2.00
8	1.48	95.15	2.25	4.28	0.73	152.71	1.81	276.43	4.000	No	No	2.00
9	1.64	93.69	2.28	4.49	0.74	150.36	1.87	281.37	4.000	No	No	2.00
10	1.80	98.68	2.25	4.33	0.73	158.36	1.80	284.51	4.000	No	No	2.00
11	1.97	108.47	2.18	3.82	0.71	174.06	1.62	282.23	4.000	No	No	2.00
12	2.13	112.84	2.14	3.49	0.69	181.08	1.53	277.16	4.000	No	No	2.00
13	2.30	105.08	2.16	3.53	0.70	168.59	1.58	265.67	4.000	No	No	2.00
14	2.46	84.17	2.27	4.13	0.74	134.97	1.86	251.53	4.000	No	No	2.00
15	2.62	64.08	2.40	4.90	0.79	102.67	2.33	238.93	4.000	No	No	2.00
16	2.79	49.65	2.51	5.53	0.83	79.48	2.83	225.31	4.000	No	No	2.00
17	2.95	43.15	2.54	5.35	0.84	69.02	2.99	206.05	4.000	No	No	2.00
18	3.12	37.87	2.58	5.31	0.86	60.53	3.18	192.43	4.000	No	No	2.00
19	3.28	33.87	2.61	5.35	0.87	54.07	3.39	183.27	4.000	No	Yes	2.00
20	3.45	30.60	2.65	5.60	0.89	48.81	3.68	179.47	4.000	No	Yes	2.00
21	3.61	27.63	2.69	5.72	0.90	44.02	3.94	173.25	4.000	No	Yes	2.00
22	3.77	24.82	2.73	5.83	0.92	39.49	4.22	166.66	4.000	No	Yes	2.00
23	3.94	21.46	2.79	6.13	0.94	34.07	4.70	160.14	4.000	No	Yes	2.00
24	4.10	18.54	2.86	6.57	0.96	29.36	5.28	155.17	4.000	No	Yes	2.00
25	4.27	16.02	2.93	7.20	0.99	25.30	6.00	151.82	4.000	No	Yes	2.00
26	4.43	15.19	2.95	7.38	1.00	23.96	6.25	149.79	4.000	No	Yes	2.00
27	4.59	15.56	2.96	7.64	1.00	24.54	6.29	154.31	4.000	No	Yes	2.00
28	4.76	16.97	2.92	7.40	0.99	26.78	5.91	158.32	4.000	Yes	Yes	2.00
29	4.92	21.10	2.81	6.41	0.95	33.40	4.87	162.70	4.000	Yes	Yes	2.00
30	5.09	27.89	2.64	4.84	0.88	44.30	3.56	157.68	4.000	Yes	Yes	2.00
31	5.25	36.52	2.45	3.50	0.81	58.15	2.54	147.99	4.000	Yes	No	2.00
32	5.41	43.18	2.31	2.57	0.75	68.84	1.97	135.56	4.000	Yes	No	2.00
33	5.58	47.55	2.20	1.98	0.71	75.84	1.66	125.85	4.000	Yes	No	2.00
34	5.74	49.58	2.13	1.63	0.69	79.09	1.50	118.88	4.000	Yes	No	2.00
35	5.91	50.09	2.12	1.61	0.68	79.88	1.49	119.12	0.237	No	No	0.85
36	6.07	49.32	2.14	1.70	0.69	78.63	1.53	120.65	0.243	No	No	0.87
37	6.23	48.73	2.18	1.93	0.71	77.66	1.62	126.19	0.267	No	No	0.94
38	6.40	52.56	2.15	1.85	0.69	83.81	1.54	129.47	0.282	No	No	0.98
39	6.56	64.09	2.03	1.57	0.65	102.32	1.35	137.81	0.323	No	No	1.11
40	6.73	77.26	1.91	1.26	0.60	123.46	1.20	147.75	0.380	No	No	1.29
41	6.89	83.36	1.83	1.05	0.57	133.24	1.13	150.35	0.396	No	No	1.33
42	7.05	78.62	1.83	0.98	0.57	125.61	1.13	141.80	0.345	No	No	1.15
43	7.22	69.59	1.87	0.96	0.59	111.08	1.16	128.60	0.278	No	No	0.92
44	7.38	62.02	1.92	1.03	0.61	98.91	1.21	119.69	0.239	No	No	0.78
45	7.55	56.45	1.95	1.01	0.62	89.95	1.24	111.45	0.209	No	No	0.68
46	7.71	52.08	1.95	0.90	0.62	82.92	1.24	102.52	0.180	No	No	0.58
47	7.87	48.72	1.93	0.76	0.61	77.49	1.21	94.13	0.158	No	No	0.50
48	8.04	46.92	1.90	0.65	0.60	74.59	1.19	88.73	0.145	No	No	0.46

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q_t (tsf)	I_c	Fr (%)	n	Q_{tn}	K_c	$Q_{tn,cs}$	$CRR_{7.5}$	Belongs to trans. layer	Clay-like behaviour	FS
49	8.20	46.92	1.93	0.72	0.61	74.58	1.21	90.57	0.149	No	No	0.47
50	8.37	49.49	1.92	0.75	0.61	78.70	1.21	94.85	0.159	No	No	0.50
51	8.53	54.07	1.88	0.75	0.59	86.03	1.17	101.08	0.176	No	No	0.54
52	8.69	60.27	1.84	0.73	0.58	95.97	1.14	109.04	0.201	No	No	0.62
53	8.86	66.60	1.80	0.71	0.56	104.96	1.11	116.21	0.226	No	No	0.69
54	9.02	72.00	1.79	0.75	0.56	112.52	1.10	123.78	0.256	No	No	0.78
55	9.19	76.60	1.77	0.75	0.55	118.32	1.09	128.69	0.278	No	No	0.84
56	9.35	81.50	1.77	0.78	0.55	125.00	1.08	135.48	0.311	No	No	0.93
57	9.51	88.00	1.73	0.72	0.53	132.48	1.06	139.92	0.335	No	No	1.00
58	9.68	96.64	1.69	0.69	0.52	142.80	1.03	147.25	0.377	No	No	1.11
59	9.84	107.67	1.64	0.65	0.50	156.01	1.00	155.85	0.432	No	No	1.27
60	10.01	119.34	1.62	0.67	0.50	171.80	1.00	171.80	0.552	No	No	1.61
61	10.17	129.00	1.60	0.68	0.50	184.81	1.00	184.81	0.667	No	No	1.94
62	10.34	134.43	1.59	0.70	0.50	191.55	1.00	191.55	0.734	No	No	2.00
63	10.50	137.29	1.60	0.73	0.50	194.63	1.00	194.63	0.766	No	No	2.00
64	10.66	139.09	1.63	0.82	0.50	196.15	1.00	196.15	0.782	No	No	2.00
65	10.83	140.59	1.68	0.98	0.52	199.72	1.03	204.93	4.000	No	No	2.00
66	10.99	140.43	1.75	1.24	0.54	202.70	1.07	217.83	4.000	Yes	No	2.00
67	11.16	136.93	1.85	1.64	0.58	202.00	1.14	230.95	4.000	Yes	No	2.00
68	11.32	124.76	1.93	1.96	0.61	187.16	1.22	227.93	4.000	Yes	No	2.00
69	11.48	101.41	2.05	2.42	0.66	156.21	1.37	213.96	4.000	Yes	No	2.00
70	11.65	73.63	2.21	3.06	0.72	117.15	1.69	197.53	4.000	Yes	No	2.00
71	11.81	51.01	2.42	4.24	0.80	80.81	2.39	193.50	4.000	Yes	No	2.00
72	11.98	39.11	2.56	5.21	0.85	61.66	3.11	191.97	4.000	Yes	No	2.00
73	12.14	33.62	2.62	5.47	0.88	52.83	3.48	183.82	4.000	Yes	Yes	2.00
74	12.30	31.82	2.63	5.36	0.88	49.92	3.54	176.89	4.000	No	Yes	2.00
75	12.47	29.72	2.66	5.41	0.89	46.52	3.70	172.09	4.000	No	Yes	2.00
76	12.63	28.15	2.67	5.36	0.89	43.99	3.79	166.76	4.000	No	Yes	2.00
77	12.80	26.33	2.69	5.35	0.90	41.05	3.93	161.46	4.000	No	Yes	2.00
78	12.96	26.14	2.68	5.13	0.90	40.72	3.86	157.05	4.000	No	Yes	2.00
79	13.12	26.64	2.67	5.03	0.89	41.52	3.77	156.68	4.000	No	Yes	2.00
80	13.29	27.34	2.69	5.53	0.90	42.63	3.93	167.39	4.000	No	Yes	2.00
81	13.45	28.11	2.74	6.60	0.92	43.85	4.29	187.95	4.000	No	Yes	2.00
82	13.62	28.58	2.78	7.69	0.94	44.58	4.65	207.25	4.000	Yes	Yes	2.00
83	13.78	31.93	2.73	7.29	0.92	49.95	4.25	212.40	4.000	Yes	Yes	2.00
84	13.94	36.72	2.62	5.85	0.87	57.63	3.46	199.44	4.000	Yes	Yes	2.00
85	14.11	45.23	2.46	4.21	0.81	68.70	2.59	177.86	4.000	Yes	No	2.00
86	14.27	54.98	2.27	2.65	0.74	79.65	1.86	148.25	4.000	Yes	No	2.00
87	14.44	70.49	2.12	2.01	0.68	98.42	1.50	147.21	4.000	Yes	No	2.00
88	14.60	84.47	2.08	2.03	0.67	116.29	1.41	164.24	0.492	No	No	1.30
89	14.76	96.57	2.12	2.61	0.68	133.56	1.49	198.88	0.812	No	No	2.00
90	14.93	91.86	2.20	3.19	0.71	128.29	1.66	212.79	4.000	No	No	2.00
91	15.09	75.61	2.32	4.02	0.76	107.53	2.02	217.67	4.000	No	No	2.00
92	15.26	54.79	2.50	5.38	0.83	79.95	2.78	222.40	4.000	No	No	2.00
93	15.42	44.96	2.63	6.82	0.88	66.62	3.53	235.08	4.000	No	Yes	2.00
94	15.58	43.90	2.66	7.22	0.89	64.87	3.71	240.39	4.000	No	Yes	2.00
95	15.75	43.88	2.65	7.07	0.89	64.25	3.68	236.15	4.000	No	Yes	2.00
96	15.91	43.28	2.64	6.62	0.88	62.70	3.57	223.97	4.000	No	Yes	2.00

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q_t (tsf)	I_c	Fr (%)	n	Q_{tn}	K_c	$Q_{tn,cs}$	$CRR_{7.5}$	Belongs to trans. layer	Clay-like behaviour	FS
97	16.08	43.39	2.62	6.13	0.87	62.10	3.42	212.69	4.000	No	Yes	2.00
98	16.24	44.33	2.60	5.85	0.86	62.80	3.31	207.69	4.000	No	No	2.00
99	16.40	45.08	2.62	6.28	0.87	63.66	3.43	218.43	4.000	No	Yes	2.00
100	16.57	48.28	2.63	6.84	0.88	67.91	3.50	237.88	4.000	No	Yes	2.00
101	16.73	57.66	2.59	6.89	0.86	80.17	3.24	259.96	4.000	No	No	2.00
102	16.90	69.22	2.52	6.40	0.83	94.65	2.86	270.61	4.000	No	No	2.00
103	17.06	77.48	2.43	5.32	0.80	103.79	2.44	252.73	4.000	No	No	2.00
104	17.23	83.21	2.34	4.26	0.77	109.10	2.08	227.01	4.000	No	No	2.00
105	17.39	95.60	2.19	3.00	0.71	121.74	1.64	199.96	0.824	No	No	2.00
106	17.55	111.73	2.09	2.50	0.67	139.46	1.44	200.80	4.000	No	No	2.00
107	17.72	124.36	2.02	2.16	0.64	152.69	1.32	202.22	4.000	No	No	2.00
108	17.88	128.69	1.99	2.01	0.63	156.50	1.28	200.85	4.000	No	No	2.00
109	18.05	131.12	1.94	1.74	0.61	157.48	1.23	193.20	0.751	No	No	1.91
110	18.21	134.48	1.88	1.47	0.59	159.42	1.17	186.63	0.685	No	No	1.74
111	18.37	139.25	1.83	1.30	0.57	163.27	1.13	184.84	0.667	No	No	1.69
112	18.54	145.85	1.81	1.27	0.57	169.81	1.12	189.56	0.713	No	No	1.81
113	18.70	154.19	1.81	1.31	0.56	178.71	1.11	198.82	0.811	No	No	2.00
114	18.87	163.53	1.79	1.31	0.56	188.44	1.10	207.75	4.000	No	No	2.00
115	19.03	177.02	1.77	1.31	0.55	202.63	1.09	220.20	4.000	No	No	2.00
116	19.19	197.93	1.75	1.36	0.54	225.25	1.07	242.00	4.000	No	No	2.00
117	19.36	228.83	1.71	1.33	0.53	258.05	1.05	269.76	4.000	No	No	2.00
118	19.52	255.82	1.72	1.47	0.53	287.66	1.05	301.61	4.000	No	No	2.00
119	19.69	274.43	1.73	1.61	0.54	307.96	1.06	326.24	4.000	No	No	2.00
120	19.85	278.12	1.76	1.73	0.54	311.74	1.08	335.21	4.000	No	No	2.00
121	20.01	289.91	1.74	1.72	0.54	323.21	1.07	345.04	4.000	No	No	2.00
122	20.18	309.47	1.74	1.75	0.54	343.28	1.06	364.69	4.000	No	No	2.00
123	20.34	312.07	1.79	2.06	0.56	346.99	1.10	382.36	4.000	No	No	2.00
124	20.51	273.53	1.93	2.75	0.61	307.18	1.22	374.00	4.000	No	No	2.00
125	20.67	208.75	2.12	3.97	0.68	237.90	1.50	355.96	4.000	No	No	2.00
126	20.83	162.86	2.29	5.45	0.75	187.64	1.93	361.58	4.000	No	No	2.00
127	21.00	153.81	2.30	5.40	0.75	176.28	1.96	345.89	4.000	No	No	2.00
128	21.16	172.81	2.18	4.10	0.71	194.73	1.62	315.39	4.000	No	No	2.00
129	21.33	218.49	1.92	2.32	0.61	239.31	1.21	290.19	4.000	No	No	2.00
130	21.49	272.45	1.68	1.34	0.52	290.81	1.03	298.18	4.000	No	No	2.00
131	21.65	318.66	1.47	0.82	0.50	337.93	1.00	337.93	4.000	No	No	2.00
132	21.82	335.03	1.42	0.72	0.50	354.13	1.00	354.13	4.000	No	No	2.00
133	21.98	327.62	1.43	0.73	0.50	345.13	1.00	345.13	4.000	No	No	2.00
134	22.15	287.41	1.54	0.91	0.50	301.53	1.00	301.53	4.000	No	No	2.00
135	22.31	227.39	1.69	1.18	0.52	238.49	1.03	246.21	4.000	No	No	2.00
136	22.47	160.01	1.90	1.66	0.60	169.59	1.19	201.75	4.000	No	No	2.00
137	22.64	108.81	2.10	2.17	0.67	116.11	1.45	168.34	0.524	No	No	1.30
138	22.80	73.11	2.27	2.60	0.74	78.20	1.86	145.59	0.367	No	No	0.91
139	22.97	52.44	2.42	3.07	0.80	56.00	2.42	135.33	0.311	No	No	0.77
140	23.13	47.44	2.46	3.12	0.81	50.41	2.58	130.20	0.285	No	No	0.71
141	23.30	51.62	2.43	3.06	0.80	54.61	2.44	133.46	0.301	No	No	0.74
142	23.46	56.67	2.41	3.14	0.79	59.76	2.36	141.06	0.341	No	No	0.84
143	23.62	59.12	2.41	3.30	0.80	62.13	2.37	147.53	0.379	No	No	0.94
144	23.79	57.36	2.44	3.46	0.81	60.03	2.49	149.21	0.389	No	No	0.96

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q_t (tsf)	I_c	Fr (%)	n	Q_{tn}	K_c	$Q_{tn,cs}$	$CRR_{7.5}$	Belongs to trans. layer	Clay-like behaviour	FS
145	23.95	53.52	2.47	3.59	0.82	55.76	2.64	147.26	0.377	No	No	0.93
146	24.12	48.62	2.53	3.89	0.84	50.42	2.92	147.43	0.378	No	No	0.93
147	24.28	46.49	2.60	4.60	0.86	48.08	3.30	158.83	0.453	No	No	1.12
148	24.44	46.39	2.66	5.57	0.89	47.89	3.71	177.46	4.000	No	Yes	2.00
149	24.61	48.22	2.69	6.28	0.90	49.64	3.90	193.78	4.000	No	Yes	2.00
150	24.77	54.00	2.65	6.10	0.88	55.38	3.62	200.61	4.000	No	Yes	2.00
151	24.94	57.65	2.61	5.82	0.87	58.82	3.41	200.77	4.000	No	Yes	2.00
152	25.10	59.89	2.61	5.94	0.87	60.85	3.40	206.63	4.000	No	Yes	2.00
153	25.26	58.11	2.67	6.84	0.89	58.83	3.76	221.46	4.000	No	Yes	2.00
154	25.43	60.97	2.68	7.35	0.90	61.48	3.85	236.71	4.000	No	Yes	2.00
155	25.59	65.79	2.65	7.11	0.88	66.04	3.64	240.39	4.000	No	Yes	2.00
156	25.76	67.01	2.62	6.63	0.87	66.87	3.46	231.41	4.000	No	Yes	2.00
157	25.92	60.71	2.65	6.71	0.89	60.18	3.68	221.42	4.000	No	Yes	2.00
158	26.08	52.16	2.74	7.59	0.92	51.34	4.29	220.50	4.000	No	Yes	2.00
159	26.25	47.72	2.81	8.54	0.94	46.65	4.83	225.49	4.000	No	Yes	2.00
160	26.41	50.55	2.77	8.04	0.93	49.21	4.54	223.59	4.000	Yes	Yes	2.00
161	26.58	59.38	2.65	6.30	0.88	57.60	3.62	208.38	4.000	Yes	Yes	2.00
162	26.74	75.46	2.44	4.16	0.81	72.98	2.49	181.82	4.000	Yes	No	2.00
163	26.90	95.89	2.23	2.65	0.72	92.39	1.74	160.67	4.000	Yes	No	2.00
164	27.07	116.74	2.00	1.54	0.64	111.95	1.30	145.42	4.000	Yes	No	2.00
165	27.23	131.21	1.81	0.93	0.57	125.27	1.12	139.95	4.000	Yes	No	2.00
166	27.40	134.84	1.70	0.63	0.52	128.21	1.04	133.03	0.299	No	No	0.73
167	27.56	124.18	1.79	0.79	0.56	117.78	1.10	129.52	0.282	No	No	0.69
168	27.72	110.53	1.93	1.13	0.61	104.51	1.22	127.47	0.273	No	No	0.67
169	27.89	108.31	1.97	1.28	0.63	102.09	1.27	129.45	0.282	No	No	0.69
170	28.05	124.16	1.87	1.03	0.59	116.84	1.16	135.61	0.312	No	No	0.76
171	28.22	143.21	1.74	0.78	0.54	134.54	1.07	143.39	0.354	No	No	0.87
172	28.38	148.95	1.68	0.66	0.52	139.63	1.03	143.29	0.354	No	No	0.87
173	28.54	139.78	1.71	0.68	0.53	130.62	1.05	136.76	0.318	No	No	0.78
174	28.71	127.05	1.74	0.67	0.54	118.26	1.07	126.21	0.267	No	No	0.65
175	28.87	120.98	1.82	0.84	0.57	112.23	1.12	126.15	0.267	No	No	0.65
176	29.04	118.25	1.95	1.29	0.62	109.28	1.24	135.97	0.314	No	No	0.77
177	29.20	105.59	2.12	1.96	0.68	96.99	1.49	144.39	0.360	No	No	0.88
178	29.36	88.53	2.25	2.50	0.73	80.69	1.80	145.02	0.364	No	No	0.89
179	29.53	86.77	2.25	2.43	0.73	78.76	1.79	141.33	0.343	No	No	0.83
180	29.69	93.75	2.17	2.03	0.70	85.01	1.60	135.64	0.312	No	No	0.76
181	29.86	92.35	2.19	2.14	0.71	83.39	1.65	137.19	4.000	Yes	No	2.00
182	30.02	77.83	2.31	2.59	0.75	69.65	1.97	136.93	4.000	Yes	No	2.00
183	30.19	61.70	2.47	3.51	0.82	54.48	2.64	143.97	4.000	Yes	No	2.00
184	30.35	53.83	2.54	3.79	0.84	47.07	2.99	140.86	4.000	Yes	No	2.00
185	30.51	55.23	2.49	3.31	0.83	48.19	2.74	132.07	4.000	Yes	No	2.00
186	30.68	80.58	2.28	2.46	0.74	71.16	1.89	134.82	4.000	Yes	No	2.00
187	30.84	107.62	2.16	2.21	0.70	95.56	1.57	150.42	4.000	Yes	No	2.00
188	31.01	114.61	2.18	2.46	0.70	101.47	1.61	163.36	0.485	No	No	1.17
189	31.17	92.30	2.31	3.06	0.76	80.80	1.99	161.01	0.468	No	No	1.13
190	31.33	85.20	2.32	2.92	0.76	74.15	2.03	150.44	0.397	No	No	0.96
191	31.50	115.38	2.05	1.65	0.66	101.54	1.37	139.30	0.331	No	No	0.80
192	31.66	162.71	1.73	0.83	0.54	145.00	1.06	153.89	0.419	No	No	1.01

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q_t (tsf)	I_c	Fr (%)	n	Q_{tn}	K_c	$Q_{tn,cs}$	$CRR_{7.5}$	Belongs to trans. layer	Clay-like behaviour	FS
193	31.83	192.18	1.56	0.54	0.50	171.73	1.00	171.73	0.551	No	No	1.33
194	31.99	187.00	1.54	0.49	0.50	166.70	1.00	166.70	0.511	No	No	1.23
195	32.15	171.24	1.63	0.61	0.50	152.17	1.00	152.17	0.408	No	No	0.98
196	32.32	146.40	1.83	0.99	0.57	128.58	1.13	144.75	4.000	Yes	No	2.00
197	32.48	112.27	2.08	1.72	0.67	96.91	1.42	137.42	4.000	Yes	No	2.00
198	32.65	72.68	2.36	2.74	0.78	61.16	2.17	132.43	4.000	Yes	No	2.00
199	32.81	52.15	2.52	3.19	0.84	42.93	2.87	123.21	4.000	Yes	No	2.00
200	32.97	72.42	2.27	1.99	0.74	60.79	1.85	112.72	0.213	No	No	0.51
201	33.14	102.61	2.10	1.66	0.68	87.29	1.45	126.99	0.270	No	No	0.65
202	33.30	117.89	2.13	2.10	0.69	100.10	1.51	151.42	0.403	No	No	0.96
203	33.47	113.79	2.25	2.92	0.73	95.64	1.80	171.90	0.552	No	No	1.32
204	33.63	139.28	2.20	3.01	0.71	117.36	1.67	196.14	0.782	No	No	1.87
205	33.79	207.09	2.00	2.33	0.64	176.68	1.30	230.40	4.000	No	No	2.00
206	33.96	306.52	1.77	1.62	0.55	264.99	1.09	287.96	4.000	No	No	2.00
207	34.12	407.08	1.55	1.07	0.50	354.34	1.00	354.34	4.000	No	No	2.00
208	34.29	484.71	1.33	0.64	0.50	421.23	1.00	421.23	4.000	No	No	2.00
209	34.45	515.10	1.16	0.40	0.50	446.77	1.00	446.77	4.000	No	No	2.00
210	34.61	489.97	1.16	0.38	0.50	423.94	1.00	423.94	4.000	No	No	2.00
211	34.78	378.37	1.37	0.58	0.50	326.19	1.00	326.19	4.000	No	No	2.00
212	34.94	260.59	1.61	0.86	0.50	223.58	1.00	223.58	4.000	No	No	2.00
213	35.11	159.36	1.84	1.08	0.58	133.84	1.14	151.95	0.406	No	No	0.97
214	35.27	123.68	1.86	0.85	0.58	103.09	1.15	118.54	0.235	No	No	0.56
215	35.43	94.34	1.90	0.69	0.60	77.78	1.19	92.50	4.000	Yes	No	2.00
216	35.60	63.34	2.13	0.93	0.69	50.63	1.51	76.31	4.000	Yes	No	2.00
217	35.76	37.48	2.48	1.70	0.82	28.37	2.69	76.41	4.000	Yes	No	2.00
218	35.93	21.69	2.87	3.26	0.97	15.15	5.43	82.20	4.000	Yes	Yes	2.00
219	36.09	14.27	3.14	4.72	1.00	9.27	8.42	78.09	4.000	No	Yes	2.00
220	36.26	16.12	3.12	5.30	1.00	10.66	8.20	87.40	4.000	No	Yes	2.00
221	36.42	24.15	2.93	4.57	0.99	16.81	5.98	100.47	4.000	No	Yes	2.00
222	36.58	36.36	2.75	4.11	0.92	26.48	4.36	115.50	4.000	No	Yes	2.00
223	36.75	48.55	2.61	3.60	0.87	36.23	3.38	122.61	4.000	No	Yes	2.00
224	36.91	55.87	2.55	3.42	0.85	42.03	3.02	126.84	0.270	No	No	0.64
225	37.08	58.49	2.53	3.38	0.84	44.00	2.92	128.47	0.277	No	No	0.66
226	37.24	57.96	2.55	3.54	0.85	43.37	3.02	130.84	0.288	No	No	0.69
227	37.40	57.15	2.57	3.71	0.85	42.52	3.13	133.26	0.300	No	No	0.71
228	37.57	56.89	2.58	3.85	0.86	42.10	3.22	135.50	0.311	No	No	0.74
229	37.73	56.06	2.58	3.79	0.86	41.32	3.22	133.16	0.300	No	No	0.71
230	37.90	54.66	2.58	3.63	0.86	40.11	3.20	128.53	0.277	No	No	0.66
231	38.06	51.82	2.59	3.51	0.86	37.78	3.25	122.91	0.253	No	No	0.60
232	38.22	49.42	2.60	3.40	0.86	35.79	3.30	118.27	0.234	No	No	0.56
233	38.39	48.38	2.61	3.41	0.87	34.85	3.36	117.07	4.000	No	Yes	2.00
234	38.55	48.78	2.59	3.31	0.86	35.08	3.29	115.51	0.223	No	No	0.53
235	38.72	48.68	2.59	3.24	0.86	34.90	3.27	114.06	0.218	No	No	0.52
236	38.88	46.98	2.59	3.14	0.86	33.49	3.29	110.34	0.205	No	No	0.49
237	39.04	43.37	2.62	3.09	0.87	30.60	3.45	105.59	4.000	No	Yes	2.00
238	39.21	39.67	2.65	3.05	0.88	27.66	3.64	100.64	4.000	No	Yes	2.00
239	39.37	37.10	2.69	3.18	0.90	25.57	3.90	99.70	4.000	No	Yes	2.00
240	39.54	39.21	2.71	3.72	0.91	26.95	4.10	110.46	4.000	No	Yes	2.00

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q_t (tsf)	I_c	Fr (%)	n	Q_{tn}	K_c	$Q_{tn,cs}$	$CRR_{7.5}$	Belongs to trans. layer	Clay-like behaviour	FS
241	39.70	45.85	2.70	4.23	0.90	31.76	3.98	126.56	4.000	No	Yes	2.00
242	39.86	56.69	2.64	4.37	0.88	39.83	3.56	141.96	4.000	No	Yes	2.00
243	40.03	66.86	2.59	4.40	0.86	47.40	3.25	153.95	0.419	No	No	1.00
244	40.19	74.67	2.55	4.34	0.85	53.19	3.02	160.87	0.467	No	No	1.12
245	40.36	77.80	2.53	4.21	0.84	55.45	2.90	160.93	0.468	No	No	1.12
246	40.52	76.83	2.51	3.90	0.83	54.68	2.80	153.14	0.414	No	No	0.99
247	40.68	74.20	2.50	3.63	0.83	52.64	2.74	144.43	0.360	No	No	0.86
248	40.85	73.61	2.48	3.42	0.82	52.13	2.67	139.20	0.331	No	No	0.79
249	41.01	72.66	2.47	3.23	0.82	51.35	2.61	133.95	0.304	No	No	0.73
250	41.18	69.21	2.47	3.10	0.82	48.64	2.63	127.87	0.274	No	No	0.66
251	41.34	61.47	2.52	3.17	0.84	42.61	2.87	122.33	0.250	No	No	0.60
252	41.50	55.32	2.59	3.54	0.86	37.71	3.27	123.48	0.255	No	No	0.61
253	41.67	51.53	2.66	4.09	0.89	34.58	3.73	128.82	4.000	No	Yes	2.00
254	41.83	49.84	2.70	4.45	0.90	33.12	4.00	132.43	4.000	No	Yes	2.00
255	42.00	48.12	2.72	4.54	0.91	31.72	4.15	131.52	4.000	No	Yes	2.00
256	42.16	46.02	2.73	4.46	0.92	30.12	4.23	127.30	4.000	No	Yes	2.00
257	42.32	44.36	2.74	4.32	0.92	28.85	4.26	122.87	4.000	No	Yes	2.00
258	42.49	41.99	2.76	4.32	0.93	27.04	4.42	119.65	4.000	No	Yes	2.00
259	42.65	37.67	2.78	4.10	0.93	23.92	4.62	110.51	4.000	No	Yes	2.00
260	42.82	32.23	2.83	3.95	0.95	20.00	5.04	100.75	4.000	No	Yes	2.00
261	42.98	27.80	2.88	3.85	0.97	16.83	5.51	92.67	4.000	No	Yes	2.00
262	43.15	27.33	2.90	4.06	0.98	16.41	5.73	94.01	4.000	No	Yes	2.00
263	43.31	28.27	2.92	4.43	0.99	16.95	5.86	99.36	4.000	No	Yes	2.00
264	43.47	29.04	2.96	5.32	1.00	17.31	6.32	109.39	4.000	No	Yes	2.00
265	43.64	31.04	2.97	5.89	1.00	18.56	6.39	118.59	4.000	No	Yes	2.00
266	43.80	39.94	2.83	5.02	0.95	24.73	5.03	124.49	4.000	No	Yes	2.00
267	43.97	52.09	2.66	3.99	0.89	33.47	3.74	125.32	4.000	No	Yes	2.00
268	44.13	58.00	2.63	4.04	0.88	37.53	3.53	132.56	4.000	No	Yes	2.00
269	44.29	53.82	2.70	4.64	0.91	34.24	4.01	137.45	4.000	No	Yes	2.00
270	44.46	44.81	2.83	5.71	0.95	27.57	5.07	139.85	4.000	No	Yes	2.00
271	44.62	39.98	2.90	6.19	0.98	24.08	5.69	137.09	4.000	No	Yes	2.00
272	44.79	46.02	2.80	5.32	0.94	28.29	4.82	136.26	4.000	No	Yes	2.00
273	44.95	50.85	2.74	4.86	0.92	31.64	4.31	136.26	4.000	No	Yes	2.00
274	45.11	52.11	2.71	4.46	0.91	32.54	4.05	131.70	4.000	Yes	Yes	2.00
275	45.28	54.88	2.63	3.65	0.88	34.68	3.50	121.25	4.000	Yes	Yes	2.00
276	45.44	69.56	2.40	2.30	0.79	45.88	2.32	106.53	4.000	Yes	No	2.00
277	45.61	95.76	2.13	1.33	0.68	66.52	1.50	99.93	4.000	Yes	No	2.00
278	45.77	118.32	1.95	0.95	0.62	84.73	1.24	105.36	4.000	Yes	No	2.00
279	45.93	134.26	1.88	0.86	0.59	97.36	1.17	113.89	4.000	Yes	No	2.00
280	46.10	141.95	1.84	0.81	0.58	103.45	1.14	117.88	0.232	No	No	0.57
281	46.26	144.16	1.86	0.87	0.58	104.65	1.15	120.50	0.243	No	No	0.60
282	46.43	145.09	1.86	0.89	0.58	105.06	1.15	121.34	0.246	No	No	0.61
283	46.59	151.19	1.84	0.85	0.57	109.83	1.13	124.49	0.259	No	No	0.64
284	46.75	165.38	1.78	0.78	0.55	121.27	1.09	132.22	0.295	No	No	0.73
285	46.92	189.34	1.70	0.72	0.52	140.58	1.04	146.25	0.371	No	No	0.92
286	47.08	209.30	1.70	0.81	0.52	155.34	1.04	161.71	0.473	No	No	1.17
287	47.25	219.57	1.76	1.02	0.55	161.27	1.08	173.95	0.570	No	No	1.41
288	47.41	217.24	1.83	1.24	0.57	157.38	1.13	177.74	0.602	No	No	1.49

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q_t (tsf)	I_c	Fr (%)	n	Q_{tn}	K_c	$Q_{tn,cs}$	$CRR_{7.5}$	Belongs to trans. layer	Clay-like behaviour	FS
289	47.57	213.50	1.88	1.41	0.59	153.10	1.17	178.89	0.612	No	No	1.52
290	47.74	213.50	1.87	1.36	0.59	153.05	1.16	177.41	0.599	No	No	1.49
291	47.90	219.76	1.83	1.25	0.57	158.32	1.13	178.62	0.610	No	No	1.52
292	48.07	227.09	1.79	1.15	0.56	164.41	1.10	180.90	0.631	No	No	1.57
293	48.23	231.56	1.77	1.11	0.55	167.85	1.09	182.73	0.647	No	No	1.61
294	48.39	225.75	1.78	1.11	0.55	163.04	1.09	178.48	0.609	No	No	1.52
295	48.56	210.18	1.80	1.08	0.56	150.93	1.11	166.92	0.513	No	No	1.28
296	48.72	193.23	1.79	0.95	0.56	138.62	1.10	152.14	0.408	No	No	1.02
297	48.89	195.20	1.77	0.90	0.55	140.24	1.09	152.18	0.408	No	No	1.02
298	49.05	186.57	1.82	1.00	0.57	132.56	1.12	148.42	4.000	Yes	No	2.00
299	49.22	155.60	1.99	1.42	0.63	106.56	1.29	137.30	4.000	Yes	No	2.00
300	49.38	96.10	2.31	2.33	0.76	61.14	1.99	121.93	4.000	Yes	No	2.00
301	49.54	52.24	2.68	3.80	0.90	30.11	3.88	116.86	4.000	Yes	Yes	2.00
302	49.71	29.63	3.00	5.28	1.00	15.42	6.71	103.46	4.000	Yes	Yes	2.00
303	49.87	24.10	3.02	4.29	1.00	12.17	6.97	84.78	4.000	No	Yes	2.00
304	50.04	22.66	3.00	3.59	1.00	11.30	6.73	76.00	4.000	No	Yes	2.00
305	50.20	24.44	2.93	3.13	0.99	12.34	6.03	74.36	4.000	No	Yes	2.00

Abbreviations

Depth: Depth from free surface, at which CPT was performed (ft)
q_t: Total cone resistance
I_c: Soil behavior type index
Fr: Normalized friction ratio (%)
n: Stress exponent
Q_{tn}: Normalized cone resistance
K_c: Cone resistance correction factor due to fines
$Q_{tn,cs}$: Normalized and adjusted cone resistance
$CRR_{7.5}$: Cyclic resistance ratio for M_w=7.5
FS: Factor of safety against soil liquefaction

:: Liquefaction Potential Index calculation data ::

Depth (ft)	FS	F_L	w_z	d_z	LPI	Depth (ft)	FS	F_L	w_z	d_z	LPI
0.33	2.00	0.00	9.95	0.16	0.00	0.49	2.00	0.00	9.93	0.16	0.00
0.66	2.00	0.00	9.90	0.17	0.00	0.82	2.00	0.00	9.88	0.16	0.00
0.98	2.00	0.00	9.85	0.16	0.00	1.15	2.00	0.00	9.82	0.17	0.00
1.31	2.00	0.00	9.80	0.16	0.00	1.48	2.00	0.00	9.77	0.17	0.00
1.64	2.00	0.00	9.75	0.16	0.00	1.80	2.00	0.00	9.73	0.16	0.00
1.97	2.00	0.00	9.70	0.17	0.00	2.13	2.00	0.00	9.68	0.16	0.00
2.30	2.00	0.00	9.65	0.17	0.00	2.46	2.00	0.00	9.63	0.16	0.00
2.62	2.00	0.00	9.60	0.16	0.00	2.79	2.00	0.00	9.57	0.17	0.00
2.95	2.00	0.00	9.55	0.16	0.00	3.12	2.00	0.00	9.52	0.17	0.00
3.28	2.00	0.00	9.50	0.16	0.00	3.45	2.00	0.00	9.47	0.17	0.00
3.61	2.00	0.00	9.45	0.16	0.00	3.77	2.00	0.00	9.43	0.16	0.00
3.94	2.00	0.00	9.40	0.17	0.00	4.10	2.00	0.00	9.38	0.16	0.00
4.27	2.00	0.00	9.35	0.17	0.00	4.43	2.00	0.00	9.32	0.16	0.00
4.59	2.00	0.00	9.30	0.16	0.00	4.76	2.00	0.00	9.27	0.17	0.00
4.92	2.00	0.00	9.25	0.16	0.00	5.09	2.00	0.00	9.22	0.17	0.00
5.25	2.00	0.00	9.20	0.16	0.00	5.41	2.00	0.00	9.18	0.16	0.00
5.58	2.00	0.00	9.15	0.17	0.00	5.74	2.00	0.00	9.13	0.16	0.00
5.91	0.85	0.15	9.10	0.17	0.07	6.07	0.87	0.13	9.07	0.16	0.06
6.23	0.94	0.06	9.05	0.16	0.03	6.40	0.98	0.02	9.02	0.17	0.01
6.56	1.11	0.00	9.00	0.16	0.00	6.73	1.29	0.00	8.97	0.17	0.00
6.89	1.33	0.00	8.95	0.16	0.00	7.05	1.15	0.00	8.93	0.16	0.00
7.22	0.92	0.08	8.90	0.17	0.04	7.38	0.78	0.22	8.88	0.16	0.09
7.55	0.68	0.32	8.85	0.17	0.15	7.71	0.58	0.42	8.82	0.16	0.18
7.87	0.50	0.50	8.80	0.16	0.21	8.04	0.46	0.54	8.77	0.17	0.25
8.20	0.47	0.53	8.75	0.16	0.23	8.37	0.50	0.50	8.72	0.17	0.23
8.53	0.54	0.46	8.70	0.16	0.19	8.69	0.62	0.38	8.68	0.16	0.16
8.86	0.69	0.31	8.65	0.17	0.14	9.02	0.78	0.22	8.63	0.16	0.09
9.19	0.84	0.16	8.60	0.17	0.07	9.35	0.93	0.07	8.58	0.16	0.03
9.51	1.00	0.00	8.55	0.16	0.00	9.68	1.11	0.00	8.52	0.17	0.00
9.84	1.27	0.00	8.50	0.16	0.00	10.01	1.61	0.00	8.47	0.17	0.00
10.17	1.94	0.00	8.45	0.16	0.00	10.34	2.00	0.00	8.42	0.17	0.00
10.50	2.00	0.00	8.40	0.16	0.00	10.66	2.00	0.00	8.38	0.16	0.00
10.83	2.00	0.00	8.35	0.17	0.00	10.99	2.00	0.00	8.33	0.16	0.00
11.16	2.00	0.00	8.30	0.17	0.00	11.32	2.00	0.00	8.27	0.16	0.00
11.48	2.00	0.00	8.25	0.16	0.00	11.65	2.00	0.00	8.22	0.17	0.00
11.81	2.00	0.00	8.20	0.16	0.00	11.98	2.00	0.00	8.17	0.17	0.00
12.14	2.00	0.00	8.15	0.16	0.00	12.30	2.00	0.00	8.13	0.16	0.00
12.47	2.00	0.00	8.10	0.17	0.00	12.63	2.00	0.00	8.08	0.16	0.00
12.80	2.00	0.00	8.05	0.17	0.00	12.96	2.00	0.00	8.02	0.16	0.00
13.12	2.00	0.00	8.00	0.16	0.00	13.29	2.00	0.00	7.97	0.17	0.00
13.45	2.00	0.00	7.95	0.16	0.00	13.62	2.00	0.00	7.92	0.17	0.00
13.78	2.00	0.00	7.90	0.16	0.00	13.94	2.00	0.00	7.88	0.16	0.00
14.11	2.00	0.00	7.85	0.17	0.00	14.27	2.00	0.00	7.83	0.16	0.00
14.44	2.00	0.00	7.80	0.17	0.00	14.60	1.30	0.00	7.77	0.16	0.00
14.76	2.00	0.00	7.75	0.16	0.00	14.93	2.00	0.00	7.72	0.17	0.00
15.09	2.00	0.00	7.70	0.16	0.00	15.26	2.00	0.00	7.67	0.17	0.00
15.42	2.00	0.00	7.65	0.16	0.00	15.58	2.00	0.00	7.63	0.16	0.00
15.75	2.00	0.00	7.60	0.17	0.00	15.91	2.00	0.00	7.58	0.16	0.00

:: Liquefaction Potential Index calculation data :: (continued)

Depth (ft)	FS	F_L	w_z	d_z	LPI	Depth (ft)	FS	F_L	w_z	d_z	LPI
16.08	2.00	0.00	7.55	0.17	0.00	16.24	2.00	0.00	7.53	0.16	0.00
16.40	2.00	0.00	7.50	0.16	0.00	16.57	2.00	0.00	7.47	0.17	0.00
16.73	2.00	0.00	7.45	0.16	0.00	16.90	2.00	0.00	7.42	0.17	0.00
17.06	2.00	0.00	7.40	0.16	0.00	17.23	2.00	0.00	7.37	0.17	0.00
17.39	2.00	0.00	7.35	0.16	0.00	17.55	2.00	0.00	7.33	0.16	0.00
17.72	2.00	0.00	7.30	0.17	0.00	17.88	2.00	0.00	7.28	0.16	0.00
18.05	1.91	0.00	7.25	0.17	0.00	18.21	1.74	0.00	7.22	0.16	0.00
18.37	1.69	0.00	7.20	0.16	0.00	18.54	1.81	0.00	7.17	0.17	0.00
18.70	2.00	0.00	7.15	0.16	0.00	18.87	2.00	0.00	7.12	0.17	0.00
19.03	2.00	0.00	7.10	0.16	0.00	19.19	2.00	0.00	7.08	0.16	0.00
19.36	2.00	0.00	7.05	0.17	0.00	19.52	2.00	0.00	7.03	0.16	0.00
19.69	2.00	0.00	7.00	0.17	0.00	19.85	2.00	0.00	6.97	0.16	0.00
20.01	2.00	0.00	6.95	0.16	0.00	20.18	2.00	0.00	6.92	0.17	0.00
20.34	2.00	0.00	6.90	0.16	0.00	20.51	2.00	0.00	6.87	0.17	0.00
20.67	2.00	0.00	6.85	0.16	0.00	20.83	2.00	0.00	6.83	0.16	0.00
21.00	2.00	0.00	6.80	0.17	0.00	21.16	2.00	0.00	6.78	0.16	0.00
21.33	2.00	0.00	6.75	0.17	0.00	21.49	2.00	0.00	6.72	0.16	0.00
21.65	2.00	0.00	6.70	0.16	0.00	21.82	2.00	0.00	6.67	0.17	0.00
21.98	2.00	0.00	6.65	0.16	0.00	22.15	2.00	0.00	6.62	0.17	0.00
22.31	2.00	0.00	6.60	0.16	0.00	22.47	2.00	0.00	6.58	0.16	0.00
22.64	1.30	0.00	6.55	0.17	0.00	22.80	0.91	0.09	6.53	0.16	0.03
22.97	0.77	0.23	6.50	0.17	0.08	23.13	0.71	0.29	6.47	0.16	0.09
23.30	0.74	0.26	6.45	0.17	0.09	23.46	0.84	0.16	6.42	0.16	0.05
23.62	0.94	0.06	6.40	0.16	0.02	23.79	0.96	0.04	6.37	0.17	0.01
23.95	0.93	0.07	6.35	0.16	0.02	24.12	0.93	0.07	6.32	0.17	0.02
24.28	1.12	0.00	6.30	0.16	0.00	24.44	2.00	0.00	6.28	0.16	0.00
24.61	2.00	0.00	6.25	0.17	0.00	24.77	2.00	0.00	6.23	0.16	0.00
24.94	2.00	0.00	6.20	0.17	0.00	25.10	2.00	0.00	6.17	0.16	0.00
25.26	2.00	0.00	6.15	0.16	0.00	25.43	2.00	0.00	6.12	0.17	0.00
25.59	2.00	0.00	6.10	0.16	0.00	25.76	2.00	0.00	6.07	0.17	0.00
25.92	2.00	0.00	6.05	0.16	0.00	26.08	2.00	0.00	6.03	0.16	0.00
26.25	2.00	0.00	6.00	0.17	0.00	26.41	2.00	0.00	5.98	0.16	0.00
26.58	2.00	0.00	5.95	0.17	0.00	26.74	2.00	0.00	5.92	0.16	0.00
26.90	2.00	0.00	5.90	0.16	0.00	27.07	2.00	0.00	5.87	0.17	0.00
27.23	2.00	0.00	5.85	0.16	0.00	27.40	0.73	0.27	5.82	0.17	0.08
27.56	0.69	0.31	5.80	0.16	0.09	27.72	0.67	0.33	5.78	0.16	0.09
27.89	0.69	0.31	5.75	0.17	0.09	28.05	0.76	0.24	5.73	0.16	0.07
28.22	0.87	0.13	5.70	0.17	0.04	28.38	0.87	0.13	5.67	0.16	0.04
28.54	0.78	0.22	5.65	0.16	0.06	28.71	0.65	0.35	5.62	0.17	0.10
28.87	0.65	0.35	5.60	0.16	0.10	29.04	0.77	0.23	5.57	0.17	0.07
29.20	0.88	0.12	5.55	0.16	0.03	29.36	0.89	0.11	5.53	0.16	0.03
29.53	0.83	0.17	5.50	0.17	0.05	29.69	0.76	0.24	5.48	0.16	0.06
29.86	2.00	0.00	5.45	0.17	0.00	30.02	2.00	0.00	5.42	0.16	0.00
30.19	2.00	0.00	5.40	0.17	0.00	30.35	2.00	0.00	5.37	0.16	0.00
30.51	2.00	0.00	5.35	0.16	0.00	30.68	2.00	0.00	5.32	0.17	0.00
30.84	2.00	0.00	5.30	0.16	0.00	31.01	1.17	0.00	5.27	0.17	0.00
31.17	1.13	0.00	5.25	0.16	0.00	31.33	0.96	0.04	5.23	0.16	0.01
31.50	0.80	0.20	5.20	0.17	0.05	31.66	1.01	0.00	5.18	0.16	0.00

:: Liquefaction Potential Index calculation data :: (continued)

Depth (ft)	FS	F_L	w_z	d_z	LPI	Depth (ft)	FS	F_L	w_z	d_z	LPI
31.83	1.33	0.00	5.15	0.17	0.00	31.99	1.23	0.00	5.12	0.16	0.00
32.15	0.98	0.02	5.10	0.16	0.01	32.32	2.00	0.00	5.07	0.17	0.00
32.48	2.00	0.00	5.05	0.16	0.00	32.65	2.00	0.00	5.02	0.17	0.00
32.81	2.00	0.00	5.00	0.16	0.00	32.97	0.51	0.49	4.98	0.16	0.12
33.14	0.65	0.35	4.95	0.17	0.09	33.30	0.96	0.04	4.93	0.16	0.01
33.47	1.32	0.00	4.90	0.17	0.00	33.63	1.87	0.00	4.87	0.16	0.00
33.79	2.00	0.00	4.85	0.16	0.00	33.96	2.00	0.00	4.82	0.17	0.00
34.12	2.00	0.00	4.80	0.16	0.00	34.29	2.00	0.00	4.77	0.17	0.00
34.45	2.00	0.00	4.75	0.16	0.00	34.61	2.00	0.00	4.73	0.16	0.00
34.78	2.00	0.00	4.70	0.17	0.00	34.94	2.00	0.00	4.68	0.16	0.00
35.11	0.97	0.03	4.65	0.17	0.01	35.27	0.56	0.44	4.62	0.16	0.10
35.43	2.00	0.00	4.60	0.16	0.00	35.60	2.00	0.00	4.57	0.17	0.00
35.76	2.00	0.00	4.55	0.16	0.00	35.93	2.00	0.00	4.52	0.17	0.00
36.09	2.00	0.00	4.50	0.16	0.00	36.26	2.00	0.00	4.47	0.17	0.00
36.42	2.00	0.00	4.45	0.16	0.00	36.58	2.00	0.00	4.43	0.16	0.00
36.75	2.00	0.00	4.40	0.17	0.00	36.91	0.64	0.36	4.37	0.16	0.08
37.08	0.66	0.34	4.35	0.17	0.08	37.24	0.69	0.31	4.32	0.16	0.07
37.40	0.71	0.29	4.30	0.16	0.06	37.57	0.74	0.26	4.27	0.17	0.06
37.73	0.71	0.29	4.25	0.16	0.06	37.90	0.66	0.34	4.22	0.17	0.07
38.06	0.60	0.40	4.20	0.16	0.08	38.22	0.56	0.44	4.18	0.16	0.09
38.39	2.00	0.00	4.15	0.17	0.00	38.55	0.53	0.47	4.12	0.16	0.09
38.72	0.52	0.48	4.10	0.17	0.10	38.88	0.49	0.51	4.07	0.16	0.10
39.04	2.00	0.00	4.05	0.16	0.00	39.21	2.00	0.00	4.02	0.17	0.00
39.37	2.00	0.00	4.00	0.16	0.00	39.54	2.00	0.00	3.97	0.17	0.00
39.70	2.00	0.00	3.95	0.16	0.00	39.86	2.00	0.00	3.93	0.16	0.00
40.03	1.00	0.00	3.90	0.17	0.00	40.19	1.12	0.00	3.88	0.16	0.00
40.36	1.12	0.00	3.85	0.17	0.00	40.52	0.99	0.01	3.82	0.16	0.00
40.68	0.86	0.14	3.80	0.16	0.03	40.85	0.79	0.21	3.77	0.17	0.04
41.01	0.73	0.27	3.75	0.16	0.05	41.18	0.66	0.34	3.72	0.17	0.07
41.34	0.60	0.40	3.70	0.16	0.07	41.50	0.61	0.39	3.68	0.16	0.07
41.67	2.00	0.00	3.65	0.17	0.00	41.83	2.00	0.00	3.63	0.16	0.00
42.00	2.00	0.00	3.60	0.17	0.00	42.16	2.00	0.00	3.57	0.16	0.00
42.32	2.00	0.00	3.55	0.16	0.00	42.49	2.00	0.00	3.52	0.17	0.00
42.65	2.00	0.00	3.50	0.16	0.00	42.82	2.00	0.00	3.47	0.17	0.00
42.98	2.00	0.00	3.45	0.16	0.00	43.15	2.00	0.00	3.42	0.17	0.00
43.31	2.00	0.00	3.40	0.16	0.00	43.47	2.00	0.00	3.38	0.16	0.00
43.64	2.00	0.00	3.35	0.17	0.00	43.80	2.00	0.00	3.32	0.16	0.00
43.97	2.00	0.00	3.30	0.17	0.00	44.13	2.00	0.00	3.27	0.16	0.00
44.29	2.00	0.00	3.25	0.16	0.00	44.46	2.00	0.00	3.22	0.17	0.00
44.62	2.00	0.00	3.20	0.16	0.00	44.79	2.00	0.00	3.17	0.17	0.00
44.95	2.00	0.00	3.15	0.16	0.00	45.11	2.00	0.00	3.13	0.16	0.00
45.28	2.00	0.00	3.10	0.17	0.00	45.44	2.00	0.00	3.07	0.16	0.00
45.61	2.00	0.00	3.05	0.17	0.00	45.77	2.00	0.00	3.02	0.16	0.00
45.93	2.00	0.00	3.00	0.16	0.00	46.10	0.57	0.43	2.97	0.17	0.07
46.26	0.60	0.40	2.95	0.16	0.06	46.43	0.61	0.39	2.92	0.17	0.06
46.59	0.64	0.36	2.90	0.16	0.05	46.75	0.73	0.27	2.88	0.16	0.04
46.92	0.92	0.08	2.85	0.17	0.01	47.08	1.17	0.00	2.83	0.16	0.00
47.25	1.41	0.00	2.80	0.17	0.00	47.41	1.49	0.00	2.77	0.16	0.00

:: Liquefaction Potential Index calculation data :: (continued)

Depth (ft)	FS	F_L	w_z	d_z	LPI	Depth (ft)	FS	F_L	w_z	d_z	LPI
47.57	1.52	0.00	2.75	0.16	0.00	47.74	1.49	0.00	2.72	0.17	0.00
47.90	1.52	0.00	2.70	0.16	0.00	48.07	1.57	0.00	2.67	0.17	0.00
48.23	1.61	0.00	2.65	0.16	0.00	48.39	1.52	0.00	2.63	0.16	0.00
48.56	1.28	0.00	2.60	0.17	0.00	48.72	1.02	0.00	2.58	0.16	0.00
48.89	1.02	0.00	2.55	0.17	0.00	49.05	2.00	0.00	2.52	0.16	0.00
49.22	2.00	0.00	2.50	0.17	0.00	49.38	2.00	0.00	2.47	0.16	0.00
49.54	2.00	0.00	2.45	0.16	0.00	49.71	2.00	0.00	2.42	0.17	0.00
49.87	2.00	0.00	2.40	0.16	0.00	50.04	2.00	0.00	2.37	0.17	0.00
50.20	2.00	0.00	2.35	0.16	0.00						

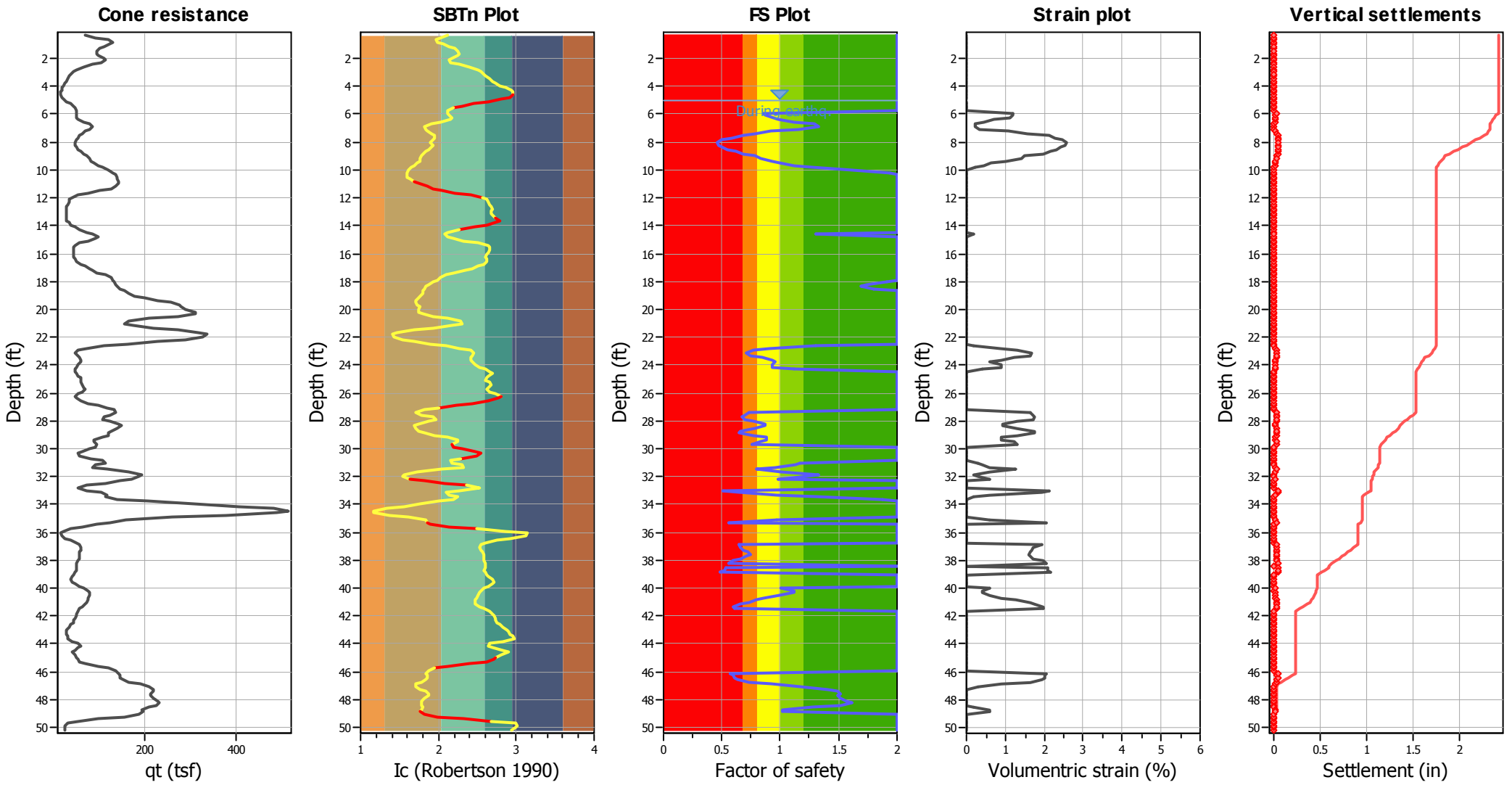
Overall liquefaction potential: 5.58

LPI = 0.00 - Liquefaction risk very low
LPI between 0.00 and 5.00 - Liquefaction risk low
LPI between 5.00 and 15.00 - Liquefaction risk high
LPI > 15.00 - Liquefaction risk very high

Abbreviations

FS: Calculated factor of safety for test point
F_L: 1 - FS
w_z: Function value of the extend of soil liquefaction according to depth
d_z: Layer thickness (ft)
LPI: Liquefaction potential index value for test point

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

:: Post-earthquake settlement of dry sands ::

Depth (ft)	Ic	Kc	Qc1n	Qc1n,cs	N1,60 (blows)	Vs (ft/s)	Gmax (tsf)	CSR	Shear, γ (%)	Svol,15 (%)	Nc	ev (%)	Settle. (in)
0.33	2.11	1.48	109.01	161.44	35	903.9	217	0.26	0.003	0.00	10.08	0.00	0.000
0.49	2.02	1.32	146.33	193.74	41	985.3	322	0.26	0.003	0.00	10.08	0.00	0.000
0.66	1.97	1.26	190.28	239.83	49	1088.7	470	0.26	0.003	0.00	10.08	0.00	0.000
0.82	1.99	1.28	204.98	263.14	55	1143.8	587	0.26	0.003	0.00	10.08	0.00	0.000
0.98	2.06	1.39	195.47	271.53	58	1170.7	679	0.26	0.003	0.00	10.08	0.00	0.000
1.15	2.14	1.53	176.44	270.14	59	1168.6	735	0.26	0.003	0.00	10.08	0.00	0.000
1.31	2.21	1.68	161.06	271.28	61	1165.3	782	0.26	0.003	0.00	10.08	0.00	0.000
1.48	2.25	1.81	152.71	276.43	64	1169.0	838	0.26	0.003	0.00	10.08	0.00	0.000
1.64	2.28	1.87	150.36	281.37	65	1175.4	895	0.26	0.003	0.00	10.08	0.00	0.000
1.80	2.25	1.80	158.36	284.51	66	1186.9	958	0.26	0.003	0.00	10.08	0.00	0.000
1.97	2.18	1.62	174.06	282.23	63	1191.5	1012	0.26	0.003	0.00	10.08	0.00	0.000
2.13	2.14	1.53	181.08	277.16	61	1183.7	1037	0.26	0.004	0.00	10.08	0.00	0.000
2.30	2.16	1.58	168.59	265.67	59	1157.7	1026	0.26	0.004	0.00	10.08	0.00	0.000
2.46	2.27	1.86	134.97	251.53	58	1111.9	971	0.26	0.005	0.00	10.08	0.00	0.000
2.62	2.40	2.33	102.67	238.93	59	1053.7	890	0.26	0.005	0.00	10.08	0.00	0.000
2.79	2.51	2.83	79.48	225.31	58	993.5	806	0.26	0.007	0.00	10.08	0.00	0.000
2.95	2.54	2.99	69.02	206.05	54	942.5	736	0.26	0.008	0.00	10.08	0.00	0.000
3.12	2.58	3.18	60.53	192.43	51	902.0	685	0.26	0.009	0.00	10.08	0.00	0.000
3.28	2.61	3.39	54.07	183.27	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
3.45	2.65	3.68	48.81	179.47	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
3.61	2.69	3.94	44.02	173.25	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
3.77	2.73	4.22	39.49	166.66	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
3.94	2.79	4.70	34.07	160.14	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
4.10	2.86	5.28	29.36	155.17	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
4.27	2.93	6.00	25.30	151.82	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
4.43	2.95	6.25	23.96	149.79	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
4.59	2.96	6.29	24.54	154.31	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
4.76	2.92	5.91	26.78	158.32	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
4.92	2.81	4.87	33.40	162.70	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000

Total estimated settlement: 0.00

:: Post-earthquake settlement due to soil liquefaction ::

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
5.09	157.68	2.00	0.00	1.00	0.00	5.25	147.99	2.00	0.00	1.00	0.00
5.41	135.56	2.00	0.00	1.00	0.00	5.58	125.85	2.00	0.00	1.00	0.00
5.74	118.88	2.00	0.00	1.00	0.00	5.91	119.12	0.85	1.21	1.00	0.02
6.07	120.65	0.87	1.19	1.00	0.02	6.23	126.19	0.94	1.11	1.00	0.02
6.40	129.47	0.98	0.69	1.00	0.01	6.56	137.81	1.11	0.45	1.00	0.01
6.73	147.75	1.29	0.22	1.00	0.00	6.89	150.35	1.33	0.22	1.00	0.00
7.05	141.80	1.15	0.32	1.00	0.01	7.22	128.60	0.92	1.08	1.00	0.02
7.38	119.69	0.78	1.56	1.00	0.03	7.55	111.45	0.68	2.11	1.00	0.04
7.71	102.52	0.58	2.29	1.00	0.04	7.87	94.13	0.50	2.46	1.00	0.05
8.04	88.73	0.46	2.58	1.00	0.05	8.20	90.57	0.47	2.53	1.00	0.05
8.37	94.85	0.50	2.44	1.00	0.05	8.53	101.08	0.54	2.32	1.00	0.04
8.69	109.04	0.62	2.18	1.00	0.04	8.86	116.21	0.69	1.99	1.00	0.04
9.02	123.78	0.78	1.49	1.00	0.03	9.19	128.69	0.84	1.41	1.00	0.03

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
9.35	135.48	0.93	1.00	1.00	0.02	9.51	139.92	1.00	0.65	1.00	0.01
9.68	147.25	1.11	0.43	1.00	0.01	9.84	155.85	1.27	0.21	1.00	0.00
10.01	171.80	1.61	0.00	1.00	0.00	10.17	184.81	1.94	0.00	1.00	0.00
10.34	191.55	2.00	0.00	1.00	0.00	10.50	194.63	2.00	0.00	1.00	0.00
10.66	196.15	2.00	0.00	1.00	0.00	10.83	204.93	2.00	0.00	1.00	0.00
10.99	217.83	2.00	0.00	1.00	0.00	11.16	230.95	2.00	0.00	1.00	0.00
11.32	227.93	2.00	0.00	1.00	0.00	11.48	213.96	2.00	0.00	1.00	0.00
11.65	197.53	2.00	0.00	1.00	0.00	11.81	193.50	2.00	0.00	1.00	0.00
11.98	191.97	2.00	0.00	1.00	0.00	12.14	183.82	2.00	0.00	1.00	0.00
12.30	176.89	2.00	0.00	1.00	0.00	12.47	172.09	2.00	0.00	1.00	0.00
12.63	166.76	2.00	0.00	1.00	0.00	12.80	161.46	2.00	0.00	1.00	0.00
12.96	157.05	2.00	0.00	1.00	0.00	13.12	156.68	2.00	0.00	1.00	0.00
13.29	167.39	2.00	0.00	1.00	0.00	13.45	187.95	2.00	0.00	1.00	0.00
13.62	207.25	2.00	0.00	1.00	0.00	13.78	212.40	2.00	0.00	1.00	0.00
13.94	199.44	2.00	0.00	1.00	0.00	14.11	177.86	2.00	0.00	1.00	0.00
14.27	148.25	2.00	0.00	1.00	0.00	14.44	147.21	2.00	0.00	1.00	0.00
14.60	164.24	1.30	0.20	1.00	0.00	14.76	198.88	2.00	0.00	1.00	0.00
14.93	212.79	2.00	0.00	1.00	0.00	15.09	217.67	2.00	0.00	1.00	0.00
15.26	222.40	2.00	0.00	1.00	0.00	15.42	235.08	2.00	0.00	1.00	0.00
15.58	240.39	2.00	0.00	1.00	0.00	15.75	236.15	2.00	0.00	1.00	0.00
15.91	223.97	2.00	0.00	1.00	0.00	16.08	212.69	2.00	0.00	1.00	0.00
16.24	207.69	2.00	0.00	1.00	0.00	16.40	218.43	2.00	0.00	1.00	0.00
16.57	237.88	2.00	0.00	1.00	0.00	16.73	259.96	2.00	0.00	1.00	0.00
16.90	270.61	2.00	0.00	1.00	0.00	17.06	252.73	2.00	0.00	1.00	0.00
17.23	227.01	2.00	0.00	1.00	0.00	17.39	199.96	2.00	0.00	1.00	0.00
17.55	200.80	2.00	0.00	1.00	0.00	17.72	202.22	2.00	0.00	1.00	0.00
17.88	200.85	2.00	0.00	1.00	0.00	18.05	193.20	1.91	0.00	1.00	0.00
18.21	186.63	1.74	0.00	1.00	0.00	18.37	184.84	1.69	0.00	1.00	0.00
18.54	189.56	1.81	0.00	1.00	0.00	18.70	198.82	2.00	0.00	1.00	0.00
18.87	207.75	2.00	0.00	1.00	0.00	19.03	220.20	2.00	0.00	1.00	0.00
19.19	242.00	2.00	0.00	1.00	0.00	19.36	269.76	2.00	0.00	1.00	0.00
19.52	301.61	2.00	0.00	1.00	0.00	19.69	326.24	2.00	0.00	1.00	0.00
19.85	335.21	2.00	0.00	1.00	0.00	20.01	345.04	2.00	0.00	1.00	0.00
20.18	364.69	2.00	0.00	1.00	0.00	20.34	382.36	2.00	0.00	1.00	0.00
20.51	374.00	2.00	0.00	1.00	0.00	20.67	355.96	2.00	0.00	1.00	0.00
20.83	361.58	2.00	0.00	1.00	0.00	21.00	345.89	2.00	0.00	1.00	0.00
21.16	315.39	2.00	0.00	1.00	0.00	21.33	290.19	2.00	0.00	1.00	0.00
21.49	298.18	2.00	0.00	1.00	0.00	21.65	337.93	2.00	0.00	1.00	0.00
21.82	354.13	2.00	0.00	1.00	0.00	21.98	345.13	2.00	0.00	1.00	0.00
22.15	301.53	2.00	0.00	1.00	0.00	22.31	246.21	2.00	0.00	1.00	0.00
22.47	201.75	2.00	0.00	1.00	0.00	22.64	168.34	1.30	0.20	1.00	0.00
22.80	145.59	0.91	0.90	1.00	0.02	22.97	135.33	0.77	1.31	1.00	0.03
23.13	130.20	0.71	1.69	1.00	0.03	23.30	133.46	0.74	1.63	1.00	0.03
23.46	141.06	0.84	1.23	1.00	0.02	23.62	147.53	0.94	0.88	1.00	0.02
23.79	149.21	0.96	0.61	1.00	0.01	23.95	147.26	0.93	0.88	1.00	0.02
24.12	147.43	0.93	0.88	1.00	0.02	24.28	158.83	1.12	0.41	1.00	0.01
24.44	177.46	2.00	0.00	1.00	0.00	24.61	193.78	2.00	0.00	1.00	0.00
24.77	200.61	2.00	0.00	1.00	0.00	24.94	200.77	2.00	0.00	1.00	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
25.10	206.63	2.00	0.00	1.00	0.00	25.26	221.46	2.00	0.00	1.00	0.00
25.43	236.71	2.00	0.00	1.00	0.00	25.59	240.39	2.00	0.00	1.00	0.00
25.76	231.41	2.00	0.00	1.00	0.00	25.92	221.42	2.00	0.00	1.00	0.00
26.08	220.50	2.00	0.00	1.00	0.00	26.25	225.49	2.00	0.00	1.00	0.00
26.41	223.59	2.00	0.00	1.00	0.00	26.58	208.38	2.00	0.00	1.00	0.00
26.74	181.82	2.00	0.00	1.00	0.00	26.90	160.67	2.00	0.00	1.00	0.00
27.07	145.42	2.00	0.00	1.00	0.00	27.23	139.95	2.00	0.00	1.00	0.00
27.40	133.03	0.73	1.64	1.00	0.03	27.56	129.52	0.69	1.70	1.00	0.03
27.72	127.47	0.67	1.74	1.00	0.03	27.89	129.45	0.69	1.70	1.00	0.03
28.05	135.61	0.76	1.30	1.00	0.03	28.22	143.39	0.87	0.92	1.00	0.02
28.38	143.29	0.87	0.92	1.00	0.02	28.54	136.76	0.78	1.29	1.00	0.02
28.71	126.21	0.65	1.77	1.00	0.04	28.87	126.15	0.65	1.77	1.00	0.03
29.04	135.97	0.77	1.30	1.00	0.03	29.20	144.39	0.88	0.91	1.00	0.02
29.36	145.02	0.89	0.90	1.00	0.02	29.53	141.33	0.83	1.23	1.00	0.03
29.69	135.64	0.76	1.30	1.00	0.02	29.86	137.19	2.00	0.00	1.00	0.00
30.02	136.93	2.00	0.00	1.00	0.00	30.19	143.97	2.00	0.00	1.00	0.00
30.35	140.86	2.00	0.00	1.00	0.00	30.51	132.07	2.00	0.00	1.00	0.00
30.68	134.82	2.00	0.00	1.00	0.00	30.84	150.42	2.00	0.00	1.00	0.00
31.01	163.36	1.17	0.29	1.00	0.01	31.17	161.01	1.13	0.40	1.00	0.01
31.33	150.44	0.96	0.60	1.00	0.01	31.50	139.30	0.80	1.25	1.00	0.03
31.66	153.89	1.01	0.59	1.00	0.01	31.83	171.73	1.33	0.20	1.00	0.00
31.99	166.70	1.23	0.28	1.00	0.01	32.15	152.17	0.98	0.60	1.00	0.01
32.32	144.75	2.00	0.00	1.00	0.00	32.48	137.42	2.00	0.00	1.00	0.00
32.65	132.43	2.00	0.00	1.00	0.00	32.81	123.21	2.00	0.00	1.00	0.00
32.97	112.72	0.51	2.12	1.00	0.04	33.14	126.99	0.65	1.92	1.00	0.04
33.30	151.42	0.96	0.60	1.00	0.01	33.47	171.90	1.32	0.20	1.00	0.00
33.63	196.14	1.87	0.00	1.00	0.00	33.79	230.40	2.00	0.00	1.00	0.00
33.96	287.96	2.00	0.00	1.00	0.00	34.12	354.34	2.00	0.00	1.00	0.00
34.29	421.23	2.00	0.00	1.00	0.00	34.45	446.77	2.00	0.00	1.00	0.00
34.61	423.94	2.00	0.00	1.00	0.00	34.78	326.19	2.00	0.00	1.00	0.00
34.94	223.58	2.00	0.00	1.00	0.00	35.11	151.95	0.97	0.60	1.00	0.01
35.27	118.54	0.56	2.03	1.00	0.04	35.43	92.50	2.00	0.00	1.00	0.00
35.60	76.31	2.00	0.00	1.00	0.00	35.76	76.41	2.00	0.00	1.00	0.00
35.93	82.20	2.00	0.00	1.00	0.00	36.09	78.09	2.00	0.00	1.00	0.00
36.26	87.40	2.00	0.00	1.00	0.00	36.42	100.47	2.00	0.00	1.00	0.00
36.58	115.50	2.00	0.00	1.00	0.00	36.75	122.61	2.00	0.00	1.00	0.00
36.91	126.84	0.64	1.92	1.00	0.04	37.08	128.47	0.66	1.72	1.00	0.04
37.24	130.84	0.69	1.68	1.00	0.03	37.40	133.26	0.71	1.64	1.00	0.03
37.57	135.50	0.74	1.60	1.00	0.03	37.73	133.16	0.71	1.64	1.00	0.03
37.90	128.53	0.66	1.72	1.00	0.04	38.06	122.91	0.60	1.97	1.00	0.04
38.22	118.27	0.56	2.04	1.00	0.04	38.39	117.07	2.00	0.00	1.00	0.00
38.55	115.51	0.53	2.08	1.00	0.04	38.72	114.06	0.52	2.10	1.00	0.04
38.88	110.34	0.49	2.16	1.00	0.04	39.04	105.59	2.00	0.00	1.00	0.00
39.21	100.64	2.00	0.00	1.00	0.00	39.37	99.70	2.00	0.00	1.00	0.00
39.54	110.46	2.00	0.00	1.00	0.00	39.70	126.56	2.00	0.00	1.00	0.00
39.86	141.96	2.00	0.00	1.00	0.00	40.03	153.95	1.00	0.59	1.00	0.01
40.19	160.87	1.12	0.40	1.00	0.01	40.36	160.93	1.12	0.40	1.00	0.01
40.52	153.14	0.99	0.59	1.00	0.01	40.68	144.43	0.86	0.91	1.00	0.02

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
40.85	139.20	0.79	1.25	1.00	0.03	41.01	133.95	0.73	1.62	1.00	0.03
41.18	127.87	0.66	1.73	1.00	0.04	41.34	122.33	0.60	1.98	1.00	0.04
41.50	123.48	0.61	1.97	1.00	0.04	41.67	128.82	2.00	0.00	1.00	0.00
41.83	132.43	2.00	0.00	1.00	0.00	42.00	131.52	2.00	0.00	1.00	0.00
42.16	127.30	2.00	0.00	1.00	0.00	42.32	122.87	2.00	0.00	1.00	0.00
42.49	119.65	2.00	0.00	1.00	0.00	42.65	110.51	2.00	0.00	1.00	0.00
42.82	100.75	2.00	0.00	1.00	0.00	42.98	92.67	2.00	0.00	1.00	0.00
43.15	94.01	2.00	0.00	1.00	0.00	43.31	99.36	2.00	0.00	1.00	0.00
43.47	109.39	2.00	0.00	1.00	0.00	43.64	118.59	2.00	0.00	1.00	0.00
43.80	124.49	2.00	0.00	1.00	0.00	43.97	125.32	2.00	0.00	1.00	0.00
44.13	132.56	2.00	0.00	1.00	0.00	44.29	137.45	2.00	0.00	1.00	0.00
44.46	139.85	2.00	0.00	1.00	0.00	44.62	137.09	2.00	0.00	1.00	0.00
44.79	136.26	2.00	0.00	1.00	0.00	44.95	136.26	2.00	0.00	1.00	0.00
45.11	131.70	2.00	0.00	1.00	0.00	45.28	121.25	2.00	0.00	1.00	0.00
45.44	106.53	2.00	0.00	1.00	0.00	45.61	99.93	2.00	0.00	1.00	0.00
45.77	105.36	2.00	0.00	1.00	0.00	45.93	113.89	2.00	0.00	1.00	0.00
46.10	117.88	0.57	2.04	1.00	0.04	46.26	120.50	0.60	2.01	1.00	0.04
46.43	121.34	0.61	1.99	1.00	0.04	46.59	124.49	0.64	1.95	1.00	0.04
46.75	132.22	0.73	1.65	1.00	0.03	46.92	146.25	0.92	0.89	1.00	0.02
47.08	161.71	1.17	0.29	1.00	0.01	47.25	173.95	1.41	0.00	1.00	0.00
47.41	177.74	1.49	0.00	1.00	0.00	47.57	178.89	1.52	0.00	1.00	0.00
47.74	177.41	1.49	0.00	1.00	0.00	47.90	178.62	1.52	0.00	1.00	0.00
48.07	180.90	1.57	0.00	1.00	0.00	48.23	182.73	1.61	0.00	1.00	0.00
48.39	178.48	1.52	0.00	1.00	0.00	48.56	166.92	1.28	0.20	1.00	0.00
48.72	152.14	1.02	0.60	1.00	0.01	48.89	152.18	1.02	0.60	1.00	0.01
49.05	148.42	2.00	0.00	1.00	0.00	49.22	137.30	2.00	0.00	1.00	0.00
49.38	121.93	2.00	0.00	1.00	0.00	49.54	116.86	2.00	0.00	1.00	0.00
49.71	103.46	2.00	0.00	1.00	0.00	49.87	84.78	2.00	0.00	1.00	0.00
50.04	76.00	2.00	0.00	1.00	0.00	50.20	74.36	2.00	0.00	1.00	0.00

Total estimated settlement: 2.42

Abbreviations

$Q_{tn,cs}$:	Equivalent clean sand normalized cone resistance
FS:	Factor of safety against liquefaction
e_v (%):	Post-liquefaction volumentric strain
DF:	e_v depth weighting factor
Settlement:	Calculated settlement

:: Strength loss calculation (Robertson (2009) ::

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
0.33	67.87	109.01	1.48	161.44	2.11	N/A	N/A
0.49	91.11	146.33	1.32	193.74	2.02	N/A	N/A
0.66	118.47	190.28	1.26	239.83	1.97	N/A	N/A
0.82	127.63	204.98	1.28	263.14	1.99	N/A	N/A
0.98	121.73	195.47	1.39	271.53	2.06	N/A	N/A
1.15	109.90	176.44	1.53	270.14	2.14	N/A	N/A
1.31	100.33	161.06	1.68	271.28	2.21	N/A	N/A
1.48	95.15	152.71	1.81	276.43	2.25	N/A	N/A
1.64	93.69	150.36	1.87	281.37	2.28	N/A	N/A
1.80	98.68	158.36	1.80	284.51	2.25	N/A	N/A
1.97	108.47	174.06	1.62	282.23	2.18	N/A	N/A
2.13	112.84	181.08	1.53	277.16	2.14	N/A	N/A
2.30	105.08	168.59	1.58	265.67	2.16	N/A	N/A
2.46	84.17	134.97	1.86	251.53	2.27	N/A	N/A
2.62	64.08	102.67	2.33	238.93	2.40	N/A	N/A
2.79	49.65	79.48	2.83	225.31	2.51	N/A	N/A
2.95	43.15	69.02	2.99	206.05	2.54	N/A	N/A
3.12	37.87	60.53	3.18	192.43	2.58	N/A	N/A
3.28	33.87	54.07	3.39	183.27	2.61	N/A	N/A
3.45	30.60	48.81	3.68	179.47	2.65	N/A	N/A
3.61	27.63	44.02	3.94	173.25	2.69	N/A	N/A
3.77	24.82	39.49	4.22	166.66	2.73	N/A	N/A
3.94	21.46	34.07	4.70	160.14	2.79	N/A	N/A
4.10	18.54	29.36	5.28	155.17	2.86	N/A	N/A
4.27	16.02	25.30	6.00	151.82	2.93	N/A	N/A
4.43	15.19	23.96	6.25	149.79	2.95	N/A	N/A
4.59	15.56	24.54	6.29	154.31	2.96	N/A	N/A
4.76	16.97	26.78	5.91	158.32	2.92	N/A	N/A
4.92	21.10	33.40	4.87	162.70	2.81	N/A	N/A
5.09	27.89	44.30	3.56	157.68	2.64	6.22	6.22
5.25	36.52	58.15	2.54	147.99	2.45	0.75	0.75
5.41	43.18	68.84	1.97	135.56	2.31	0.78	0.78
5.58	47.55	75.84	1.66	125.85	2.20	0.79	0.79
5.74	49.58	79.09	1.50	118.88	2.13	0.79	0.79
5.91	50.09	79.88	1.49	119.12	2.12	0.80	0.80
6.07	49.32	78.63	1.53	120.65	2.14	0.79	0.79
6.23	48.73	77.66	1.62	126.19	2.18	0.79	0.79
6.40	52.56	83.81	1.54	129.47	2.15	0.80	0.80
6.56	64.09	102.32	1.35	137.81	2.03	0.83	0.83
6.73	77.26	123.46	1.20	147.75	1.91	0.86	0.86
6.89	83.36	133.24	1.13	150.35	1.83	0.87	0.87
7.05	78.62	125.61	1.13	141.80	1.83	0.86	0.86
7.22	69.59	111.08	1.16	128.60	1.87	0.84	0.84
7.38	62.02	98.91	1.21	119.69	1.92	0.83	0.83
7.55	56.45	89.95	1.24	111.45	1.95	0.81	0.81
7.71	52.08	82.92	1.24	102.52	1.95	0.80	0.80
7.87	48.72	77.49	1.21	94.13	1.93	0.79	0.79
8.04	46.92	74.59	1.19	88.73	1.90	0.79	0.79

:: Strength loss calculation (Robertson (2009) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
8.20	46.92	74.58	1.21	90.57	1.93	0.79	0.79
8.37	49.49	78.70	1.21	94.85	1.92	0.79	0.79
8.53	54.07	86.03	1.17	101.08	1.88	0.81	0.81
8.69	60.27	95.97	1.14	109.04	1.84	0.82	0.82
8.86	66.60	104.96	1.11	116.21	1.80	0.83	0.83
9.02	72.00	112.52	1.10	123.78	1.79	0.84	0.84
9.19	76.60	118.32	1.09	128.69	1.77	0.85	0.85
9.35	81.50	125.00	1.08	135.48	1.77	0.86	0.86
9.51	88.00	132.48	1.06	139.92	1.73	0.87	0.87
9.68	96.64	142.80	1.03	147.25	1.69	0.88	0.88
9.84	107.67	156.01	1.00	155.85	1.64	0.89	0.89
10.01	119.34	171.80	1.00	171.80	1.62	0.91	0.91
10.17	129.00	184.81	1.00	184.81	1.60	0.92	0.92
10.34	134.43	191.55	1.00	191.55	1.59	0.92	0.92
10.50	137.29	194.63	1.00	194.63	1.60	0.93	0.93
10.66	139.09	196.15	1.00	196.15	1.63	0.93	0.93
10.83	140.59	199.72	1.03	204.93	1.68	0.93	0.93
10.99	140.43	202.70	1.07	217.83	1.75	0.93	0.93
11.16	136.93	202.00	1.14	230.95	1.85	0.93	0.93
11.32	124.76	187.16	1.22	227.93	1.93	0.92	0.92
11.48	101.41	156.21	1.37	213.96	2.05	0.89	0.89
11.65	73.63	117.15	1.69	197.53	2.21	0.85	0.85
11.81	51.01	80.81	2.39	193.50	2.42	0.80	0.80
11.98	39.11	61.66	3.11	191.97	2.56	0.76	0.76
12.14	33.62	52.83	3.48	183.82	2.62	4.53	4.53
12.30	31.82	49.92	3.54	176.89	2.63	4.25	4.25
12.47	29.72	46.52	3.70	172.09	2.66	3.92	3.92
12.63	28.15	43.99	3.79	166.76	2.67	3.67	3.67
12.80	26.33	41.05	3.93	161.46	2.69	3.40	3.40
12.96	26.14	40.72	3.86	157.05	2.68	3.34	3.34
13.12	26.64	41.52	3.77	156.68	2.67	3.38	3.38
13.29	27.34	42.63	3.93	167.39	2.69	3.44	3.44
13.45	28.11	43.85	4.29	187.95	2.74	3.50	3.50
13.62	28.58	44.58	4.65	207.25	2.78	3.53	3.53
13.78	31.93	49.95	4.25	212.40	2.73	3.92	3.92
13.94	36.72	57.63	3.46	199.44	2.62	4.48	4.48
14.11	45.23	68.70	2.59	177.86	2.46	0.78	0.78
14.27	54.98	79.65	1.86	148.25	2.27	0.80	0.80
14.44	70.49	98.42	1.50	147.21	2.12	0.83	0.83
14.60	84.47	116.29	1.41	164.24	2.08	0.85	0.85
14.76	96.57	133.56	1.49	198.88	2.12	0.87	0.87
14.93	91.86	128.29	1.66	212.79	2.20	0.86	0.86
15.09	75.61	107.53	2.02	217.67	2.32	0.84	0.84
15.26	54.79	79.95	2.78	222.40	2.50	0.80	0.80
15.42	44.96	66.62	3.53	235.08	2.63	5.08	5.08
15.58	43.90	64.87	3.71	240.39	2.66	4.91	4.91
15.75	43.88	64.25	3.68	236.15	2.65	4.87	4.87
15.91	43.28	62.70	3.57	223.97	2.64	4.76	4.76

:: Strength loss calculation (Robertson (2009) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
16.08	43.39	62.10	3.42	212.69	2.62	4.73	4.73
16.24	44.33	62.80	3.31	207.69	2.60	0.76	0.76
16.40	45.08	63.66	3.43	218.43	2.62	4.84	4.84
16.57	48.28	67.91	3.50	237.88	2.63	5.14	5.14
16.73	57.66	80.17	3.24	259.96	2.59	0.80	0.80
16.90	69.22	94.65	2.86	270.61	2.52	0.82	0.82
17.06	77.48	103.79	2.44	252.73	2.43	0.83	0.83
17.23	83.21	109.10	2.08	227.01	2.34	0.84	0.84
17.39	95.60	121.74	1.64	199.96	2.19	0.86	0.86
17.55	111.73	139.46	1.44	200.80	2.09	0.88	0.88
17.72	124.36	152.69	1.32	202.22	2.02	0.89	0.89
17.88	128.69	156.50	1.28	200.85	1.99	0.89	0.89
18.05	131.12	157.48	1.23	193.20	1.94	0.89	0.89
18.21	134.48	159.42	1.17	186.63	1.88	0.89	0.89
18.37	139.25	163.27	1.13	184.84	1.83	0.90	0.90
18.54	145.85	169.81	1.12	189.56	1.81	0.90	0.90
18.70	154.19	178.71	1.11	198.82	1.81	0.91	0.91
18.87	163.53	188.44	1.10	207.75	1.79	0.92	0.92
19.03	177.02	202.63	1.09	220.20	1.77	0.93	0.93
19.19	197.93	225.25	1.07	242.00	1.75	0.95	0.95
19.36	228.83	258.05	1.05	269.76	1.71	0.97	0.97
19.52	255.82	287.66	1.05	301.61	1.72	0.99	0.99
19.69	274.43	307.96	1.06	326.24	1.73	1.00	1.00
19.85	278.12	311.74	1.08	335.21	1.76	1.00	1.00
20.01	289.91	323.21	1.07	345.04	1.74	1.01	1.01
20.18	309.47	343.28	1.06	364.69	1.74	1.02	1.02
20.34	312.07	346.99	1.10	382.36	1.79	1.02	1.02
20.51	273.53	307.18	1.22	374.00	1.93	1.00	1.00
20.67	208.75	237.90	1.50	355.96	2.12	0.96	0.96
20.83	162.86	187.64	1.93	361.58	2.29	0.92	0.92
21.00	153.81	176.28	1.96	345.89	2.30	0.91	0.91
21.16	172.81	194.73	1.62	315.39	2.18	0.93	0.93
21.33	218.49	239.31	1.21	290.19	1.92	0.96	0.96
21.49	272.45	290.81	1.03	298.18	1.68	0.99	0.99
21.65	318.66	337.93	1.00	337.93	1.47	1.01	1.01
21.82	335.03	354.13	1.00	354.13	1.42	1.02	1.02
21.98	327.62	345.13	1.00	345.13	1.43	1.02	1.02
22.15	287.41	301.53	1.00	301.53	1.54	1.00	1.00
22.31	227.39	238.49	1.03	246.21	1.69	0.96	0.96
22.47	160.01	169.59	1.19	201.75	1.90	0.90	0.90
22.64	108.81	116.11	1.45	168.34	2.10	0.85	0.85
22.80	73.11	78.20	1.86	145.59	2.27	0.79	0.79
22.97	52.44	56.00	2.42	135.33	2.42	0.75	0.75
23.13	47.44	50.41	2.58	130.20	2.46	0.74	0.74
23.30	51.62	54.61	2.44	133.46	2.43	0.75	0.75
23.46	56.67	59.76	2.36	141.06	2.41	0.76	0.76
23.62	59.12	62.13	2.37	147.53	2.41	0.76	0.76
23.79	57.36	60.03	2.49	149.21	2.44	0.76	0.76

:: Strength loss calculation (Robertson (2009) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
23.95	53.52	55.76	2.64	147.26	2.47	0.75	0.75
24.12	48.62	50.42	2.92	147.43	2.53	0.74	0.74
24.28	46.49	48.08	3.30	158.83	2.60	0.73	0.73
24.44	46.39	47.89	3.71	177.46	2.66	3.47	3.47
24.61	48.22	49.64	3.90	193.78	2.69	3.59	3.59
24.77	54.00	55.38	3.62	200.61	2.65	4.01	4.01
24.94	57.65	58.82	3.41	200.77	2.61	4.27	4.27
25.10	59.89	60.85	3.40	206.63	2.61	4.41	4.41
25.26	58.11	58.83	3.76	221.46	2.67	4.25	4.25
25.43	60.97	61.48	3.85	236.71	2.68	4.44	4.44
25.59	65.79	66.04	3.64	240.39	2.65	4.77	4.77
25.76	67.01	66.87	3.46	231.41	2.62	4.83	4.83
25.92	60.71	60.18	3.68	221.42	2.65	4.34	4.34
26.08	52.16	51.34	4.29	220.50	2.74	3.69	3.69
26.25	47.72	46.65	4.83	225.49	2.81	3.35	3.35
26.41	50.55	49.21	4.54	223.59	2.77	3.53	3.53
26.58	59.38	57.60	3.62	208.38	2.65	4.14	4.14
26.74	75.46	72.98	2.49	181.82	2.44	0.78	0.78
26.90	95.89	92.39	1.74	160.67	2.23	0.82	0.82
27.07	116.74	111.95	1.30	145.42	2.00	0.84	0.84
27.23	131.21	125.27	1.12	139.95	1.81	0.86	0.86
27.40	134.84	128.21	1.04	133.03	1.70	0.86	0.86
27.56	124.18	117.78	1.10	129.52	1.79	0.85	0.85
27.72	110.53	104.51	1.22	127.47	1.93	0.83	0.83
27.89	108.31	102.09	1.27	129.45	1.97	0.83	0.83
28.05	124.16	116.84	1.16	135.61	1.87	0.85	0.85
28.22	143.21	134.54	1.07	143.39	1.74	0.87	0.87
28.38	148.95	139.63	1.03	143.29	1.68	0.88	0.88
28.54	139.78	130.62	1.05	136.76	1.71	0.87	0.87
28.71	127.05	118.26	1.07	126.21	1.74	0.85	0.85
28.87	120.98	112.23	1.12	126.15	1.82	0.84	0.84
29.04	118.25	109.28	1.24	135.97	1.95	0.84	0.84
29.20	105.59	96.99	1.49	144.39	2.12	0.82	0.82
29.36	88.53	80.69	1.80	145.02	2.25	0.80	0.80
29.53	86.77	78.76	1.79	141.33	2.25	0.79	0.79
29.69	93.75	85.01	1.60	135.64	2.17	0.80	0.80
29.86	92.35	83.39	1.65	137.19	2.19	0.80	0.80
30.02	77.83	69.65	1.97	136.93	2.31	0.78	0.78
30.19	61.70	54.48	2.64	143.97	2.47	0.75	0.75
30.35	53.83	47.07	2.99	140.86	2.54	0.73	0.73
30.51	55.23	48.19	2.74	132.07	2.49	0.73	0.73
30.68	80.58	71.16	1.89	134.82	2.28	0.78	0.78
30.84	107.62	95.56	1.57	150.42	2.16	0.82	0.82
31.01	114.61	101.47	1.61	163.36	2.18	0.83	0.83
31.17	92.30	80.80	1.99	161.01	2.31	0.80	0.80
31.33	85.20	74.15	2.03	150.44	2.32	0.79	0.79
31.50	115.38	101.54	1.37	139.30	2.05	0.83	0.83
31.66	162.71	145.00	1.06	153.89	1.73	0.88	0.88

:: Strength loss calculation (Robertson (2009) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
31.83	192.18	171.73	1.00	171.73	1.56	0.91	0.91
31.99	187.00	166.70	1.00	166.70	1.54	0.90	0.90
32.15	171.24	152.17	1.00	152.17	1.63	0.89	0.89
32.32	146.40	128.58	1.13	144.75	1.83	0.86	0.86
32.48	112.27	96.91	1.42	137.42	2.08	0.82	0.82
32.65	72.68	61.16	2.17	132.43	2.36	0.76	0.76
32.81	52.15	42.93	2.87	123.21	2.52	0.71	0.71
32.97	72.42	60.79	1.85	112.72	2.27	0.76	0.76
33.14	102.61	87.29	1.45	126.99	2.10	0.81	0.81
33.30	117.89	100.10	1.51	151.42	2.13	0.83	0.83
33.47	113.79	95.64	1.80	171.90	2.25	0.82	0.82
33.63	139.28	117.36	1.67	196.14	2.20	0.85	0.85
33.79	207.09	176.68	1.30	230.40	2.00	0.91	0.91
33.96	306.52	264.99	1.09	287.96	1.77	0.97	0.97
34.12	407.08	354.34	1.00	354.34	1.55	1.02	1.02
34.29	484.71	421.23	1.00	421.23	1.33	1.05	1.05
34.45	515.10	446.77	1.00	446.77	1.16	1.06	1.06
34.61	489.97	423.94	1.00	423.94	1.16	1.05	1.05
34.78	378.37	326.19	1.00	326.19	1.37	1.01	1.01
34.94	260.59	223.58	1.00	223.58	1.61	0.95	0.95
35.11	159.36	133.84	1.14	151.95	1.84	0.87	0.87
35.27	123.68	103.09	1.15	118.54	1.86	0.83	0.83
35.43	94.34	77.78	1.19	92.50	1.90	0.79	0.79
35.60	63.34	50.63	1.51	76.31	2.13	0.74	0.74
35.76	37.48	28.37	2.69	76.41	2.48	0.66	0.66
35.93	21.69	15.15	5.43	82.20	2.87	1.08	1.08
36.09	14.27	9.27	8.42	78.09	3.14	0.66	0.66
36.26	16.12	10.66	8.20	87.40	3.12	0.76	0.76
36.42	24.15	16.81	5.98	100.47	2.93	1.20	1.20
36.58	36.36	26.48	4.36	115.50	2.75	1.86	1.86
36.75	48.55	36.23	3.38	122.61	2.61	2.52	2.52
36.91	55.87	42.03	3.02	126.84	2.55	0.71	0.71
37.08	58.49	44.00	2.92	128.47	2.53	0.72	0.72
37.24	57.96	43.37	3.02	130.84	2.55	0.72	0.72
37.40	57.15	42.52	3.13	133.26	2.57	0.71	0.71
37.57	56.89	42.10	3.22	135.50	2.58	0.71	0.71
37.73	56.06	41.32	3.22	133.16	2.58	0.71	0.71
37.90	54.66	40.11	3.20	128.53	2.58	0.71	0.71
38.06	51.82	37.78	3.25	122.91	2.59	0.70	0.70
38.22	49.42	35.79	3.30	118.27	2.60	0.69	0.69
38.39	48.38	34.85	3.36	117.07	2.61	2.41	2.41
38.55	48.78	35.08	3.29	115.51	2.59	0.69	0.69
38.72	48.68	34.90	3.27	114.06	2.59	0.69	0.69
38.88	46.98	33.49	3.29	110.34	2.59	0.68	0.68
39.04	43.37	30.60	3.45	105.59	2.62	2.11	2.11
39.21	39.67	27.66	3.64	100.64	2.65	1.91	1.91
39.37	37.10	25.57	3.90	99.70	2.69	1.78	1.78
39.54	39.21	26.95	4.10	110.46	2.71	1.88	1.88

:: Strength loss calculation (Robertson (2009) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
39.70	45.85	31.76	3.98	126.56	2.70	2.21	2.21
39.86	56.69	39.83	3.56	141.96	2.64	2.75	2.75
40.03	66.86	47.40	3.25	153.95	2.59	0.73	0.73
40.19	74.67	53.19	3.02	160.87	2.55	0.74	0.74
40.36	77.80	55.45	2.90	160.93	2.53	0.75	0.75
40.52	76.83	54.68	2.80	153.14	2.51	0.75	0.75
40.68	74.20	52.64	2.74	144.43	2.50	0.74	0.74
40.85	73.61	52.13	2.67	139.20	2.48	0.74	0.74
41.01	72.66	51.35	2.61	133.95	2.47	0.74	0.74
41.18	69.21	48.64	2.63	127.87	2.47	0.73	0.73
41.34	61.47	42.61	2.87	122.33	2.52	0.71	0.71
41.50	55.32	37.71	3.27	123.48	2.59	0.70	0.70
41.67	51.53	34.58	3.73	128.82	2.66	2.38	2.38
41.83	49.84	33.12	4.00	132.43	2.70	2.29	2.29
42.00	48.12	31.72	4.15	131.52	2.72	2.20	2.20
42.16	46.02	30.12	4.23	127.30	2.73	2.09	2.09
42.32	44.36	28.85	4.26	122.87	2.74	2.00	2.00
42.49	41.99	27.04	4.42	119.65	2.76	1.88	1.88
42.65	37.67	23.92	4.62	110.51	2.78	1.67	1.67
42.82	32.23	20.00	5.04	100.75	2.83	1.41	1.41
42.98	27.80	16.83	5.51	92.67	2.88	1.19	1.19
43.15	27.33	16.41	5.73	94.01	2.90	1.16	1.16
43.31	28.27	16.95	5.86	99.36	2.92	1.20	1.20
43.47	29.04	17.31	6.32	109.39	2.96	1.24	1.24
43.64	31.04	18.56	6.39	118.59	2.97	1.33	1.33
43.80	39.94	24.73	5.03	124.49	2.83	1.74	1.74
43.97	52.09	33.47	3.74	125.32	2.66	2.30	2.30
44.13	58.00	37.53	3.53	132.56	2.63	2.56	2.56
44.29	53.82	34.24	4.01	137.45	2.70	2.36	2.36
44.46	44.81	27.57	5.07	139.85	2.83	1.94	1.94
44.62	39.98	24.08	5.69	137.09	2.90	1.71	1.71
44.79	46.02	28.29	4.82	136.26	2.80	1.98	1.98
44.95	50.85	31.64	4.31	136.26	2.74	2.19	2.19
45.11	52.11	32.54	4.05	131.70	2.71	2.24	2.24
45.28	54.88	34.68	3.50	121.25	2.63	2.36	2.36
45.44	69.56	45.88	2.32	106.53	2.40	0.72	0.72
45.61	95.76	66.52	1.50	99.93	2.13	0.77	0.77
45.77	118.32	84.73	1.24	105.36	1.95	0.80	0.80
45.93	134.26	97.36	1.17	113.89	1.88	0.82	0.82
46.10	141.95	103.45	1.14	117.88	1.84	0.83	0.83
46.26	144.16	104.65	1.15	120.50	1.86	0.83	0.83
46.43	145.09	105.06	1.15	121.34	1.86	0.83	0.83
46.59	151.19	109.83	1.13	124.49	1.84	0.84	0.84
46.75	165.38	121.27	1.09	132.22	1.78	0.85	0.85
46.92	189.34	140.58	1.04	146.25	1.70	0.88	0.88
47.08	209.30	155.34	1.04	161.71	1.70	0.89	0.89
47.25	219.57	161.27	1.08	173.95	1.76	0.90	0.90
47.41	217.24	157.38	1.13	177.74	1.83	0.89	0.89

:: Strength loss calculation (Robertson (2009) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
47.57	213.50	153.10	1.17	178.89	1.88	0.89	0.89
47.74	213.50	153.05	1.16	177.41	1.87	0.89	0.89
47.90	219.76	158.32	1.13	178.62	1.83	0.89	0.89
48.07	227.09	164.41	1.10	180.90	1.79	0.90	0.90
48.23	231.56	167.85	1.09	182.73	1.77	0.90	0.90
48.39	225.75	163.04	1.09	178.48	1.78	0.90	0.90
48.56	210.18	150.93	1.11	166.92	1.80	0.89	0.89
48.72	193.23	138.62	1.10	152.14	1.79	0.87	0.87
48.89	195.20	140.24	1.09	152.18	1.77	0.88	0.88
49.05	186.57	132.56	1.12	148.42	1.82	0.87	0.87
49.22	155.60	106.56	1.29	137.30	1.99	0.84	0.84
49.38	96.10	61.14	1.99	121.93	2.31	0.76	0.76
49.54	52.24	30.11	3.88	116.86	2.68	2.05	2.05
49.71	29.63	15.42	6.71	103.46	3.00	1.10	1.10
49.87	24.10	12.17	6.97	84.78	3.02	0.87	0.87
50.04	22.66	11.30	6.73	76.00	3.00	0.81	0.81
50.20	24.44	12.34	6.03	74.36	2.93	0.88	0.88

Abbreviations

q_t:	Total cone resistance
K_c:	Cone resistance correction factor due to fines
$Q_{tn,cs}$:	Adjusted and corrected cone resistance due to fines
I_c:	Soil behavior type index
$S_{u(liq)}/\sigma'_v$:	Calculated liquefied undrained strength ratio
$S_{u(peak)}/\sigma'_v$:	Calculated peak undrained strength ratio

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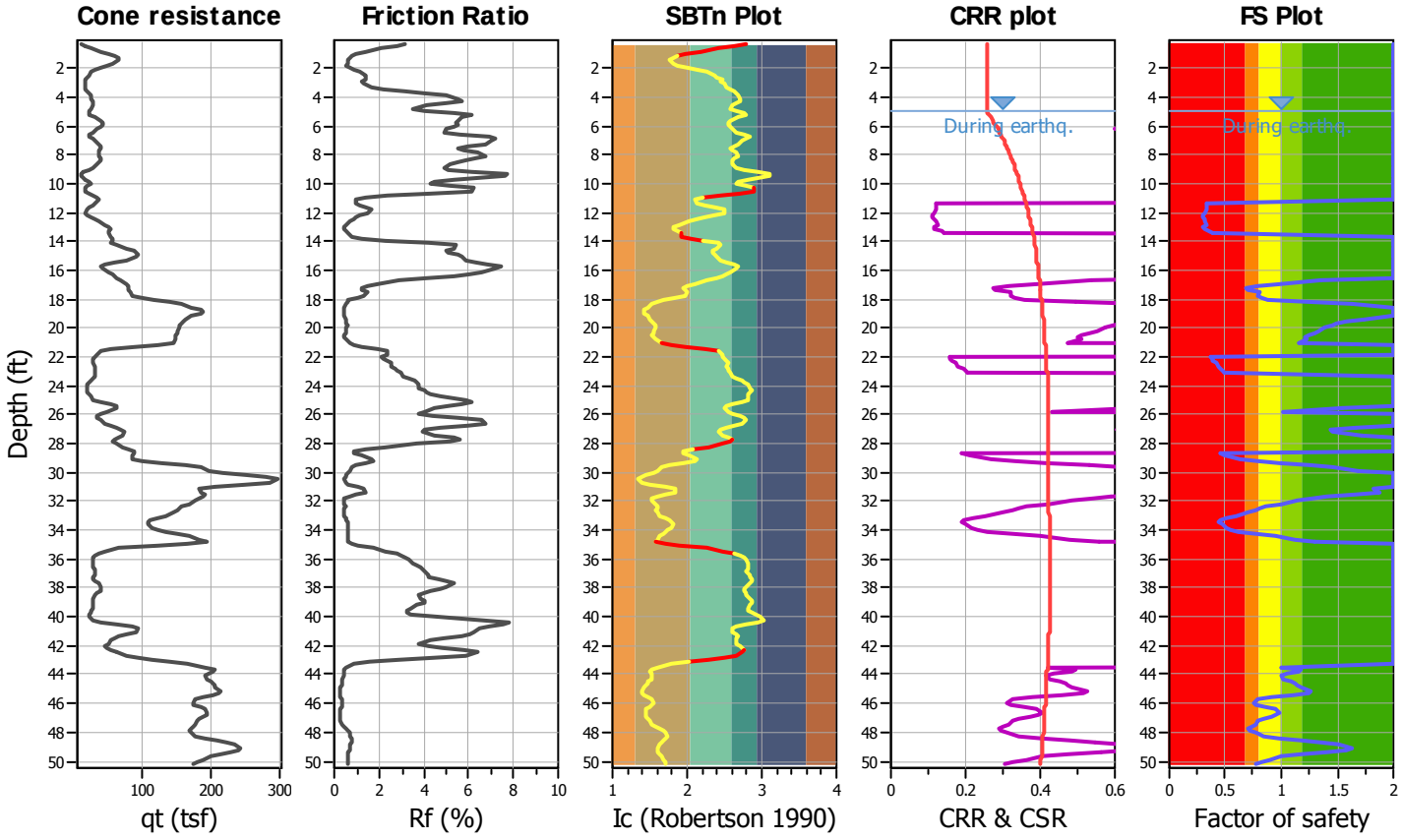
LIQUEFACTION ANALYSIS REPORT

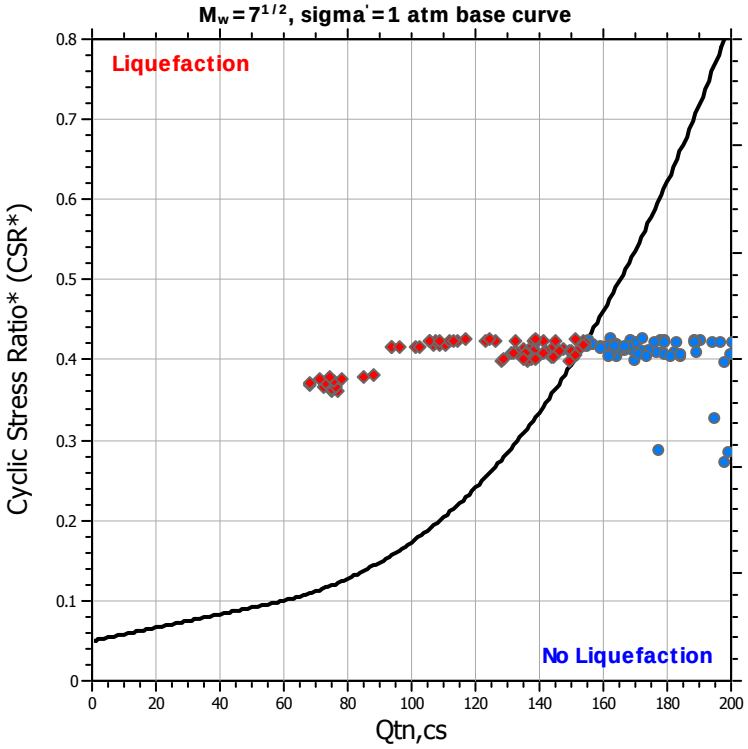
Project title : **Location :**

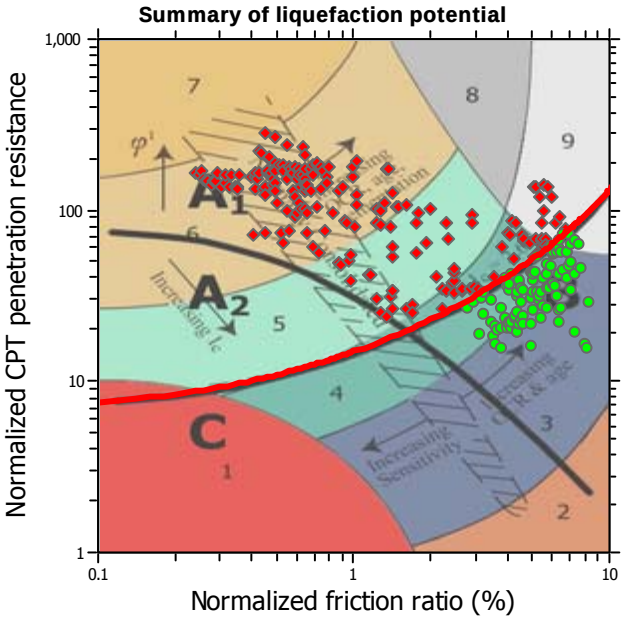
CPT file : CPT-02

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	5.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	5.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	6.90	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.38	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

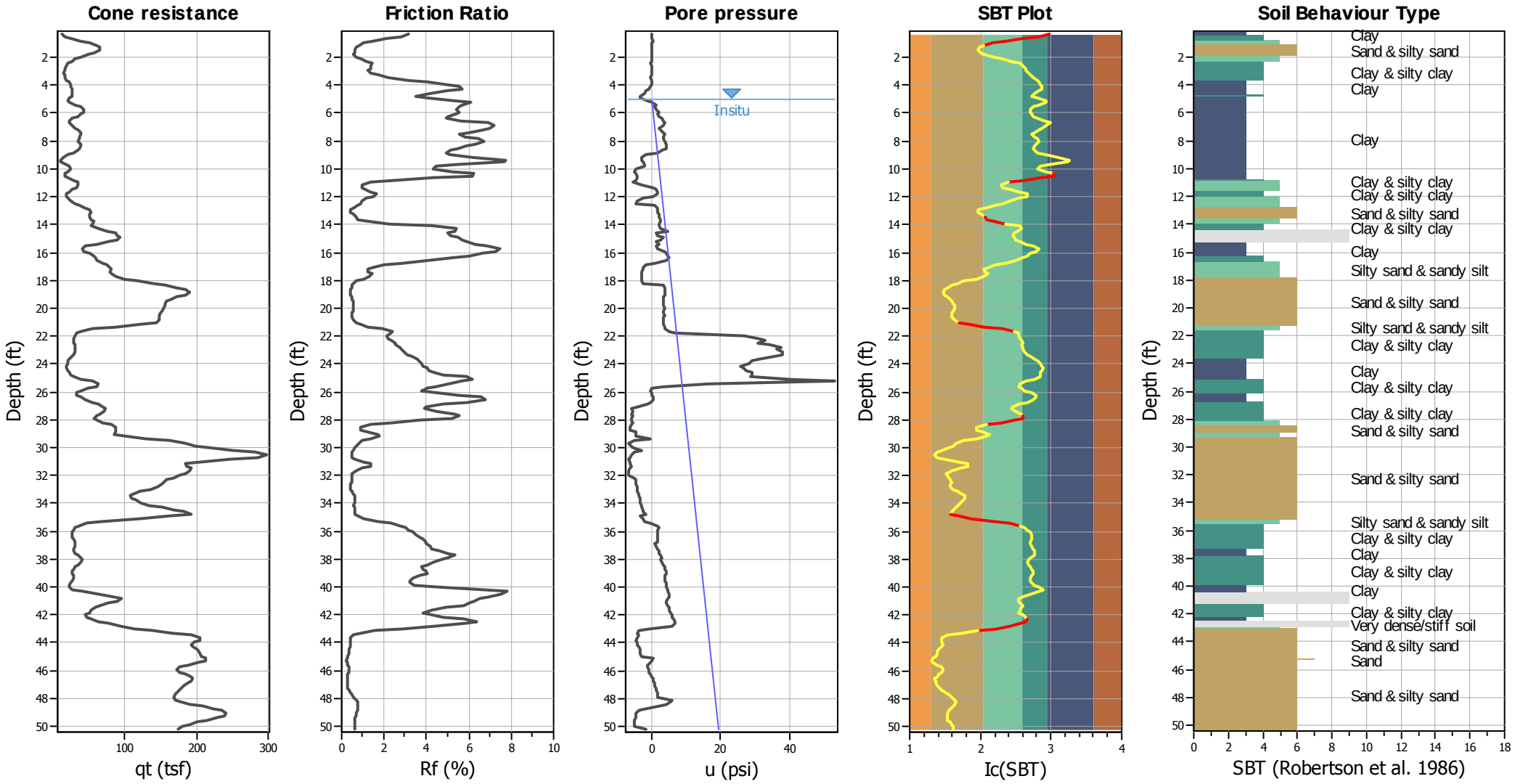






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



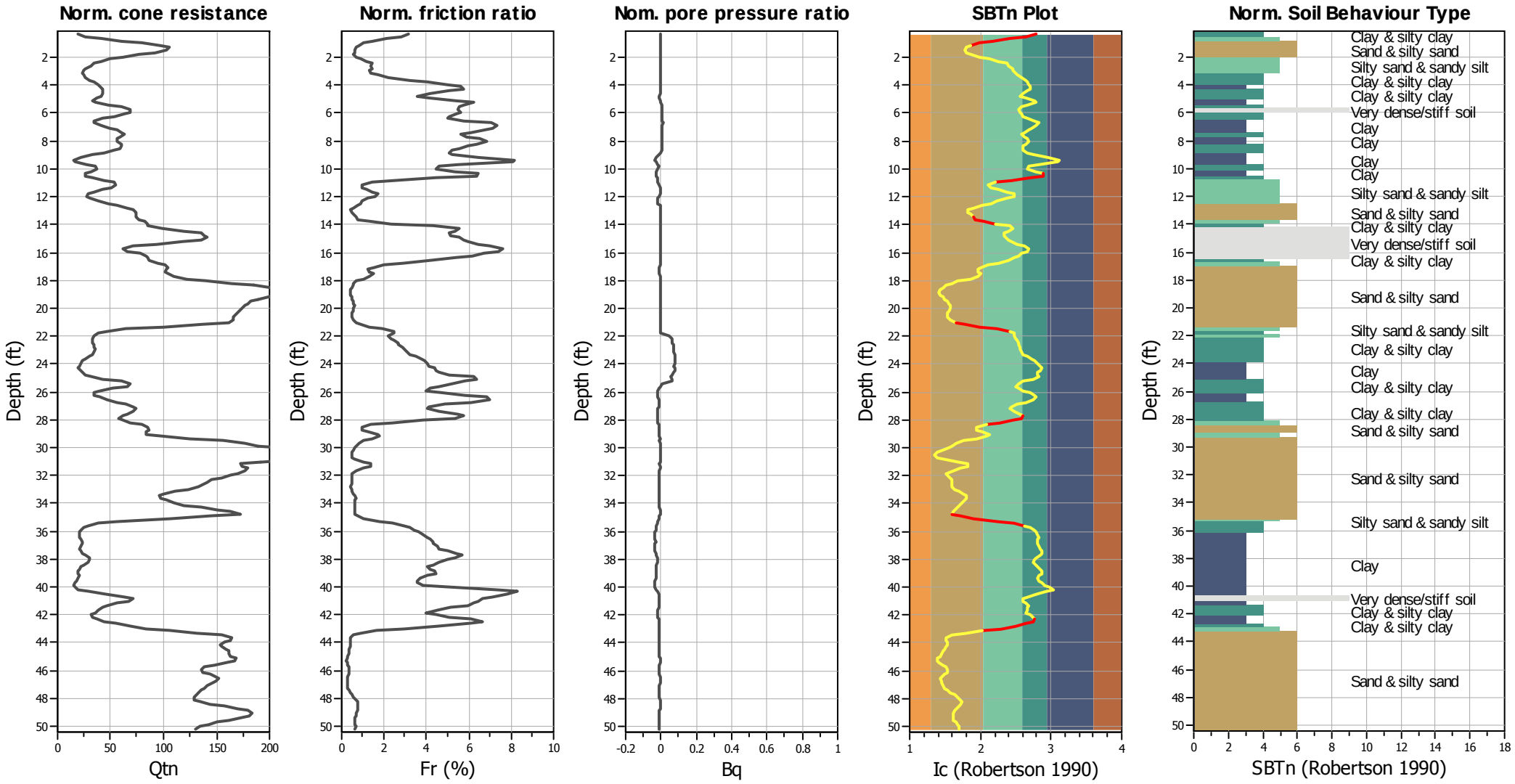
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.90	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.38	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	5.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

CPT basic interpretation plots (normalized)



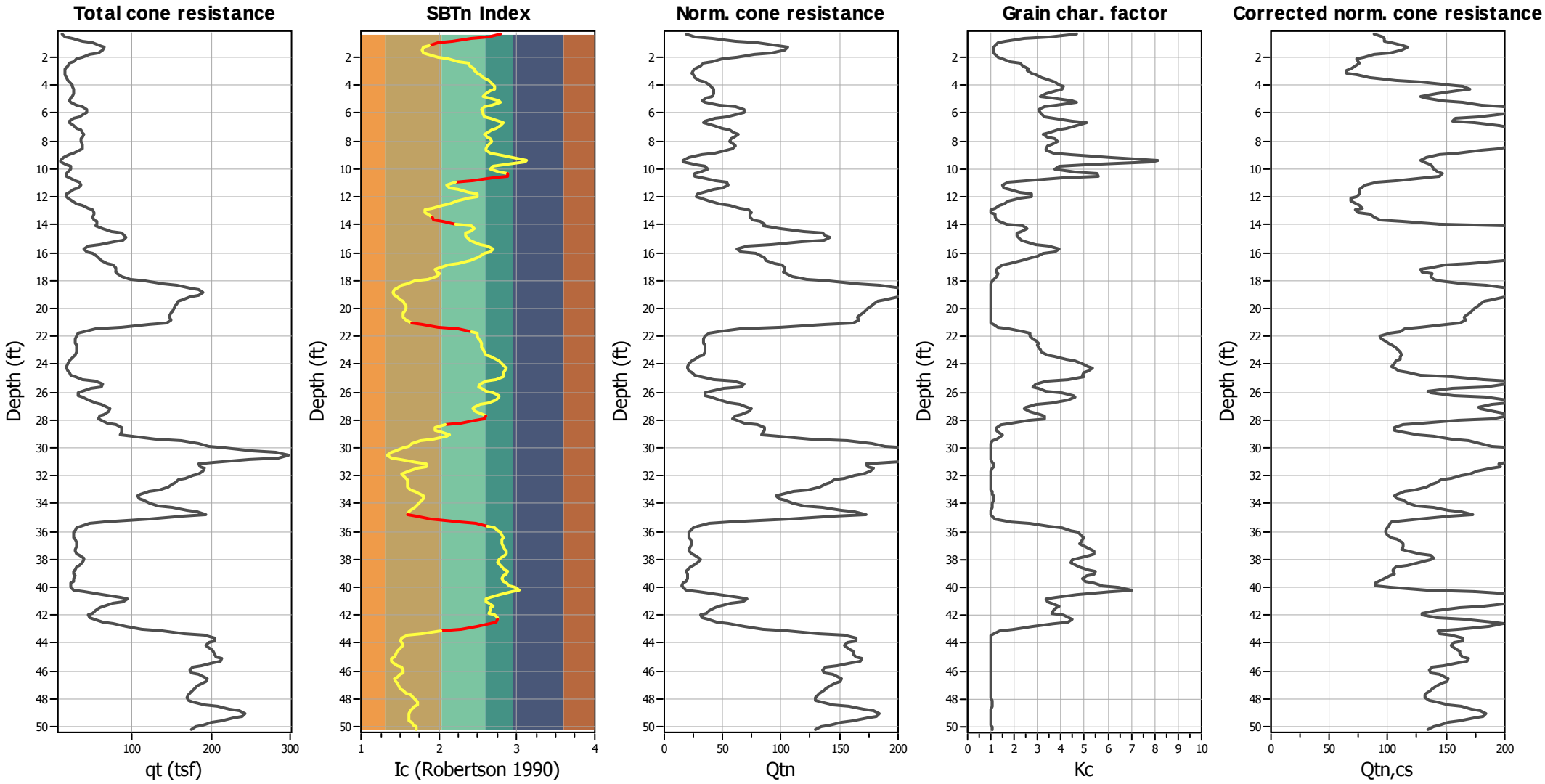
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.90	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.38	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	5.00 ft	Fill height:	N/A	Limit depth:	N/A

SBTn legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to
9. Very stiff fine grained

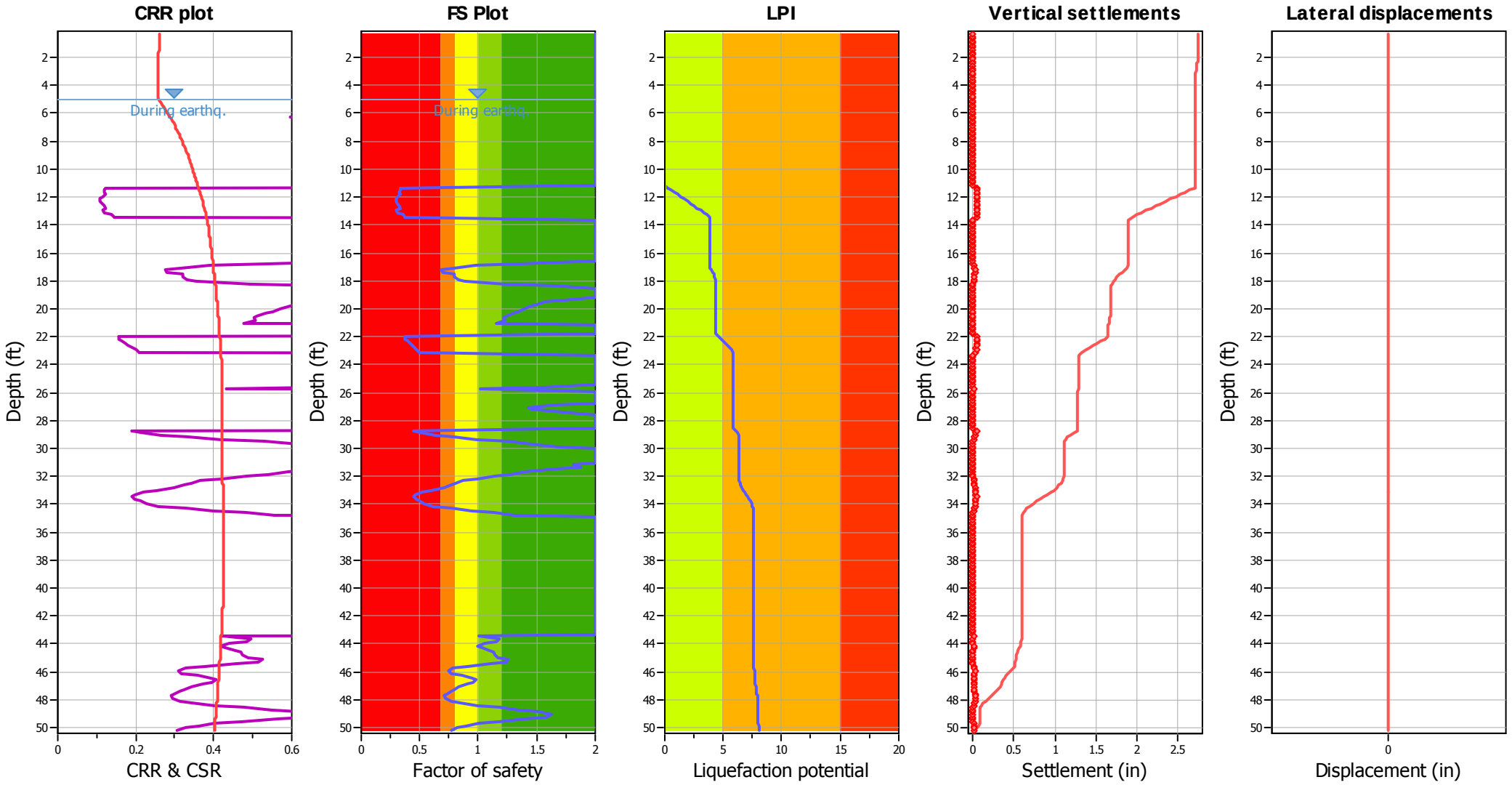
Liquefaction analysis overall plots (intermediate results)



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.90	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.38	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	5.00 ft	Fill height:	N/A	Limit depth:	N/A

Liquefaction analysis overall plots



Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.90	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.38	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	5.00 ft	Fill height:	N/A	Limit depth:	N/A

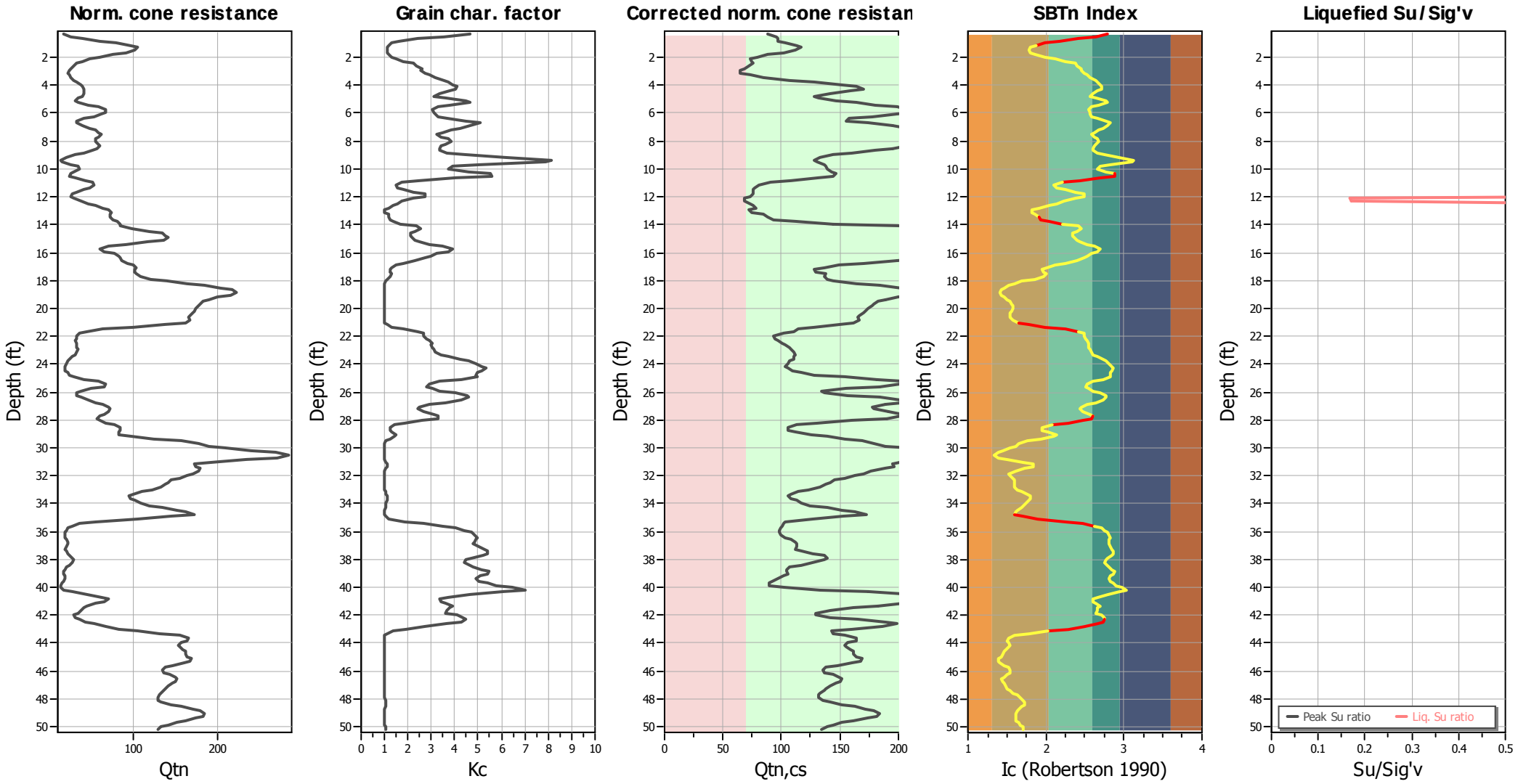
F.S. color scheme

- Almost certain it will liquefy
- Very likely to liquefy
- Liquefaction and no liq. are equally likely
- Unlike to liquefy
- Almost certain it will not liquefy

LPI color scheme

- Very high risk
- High risk
- Low risk

Check for strength loss plots (Robertson (2010))



Input parameters and analysis data

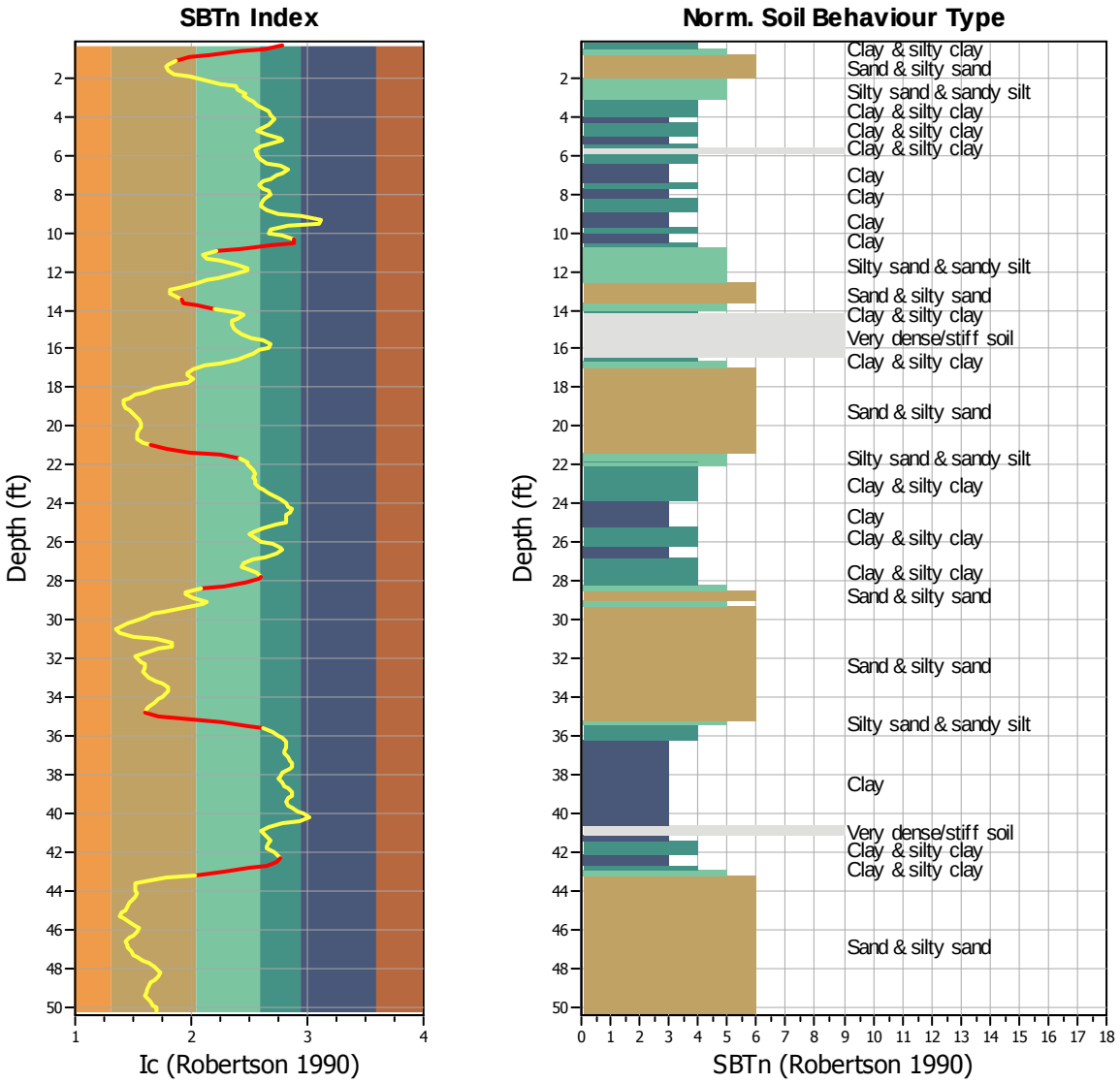
Analysis method:	NCEER (1998)	Depth to water table (erthq.):	5.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	6.90	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.38	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	5.00 ft	Fill height:	N/A	Limit depth:	N/A

TRANSITION LAYER DETECTION ALGORITHM REPORT
Summary Details & Plots

Short description

The software will delete data when the cone is in transition from either clay to sand or vise-versa. To do this the software requires a range of I_c values over which the transition will be defined (typically somewhere between $1.80 < I_c < 3.0$) and a rate of change of I_c. Transitions typically occur when the rate of change of I_c is fast (i.e. delta I_c is small).

The SBT_n plot below, displays in red the detected transition layers based on the parameters listed below the graphs.



Transition layer algorithm properties

I_c minimum check value:	1.70
I_c maximum check value:	3.00
I_c change ratio value:	0.0250
Minimum number of points in layer:	4

General statistics

Total points in CPT file:	305
Total points excluded:	38
Exclusion percentage:	12.46%
Number of layers detected:	7

Transition layer No	Number of points	Depth	SBT_n number	SBT_n description
Transition layer 1	7	Start depth: 0.33 (ft)	4	Clay & silty clay
		End depth: 1.31 (ft)	6	Sand & silty sand
Transition layer 2	5	Start depth: 10.50 (ft)	3	Clay
		End depth: 11.16 (ft)	5	Silty sand & sandy silt
Transition layer 3	4	Start depth: 13.62 (ft)	6	Sand & silty sand
		End depth: 14.11 (ft)	4	Clay & silty clay
Transition layer 4	5	Start depth: 21.16 (ft)	6	Sand & silty sand
		End depth: 21.82 (ft)	4	Clay & silty clay
Transition layer 5	5	Start depth: 27.89 (ft)	4	Clay & silty clay
		End depth: 28.54 (ft)	6	Sand & silty sand
Transition layer 6	6	Start depth: 34.94 (ft)	6	Sand & silty sand
		End depth: 35.76 (ft)	4	Clay & silty clay
Transition layer 7	6	Start depth: 42.49 (ft)	3	Clay
		End depth: 43.31 (ft)	6	Sand & silty sand

Start depth: Depth where the transition layer begins
End depth: Depth where the transition layer ends

:: Field input data ::

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
1	0.33	12.00	0.30	0.10	45.19	108.94
2	0.49	11.20	0.50	0.00	37.27	111.55
3	0.66	26.70	0.60	0.10	27.29	113.54
4	0.82	37.70	0.50	0.40	18.15	114.53
5	0.98	48.80	0.50	0.00	12.58	114.74
6	1.15	63.20	0.50	0.10	9.68	115.20
7	1.31	69.20	0.50	0.00	8.18	114.89
8	1.48	64.00	0.40	0.00	7.60	113.72
9	1.64	59.60	0.30	0.00	8.18	112.10
10	1.80	47.60	0.30	0.00	9.39	110.03
11	1.97	36.20	0.20	0.10	12.65	109.50
12	2.13	31.40	0.30	0.10	16.43	108.97
13	2.30	25.00	0.30	0.00	20.91	109.40
14	2.46	21.30	0.30	-0.10	25.47	108.91
15	2.62	17.40	0.30	0.10	26.60	107.82
16	2.79	19.30	0.20	0.10	28.99	106.49
17	2.95	13.40	0.20	0.10	28.65	105.25
18	3.12	15.10	0.20	0.00	30.32	105.09
19	3.28	16.40	0.20	0.00	32.06	107.33
20	3.45	15.80	0.40	-0.10	34.08	109.81
21	3.61	18.20	0.50	0.00	37.09	113.71
22	3.77	22.80	0.90	0.10	38.50	116.71
23	3.94	23.60	1.20	0.30	39.99	119.37
24	4.10	26.00	1.50	-0.40	41.02	120.61
25	4.27	26.30	1.50	-0.80	40.80	121.22
26	4.43	26.90	1.50	-1.40	38.70	120.37
27	4.59	26.40	1.00	-2.10	35.72	118.96
28	4.76	26.30	0.80	-3.40	33.80	117.41
29	4.92	24.30	0.90	-3.20	37.65	117.41
30	5.09	18.50	1.10	-1.30	43.97	118.35
31	5.25	19.10	1.30	0.30	45.02	120.13
32	5.41	29.30	1.70	1.40	38.97	122.44
33	5.58	41.10	2.10	1.10	34.97	124.57
34	5.74	43.40	2.50	1.30	32.93	125.65
35	5.91	44.60	2.40	2.10	33.43	125.73
36	6.07	39.90	2.20	1.80	34.01	124.79
37	6.23	34.10	1.80	2.30	35.02	122.75
38	6.40	27.70	1.10	3.20	38.18	120.42
39	6.56	19.30	1.10	3.30	43.95	119.34
40	6.73	18.60	1.50	3.80	47.95	120.74
41	6.89	26.90	1.90	3.40	45.30	122.94
42	7.05	33.30	2.30	2.20	41.93	124.44
43	7.22	33.70	2.40	2.70	39.42	125.26
44	7.38	38.40	2.40	3.40	36.41	125.12
45	7.55	41.20	2.00	3.80	34.60	125.01
46	7.71	38.80	2.20	3.50	36.12	124.75
47	7.87	31.70	2.30	3.60	38.44	125.09
48	8.04	36.60	2.40	3.90	39.48	125.26

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
49	8.20	37.00	2.40	4.40	37.30	125.43
50	8.37	39.20	2.30	4.40	35.99	125.16
51	8.53	38.80	2.10	4.40	35.35	124.27
52	8.69	32.90	1.70	3.00	35.69	122.87
53	8.86	29.20	1.40	1.80	38.16	120.65
54	9.02	20.60	1.00	-1.60	43.28	118.16
55	9.19	13.10	0.80	-3.00	54.68	115.67
56	9.35	8.60	0.80	-2.70	66.75	114.33
57	9.51	9.40	0.80	-2.20	65.28	114.76
58	9.68	14.70	0.90	-2.00	47.54	116.75
59	9.84	28.50	1.10	-2.00	39.97	117.86
60	10.01	24.20	1.00	-4.50	38.44	118.25
61	10.17	19.10	1.00	-4.80	44.80	117.80
62	10.34	16.40	1.10	-4.50	50.95	117.67
63	10.50	16.00	1.10	-4.10	51.14	117.39
64	10.66	18.10	0.90	-3.90	40.60	116.92
65	10.83	29.00	0.70	-4.50	28.03	115.41
66	10.99	36.30	0.40	-5.30	19.59	113.28
67	11.16	36.10	0.30	-2.90	16.04	110.91
68	11.32	32.80	0.30	0.60	17.07	109.90
69	11.48	26.60	0.30	1.20	20.60	109.48
70	11.65	21.00	0.30	1.80	25.60	108.96
71	11.81	17.30	0.30	1.70	30.13	108.55
72	11.98	16.40	0.30	0.40	30.12	107.57
73	12.14	18.60	0.20	-2.50	25.36	106.91
74	12.30	24.60	0.20	-3.90	20.26	107.45
75	12.47	31.20	0.30	-4.30	17.09	108.93
76	12.63	35.60	0.30	1.00	13.94	109.40
77	12.80	44.00	0.20	1.80	10.58	108.89
78	12.96	54.10	0.20	1.90	5.00	108.06
79	13.12	53.10	0.20	2.00	5.00	109.28
80	13.29	50.20	0.30	2.20	9.41	110.22
81	13.45	51.70	0.30	2.30	10.68	111.83
82	13.62	51.40	0.40	2.50	11.23	113.25
83	13.78	55.80	0.50	2.60	14.11	117.47
84	13.94	60.20	1.20	2.10	19.25	121.81
85	14.11	51.10	2.10	2.40	26.85	125.97
86	14.27	49.30	3.50	2.60	28.66	129.31
87	14.44	86.90	4.60	4.80	26.34	130.95
88	14.60	89.40	3.90	1.40	24.22	132.02
89	14.76	86.30	4.70	1.80	24.24	132.41
90	14.93	94.40	5.20	3.60	25.05	133.18
91	15.09	96.10	5.30	2.60	25.97	133.15
92	15.26	77.30	4.80	1.30	27.88	132.00
93	15.42	59.10	3.60	2.10	31.80	130.03
94	15.58	43.60	3.00	1.60	36.51	127.95
95	15.75	34.30	2.80	2.00	39.88	127.21
96	15.91	41.40	3.10	3.80	38.44	127.72

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
97	16.08	52.80	3.40	4.40	34.72	128.84
98	16.24	59.90	3.70	4.70	32.30	129.06
99	16.40	56.00	3.10	5.10	30.10	128.47
100	16.57	58.90	2.50	4.30	26.09	127.01
101	16.73	68.50	1.90	0.90	20.75	125.54
102	16.90	78.60	1.50	-1.70	16.16	123.80
103	17.06	81.10	1.10	-2.50	13.31	122.08
104	17.23	79.40	0.90	-2.50	11.87	120.72
105	17.39	80.00	0.90	-2.70	12.20	120.95
106	17.55	80.30	1.20	-2.70	13.28	122.34
107	17.72	84.30	1.50	-2.60	11.98	122.06
108	17.88	94.70	0.70	-2.60	9.29	121.47
109	18.05	116.80	0.80	-2.60	5.81	119.95
110	18.21	140.10	0.80	-2.50	4.26	120.67
111	18.37	160.30	0.80	3.70	3.17	120.96
112	18.54	168.60	0.80	4.00	2.34	121.20
113	18.70	188.40	0.80	3.80	1.80	121.37
114	18.87	197.50	0.80	3.80	1.63	121.43
115	19.03	182.70	0.80	3.90	1.86	121.36
116	19.19	172.50	0.80	3.60	2.40	121.20
117	19.36	162.30	0.80	3.60	2.86	121.08
118	19.52	156.90	0.80	3.60	3.33	121.29
119	19.69	156.50	0.90	3.70	3.64	121.54
120	19.85	155.20	0.90	3.70	3.89	121.80
121	20.01	153.50	0.90	3.80	3.87	121.50
122	20.18	150.50	0.80	3.70	3.67	120.88
123	20.34	150.00	0.70	3.70	3.42	120.22
124	20.51	149.70	0.70	3.80	3.38	119.85
125	20.67	144.80	0.70	3.40	3.43	119.84
126	20.83	148.00	0.70	3.50	4.08	121.14
127	21.00	153.20	1.10	3.70	5.21	122.40
128	21.16	132.70	1.20	3.60	7.71	122.68
129	21.33	78.70	1.00	3.80	12.46	121.86
130	21.49	49.20	1.10	3.90	20.47	120.27
131	21.65	36.20	1.00	5.30	27.42	118.69
132	21.82	30.90	0.70	7.00	29.86	116.82
133	21.98	29.80	0.60	27.20	29.98	115.21
134	22.15	27.90	0.60	31.40	31.09	115.12
135	22.31	27.20	0.70	32.80	32.00	115.48
136	22.47	29.10	0.70	31.00	32.81	116.21
137	22.64	29.20	0.80	34.40	32.46	116.62
138	22.80	30.20	0.80	37.50	33.19	117.27
139	22.97	30.30	0.90	36.40	33.33	117.59
140	23.13	30.60	0.90	37.90	34.25	117.84
141	23.30	29.10	0.90	38.10	35.83	117.72
142	23.46	25.90	0.90	35.90	38.53	117.20
143	23.62	22.40	0.80	31.20	42.00	116.62
144	23.79	20.40	0.80	29.10	44.54	115.76

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
145	23.95	19.00	0.70	28.50	46.77	115.24
146	24.12	17.80	0.70	25.80	48.36	114.76
147	24.28	17.10	0.70	26.70	49.89	115.06
148	24.44	18.10	0.80	27.40	48.45	115.88
149	24.61	22.10	0.90	29.20	47.04	117.27
150	24.77	23.70	1.10	29.20	46.99	118.92
151	24.94	24.30	1.40	28.70	47.36	122.16
152	25.10	35.40	2.50	40.70	42.56	125.48
153	25.26	54.10	3.20	53.20	35.78	128.31
154	25.43	73.20	3.60	16.40	32.18	128.89
155	25.59	61.10	2.80	3.60	30.87	127.66
156	25.76	48.60	1.80	0.20	32.86	124.68
157	25.92	35.10	1.30	-0.40	35.59	121.77
158	26.08	30.00	1.20	0.00	40.59	121.40
159	26.25	32.50	1.80	0.20	44.32	123.23
160	26.41	36.30	2.50	0.50	44.73	125.85
161	26.58	45.30	3.20	0.50	42.47	127.67
162	26.74	53.10	3.40	-0.30	37.40	128.51
163	26.90	63.70	3.00	-1.10	32.04	128.30
164	27.07	70.10	2.50	-4.20	28.26	128.05
165	27.23	73.70	2.80	-5.80	27.47	128.33
166	27.40	73.30	3.20	-5.30	29.79	128.99
167	27.56	63.20	3.40	-5.80	33.45	129.47
168	27.72	57.70	3.70	-5.50	35.26	129.15
169	27.89	60.40	3.00	-5.70	34.88	128.20
170	28.05	55.20	2.30	-5.80	29.08	126.43
171	28.22	70.20	1.60	-5.40	21.85	124.05
172	28.38	83.00	0.90	-5.80	15.24	121.67
173	28.54	88.80	0.80	-6.00	11.54	119.54
174	28.71	90.20	0.70	-6.10	11.42	119.56
175	28.87	85.40	0.90	-4.70	13.60	121.39
176	29.04	83.80	1.50	-4.70	16.73	123.93
177	29.20	88.30	2.00	-4.50	15.60	125.66
178	29.36	127.30	1.80	-0.20	11.40	126.42
179	29.53	171.40	1.60	-5.00	7.38	126.12
180	29.69	188.10	1.40	-6.40	5.39	125.80
181	29.86	194.60	1.40	-5.80	4.45	125.63
182	30.02	210.10	1.40	-5.40	3.52	125.86
183	30.19	248.20	1.40	-3.00	2.21	126.03
184	30.35	292.40	1.30	-5.00	1.33	126.31
185	30.51	302.60	1.40	-5.90	0.85	126.27
186	30.68	297.70	1.30	-6.30	1.33	126.52
187	30.84	254.40	1.50	-6.40	2.88	127.00
188	31.01	191.80	1.90	-6.30	6.26	128.56
189	31.17	167.60	2.80	-6.20	8.78	129.59
190	31.33	192.40	2.70	-5.80	8.81	129.82
191	31.50	198.90	2.10	-6.10	6.54	127.79
192	31.66	185.60	0.90	-6.40	4.55	124.79

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
193	31.83	184.90	0.80	-6.60	3.13	121.65
194	31.99	180.60	0.80	-6.50	3.35	121.26
195	32.15	164.10	0.80	-4.90	3.86	121.12
196	32.32	157.10	0.80	-4.70	4.27	120.67
197	32.48	152.80	0.70	-4.50	4.36	120.29
198	32.65	152.10	0.70	-4.40	4.19	119.54
199	32.81	148.10	0.60	-4.20	4.37	119.07
200	32.97	136.30	0.60	-4.00	4.94	118.50
201	33.14	120.70	0.60	-4.00	6.07	118.25
202	33.30	108.80	0.60	-3.70	7.19	118.02
203	33.47	104.10	0.60	-3.60	8.01	118.32
204	33.63	107.30	0.70	-3.40	8.28	119.10
205	33.79	115.60	0.80	-3.30	7.82	119.58
206	33.96	122.40	0.70	-3.10	7.08	119.72
207	34.12	128.60	0.70	-2.90	6.28	120.26
208	34.29	148.30	0.90	-2.70	5.76	122.01
209	34.45	176.80	1.20	-2.40	4.90	122.78
210	34.61	181.10	0.90	-2.30	4.56	123.66
211	34.78	187.90	1.20	-1.50	4.23	124.24
212	34.94	210.20	1.40	-3.10	6.43	124.44
213	35.11	94.50	1.20	-2.50	10.35	123.52
214	35.27	60.60	1.10	-1.90	21.18	121.41
215	35.43	43.30	1.10	-0.40	29.76	120.09
216	35.60	34.50	1.00	1.70	36.47	119.02
217	35.76	30.50	0.90	2.10	40.84	118.14
218	35.93	27.70	0.90	2.00	43.61	117.65
219	36.09	26.60	0.90	1.90	45.48	117.54
220	36.26	26.60	0.90	1.90	46.55	117.78
221	36.42	26.90	1.00	1.90	47.24	118.32
222	36.58	27.70	1.10	1.90	46.89	119.14
223	36.75	30.90	1.20	1.70	46.22	119.92
224	36.91	31.90	1.30	1.10	46.00	120.16
225	37.08	29.50	1.20	1.50	47.70	120.06
226	37.24	27.20	1.20	1.90	49.16	119.75
227	37.40	27.90	1.20	2.20	50.21	120.58
228	37.57	31.40	1.60	2.20	50.07	121.94
229	37.73	34.10	1.90	2.50	48.74	123.51
230	37.90	39.20	2.10	3.20	45.40	124.16
231	38.06	43.80	1.90	2.60	43.83	123.98
232	38.22	37.40	1.70	3.10	43.35	122.74
233	38.39	32.80	1.30	3.70	44.93	121.14
234	38.55	30.90	1.10	3.80	46.06	119.51
235	38.72	27.00	1.00	3.80	48.36	118.86
236	38.88	25.70	1.10	4.30	50.36	118.75
237	39.04	27.10	1.10	4.20	50.11	119.03
238	39.21	28.70	1.10	3.90	47.92	118.64
239	39.37	28.10	0.90	4.00	46.87	117.86
240	39.54	25.90	0.80	4.10	47.65	116.88

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
241	39.70	23.60	0.80	4.20	49.91	116.06
242	39.86	21.70	0.70	4.20	52.56	115.91
243	40.03	21.80	0.80	4.30	56.78	118.17
244	40.19	25.50	1.60	4.80	60.15	122.78
245	40.36	34.80	3.10	4.90	54.43	127.63
246	40.52	59.90	4.70	5.10	44.98	131.62
247	40.68	91.60	6.20	5.10	38.44	133.99
248	40.85	101.50	6.60	4.90	35.68	134.69
249	41.01	91.40	5.70	4.50	35.85	133.85
250	41.18	76.20	4.50	4.20	37.70	132.08
251	41.34	62.70	3.70	4.70	39.76	130.01
252	41.50	54.40	2.90	5.00	38.73	128.10
253	41.67	60.60	2.20	5.00	38.13	126.08
254	41.83	46.10	1.80	5.50	37.63	124.51
255	42.00	43.00	1.70	6.00	41.25	124.11
256	42.16	45.00	2.10	6.10	42.97	125.52
257	42.32	51.30	2.90	6.50	43.77	128.16
258	42.49	62.70	4.20	6.70	42.49	130.51
259	42.65	74.30	4.90	6.90	37.82	131.86
260	42.82	92.30	4.40	6.10	30.49	131.78
261	42.98	113.00	3.20	-1.30	22.04	130.39
262	43.15	133.80	2.10	-3.80	13.84	128.06
263	43.31	168.10	1.30	-4.00	7.76	125.38
264	43.47	196.80	0.90	-3.70	4.34	123.34
265	43.64	212.10	0.90	-4.10	3.06	122.21
266	43.80	206.30	0.80	-4.30	2.98	121.91
267	43.97	193.90	0.80	-4.10	3.18	121.52
268	44.13	189.00	0.80	-3.90	3.38	121.47
269	44.29	194.50	0.80	-3.70	3.12	121.19
270	44.46	201.60	0.70	-3.40	2.61	120.59
271	44.62	204.30	0.60	-3.20	2.35	120.26
272	44.79	203.40	0.70	-3.10	2.16	119.90
273	44.95	205.20	0.60	-2.90	1.93	119.53
274	45.11	211.10	0.50	0.70	1.42	118.75
275	45.28	222.50	0.50	0.30	1.32	118.26
276	45.44	201.50	0.50	-0.40	1.64	118.15
277	45.61	184.10	0.50	-1.10	2.40	118.44
278	45.77	177.50	0.60	-1.00	3.09	118.74
279	45.93	168.40	0.60	-0.80	3.48	119.10
280	46.10	172.00	0.60	-0.50	3.36	119.13
281	46.26	185.50	0.60	-0.10	2.76	118.84
282	46.43	195.10	0.50	0.20	2.27	118.49
283	46.59	194.60	0.50	0.40	1.99	118.06
284	46.75	195.10	0.50	0.60	2.07	118.03
285	46.92	189.10	0.50	0.80	2.25	117.98
286	47.08	182.00	0.50	1.10	2.51	117.90
287	47.25	177.50	0.50	1.30	2.88	118.32
288	47.41	176.90	0.60	1.50	3.37	119.15

:: Field input data :: (continued)

Point ID	Depth (ft)	q_c (tsf)	f_s (tsf)	u (tsf)	Fines content (%)	Unit weight (pcf)
289	47.57	174.80	0.70	1.80	4.10	120.23
290	47.74	166.70	0.80	1.70	4.92	121.47
291	47.90	170.30	1.00	1.80	5.73	122.53
292	48.07	169.80	1.10	6.10	6.43	123.72
293	48.23	171.90	1.30	5.80	6.74	124.82
294	48.39	189.20	1.50	4.20	6.49	125.88
295	48.56	211.20	1.60	2.20	5.95	126.72
296	48.72	222.50	1.70	-1.80	5.33	127.20
297	48.89	235.50	1.70	-3.60	4.97	127.61
298	49.05	246.60	1.80	-4.50	4.57	127.54
299	49.22	243.50	1.60	-4.50	4.52	127.22
300	49.38	226.30	1.50	-4.70	4.47	126.32
301	49.54	216.50	1.30	-4.90	4.73	125.46
302	49.71	199.40	1.20	-4.90	5.20	124.93
303	49.87	185.90	1.30	-5.00	5.60	124.40
304	50.04	183.10	1.10	-5.00	6.09	124.06
305	50.20	170.70	1.10	-1.70	6.15	123.56

Abbreviations

Depth:	Depth from free surface, at which CPT was performed (ft)
q_c:	Measured cone resistance (tsf)
f_s:	Sleeve friction resistance (tsf)
u:	Pore pressure (tsf)
Fines content:	Percentage of fines in soil (%)
Unit weight:	Bulk soil unit weight (pcf)

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data ::

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR_{eq}	K_σ	User FS	CSR^*	Belongs to transition
1	0.33	0.02	0.00	0.02	1.00	0.247	1.24	0.200	1.00	1.30	2.000	Yes
2	0.49	0.03	0.00	0.03	1.00	0.247	1.24	0.200	1.00	1.30	2.000	Yes
3	0.66	0.04	0.00	0.04	1.00	0.247	1.24	0.200	1.00	1.30	2.000	Yes
4	0.82	0.05	0.00	0.05	1.00	0.247	1.24	0.200	1.00	1.30	2.000	Yes
5	0.98	0.05	0.00	0.05	1.00	0.247	1.24	0.200	1.00	1.30	2.000	Yes
6	1.15	0.06	0.00	0.06	1.00	0.247	1.24	0.199	1.00	1.30	2.000	Yes
7	1.31	0.07	0.00	0.07	1.00	0.247	1.24	0.199	1.00	1.30	2.000	Yes
8	1.48	0.08	0.00	0.08	1.00	0.247	1.24	0.199	1.00	1.30	2.000	No
9	1.64	0.09	0.00	0.09	1.00	0.247	1.24	0.199	1.00	1.30	2.000	No
10	1.80	0.10	0.00	0.10	1.00	0.246	1.24	0.199	1.00	1.30	2.000	No
11	1.97	0.11	0.00	0.11	1.00	0.246	1.24	0.199	1.00	1.30	2.000	No
12	2.13	0.12	0.00	0.12	1.00	0.246	1.24	0.199	1.00	1.30	2.000	No
13	2.30	0.13	0.00	0.13	1.00	0.246	1.24	0.199	1.00	1.30	2.000	No
14	2.46	0.14	0.00	0.14	1.00	0.246	1.24	0.199	1.00	1.30	2.000	No
15	2.62	0.15	0.00	0.15	1.00	0.246	1.24	0.199	1.00	1.30	2.000	No
16	2.79	0.16	0.00	0.16	1.00	0.246	1.24	0.199	1.00	1.30	2.000	No
17	2.95	0.16	0.00	0.16	1.00	0.246	1.24	0.199	1.00	1.30	2.000	No
18	3.12	0.17	0.00	0.17	0.99	0.246	1.24	0.199	1.00	1.30	2.000	No
19	3.28	0.18	0.00	0.18	0.99	0.246	1.24	0.198	1.00	1.30	2.000	No
20	3.45	0.19	0.00	0.19	0.99	0.245	1.24	0.198	1.00	1.30	2.000	No
21	3.61	0.20	0.00	0.20	0.99	0.245	1.24	0.198	1.00	1.30	2.000	No
22	3.77	0.21	0.00	0.21	0.99	0.245	1.24	0.198	1.00	1.30	2.000	No
23	3.94	0.22	0.00	0.22	0.99	0.245	1.24	0.198	1.00	1.30	2.000	No
24	4.10	0.23	0.00	0.23	0.99	0.245	1.24	0.198	1.00	1.30	2.000	No
25	4.27	0.24	0.00	0.24	0.99	0.245	1.24	0.198	1.00	1.30	2.000	No
26	4.43	0.25	0.00	0.25	0.99	0.245	1.24	0.198	1.00	1.30	2.000	No
27	4.59	0.26	0.00	0.26	0.99	0.245	1.24	0.198	1.00	1.30	2.000	No
28	4.76	0.27	0.00	0.27	0.99	0.245	1.24	0.198	1.00	1.30	2.000	No
29	4.92	0.28	0.00	0.28	0.99	0.245	1.24	0.198	1.00	1.30	2.000	No
30	5.09	0.29	0.00	0.28	0.99	0.247	1.24	0.200	1.00	1.30	0.259	No
31	5.25	0.30	0.01	0.29	0.99	0.251	1.24	0.203	1.00	1.30	0.264	No
32	5.41	0.31	0.01	0.29	0.99	0.255	1.24	0.206	1.00	1.30	0.268	No
33	5.58	0.32	0.02	0.30	0.99	0.259	1.24	0.209	1.00	1.30	0.272	No
34	5.74	0.33	0.02	0.30	0.99	0.263	1.24	0.212	1.00	1.30	0.276	No
35	5.91	0.34	0.03	0.31	0.99	0.266	1.24	0.215	1.00	1.30	0.280	No
36	6.07	0.35	0.03	0.31	0.99	0.270	1.24	0.218	1.00	1.30	0.283	No
37	6.23	0.36	0.04	0.32	0.99	0.273	1.24	0.221	1.00	1.30	0.287	No
38	6.40	0.37	0.04	0.32	0.99	0.277	1.24	0.224	1.00	1.30	0.291	No
39	6.56	0.38	0.05	0.33	0.99	0.280	1.24	0.226	1.00	1.30	0.294	No
40	6.73	0.39	0.05	0.33	0.99	0.283	1.24	0.229	1.00	1.30	0.297	No
41	6.89	0.40	0.06	0.34	0.99	0.286	1.24	0.231	1.00	1.30	0.300	No
42	7.05	0.41	0.06	0.34	0.99	0.289	1.24	0.233	1.00	1.30	0.303	No
43	7.22	0.42	0.07	0.35	0.99	0.292	1.24	0.236	1.00	1.30	0.306	No
44	7.38	0.43	0.07	0.35	0.98	0.294	1.24	0.238	1.00	1.30	0.309	No
45	7.55	0.44	0.08	0.36	0.98	0.297	1.24	0.240	1.00	1.30	0.312	No
46	7.71	0.45	0.08	0.36	0.98	0.299	1.24	0.242	1.00	1.30	0.315	No
47	7.87	0.46	0.09	0.37	0.98	0.302	1.24	0.244	1.00	1.30	0.317	No
48	8.04	0.47	0.09	0.37	0.98	0.304	1.24	0.246	1.00	1.30	0.320	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR_{eq}	K_σ	User FS	CSR^*	Belongs to transition
49	8.20	0.48	0.10	0.38	0.98	0.307	1.24	0.248	1.00	1.30	0.322	No
50	8.37	0.49	0.11	0.39	0.98	0.309	1.24	0.250	1.00	1.30	0.325	No
51	8.53	0.50	0.11	0.39	0.98	0.311	1.24	0.251	1.00	1.30	0.327	No
52	8.69	0.51	0.12	0.40	0.98	0.313	1.24	0.253	1.00	1.30	0.329	No
53	8.86	0.52	0.12	0.40	0.98	0.315	1.24	0.255	1.00	1.30	0.331	No
54	9.02	0.53	0.13	0.40	0.98	0.318	1.24	0.257	1.00	1.30	0.334	No
55	9.19	0.54	0.13	0.41	0.98	0.320	1.24	0.258	1.00	1.30	0.336	No
56	9.35	0.55	0.14	0.41	0.98	0.322	1.24	0.260	1.00	1.30	0.338	No
57	9.51	0.56	0.14	0.42	0.98	0.324	1.24	0.262	1.00	1.30	0.340	No
58	9.68	0.57	0.15	0.42	0.98	0.326	1.24	0.263	1.00	1.30	0.342	No
59	9.84	0.58	0.15	0.43	0.98	0.328	1.24	0.265	1.00	1.30	0.344	No
60	10.01	0.59	0.16	0.43	0.98	0.330	1.24	0.266	1.00	1.30	0.346	No
61	10.17	0.60	0.16	0.44	0.98	0.331	1.24	0.268	1.00	1.30	0.348	No
62	10.34	0.61	0.17	0.44	0.98	0.333	1.24	0.269	1.00	1.30	0.350	No
63	10.50	0.62	0.17	0.44	0.98	0.335	1.24	0.271	1.00	1.30	2.000	Yes
64	10.66	0.63	0.18	0.45	0.98	0.336	1.24	0.272	1.00	1.30	2.000	Yes
65	10.83	0.64	0.18	0.45	0.98	0.338	1.24	0.273	1.00	1.30	2.000	Yes
66	10.99	0.64	0.19	0.46	0.98	0.340	1.24	0.275	1.00	1.30	2.000	Yes
67	11.16	0.65	0.19	0.46	0.98	0.342	1.24	0.276	1.00	1.30	2.000	Yes
68	11.32	0.66	0.20	0.47	0.98	0.343	1.24	0.277	1.00	1.30	0.361	No
69	11.48	0.67	0.20	0.47	0.98	0.345	1.24	0.279	1.00	1.30	0.362	No
70	11.65	0.68	0.21	0.47	0.98	0.347	1.24	0.280	1.00	1.30	0.364	No
71	11.81	0.69	0.21	0.48	0.98	0.348	1.24	0.281	1.00	1.30	0.366	No
72	11.98	0.70	0.22	0.48	0.97	0.350	1.24	0.283	1.00	1.30	0.368	No
73	12.14	0.71	0.22	0.48	0.97	0.351	1.24	0.284	1.00	1.30	0.369	No
74	12.30	0.72	0.23	0.49	0.97	0.353	1.24	0.285	1.00	1.30	0.371	No
75	12.47	0.72	0.23	0.49	0.97	0.355	1.24	0.287	1.00	1.30	0.372	No
76	12.63	0.73	0.24	0.50	0.97	0.356	1.24	0.288	1.00	1.30	0.374	No
77	12.80	0.74	0.24	0.50	0.97	0.357	1.24	0.289	1.00	1.30	0.376	No
78	12.96	0.75	0.25	0.50	0.97	0.359	1.24	0.290	1.00	1.30	0.377	No
79	13.12	0.76	0.25	0.51	0.97	0.360	1.24	0.291	1.00	1.30	0.378	No
80	13.29	0.77	0.26	0.51	0.97	0.362	1.24	0.292	1.00	1.30	0.380	No
81	13.45	0.78	0.26	0.52	0.97	0.363	1.24	0.293	1.00	1.30	0.381	No
82	13.62	0.79	0.27	0.52	0.97	0.364	1.24	0.294	1.00	1.30	2.000	Yes
83	13.78	0.80	0.27	0.52	0.97	0.365	1.24	0.295	1.00	1.30	2.000	Yes
84	13.94	0.81	0.28	0.53	0.97	0.366	1.24	0.296	1.00	1.30	2.000	Yes
85	14.11	0.82	0.28	0.53	0.97	0.367	1.24	0.297	1.00	1.30	2.000	Yes
86	14.27	0.83	0.29	0.54	0.97	0.368	1.24	0.297	1.00	1.30	0.387	No
87	14.44	0.84	0.29	0.55	0.97	0.369	1.24	0.298	1.00	1.30	0.388	No
88	14.60	0.85	0.30	0.55	0.97	0.370	1.24	0.299	1.00	1.30	0.388	No
89	14.76	0.86	0.30	0.56	0.97	0.370	1.24	0.299	1.00	1.30	0.389	No
90	14.93	0.87	0.31	0.56	0.97	0.371	1.24	0.300	1.00	1.30	0.390	No
91	15.09	0.88	0.31	0.57	0.97	0.372	1.24	0.300	1.00	1.30	0.391	No
92	15.26	0.89	0.32	0.57	0.97	0.372	1.24	0.301	1.00	1.30	0.391	No
93	15.42	0.90	0.33	0.58	0.97	0.373	1.24	0.302	1.00	1.30	0.392	No
94	15.58	0.91	0.33	0.58	0.97	0.374	1.24	0.302	1.00	1.30	0.393	No
95	15.75	0.93	0.34	0.59	0.97	0.375	1.24	0.303	1.00	1.30	0.394	No
96	15.91	0.94	0.34	0.60	0.97	0.375	1.24	0.303	1.00	1.30	0.394	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR_{eq}	K_σ	User FS	CSR^*	Belongs to transition
97	16.08	0.95	0.35	0.60	0.97	0.376	1.24	0.304	1.00	1.30	0.395	No
98	16.24	0.96	0.35	0.61	0.97	0.377	1.24	0.304	1.00	1.30	0.396	No
99	16.40	0.97	0.36	0.61	0.97	0.377	1.24	0.305	1.00	1.30	0.396	No
100	16.57	0.98	0.36	0.62	0.97	0.378	1.24	0.305	1.00	1.30	0.397	No
101	16.73	0.99	0.37	0.62	0.96	0.378	1.24	0.306	1.00	1.30	0.398	No
102	16.90	1.00	0.37	0.63	0.96	0.379	1.24	0.306	1.00	1.30	0.398	No
103	17.06	1.01	0.38	0.63	0.96	0.380	1.24	0.307	1.00	1.30	0.399	No
104	17.23	1.02	0.38	0.64	0.96	0.381	1.24	0.308	1.00	1.30	0.400	No
105	17.39	1.03	0.39	0.64	0.96	0.381	1.24	0.308	1.00	1.30	0.401	No
106	17.55	1.04	0.39	0.65	0.96	0.382	1.24	0.309	1.00	1.30	0.401	No
107	17.72	1.05	0.40	0.65	0.96	0.383	1.24	0.309	1.00	1.30	0.402	No
108	17.88	1.06	0.40	0.66	0.96	0.383	1.24	0.310	1.00	1.30	0.403	No
109	18.05	1.07	0.41	0.66	0.96	0.384	1.24	0.310	1.00	1.30	0.403	No
110	18.21	1.08	0.41	0.67	0.96	0.384	1.24	0.311	1.00	1.30	0.404	No
111	18.37	1.09	0.42	0.67	0.96	0.385	1.24	0.311	1.00	1.30	0.404	No
112	18.54	1.10	0.42	0.68	0.96	0.386	1.24	0.312	1.00	1.30	0.405	No
113	18.70	1.11	0.43	0.68	0.96	0.386	1.24	0.312	1.00	1.30	0.406	No
114	18.87	1.12	0.43	0.69	0.96	0.387	1.24	0.313	1.00	1.30	0.406	No
115	19.03	1.13	0.44	0.69	0.96	0.387	1.24	0.313	1.00	1.30	0.407	No
116	19.19	1.14	0.44	0.69	0.96	0.388	1.24	0.313	1.00	1.30	0.407	No
117	19.36	1.15	0.45	0.70	0.96	0.388	1.24	0.314	1.00	1.30	0.408	No
118	19.52	1.16	0.45	0.70	0.96	0.389	1.24	0.314	1.00	1.30	0.409	No
119	19.69	1.17	0.46	0.71	0.96	0.389	1.24	0.315	1.00	1.30	0.409	No
120	19.85	1.18	0.46	0.71	0.96	0.390	1.24	0.315	1.00	1.30	0.410	No
121	20.01	1.19	0.47	0.72	0.96	0.390	1.24	0.315	1.00	1.30	0.410	No
122	20.18	1.20	0.47	0.72	0.96	0.391	1.24	0.316	1.00	1.30	0.411	No
123	20.34	1.21	0.48	0.73	0.96	0.391	1.24	0.316	1.00	1.30	0.411	No
124	20.51	1.22	0.48	0.73	0.96	0.392	1.24	0.317	1.00	1.30	0.412	No
125	20.67	1.23	0.49	0.74	0.96	0.392	1.24	0.317	1.00	1.30	0.412	No
126	20.83	1.24	0.49	0.74	0.95	0.393	1.24	0.317	1.00	1.30	0.412	No
127	21.00	1.25	0.50	0.75	0.95	0.393	1.24	0.318	1.00	1.30	0.413	No
128	21.16	1.26	0.50	0.75	0.95	0.393	1.24	0.318	1.00	1.30	2.000	Yes
129	21.33	1.27	0.51	0.76	0.95	0.394	1.24	0.318	1.00	1.30	2.000	Yes
130	21.49	1.28	0.51	0.76	0.95	0.394	1.24	0.319	1.00	1.30	2.000	Yes
131	21.65	1.29	0.52	0.77	0.95	0.395	1.24	0.319	1.00	1.30	2.000	Yes
132	21.82	1.30	0.52	0.77	0.95	0.395	1.24	0.319	1.00	1.30	2.000	Yes
133	21.98	1.31	0.53	0.78	0.95	0.396	1.24	0.320	1.00	1.30	0.416	No
134	22.15	1.32	0.54	0.78	0.95	0.396	1.24	0.320	1.00	1.30	0.416	No
135	22.31	1.32	0.54	0.78	0.95	0.396	1.24	0.320	1.00	1.30	0.416	No
136	22.47	1.33	0.55	0.79	0.95	0.397	1.24	0.321	1.00	1.30	0.417	No
137	22.64	1.34	0.55	0.79	0.95	0.397	1.24	0.321	1.00	1.30	0.417	No
138	22.80	1.35	0.56	0.80	0.95	0.398	1.24	0.321	1.00	1.30	0.418	No
139	22.97	1.36	0.56	0.80	0.95	0.398	1.24	0.322	1.00	1.30	0.418	No
140	23.13	1.37	0.57	0.81	0.95	0.398	1.24	0.322	1.00	1.30	0.418	No
141	23.30	1.38	0.57	0.81	0.95	0.399	1.24	0.322	1.00	1.30	0.419	No
142	23.46	1.39	0.58	0.82	0.95	0.399	1.24	0.322	1.00	1.30	0.419	No
143	23.62	1.40	0.58	0.82	0.95	0.399	1.24	0.323	1.00	1.30	0.420	No
144	23.79	1.41	0.59	0.82	0.95	0.400	1.24	0.323	1.00	1.30	0.420	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR_{eq}	K_σ	User FS	CSR^*	Belongs to transition
145	23.95	1.42	0.59	0.83	0.95	0.400	1.24	0.323	1.00	1.30	0.420	No
146	24.12	1.43	0.60	0.83	0.94	0.400	1.24	0.324	1.00	1.30	0.421	No
147	24.28	1.44	0.60	0.84	0.94	0.401	1.24	0.324	1.00	1.30	0.421	No
148	24.44	1.45	0.61	0.84	0.94	0.401	1.24	0.324	1.00	1.30	0.421	No
149	24.61	1.46	0.61	0.85	0.94	0.401	1.24	0.324	1.00	1.30	0.422	No
150	24.77	1.47	0.62	0.85	0.94	0.402	1.24	0.325	1.00	1.30	0.422	No
151	24.94	1.48	0.62	0.86	0.94	0.402	1.24	0.325	1.00	1.30	0.422	No
152	25.10	1.49	0.63	0.86	0.94	0.402	1.24	0.325	1.00	1.30	0.422	No
153	25.26	1.50	0.63	0.87	0.94	0.402	1.24	0.325	1.00	1.30	0.422	No
154	25.43	1.51	0.64	0.87	0.94	0.402	1.24	0.325	1.00	1.30	0.422	No
155	25.59	1.52	0.64	0.88	0.94	0.402	1.24	0.325	1.00	1.30	0.422	No
156	25.76	1.53	0.65	0.88	0.94	0.402	1.24	0.325	1.00	1.30	0.422	No
157	25.92	1.54	0.65	0.89	0.94	0.402	1.24	0.325	1.00	1.30	0.423	No
158	26.08	1.55	0.66	0.89	0.94	0.402	1.24	0.325	1.00	1.30	0.423	No
159	26.25	1.56	0.66	0.90	0.94	0.403	1.24	0.325	1.00	1.30	0.423	No
160	26.41	1.57	0.67	0.90	0.94	0.403	1.24	0.325	1.00	1.30	0.423	No
161	26.58	1.58	0.67	0.91	0.94	0.403	1.24	0.325	1.00	1.30	0.423	No
162	26.74	1.59	0.68	0.91	0.94	0.403	1.24	0.325	1.00	1.30	0.423	No
163	26.90	1.60	0.68	0.92	0.93	0.403	1.24	0.325	1.00	1.30	0.423	No
164	27.07	1.61	0.69	0.92	0.93	0.403	1.24	0.325	1.00	1.30	0.423	No
165	27.23	1.62	0.69	0.93	0.93	0.403	1.24	0.325	1.00	1.30	0.423	No
166	27.40	1.63	0.70	0.93	0.93	0.403	1.24	0.325	1.00	1.30	0.423	No
167	27.56	1.64	0.70	0.94	0.93	0.402	1.24	0.325	1.00	1.30	0.423	No
168	27.72	1.65	0.71	0.95	0.93	0.402	1.24	0.325	1.00	1.30	0.423	No
169	27.89	1.67	0.71	0.95	0.93	0.402	1.24	0.325	1.00	1.30	2.000	Yes
170	28.05	1.68	0.72	0.96	0.93	0.402	1.24	0.325	1.00	1.30	2.000	Yes
171	28.22	1.69	0.72	0.96	0.93	0.402	1.24	0.325	1.00	1.30	2.000	Yes
172	28.38	1.70	0.73	0.97	0.93	0.402	1.24	0.325	1.00	1.30	2.000	Yes
173	28.54	1.71	0.73	0.97	0.93	0.402	1.24	0.325	1.00	1.30	2.000	Yes
174	28.71	1.72	0.74	0.98	0.93	0.402	1.24	0.325	1.00	1.30	0.423	No
175	28.87	1.73	0.74	0.98	0.93	0.402	1.24	0.325	1.00	1.30	0.423	No
176	29.04	1.74	0.75	0.99	0.93	0.402	1.24	0.325	1.00	1.30	0.423	No
177	29.20	1.75	0.76	0.99	0.92	0.402	1.24	0.325	1.00	1.30	0.423	No
178	29.36	1.76	0.76	1.00	0.92	0.402	1.24	0.325	1.00	1.30	0.423	No
179	29.53	1.77	0.77	1.00	0.92	0.402	1.24	0.325	1.00	1.30	0.423	No
180	29.69	1.78	0.77	1.01	0.92	0.402	1.24	0.325	1.00	1.30	0.422	No
181	29.86	1.79	0.78	1.01	0.92	0.402	1.24	0.325	1.00	1.30	0.422	No
182	30.02	1.80	0.78	1.02	0.92	0.402	1.24	0.325	1.00	1.30	0.422	No
183	30.19	1.81	0.79	1.02	0.92	0.402	1.24	0.325	1.00	1.30	0.422	No
184	30.35	1.82	0.79	1.03	0.92	0.402	1.24	0.325	1.00	1.30	0.422	No
185	30.51	1.83	0.80	1.03	0.92	0.402	1.24	0.324	1.00	1.30	0.422	No
186	30.68	1.84	0.80	1.04	0.92	0.401	1.24	0.324	1.00	1.30	0.422	No
187	30.84	1.85	0.81	1.04	0.92	0.401	1.24	0.324	1.00	1.30	0.421	No
188	31.01	1.86	0.81	1.05	0.92	0.401	1.24	0.324	1.00	1.30	0.421	No
189	31.17	1.87	0.82	1.05	0.91	0.401	1.24	0.324	1.00	1.30	0.421	No
190	31.33	1.88	0.82	1.06	0.91	0.401	1.24	0.324	1.00	1.30	0.421	No
191	31.50	1.89	0.83	1.07	0.91	0.400	1.24	0.324	1.00	1.30	0.421	No
192	31.66	1.90	0.83	1.07	0.91	0.400	1.24	0.323	1.00	1.30	0.422	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR_{eq}	K_σ	User FS	CSR^*	Belongs to transition
193	31.83	1.91	0.84	1.08	0.91	0.400	1.24	0.323	1.00	1.30	0.422	No
194	31.99	1.92	0.84	1.08	0.91	0.400	1.24	0.323	1.00	1.30	0.422	No
195	32.15	1.93	0.85	1.08	0.91	0.400	1.24	0.323	0.99	1.30	0.422	No
196	32.32	1.94	0.85	1.09	0.91	0.400	1.24	0.323	0.99	1.30	0.423	No
197	32.48	1.95	0.86	1.09	0.91	0.400	1.24	0.323	0.99	1.30	0.423	No
198	32.65	1.96	0.86	1.10	0.91	0.399	1.24	0.323	0.99	1.30	0.423	No
199	32.81	1.97	0.87	1.10	0.90	0.399	1.24	0.323	0.99	1.30	0.424	No
200	32.97	1.98	0.87	1.11	0.90	0.399	1.24	0.323	0.99	1.30	0.424	No
201	33.14	1.99	0.88	1.11	0.90	0.399	1.24	0.322	0.99	1.30	0.424	No
202	33.30	2.00	0.88	1.12	0.90	0.399	1.24	0.322	0.99	1.30	0.424	No
203	33.47	2.01	0.89	1.12	0.90	0.399	1.24	0.322	0.99	1.30	0.424	No
204	33.63	2.02	0.89	1.13	0.90	0.398	1.24	0.322	0.99	1.30	0.425	No
205	33.79	2.03	0.90	1.13	0.90	0.398	1.24	0.322	0.98	1.30	0.425	No
206	33.96	2.04	0.90	1.14	0.90	0.398	1.24	0.322	0.98	1.30	0.425	No
207	34.12	2.05	0.91	1.14	0.90	0.398	1.24	0.322	0.98	1.30	0.425	No
208	34.29	2.06	0.91	1.15	0.90	0.398	1.24	0.321	0.98	1.30	0.425	No
209	34.45	2.07	0.92	1.15	0.89	0.397	1.24	0.321	0.98	1.30	0.426	No
210	34.61	2.08	0.92	1.16	0.89	0.397	1.24	0.321	0.98	1.30	0.426	No
211	34.78	2.09	0.93	1.16	0.89	0.397	1.24	0.321	0.98	1.30	0.426	No
212	34.94	2.10	0.93	1.17	0.89	0.396	1.24	0.320	0.98	1.30	2.000	Yes
213	35.11	2.11	0.94	1.17	0.89	0.396	1.24	0.320	0.98	1.30	2.000	Yes
214	35.27	2.12	0.94	1.18	0.89	0.396	1.24	0.320	0.98	1.30	2.000	Yes
215	35.43	2.13	0.95	1.18	0.89	0.396	1.24	0.320	0.98	1.30	2.000	Yes
216	35.60	2.14	0.95	1.18	0.89	0.395	1.24	0.319	0.97	1.30	2.000	Yes
217	35.76	2.15	0.96	1.19	0.89	0.395	1.24	0.319	0.97	1.30	2.000	Yes
218	35.93	2.16	0.97	1.19	0.88	0.395	1.24	0.319	0.97	1.30	0.426	No
219	36.09	2.17	0.97	1.20	0.88	0.395	1.24	0.319	0.97	1.30	0.427	No
220	36.26	2.18	0.98	1.20	0.88	0.394	1.24	0.319	0.97	1.30	0.427	No
221	36.42	2.19	0.98	1.21	0.88	0.394	1.24	0.318	0.97	1.30	0.427	No
222	36.58	2.20	0.99	1.21	0.88	0.394	1.24	0.318	0.97	1.30	0.427	No
223	36.75	2.21	0.99	1.22	0.88	0.393	1.24	0.318	0.97	1.30	0.427	No
224	36.91	2.22	1.00	1.22	0.88	0.393	1.24	0.318	0.97	1.30	0.427	No
225	37.08	2.23	1.00	1.23	0.88	0.393	1.24	0.317	0.97	1.30	0.427	No
226	37.24	2.24	1.01	1.23	0.87	0.392	1.24	0.317	0.97	1.30	0.427	No
227	37.40	2.25	1.01	1.24	0.87	0.392	1.24	0.317	0.96	1.30	0.427	No
228	37.57	2.26	1.02	1.24	0.87	0.392	1.24	0.316	0.96	1.30	0.427	No
229	37.73	2.27	1.02	1.25	0.87	0.391	1.24	0.316	0.96	1.30	0.427	No
230	37.90	2.28	1.03	1.25	0.87	0.391	1.24	0.316	0.96	1.30	0.427	No
231	38.06	2.29	1.03	1.26	0.87	0.390	1.24	0.315	0.96	1.30	0.426	No
232	38.22	2.30	1.04	1.26	0.87	0.390	1.24	0.315	0.96	1.30	0.426	No
233	38.39	2.31	1.04	1.27	0.86	0.389	1.24	0.315	0.96	1.30	0.426	No
234	38.55	2.32	1.05	1.27	0.86	0.389	1.24	0.314	0.96	1.30	0.426	No
235	38.72	2.33	1.05	1.28	0.86	0.389	1.24	0.314	0.96	1.30	0.426	No
236	38.88	2.34	1.06	1.28	0.86	0.388	1.24	0.314	0.96	1.30	0.426	No
237	39.04	2.35	1.06	1.28	0.86	0.388	1.24	0.313	0.96	1.30	0.426	No
238	39.21	2.36	1.07	1.29	0.86	0.387	1.24	0.313	0.96	1.30	0.426	No
239	39.37	2.37	1.07	1.29	0.86	0.387	1.24	0.313	0.95	1.30	0.426	No
240	39.54	2.38	1.08	1.30	0.86	0.387	1.24	0.312	0.95	1.30	0.426	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR_{eq}	K_σ	User FS	CSR^*	Belongs to transition
241	39.70	2.38	1.08	1.30	0.85	0.386	1.24	0.312	0.95	1.30	0.425	No
242	39.86	2.39	1.09	1.31	0.85	0.386	1.24	0.312	0.95	1.30	0.425	No
243	40.03	2.40	1.09	1.31	0.85	0.385	1.24	0.311	0.95	1.30	0.425	No
244	40.19	2.41	1.10	1.32	0.85	0.385	1.24	0.311	0.95	1.30	0.425	No
245	40.36	2.42	1.10	1.32	0.85	0.384	1.24	0.310	0.95	1.30	0.425	No
246	40.52	2.44	1.11	1.33	0.85	0.384	1.24	0.310	0.95	1.30	0.425	No
247	40.68	2.45	1.11	1.33	0.84	0.383	1.24	0.310	0.95	1.30	0.424	No
248	40.85	2.46	1.12	1.34	0.84	0.382	1.24	0.309	0.95	1.30	0.424	No
249	41.01	2.47	1.12	1.34	0.84	0.382	1.24	0.308	0.95	1.30	0.424	No
250	41.18	2.48	1.13	1.35	0.84	0.381	1.24	0.308	0.95	1.30	0.423	No
251	41.34	2.49	1.13	1.36	0.84	0.380	1.24	0.307	0.94	1.30	0.423	No
252	41.50	2.50	1.14	1.36	0.84	0.380	1.24	0.307	0.94	1.30	0.423	No
253	41.67	2.51	1.14	1.37	0.84	0.379	1.24	0.306	0.94	1.30	0.423	No
254	41.83	2.52	1.15	1.37	0.83	0.379	1.24	0.306	0.94	1.30	0.422	No
255	42.00	2.53	1.15	1.38	0.83	0.378	1.24	0.306	0.94	1.30	0.422	No
256	42.16	2.54	1.16	1.38	0.83	0.378	1.24	0.305	0.94	1.30	0.422	No
257	42.32	2.55	1.16	1.39	0.83	0.377	1.24	0.305	0.94	1.30	0.421	No
258	42.49	2.56	1.17	1.39	0.83	0.376	1.24	0.304	0.94	1.30	2.000	Yes
259	42.65	2.57	1.17	1.40	0.83	0.376	1.24	0.304	0.94	1.30	2.000	Yes
260	42.82	2.58	1.18	1.40	0.83	0.375	1.24	0.303	0.94	1.30	2.000	Yes
261	42.98	2.60	1.18	1.41	0.82	0.374	1.24	0.302	0.94	1.30	2.000	Yes
262	43.15	2.61	1.19	1.42	0.82	0.374	1.24	0.302	0.94	1.30	2.000	Yes
263	43.31	2.62	1.20	1.42	0.82	0.373	1.24	0.301	0.93	1.30	2.000	Yes
264	43.47	2.63	1.20	1.43	0.82	0.373	1.24	0.301	0.93	1.30	0.419	No
265	43.64	2.64	1.21	1.43	0.82	0.372	1.24	0.301	0.93	1.30	0.419	No
266	43.80	2.65	1.21	1.44	0.82	0.371	1.24	0.300	0.93	1.30	0.418	No
267	43.97	2.66	1.22	1.44	0.81	0.371	1.24	0.300	0.93	1.30	0.418	No
268	44.13	2.67	1.22	1.45	0.81	0.370	1.24	0.299	0.93	1.30	0.418	No
269	44.29	2.68	1.23	1.45	0.81	0.370	1.24	0.299	0.93	1.30	0.417	No
270	44.46	2.69	1.23	1.45	0.81	0.369	1.24	0.298	0.93	1.30	0.417	No
271	44.62	2.70	1.24	1.46	0.81	0.368	1.24	0.298	0.93	1.30	0.417	No
272	44.79	2.71	1.24	1.46	0.81	0.368	1.24	0.297	0.93	1.30	0.416	No
273	44.95	2.72	1.25	1.47	0.80	0.367	1.24	0.297	0.93	1.30	0.416	No
274	45.11	2.72	1.25	1.47	0.80	0.367	1.24	0.296	0.93	1.30	0.416	No
275	45.28	2.73	1.26	1.48	0.80	0.366	1.24	0.296	0.93	1.30	0.415	No
276	45.44	2.74	1.26	1.48	0.80	0.365	1.24	0.295	0.93	1.30	0.415	No
277	45.61	2.75	1.27	1.49	0.80	0.365	1.24	0.295	0.92	1.30	0.414	No
278	45.77	2.76	1.27	1.49	0.80	0.364	1.24	0.294	0.92	1.30	0.414	No
279	45.93	2.77	1.28	1.50	0.79	0.364	1.24	0.294	0.92	1.30	0.414	No
280	46.10	2.78	1.28	1.50	0.79	0.363	1.24	0.293	0.92	1.30	0.413	No
281	46.26	2.79	1.29	1.51	0.79	0.362	1.24	0.293	0.92	1.30	0.413	No
282	46.43	2.80	1.29	1.51	0.79	0.362	1.24	0.292	0.92	1.30	0.412	No
283	46.59	2.81	1.30	1.51	0.79	0.361	1.24	0.292	0.92	1.30	0.412	No
284	46.75	2.82	1.30	1.52	0.79	0.361	1.24	0.291	0.92	1.30	0.412	No
285	46.92	2.83	1.31	1.52	0.78	0.360	1.24	0.291	0.92	1.30	0.411	No
286	47.08	2.84	1.31	1.53	0.78	0.359	1.24	0.290	0.92	1.30	0.411	No
287	47.25	2.85	1.32	1.53	0.78	0.359	1.24	0.290	0.92	1.30	0.410	No
288	47.41	2.86	1.32	1.54	0.78	0.358	1.24	0.289	0.92	1.30	0.410	No

:: Cyclic Stress Ratio fully adjusted (CSR*) calculation data :: (continued)

Point ID	Depth (ft)	σ_v (tsf)	u_0 (tsf)	σ_v' (tsf)	r_d	CSR	MSF	CSR_{eq}	K_σ	User FS	CSR^*	Belongs to transition
289	47.57	2.87	1.33	1.54	0.78	0.357	1.24	0.289	0.92	1.30	0.409	No
290	47.74	2.88	1.33	1.55	0.78	0.357	1.24	0.288	0.92	1.30	0.409	No
291	47.90	2.89	1.34	1.55	0.77	0.356	1.24	0.288	0.92	1.30	0.409	No
292	48.07	2.90	1.34	1.56	0.77	0.355	1.24	0.287	0.91	1.30	0.408	No
293	48.23	2.91	1.35	1.56	0.77	0.355	1.24	0.287	0.91	1.30	0.408	No
294	48.39	2.92	1.35	1.57	0.77	0.354	1.24	0.286	0.91	1.30	0.407	No
295	48.56	2.93	1.36	1.57	0.77	0.353	1.24	0.286	0.91	1.30	0.407	No
296	48.72	2.94	1.36	1.58	0.77	0.353	1.24	0.285	0.91	1.30	0.406	No
297	48.89	2.95	1.37	1.58	0.76	0.352	1.24	0.284	0.91	1.30	0.406	No
298	49.05	2.96	1.37	1.59	0.76	0.351	1.24	0.284	0.91	1.30	0.405	No
299	49.22	2.97	1.38	1.59	0.76	0.350	1.24	0.283	0.91	1.30	0.405	No
300	49.38	2.98	1.38	1.60	0.76	0.350	1.24	0.283	0.91	1.30	0.404	No
301	49.54	2.99	1.39	1.60	0.76	0.349	1.24	0.282	0.91	1.30	0.404	No
302	49.71	3.00	1.39	1.61	0.76	0.348	1.24	0.282	0.91	1.30	0.403	No
303	49.87	3.01	1.40	1.61	0.75	0.348	1.24	0.281	0.91	1.30	0.403	No
304	50.04	3.03	1.41	1.62	0.75	0.347	1.24	0.280	0.91	1.30	0.402	No
305	50.20	3.04	1.41	1.63	0.75	0.346	1.24	0.280	0.91	1.30	0.402	No

Abbreviations

Depth: Depth from free surface, at which CPT was performed (ft)
σ_v: Total overburden pressure at test point (tsf)
u_0: Water pressure at test point (tsf)
σ_v': Effective overburden pressure based on GWT during earthquake (tsf)
r_d: Nonlinear shear mass factor
CSR: Cyclic Stress Ratio
MSF: Magnitude Scaling Factor
CSR_{eq}: CSR adjusted for M=7.5
K_σ: Effective overburden stress factor
CSR^*: CSR fully adjusted

:: Cyclic Resistance Ratio (CRR) calculation data ::

Point ID	Depth (ft)	q_t (tsf)	I_c	Fr (%)	n	Q_{tn}	K_c	$Q_{tn,cs}$	$CRR_{7.5}$	Belongs to trans. layer	Clay-like behaviour	FS
1	0.33	11.73	2.79	3.13	0.94	18.82	4.67	87.85	4.000	Yes	Yes	2.00
2	0.49	16.63	2.64	2.81	0.88	26.68	3.57	95.27	4.000	Yes	Yes	2.00
3	0.66	25.20	2.42	2.12	0.80	40.43	2.40	97.09	4.000	Yes	No	2.00
4	0.82	37.74	2.17	1.42	0.70	60.55	1.61	97.27	4.000	Yes	No	2.00
5	0.98	49.90	1.99	1.00	0.63	80.09	1.28	102.71	4.000	Yes	No	2.00
6	1.15	60.40	1.87	0.83	0.59	96.94	1.16	112.62	4.000	Yes	No	2.00
7	1.31	65.47	1.80	0.71	0.56	105.06	1.11	116.50	4.000	Yes	No	2.00
8	1.48	64.27	1.78	0.62	0.55	103.12	1.09	112.29	4.000	No	No	2.00
9	1.64	57.07	1.80	0.59	0.56	91.54	1.11	101.48	4.000	No	No	2.00
10	1.80	47.80	1.86	0.56	0.58	76.64	1.15	88.22	4.000	No	No	2.00
11	1.97	38.40	1.99	0.70	0.63	61.52	1.29	79.09	4.000	No	No	2.00
12	2.13	30.87	2.12	0.87	0.68	49.40	1.49	73.76	4.000	No	No	2.00
13	2.30	25.90	2.26	1.16	0.73	41.41	1.81	75.10	4.000	No	No	2.00
14	2.46	21.23	2.38	1.42	0.78	33.89	2.22	75.22	4.000	No	No	2.00
15	2.62	19.33	2.40	1.39	0.79	30.83	2.33	71.87	4.000	No	No	2.00
16	2.79	16.70	2.46	1.41	0.81	26.58	2.58	68.61	4.000	No	No	2.00
17	2.95	15.93	2.45	1.27	0.81	25.34	2.54	64.48	4.000	No	No	2.00
18	3.12	14.97	2.49	1.35	0.82	23.77	2.73	64.84	4.000	No	No	2.00
19	3.28	15.77	2.53	1.71	0.84	25.04	2.93	73.28	4.000	No	No	2.00
20	3.45	16.80	2.57	2.21	0.86	26.69	3.17	84.54	4.000	No	No	2.00
21	3.61	18.93	2.64	3.20	0.88	30.10	3.55	106.79	4.000	No	Yes	2.00
22	3.77	21.54	2.66	4.06	0.89	34.26	3.73	127.90	4.000	No	Yes	2.00
23	3.94	24.13	2.69	5.02	0.90	38.42	3.93	151.13	4.000	No	Yes	2.00
24	4.10	25.30	2.71	5.58	0.91	40.27	4.07	164.07	4.000	No	Yes	2.00
25	4.27	26.39	2.71	5.74	0.91	42.01	4.04	169.87	4.000	No	Yes	2.00
26	4.43	26.51	2.67	5.08	0.89	42.20	3.76	158.65	4.000	No	Yes	2.00
27	4.59	26.50	2.61	4.19	0.87	42.16	3.37	142.19	4.000	No	Yes	2.00
28	4.76	25.62	2.57	3.55	0.85	40.74	3.13	127.70	4.000	No	No	2.00
29	4.92	23.00	2.65	4.11	0.88	36.50	3.62	132.16	4.000	No	Yes	2.00
30	5.09	20.61	2.76	5.41	0.93	32.66	4.49	146.60	4.000	No	Yes	2.00
31	5.25	22.30	2.78	6.21	0.94	35.35	4.64	164.10	4.000	No	Yes	2.00
32	5.41	29.85	2.67	5.75	0.89	47.46	3.79	180.10	4.000	No	Yes	2.00
33	5.58	37.95	2.59	5.58	0.86	60.46	3.28	198.22	0.804	No	No	2.00
34	5.74	43.05	2.55	5.46	0.85	68.65	3.03	208.02	4.000	No	No	2.00
35	5.91	42.66	2.56	5.59	0.85	67.99	3.09	210.09	4.000	No	No	2.00
36	6.07	39.56	2.57	5.44	0.86	63.00	3.16	199.08	0.814	No	No	2.00
37	6.23	33.94	2.59	5.06	0.86	53.95	3.28	177.20	0.597	No	No	2.00
38	6.40	27.08	2.66	4.99	0.89	42.91	3.69	158.32	4.000	No	Yes	2.00
39	6.56	21.92	2.76	5.73	0.93	34.60	4.49	155.27	4.000	No	Yes	2.00
40	6.73	21.65	2.83	7.05	0.95	34.16	5.08	173.40	4.000	No	Yes	2.00
41	6.89	26.31	2.79	7.33	0.94	41.63	4.68	194.96	4.000	No	Yes	2.00
42	7.05	31.34	2.73	7.11	0.91	49.70	4.20	208.75	4.000	No	Yes	2.00
43	7.22	35.17	2.68	6.81	0.90	55.84	3.86	215.28	4.000	No	Yes	2.00
44	7.38	37.81	2.62	6.06	0.87	60.07	3.46	207.83	4.000	No	Yes	2.00
45	7.55	39.52	2.58	5.63	0.86	62.79	3.23	202.94	4.000	No	No	2.00
46	7.71	37.29	2.62	5.88	0.87	59.18	3.42	202.57	4.000	No	Yes	2.00
47	7.87	35.75	2.66	6.52	0.89	56.70	3.72	211.18	4.000	No	Yes	2.00
48	8.04	35.16	2.68	6.82	0.90	55.73	3.86	215.33	4.000	No	Yes	2.00

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q_t (tsf)	I_c	Fr (%)	n	Q_{tn}	K_c	$Q_{tn,cs}$	$CRR_{7.5}$	Belongs to trans. layer	Clay-like behaviour	FS
49	8.20	37.66	2.64	6.37	0.88	59.74	3.57	213.53	4.000	No	Yes	2.00
50	8.37	38.40	2.61	5.98	0.87	60.90	3.41	207.47	4.000	No	Yes	2.00
51	8.53	37.02	2.60	5.57	0.87	58.68	3.33	195.13	0.771	No	No	2.00
52	8.69	33.68	2.61	5.23	0.87	53.29	3.37	179.54	4.000	No	Yes	2.00
53	8.86	27.58	2.66	5.05	0.89	43.48	3.69	160.32	4.000	No	Yes	2.00
54	9.02	20.95	2.75	5.22	0.92	32.81	4.39	144.06	4.000	No	Yes	2.00
55	9.19	14.06	2.94	6.41	1.00	21.73	6.12	133.07	4.000	No	Yes	2.00
56	9.35	10.33	3.12	8.18	1.00	15.71	8.15	128.01	4.000	No	Yes	2.00
57	9.51	10.87	3.10	8.08	1.00	16.56	7.89	130.72	4.000	No	Yes	2.00
58	9.68	17.50	2.83	5.51	0.95	27.21	5.01	136.42	4.000	No	Yes	2.00
59	9.84	22.43	2.69	4.58	0.90	35.10	3.93	137.96	4.000	No	Yes	2.00
60	10.01	23.88	2.66	4.44	0.89	37.42	3.73	139.40	4.000	No	Yes	2.00
61	10.17	19.83	2.78	5.37	0.93	30.91	4.61	142.45	4.000	No	Yes	2.00
62	10.34	17.10	2.88	6.47	0.97	26.50	5.54	146.70	4.000	No	Yes	2.00
63	10.50	16.77	2.89	6.40	0.97	25.96	5.56	144.45	4.000	Yes	Yes	2.00
64	10.66	20.97	2.70	4.42	0.90	32.69	4.02	131.31	4.000	Yes	Yes	2.00
65	10.83	27.73	2.44	2.46	0.80	43.54	2.48	107.90	4.000	Yes	No	2.00
66	10.99	33.74	2.22	1.41	0.72	53.17	1.71	90.97	4.000	Yes	No	2.00
67	11.16	35.03	2.11	0.97	0.68	55.23	1.47	81.10	4.000	Yes	No	2.00
68	11.32	31.83	2.14	0.96	0.69	50.07	1.53	76.78	0.122	No	No	0.34
69	11.48	26.82	2.25	1.15	0.73	42.01	1.79	75.16	0.119	No	No	0.33
70	11.65	21.66	2.38	1.43	0.78	33.70	2.23	75.24	0.120	No	No	0.33
71	11.81	18.25	2.49	1.71	0.82	28.22	2.71	76.37	0.121	No	No	0.33
72	11.98	17.43	2.49	1.59	0.82	26.88	2.71	72.73	0.116	No	No	0.31
73	12.14	19.84	2.37	1.22	0.78	30.74	2.21	67.91	0.109	No	No	0.30
74	12.30	24.75	2.24	0.97	0.73	38.61	1.76	68.04	0.109	No	No	0.29
75	12.47	30.43	2.14	0.90	0.69	47.67	1.54	73.19	0.116	No	No	0.31
76	12.63	36.93	2.04	0.74	0.65	56.06	1.35	75.68	0.120	No	No	0.32
77	12.80	44.59	1.91	0.53	0.60	65.09	1.20	77.86	0.124	No	No	0.33
78	12.96	50.43	1.81	0.40	0.57	71.50	1.00	71.50	0.114	No	No	0.30
79	13.12	52.50	1.82	0.45	0.57	74.33	1.00	74.33	0.118	No	No	0.31
80	13.29	51.70	1.86	0.52	0.58	73.56	1.15	84.73	0.137	No	No	0.36
81	13.45	51.13	1.91	0.66	0.60	73.49	1.20	88.21	0.144	No	No	0.38
82	13.62	53.00	1.93	0.77	0.61	76.27	1.22	93.25	4.000	Yes	No	2.00
83	13.78	55.83	2.04	1.27	0.65	82.39	1.36	111.95	4.000	Yes	No	2.00
84	13.94	55.73	2.21	2.31	0.72	85.37	1.69	143.88	4.000	Yes	No	2.00
85	14.11	53.57	2.41	4.30	0.79	84.75	2.36	199.73	4.000	Yes	No	2.00
86	14.27	62.48	2.45	5.51	0.81	99.05	2.55	252.11	4.000	No	No	2.00
87	14.44	75.24	2.40	5.38	0.79	118.67	2.31	273.63	4.000	No	No	2.00
88	14.60	87.57	2.34	5.07	0.77	135.41	2.10	284.48	4.000	No	No	2.00
89	14.76	90.07	2.35	5.16	0.77	138.24	2.10	290.76	4.000	No	No	2.00
90	14.93	92.31	2.37	5.54	0.78	141.22	2.18	307.76	4.000	No	No	2.00
91	15.09	89.30	2.39	5.77	0.79	136.26	2.27	309.15	4.000	No	No	2.00
92	15.26	77.53	2.44	5.96	0.80	118.40	2.46	291.61	4.000	No	No	2.00
93	15.42	60.02	2.52	6.43	0.84	92.53	2.90	268.02	4.000	No	No	2.00
94	15.58	45.69	2.62	7.00	0.87	71.12	3.47	246.98	4.000	No	Yes	2.00
95	15.75	39.80	2.69	7.63	0.90	62.15	3.92	243.50	4.000	No	Yes	2.00
96	15.91	42.88	2.66	7.39	0.89	66.13	3.72	246.32	4.000	No	Yes	2.00

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q_t (tsf)	I_c	Fr (%)	n	Q_{tn}	K_c	$Q_{tn,cs}$	$CRR_{7.5}$	Belongs to trans. layer	Clay-like behaviour	FS
97	16.08	51.43	2.59	6.74	0.86	77.66	3.25	252.15	4.000	No	No	2.00
98	16.24	56.30	2.54	6.14	0.84	83.59	2.96	247.03	4.000	No	No	2.00
99	16.40	58.33	2.49	5.40	0.82	85.14	2.70	230.11	4.000	No	No	2.00
100	16.57	61.18	2.39	4.15	0.79	86.97	2.28	198.33	0.806	No	No	2.00
101	16.73	68.68	2.25	2.91	0.73	94.43	1.80	170.12	0.538	No	No	1.35
102	16.90	76.05	2.11	2.00	0.68	101.20	1.48	149.36	0.390	No	No	0.98
103	17.06	79.67	2.01	1.48	0.64	103.49	1.32	136.36	0.316	No	No	0.79
104	17.23	80.13	1.96	1.22	0.62	102.49	1.25	128.12	0.276	No	No	0.69
105	17.39	79.86	1.97	1.27	0.63	101.91	1.26	128.90	0.279	No	No	0.70
106	17.55	81.49	2.01	1.49	0.64	104.32	1.32	137.33	0.321	No	No	0.80
107	17.72	86.40	1.96	1.33	0.62	109.12	1.26	136.95	0.319	No	No	0.79
108	17.88	98.56	1.85	1.03	0.58	121.63	1.15	139.57	0.333	No	No	0.83
109	18.05	117.16	1.68	0.66	0.52	139.89	1.03	143.63	0.356	No	No	0.88
110	18.21	139.06	1.59	0.58	0.50	164.39	1.00	164.39	0.493	No	No	1.22
111	18.37	156.36	1.52	0.52	0.50	184.34	1.00	184.34	0.663	No	No	1.64
112	18.54	172.49	1.46	0.47	0.50	202.73	1.00	202.73	4.000	No	No	2.00
113	18.70	184.89	1.42	0.44	0.50	216.63	1.00	216.63	4.000	No	No	2.00
114	18.87	189.59	1.41	0.42	0.50	221.34	1.00	221.34	4.000	No	No	2.00
115	19.03	184.29	1.43	0.44	0.50	214.37	1.00	214.37	4.000	No	No	2.00
116	19.19	172.55	1.47	0.47	0.50	199.94	1.00	199.94	0.823	No	No	2.00
117	19.36	163.95	1.50	0.49	0.50	189.22	1.00	189.22	0.710	No	No	1.74
118	19.52	158.62	1.53	0.53	0.50	182.40	1.00	182.40	0.644	No	No	1.58
119	19.69	156.25	1.55	0.56	0.50	179.01	1.00	179.01	0.613	No	No	1.50
120	19.85	155.12	1.57	0.58	0.50	177.10	1.00	177.10	0.597	No	No	1.46
121	20.01	153.12	1.57	0.57	0.50	174.21	1.00	174.21	0.572	No	No	1.39
122	20.18	151.39	1.56	0.53	0.50	171.62	1.00	171.62	0.550	No	No	1.34
123	20.34	150.12	1.54	0.49	0.50	169.62	1.00	169.62	0.534	No	No	1.30
124	20.51	148.22	1.54	0.48	0.50	166.88	1.00	166.88	0.512	No	No	1.24
125	20.67	147.55	1.54	0.48	0.50	165.59	1.00	165.59	0.502	No	No	1.22
126	20.83	148.72	1.58	0.57	0.50	166.37	1.00	166.37	0.508	No	No	1.23
127	21.00	144.69	1.65	0.70	0.50	161.49	1.00	162.04	0.476	No	No	1.15
128	21.16	121.59	1.78	0.91	0.55	137.33	1.09	150.04	4.000	Yes	No	2.00
129	21.33	86.92	1.98	1.28	0.63	99.92	1.28	127.58	4.000	Yes	No	2.00
130	21.49	54.76	2.24	1.93	0.73	64.22	1.78	114.24	4.000	Yes	No	2.00
131	21.65	38.84	2.42	2.49	0.80	45.92	2.42	110.90	4.000	Yes	No	2.00
132	21.82	32.49	2.48	2.46	0.82	38.21	2.68	102.27	4.000	Yes	No	2.00
133	21.98	29.85	2.48	2.22	0.82	34.82	2.69	93.64	0.156	No	No	0.38
134	22.15	28.74	2.51	2.31	0.83	33.39	2.81	94.00	0.157	No	No	0.38
135	22.31	28.52	2.53	2.45	0.84	33.05	2.92	96.48	0.164	No	No	0.39
136	22.47	28.97	2.55	2.65	0.85	33.49	3.02	100.99	0.176	No	No	0.42
137	22.64	29.99	2.54	2.68	0.84	34.52	2.97	102.64	0.181	No	No	0.43
138	22.80	30.42	2.55	2.87	0.85	34.92	3.06	106.88	0.194	No	No	0.46
139	22.97	30.90	2.56	2.93	0.85	35.32	3.08	108.68	0.199	No	No	0.48
140	23.13	30.54	2.58	3.09	0.86	34.78	3.19	110.94	0.207	No	No	0.49
141	23.30	29.07	2.61	3.25	0.87	32.96	3.39	111.60	4.000	No	Yes	2.00
142	23.46	26.30	2.66	3.48	0.89	29.68	3.74	110.89	4.000	No	Yes	2.00
143	23.62	23.36	2.73	3.79	0.91	26.20	4.21	110.32	4.000	No	Yes	2.00
144	23.79	21.03	2.77	3.91	0.93	23.39	4.57	106.91	4.000	No	Yes	2.00

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q_t (tsf)	I_c	Fr (%)	n	Q_{tn}	K_c	$Q_{tn,cs}$	$CRR_{7.5}$	Belongs to trans. layer	Clay-like behaviour	FS
145	23.95	19.47	2.81	4.06	0.95	21.49	4.90	105.28	4.000	No	Yes	2.00
146	24.12	18.36	2.84	4.14	0.96	20.10	5.14	103.29	4.000	No	Yes	2.00
147	24.28	18.05	2.87	4.41	0.97	19.68	5.37	105.70	4.000	No	Yes	2.00
148	24.44	19.50	2.84	4.43	0.96	21.24	5.15	109.40	4.000	No	Yes	2.00
149	24.61	21.71	2.82	4.61	0.95	23.65	4.94	116.84	4.000	No	Yes	2.00
150	24.77	23.78	2.82	5.08	0.95	25.93	4.93	127.89	4.000	No	Yes	2.00
151	24.94	28.27	2.82	6.22	0.95	30.97	4.99	154.47	4.000	No	Yes	2.00
152	25.10	38.52	2.74	6.39	0.92	42.29	4.29	181.39	4.000	No	Yes	2.00
153	25.26	54.76	2.61	5.82	0.87	59.89	3.38	202.42	4.000	No	Yes	2.00
154	25.43	63.15	2.53	5.19	0.84	68.53	2.94	201.51	4.000	No	No	2.00
155	25.59	61.06	2.50	4.59	0.83	65.73	2.79	183.39	0.654	No	No	1.55
156	25.76	48.28	2.55	4.21	0.85	51.51	3.02	155.65	0.431	No	No	1.02
157	25.92	37.90	2.60	3.94	0.87	40.03	3.36	134.35	4.000	No	Yes	2.00
158	26.08	32.53	2.70	4.63	0.90	34.17	4.01	137.17	4.000	No	Yes	2.00
159	26.25	32.94	2.77	5.84	0.93	34.57	4.54	156.97	4.000	No	Yes	2.00
160	26.41	38.04	2.78	6.86	0.93	39.99	4.60	183.94	4.000	No	Yes	2.00
161	26.58	44.90	2.74	7.00	0.92	47.12	4.28	201.53	4.000	No	Yes	2.00
162	26.74	54.03	2.64	6.10	0.88	56.43	3.59	202.45	4.000	No	Yes	2.00
163	26.90	62.27	2.53	4.89	0.84	64.57	2.92	188.85	0.706	No	No	1.67
164	27.07	69.11	2.44	4.10	0.81	71.16	2.50	178.15	0.606	No	No	1.43
165	27.23	72.29	2.43	4.01	0.80	74.09	2.42	179.35	0.616	No	No	1.46
166	27.40	69.99	2.48	4.58	0.82	71.50	2.67	190.80	0.726	No	No	1.72
167	27.56	64.65	2.56	5.45	0.85	65.84	3.09	203.55	4.000	No	No	2.00
168	27.72	60.35	2.60	5.74	0.87	61.14	3.31	202.64	4.000	No	No	2.00
169	27.89	57.69	2.59	5.36	0.86	58.03	3.27	189.62	4.000	Yes	No	2.00
170	28.05	61.85	2.46	3.82	0.81	61.75	2.59	159.95	4.000	Yes	No	2.00
171	28.22	69.39	2.28	2.36	0.74	68.70	1.89	129.94	4.000	Yes	No	2.00
172	28.38	80.58	2.08	1.39	0.67	79.21	1.42	112.58	4.000	Yes	No	2.00
173	28.54	87.25	1.95	0.94	0.62	85.25	1.24	105.34	4.000	Yes	No	2.00
174	28.71	88.05	1.94	0.93	0.61	85.76	1.23	105.56	0.189	No	No	0.45
175	28.87	86.39	2.02	1.22	0.65	84.05	1.33	111.98	0.211	No	No	0.50
176	29.04	85.77	2.13	1.75	0.69	83.37	1.51	126.02	0.266	No	No	0.63
177	29.20	99.75	2.09	1.80	0.67	96.81	1.44	139.63	0.333	No	No	0.79
178	29.36	128.95	1.94	1.42	0.61	124.77	1.23	153.45	0.416	No	No	0.98
179	29.53	162.21	1.76	1.00	0.55	156.28	1.08	169.04	0.529	No	No	1.25
180	29.69	184.62	1.66	0.80	0.51	177.25	1.01	179.10	0.614	No	No	1.45
181	29.86	197.52	1.61	0.72	0.50	189.17	1.00	189.17	0.710	No	No	1.68
182	30.02	217.57	1.55	0.65	0.50	208.01	1.00	208.01	4.000	No	No	2.00
183	30.19	250.17	1.45	0.55	0.50	238.80	1.00	238.80	4.000	No	No	2.00
184	30.35	281.00	1.38	0.49	0.50	267.77	1.00	267.77	4.000	No	No	2.00
185	30.51	297.48	1.34	0.45	0.50	282.86	1.00	282.86	4.000	No	No	2.00
186	30.68	284.81	1.38	0.49	0.50	270.02	1.00	270.02	4.000	No	No	2.00
187	30.84	247.88	1.50	0.64	0.50	234.18	1.00	234.18	4.000	No	No	2.00
188	31.01	204.51	1.71	1.02	0.53	192.42	1.04	200.67	4.000	No	No	2.00
189	31.17	183.85	1.83	1.36	0.57	172.35	1.13	194.66	0.766	No	No	1.82
190	31.33	186.21	1.83	1.37	0.57	174.08	1.13	196.81	0.789	No	No	1.87
191	31.50	192.21	1.72	1.00	0.53	179.24	1.05	188.73	0.705	No	No	1.67
192	31.66	189.71	1.61	0.67	0.50	176.50	1.00	176.50	0.591	No	No	1.40

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q_t (tsf)	I_c	Fr (%)	n	Q_{tn}	K_c	$Q_{tn,cs}$	$CRR_{7.5}$	Belongs to trans. layer	Clay-like behaviour	FS
193	31.83	183.61	1.52	0.46	0.50	170.35	1.00	170.35	0.540	No	No	1.28
194	31.99	176.45	1.54	0.46	0.50	163.28	1.00	163.28	0.485	No	No	1.15
195	32.15	167.19	1.57	0.48	0.50	154.27	1.00	154.27	0.421	No	No	1.00
196	32.32	157.93	1.59	0.49	0.50	145.29	1.00	145.29	0.365	No	No	0.86
197	32.48	153.93	1.60	0.48	0.50	141.26	1.00	141.26	0.342	No	No	0.81
198	32.65	150.94	1.59	0.45	0.50	138.15	1.00	138.15	0.325	No	No	0.77
199	32.81	145.44	1.60	0.44	0.50	132.77	1.00	132.77	0.298	No	No	0.70
200	32.97	134.97	1.63	0.45	0.50	122.83	1.00	122.83	0.252	No	No	0.60
201	33.14	121.88	1.70	0.50	0.52	110.37	1.04	114.37	0.219	No	No	0.52
202	33.30	111.15	1.76	0.55	0.54	100.15	1.08	107.68	0.196	No	No	0.46
203	33.47	106.68	1.79	0.61	0.56	95.74	1.10	105.57	0.189	No	No	0.45
204	33.63	108.95	1.81	0.65	0.56	97.56	1.11	108.47	0.199	No	No	0.47
205	33.79	115.05	1.79	0.65	0.56	102.93	1.10	112.87	0.214	No	No	0.50
206	33.96	122.16	1.75	0.61	0.54	109.24	1.07	117.03	0.229	No	No	0.54
207	34.12	133.06	1.71	0.59	0.53	119.02	1.04	124.21	0.258	No	No	0.61
208	34.29	151.19	1.68	0.63	0.52	135.29	1.02	138.65	0.328	No	No	0.77
209	34.45	168.70	1.63	0.60	0.50	151.03	1.00	151.03	0.400	No	No	0.94
210	34.61	181.90	1.61	0.61	0.50	162.64	1.00	162.64	0.480	No	No	1.13
211	34.78	193.03	1.59	0.61	0.50	172.31	1.00	172.31	0.556	No	No	1.31
212	34.94	164.17	1.72	0.78	0.53	145.52	1.05	152.67	4.000	Yes	No	2.00
213	35.11	121.73	1.90	1.03	0.60	106.41	1.19	126.33	4.000	Yes	No	2.00
214	35.27	66.11	2.26	1.77	0.74	55.96	1.84	102.73	4.000	Yes	No	2.00
215	35.43	46.13	2.48	2.42	0.82	38.03	2.67	101.36	4.000	Yes	No	2.00
216	35.60	36.12	2.62	2.94	0.87	29.09	3.47	100.85	4.000	Yes	Yes	2.00
217	35.76	30.93	2.71	3.24	0.91	24.46	4.05	99.04	4.000	Yes	Yes	2.00
218	35.93	28.30	2.76	3.44	0.93	22.09	4.44	98.02	4.000	No	Yes	2.00
219	36.09	26.99	2.79	3.63	0.94	20.87	4.71	98.30	4.000	No	Yes	2.00
220	36.26	26.73	2.81	3.80	0.95	20.55	4.87	99.99	4.000	No	Yes	2.00
221	36.42	27.09	2.82	4.02	0.95	20.76	4.97	103.16	4.000	No	Yes	2.00
222	36.58	28.53	2.82	4.18	0.95	21.88	4.92	107.54	4.000	No	Yes	2.00
223	36.75	30.19	2.80	4.29	0.94	23.17	4.82	111.65	4.000	No	Yes	2.00
224	36.91	30.79	2.80	4.32	0.94	23.58	4.79	112.85	4.000	No	Yes	2.00
225	37.08	29.55	2.83	4.51	0.95	22.43	5.04	113.02	4.000	No	Yes	2.00
226	37.24	28.23	2.85	4.62	0.96	21.23	5.26	111.65	4.000	No	Yes	2.00
227	37.40	28.86	2.87	5.01	0.97	21.64	5.42	117.29	4.000	No	Yes	2.00
228	37.57	31.17	2.87	5.42	0.97	23.42	5.40	126.42	4.000	No	Yes	2.00
229	37.73	34.94	2.85	5.71	0.96	26.40	5.20	137.16	4.000	No	Yes	2.00
230	37.90	39.07	2.79	5.34	0.94	29.72	4.70	139.60	4.000	No	Yes	2.00
231	38.06	40.18	2.76	5.01	0.93	30.54	4.47	136.51	4.000	No	Yes	2.00
232	38.22	38.05	2.75	4.57	0.92	28.73	4.40	126.44	4.000	No	Yes	2.00
233	38.39	33.75	2.78	4.35	0.93	25.13	4.63	116.34	4.000	No	Yes	2.00
234	38.55	30.29	2.80	4.05	0.94	22.25	4.79	106.66	4.000	No	Yes	2.00
235	38.72	27.92	2.84	4.17	0.96	20.23	5.14	103.95	4.000	No	Yes	2.00
236	38.88	26.66	2.87	4.39	0.97	19.12	5.44	104.06	4.000	No	Yes	2.00
237	39.04	27.23	2.87	4.42	0.97	19.49	5.40	105.35	4.000	No	Yes	2.00
238	39.21	28.02	2.83	4.03	0.95	20.09	5.07	101.90	4.000	No	Yes	2.00
239	39.37	27.62	2.82	3.70	0.95	19.73	4.91	96.99	4.000	No	Yes	2.00
240	39.54	25.93	2.83	3.54	0.95	18.32	5.03	92.16	4.000	No	Yes	2.00

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q_t (tsf)	I_c	Fr (%)	n	Q_{tn}	K_c	$Q_{tn,cs}$	$CRR_{7.5}$	Belongs to trans. layer	Clay-like behaviour	FS
241	39.70	23.79	2.87	3.58	0.97	16.55	5.37	88.96	4.000	No	Yes	2.00
242	39.86	22.43	2.91	3.83	0.98	15.39	5.79	89.02	4.000	No	Yes	2.00
243	40.03	23.06	2.97	5.00	1.00	15.75	6.46	101.85	4.000	No	Yes	2.00
244	40.19	27.43	3.02	7.33	1.00	19.01	7.02	133.47	4.000	No	Yes	2.00
245	40.36	40.14	2.94	8.31	0.99	28.57	6.08	173.80	4.000	No	Yes	2.00
246	40.52	62.17	2.78	7.81	0.94	45.67	4.64	211.72	4.000	No	Yes	2.00
247	40.68	84.41	2.66	7.12	0.89	63.08	3.72	234.97	4.000	No	Yes	2.00
248	40.85	94.90	2.61	6.67	0.87	71.21	3.37	239.82	4.000	No	Yes	2.00
249	41.01	89.77	2.61	6.41	0.87	66.97	3.39	226.98	4.000	No	Yes	2.00
250	41.18	76.83	2.65	6.23	0.88	56.63	3.63	205.39	4.000	No	Yes	2.00
251	41.34	64.50	2.69	5.97	0.90	46.89	3.90	182.92	4.000	No	Yes	2.00
252	41.50	59.30	2.67	5.16	0.89	42.88	3.76	161.38	4.000	No	Yes	2.00
253	41.67	53.77	2.66	4.49	0.89	38.61	3.68	142.19	4.000	No	Yes	2.00
254	41.83	49.98	2.65	4.00	0.88	35.66	3.62	129.01	4.000	No	Yes	2.00
255	42.00	44.78	2.71	4.42	0.91	31.42	4.11	129.02	4.000	No	Yes	2.00
256	42.16	46.52	2.75	5.08	0.92	32.50	4.35	141.24	4.000	No	Yes	2.00
257	42.32	53.09	2.76	6.07	0.93	37.16	4.46	165.74	4.000	No	Yes	2.00
258	42.49	62.86	2.74	6.63	0.92	44.27	4.28	189.44	4.000	Yes	Yes	2.00
259	42.65	76.53	2.65	6.08	0.88	54.60	3.64	198.93	4.000	Yes	Yes	2.00
260	42.82	93.26	2.50	4.60	0.83	67.81	2.75	186.26	4.000	Yes	No	2.00
261	42.98	113.04	2.29	2.93	0.75	84.23	1.91	160.66	4.000	Yes	No	2.00
262	43.15	138.26	2.03	1.62	0.65	106.12	1.34	142.69	4.000	Yes	No	2.00
263	43.31	166.18	1.78	0.88	0.55	131.28	1.09	143.68	4.000	Yes	No	2.00
264	43.47	192.28	1.60	0.54	0.50	154.42	1.00	154.42	0.422	No	No	1.01
265	43.64	205.01	1.52	0.43	0.50	164.48	1.00	164.48	0.494	No	No	1.18
266	43.80	204.04	1.51	0.41	0.50	163.42	1.00	163.42	0.486	No	No	1.16
267	43.97	196.34	1.52	0.41	0.50	156.89	1.00	156.89	0.439	No	No	1.05
268	44.13	192.41	1.54	0.42	0.50	153.44	1.00	153.44	0.416	No	No	1.00
269	44.29	194.98	1.52	0.40	0.50	155.26	1.00	155.26	0.428	No	No	1.03
270	44.46	200.08	1.48	0.35	0.50	159.10	1.00	159.10	0.455	No	No	1.09
271	44.62	203.05	1.46	0.33	0.50	161.23	1.00	161.23	0.470	No	No	1.13
272	44.79	204.26	1.45	0.31	0.50	161.92	1.00	161.92	0.475	No	No	1.14
273	44.95	206.54	1.43	0.29	0.50	163.49	1.00	163.49	0.486	No	No	1.17
274	45.11	212.92	1.39	0.25	0.50	168.35	1.00	168.35	0.524	No	No	1.26
275	45.28	211.70	1.38	0.24	0.50	167.09	1.00	167.09	0.514	No	No	1.24
276	45.44	202.69	1.41	0.25	0.50	159.64	1.00	159.64	0.458	No	No	1.10
277	45.61	187.69	1.47	0.29	0.50	147.42	1.00	147.42	0.378	No	No	0.91
278	45.77	176.65	1.52	0.33	0.50	138.40	1.00	138.40	0.327	No	No	0.79
279	45.93	172.62	1.54	0.35	0.50	134.98	1.00	134.98	0.309	No	No	0.75
280	46.10	175.29	1.54	0.35	0.50	136.88	1.00	136.88	0.318	No	No	0.77
281	46.26	184.20	1.49	0.31	0.50	143.72	1.00	143.72	0.356	No	No	0.86
282	46.43	191.74	1.46	0.28	0.50	149.45	1.00	149.45	0.390	No	No	0.95
283	46.59	194.94	1.44	0.26	0.50	151.75	1.00	151.75	0.405	No	No	0.98
284	46.75	192.94	1.44	0.26	0.50	149.94	1.00	149.94	0.394	No	No	0.96
285	46.92	188.75	1.46	0.27	0.50	146.40	1.00	146.40	0.372	No	No	0.90
286	47.08	182.88	1.48	0.28	0.50	141.57	1.00	141.57	0.344	No	No	0.84
287	47.25	178.82	1.50	0.30	0.50	138.15	1.00	138.15	0.325	No	No	0.79
288	47.41	176.42	1.54	0.35	0.50	136.06	1.00	136.06	0.314	No	No	0.77

:: Cyclic Resistance Ratio (CRR) calculation data :: (continued)

Point ID	Depth (ft)	q_t (tsf)	I_c	Fr (%)	n	Q_{tn}	K_c	$Q_{tn,cs}$	$CRR_{7.5}$	Belongs to trans. layer	Clay-like behaviour	FS
289	47.57	172.82	1.58	0.41	0.50	133.03	1.00	133.03	0.299	No	No	0.73
290	47.74	170.63	1.63	0.50	0.50	131.09	1.00	131.09	0.290	No	No	0.71
291	47.90	168.98	1.68	0.58	0.51	128.85	1.02	131.90	0.293	No	No	0.72
292	48.07	170.73	1.72	0.68	0.53	129.26	1.05	135.61	0.312	No	No	0.76
293	48.23	177.04	1.73	0.75	0.54	133.57	1.06	141.56	0.344	No	No	0.84
294	48.39	190.83	1.72	0.78	0.53	144.17	1.05	151.52	0.403	No	No	0.99
295	48.56	207.66	1.69	0.78	0.52	157.47	1.03	162.44	0.479	No	No	1.18
296	48.72	223.05	1.66	0.76	0.51	169.88	1.01	171.29	0.547	No	No	1.35
297	48.89	234.82	1.64	0.75	0.50	179.11	1.00	179.11	0.614	No	No	1.51
298	49.05	241.81	1.61	0.71	0.50	184.20	1.00	184.20	0.661	No	No	1.63
299	49.22	238.73	1.61	0.69	0.50	181.51	1.00	181.51	0.636	No	No	1.57
300	49.38	228.70	1.61	0.65	0.50	173.49	1.00	173.49	0.566	No	No	1.40
301	49.54	214.00	1.62	0.63	0.50	161.93	1.00	161.93	0.475	No	No	1.18
302	49.71	200.53	1.65	0.64	0.50	151.10	1.00	151.55	0.404	No	No	1.00
303	49.87	189.40	1.67	0.64	0.51	141.84	1.02	144.51	0.361	No	No	0.90
304	50.04	179.84	1.70	0.66	0.52	133.76	1.04	138.71	0.328	No	No	0.82
305	50.20	174.79	1.70	0.64	0.52	129.66	1.04	134.72	0.307	No	No	0.77

Abbreviations

Depth: Depth from free surface, at which CPT was performed (ft)
q_t: Total cone resistance
I_c: Soil behavior type index
Fr: Normalized friction ratio (%)
n: Stress exponent
Q_{tn}: Normalized cone resistance
K_c: Cone resistance correction factor due to fines
$Q_{tn,cs}$: Normalized and adjusted cone resistance
$CRR_{7.5}$: Cyclic resistance ratio for M_w=7.5
FS: Factor of safety against soil liquefaction

:: Liquefaction Potential Index calculation data ::

Depth (ft)	FS	F_L	w_z	d_z	LPI	Depth (ft)	FS	F_L	w_z	d_z	LPI
0.33	2.00	0.00	9.95	0.16	0.00	0.49	2.00	0.00	9.93	0.16	0.00
0.66	2.00	0.00	9.90	0.17	0.00	0.82	2.00	0.00	9.88	0.16	0.00
0.98	2.00	0.00	9.85	0.16	0.00	1.15	2.00	0.00	9.82	0.17	0.00
1.31	2.00	0.00	9.80	0.16	0.00	1.48	2.00	0.00	9.77	0.17	0.00
1.64	2.00	0.00	9.75	0.16	0.00	1.80	2.00	0.00	9.73	0.16	0.00
1.97	2.00	0.00	9.70	0.17	0.00	2.13	2.00	0.00	9.68	0.16	0.00
2.30	2.00	0.00	9.65	0.17	0.00	2.46	2.00	0.00	9.63	0.16	0.00
2.62	2.00	0.00	9.60	0.16	0.00	2.79	2.00	0.00	9.57	0.17	0.00
2.95	2.00	0.00	9.55	0.16	0.00	3.12	2.00	0.00	9.52	0.17	0.00
3.28	2.00	0.00	9.50	0.16	0.00	3.45	2.00	0.00	9.47	0.17	0.00
3.61	2.00	0.00	9.45	0.16	0.00	3.77	2.00	0.00	9.43	0.16	0.00
3.94	2.00	0.00	9.40	0.17	0.00	4.10	2.00	0.00	9.38	0.16	0.00
4.27	2.00	0.00	9.35	0.17	0.00	4.43	2.00	0.00	9.32	0.16	0.00
4.59	2.00	0.00	9.30	0.16	0.00	4.76	2.00	0.00	9.27	0.17	0.00
4.92	2.00	0.00	9.25	0.16	0.00	5.09	2.00	0.00	9.22	0.17	0.00
5.25	2.00	0.00	9.20	0.16	0.00	5.41	2.00	0.00	9.18	0.16	0.00
5.58	2.00	0.00	9.15	0.17	0.00	5.74	2.00	0.00	9.13	0.16	0.00
5.91	2.00	0.00	9.10	0.17	0.00	6.07	2.00	0.00	9.07	0.16	0.00
6.23	2.00	0.00	9.05	0.16	0.00	6.40	2.00	0.00	9.02	0.17	0.00
6.56	2.00	0.00	9.00	0.16	0.00	6.73	2.00	0.00	8.97	0.17	0.00
6.89	2.00	0.00	8.95	0.16	0.00	7.05	2.00	0.00	8.93	0.16	0.00
7.22	2.00	0.00	8.90	0.17	0.00	7.38	2.00	0.00	8.88	0.16	0.00
7.55	2.00	0.00	8.85	0.17	0.00	7.71	2.00	0.00	8.82	0.16	0.00
7.87	2.00	0.00	8.80	0.16	0.00	8.04	2.00	0.00	8.77	0.17	0.00
8.20	2.00	0.00	8.75	0.16	0.00	8.37	2.00	0.00	8.72	0.17	0.00
8.53	2.00	0.00	8.70	0.16	0.00	8.69	2.00	0.00	8.68	0.16	0.00
8.86	2.00	0.00	8.65	0.17	0.00	9.02	2.00	0.00	8.63	0.16	0.00
9.19	2.00	0.00	8.60	0.17	0.00	9.35	2.00	0.00	8.58	0.16	0.00
9.51	2.00	0.00	8.55	0.16	0.00	9.68	2.00	0.00	8.52	0.17	0.00
9.84	2.00	0.00	8.50	0.16	0.00	10.01	2.00	0.00	8.47	0.17	0.00
10.17	2.00	0.00	8.45	0.16	0.00	10.34	2.00	0.00	8.42	0.17	0.00
10.50	2.00	0.00	8.40	0.16	0.00	10.66	2.00	0.00	8.38	0.16	0.00
10.83	2.00	0.00	8.35	0.17	0.00	10.99	2.00	0.00	8.33	0.16	0.00
11.16	2.00	0.00	8.30	0.17	0.00	11.32	0.34	0.66	8.27	0.16	0.27
11.48	0.33	0.67	8.25	0.16	0.27	11.65	0.33	0.67	8.22	0.17	0.29
11.81	0.33	0.67	8.20	0.16	0.27	11.98	0.31	0.69	8.17	0.17	0.29
12.14	0.30	0.70	8.15	0.16	0.28	12.30	0.29	0.71	8.13	0.16	0.28
12.47	0.31	0.69	8.10	0.17	0.29	12.63	0.32	0.68	8.08	0.16	0.27
12.80	0.33	0.67	8.05	0.17	0.28	12.96	0.30	0.70	8.02	0.16	0.27
13.12	0.31	0.69	8.00	0.16	0.27	13.29	0.36	0.64	7.97	0.17	0.26
13.45	0.38	0.62	7.95	0.16	0.24	13.62	2.00	0.00	7.92	0.17	0.00
13.78	2.00	0.00	7.90	0.16	0.00	13.94	2.00	0.00	7.88	0.16	0.00
14.11	2.00	0.00	7.85	0.17	0.00	14.27	2.00	0.00	7.83	0.16	0.00
14.44	2.00	0.00	7.80	0.17	0.00	14.60	2.00	0.00	7.77	0.16	0.00
14.76	2.00	0.00	7.75	0.16	0.00	14.93	2.00	0.00	7.72	0.17	0.00
15.09	2.00	0.00	7.70	0.16	0.00	15.26	2.00	0.00	7.67	0.17	0.00
15.42	2.00	0.00	7.65	0.16	0.00	15.58	2.00	0.00	7.63	0.16	0.00
15.75	2.00	0.00	7.60	0.17	0.00	15.91	2.00	0.00	7.58	0.16	0.00

:: Liquefaction Potential Index calculation data :: (continued)

Depth (ft)	FS	F_L	w_z	d_z	LPI	Depth (ft)	FS	F_L	w_z	d_z	LPI
16.08	2.00	0.00	7.55	0.17	0.00	16.24	2.00	0.00	7.53	0.16	0.00
16.40	2.00	0.00	7.50	0.16	0.00	16.57	2.00	0.00	7.47	0.17	0.00
16.73	1.35	0.00	7.45	0.16	0.00	16.90	0.98	0.02	7.42	0.17	0.01
17.06	0.79	0.21	7.40	0.16	0.08	17.23	0.69	0.31	7.37	0.17	0.12
17.39	0.70	0.30	7.35	0.16	0.11	17.55	0.80	0.20	7.33	0.16	0.07
17.72	0.79	0.21	7.30	0.17	0.08	17.88	0.83	0.17	7.28	0.16	0.06
18.05	0.88	0.12	7.25	0.17	0.04	18.21	1.22	0.00	7.22	0.16	0.00
18.37	1.64	0.00	7.20	0.16	0.00	18.54	2.00	0.00	7.17	0.17	0.00
18.70	2.00	0.00	7.15	0.16	0.00	18.87	2.00	0.00	7.12	0.17	0.00
19.03	2.00	0.00	7.10	0.16	0.00	19.19	2.00	0.00	7.08	0.16	0.00
19.36	1.74	0.00	7.05	0.17	0.00	19.52	1.58	0.00	7.03	0.16	0.00
19.69	1.50	0.00	7.00	0.17	0.00	19.85	1.46	0.00	6.97	0.16	0.00
20.01	1.39	0.00	6.95	0.16	0.00	20.18	1.34	0.00	6.92	0.17	0.00
20.34	1.30	0.00	6.90	0.16	0.00	20.51	1.24	0.00	6.87	0.17	0.00
20.67	1.22	0.00	6.85	0.16	0.00	20.83	1.23	0.00	6.83	0.16	0.00
21.00	1.15	0.00	6.80	0.17	0.00	21.16	2.00	0.00	6.78	0.16	0.00
21.33	2.00	0.00	6.75	0.17	0.00	21.49	2.00	0.00	6.72	0.16	0.00
21.65	2.00	0.00	6.70	0.16	0.00	21.82	2.00	0.00	6.67	0.17	0.00
21.98	0.38	0.62	6.65	0.16	0.20	22.15	0.38	0.62	6.62	0.17	0.21
22.31	0.39	0.61	6.60	0.16	0.20	22.47	0.42	0.58	6.58	0.16	0.19
22.64	0.43	0.57	6.55	0.17	0.19	22.80	0.46	0.54	6.53	0.16	0.17
22.97	0.48	0.52	6.50	0.17	0.18	23.13	0.49	0.51	6.47	0.16	0.16
23.30	2.00	0.00	6.45	0.17	0.00	23.46	2.00	0.00	6.42	0.16	0.00
23.62	2.00	0.00	6.40	0.16	0.00	23.79	2.00	0.00	6.37	0.17	0.00
23.95	2.00	0.00	6.35	0.16	0.00	24.12	2.00	0.00	6.32	0.17	0.00
24.28	2.00	0.00	6.30	0.16	0.00	24.44	2.00	0.00	6.28	0.16	0.00
24.61	2.00	0.00	6.25	0.17	0.00	24.77	2.00	0.00	6.23	0.16	0.00
24.94	2.00	0.00	6.20	0.17	0.00	25.10	2.00	0.00	6.17	0.16	0.00
25.26	2.00	0.00	6.15	0.16	0.00	25.43	2.00	0.00	6.12	0.17	0.00
25.59	1.55	0.00	6.10	0.16	0.00	25.76	1.02	0.00	6.07	0.17	0.00
25.92	2.00	0.00	6.05	0.16	0.00	26.08	2.00	0.00	6.03	0.16	0.00
26.25	2.00	0.00	6.00	0.17	0.00	26.41	2.00	0.00	5.98	0.16	0.00
26.58	2.00	0.00	5.95	0.17	0.00	26.74	2.00	0.00	5.92	0.16	0.00
26.90	1.67	0.00	5.90	0.16	0.00	27.07	1.43	0.00	5.87	0.17	0.00
27.23	1.46	0.00	5.85	0.16	0.00	27.40	1.72	0.00	5.82	0.17	0.00
27.56	2.00	0.00	5.80	0.16	0.00	27.72	2.00	0.00	5.78	0.16	0.00
27.89	2.00	0.00	5.75	0.17	0.00	28.05	2.00	0.00	5.73	0.16	0.00
28.22	2.00	0.00	5.70	0.17	0.00	28.38	2.00	0.00	5.67	0.16	0.00
28.54	2.00	0.00	5.65	0.16	0.00	28.71	0.45	0.55	5.62	0.17	0.16
28.87	0.50	0.50	5.60	0.16	0.14	29.04	0.63	0.37	5.57	0.17	0.11
29.20	0.79	0.21	5.55	0.16	0.06	29.36	0.98	0.02	5.53	0.16	0.00
29.53	1.25	0.00	5.50	0.17	0.00	29.69	1.45	0.00	5.48	0.16	0.00
29.86	1.68	0.00	5.45	0.17	0.00	30.02	2.00	0.00	5.42	0.16	0.00
30.19	2.00	0.00	5.40	0.17	0.00	30.35	2.00	0.00	5.37	0.16	0.00
30.51	2.00	0.00	5.35	0.16	0.00	30.68	2.00	0.00	5.32	0.17	0.00
30.84	2.00	0.00	5.30	0.16	0.00	31.01	2.00	0.00	5.27	0.17	0.00
31.17	1.82	0.00	5.25	0.16	0.00	31.33	1.87	0.00	5.23	0.16	0.00
31.50	1.67	0.00	5.20	0.17	0.00	31.66	1.40	0.00	5.18	0.16	0.00

:: Liquefaction Potential Index calculation data :: (continued)

Depth (ft)	FS	F_L	w_z	d_z	LPI	Depth (ft)	FS	F_L	w_z	d_z	LPI
31.83	1.28	0.00	5.15	0.17	0.00	31.99	1.15	0.00	5.12	0.16	0.00
32.15	1.00	0.00	5.10	0.16	0.00	32.32	0.86	0.14	5.07	0.17	0.04
32.48	0.81	0.19	5.05	0.16	0.05	32.65	0.77	0.23	5.02	0.17	0.06
32.81	0.70	0.30	5.00	0.16	0.07	32.97	0.60	0.40	4.98	0.16	0.10
33.14	0.52	0.48	4.95	0.17	0.12	33.30	0.46	0.54	4.93	0.16	0.13
33.47	0.45	0.55	4.90	0.17	0.14	33.63	0.47	0.53	4.87	0.16	0.13
33.79	0.50	0.50	4.85	0.16	0.12	33.96	0.54	0.46	4.82	0.17	0.12
34.12	0.61	0.39	4.80	0.16	0.09	34.29	0.77	0.23	4.77	0.17	0.06
34.45	0.94	0.06	4.75	0.16	0.01	34.61	1.13	0.00	4.73	0.16	0.00
34.78	1.31	0.00	4.70	0.17	0.00	34.94	2.00	0.00	4.68	0.16	0.00
35.11	2.00	0.00	4.65	0.17	0.00	35.27	2.00	0.00	4.62	0.16	0.00
35.43	2.00	0.00	4.60	0.16	0.00	35.60	2.00	0.00	4.57	0.17	0.00
35.76	2.00	0.00	4.55	0.16	0.00	35.93	2.00	0.00	4.52	0.17	0.00
36.09	2.00	0.00	4.50	0.16	0.00	36.26	2.00	0.00	4.47	0.17	0.00
36.42	2.00	0.00	4.45	0.16	0.00	36.58	2.00	0.00	4.43	0.16	0.00
36.75	2.00	0.00	4.40	0.17	0.00	36.91	2.00	0.00	4.37	0.16	0.00
37.08	2.00	0.00	4.35	0.17	0.00	37.24	2.00	0.00	4.32	0.16	0.00
37.40	2.00	0.00	4.30	0.16	0.00	37.57	2.00	0.00	4.27	0.17	0.00
37.73	2.00	0.00	4.25	0.16	0.00	37.90	2.00	0.00	4.22	0.17	0.00
38.06	2.00	0.00	4.20	0.16	0.00	38.22	2.00	0.00	4.18	0.16	0.00
38.39	2.00	0.00	4.15	0.17	0.00	38.55	2.00	0.00	4.12	0.16	0.00
38.72	2.00	0.00	4.10	0.17	0.00	38.88	2.00	0.00	4.07	0.16	0.00
39.04	2.00	0.00	4.05	0.16	0.00	39.21	2.00	0.00	4.02	0.17	0.00
39.37	2.00	0.00	4.00	0.16	0.00	39.54	2.00	0.00	3.97	0.17	0.00
39.70	2.00	0.00	3.95	0.16	0.00	39.86	2.00	0.00	3.93	0.16	0.00
40.03	2.00	0.00	3.90	0.17	0.00	40.19	2.00	0.00	3.88	0.16	0.00
40.36	2.00	0.00	3.85	0.17	0.00	40.52	2.00	0.00	3.82	0.16	0.00
40.68	2.00	0.00	3.80	0.16	0.00	40.85	2.00	0.00	3.77	0.17	0.00
41.01	2.00	0.00	3.75	0.16	0.00	41.18	2.00	0.00	3.72	0.17	0.00
41.34	2.00	0.00	3.70	0.16	0.00	41.50	2.00	0.00	3.68	0.16	0.00
41.67	2.00	0.00	3.65	0.17	0.00	41.83	2.00	0.00	3.63	0.16	0.00
42.00	2.00	0.00	3.60	0.17	0.00	42.16	2.00	0.00	3.57	0.16	0.00
42.32	2.00	0.00	3.55	0.16	0.00	42.49	2.00	0.00	3.52	0.17	0.00
42.65	2.00	0.00	3.50	0.16	0.00	42.82	2.00	0.00	3.47	0.17	0.00
42.98	2.00	0.00	3.45	0.16	0.00	43.15	2.00	0.00	3.42	0.17	0.00
43.31	2.00	0.00	3.40	0.16	0.00	43.47	1.01	0.00	3.38	0.16	0.00
43.64	1.18	0.00	3.35	0.17	0.00	43.80	1.16	0.00	3.32	0.16	0.00
43.97	1.05	0.00	3.30	0.17	0.00	44.13	1.00	0.00	3.27	0.16	0.00
44.29	1.03	0.00	3.25	0.16	0.00	44.46	1.09	0.00	3.22	0.17	0.00
44.62	1.13	0.00	3.20	0.16	0.00	44.79	1.14	0.00	3.17	0.17	0.00
44.95	1.17	0.00	3.15	0.16	0.00	45.11	1.26	0.00	3.13	0.16	0.00
45.28	1.24	0.00	3.10	0.17	0.00	45.44	1.10	0.00	3.07	0.16	0.00
45.61	0.91	0.09	3.05	0.17	0.01	45.77	0.79	0.21	3.02	0.16	0.03
45.93	0.75	0.25	3.00	0.16	0.04	46.10	0.77	0.23	2.97	0.17	0.04
46.26	0.86	0.14	2.95	0.16	0.02	46.43	0.95	0.05	2.92	0.17	0.01
46.59	0.98	0.02	2.90	0.16	0.00	46.75	0.96	0.04	2.88	0.16	0.01
46.92	0.90	0.10	2.85	0.17	0.01	47.08	0.84	0.16	2.83	0.16	0.02
47.25	0.79	0.21	2.80	0.17	0.03	47.41	0.77	0.23	2.77	0.16	0.03

:: Liquefaction Potential Index calculation data :: (continued)

Depth (ft)	FS	F_L	w_z	d_z	LPI	Depth (ft)	FS	F_L	w_z	d_z	LPI
47.57	0.73	0.27	2.75	0.16	0.04	47.74	0.71	0.29	2.72	0.17	0.04
47.90	0.72	0.28	2.70	0.16	0.04	48.07	0.76	0.24	2.67	0.17	0.03
48.23	0.84	0.16	2.65	0.16	0.02	48.39	0.99	0.01	2.63	0.16	0.00
48.56	1.18	0.00	2.60	0.17	0.00	48.72	1.35	0.00	2.58	0.16	0.00
48.89	1.51	0.00	2.55	0.17	0.00	49.05	1.63	0.00	2.52	0.16	0.00
49.22	1.57	0.00	2.50	0.17	0.00	49.38	1.40	0.00	2.47	0.16	0.00
49.54	1.18	0.00	2.45	0.16	0.00	49.71	1.00	0.00	2.42	0.17	0.00
49.87	0.90	0.10	2.40	0.16	0.01	50.04	0.82	0.18	2.37	0.17	0.02
50.20	0.77	0.23	2.35	0.16	0.03						

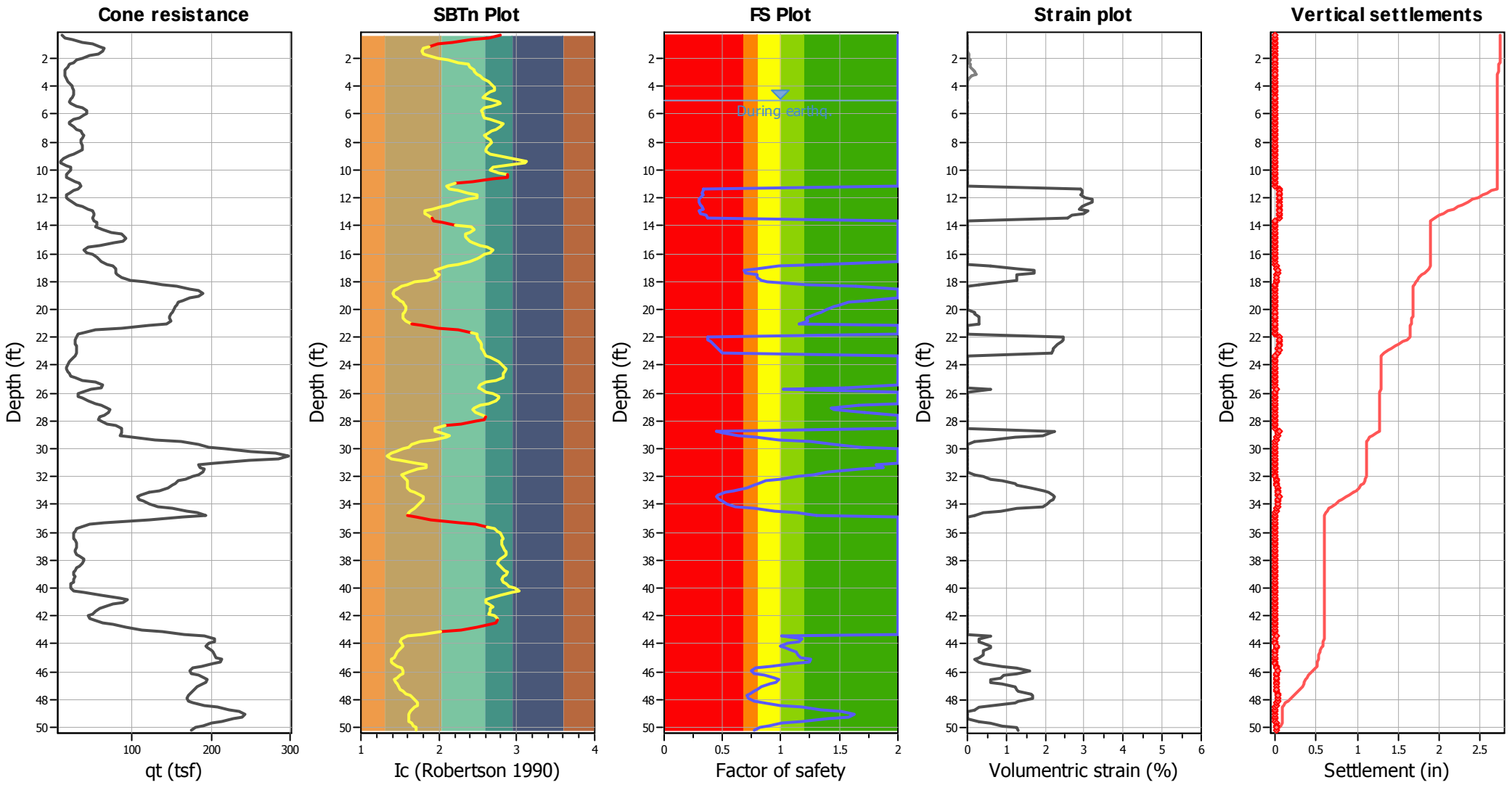
Overall liquefaction potential: 8.06

LPI = 0.00 - Liquefaction risk very low
LPI between 0.00 and 5.00 - Liquefaction risk low
LPI between 5.00 and 15.00 - Liquefaction risk high
LPI > 15.00 - Liquefaction risk very high

Abbreviations

FS: Calculated factor of safety for test point
F_L: 1 - FS
w_z: Function value of the extend of soil liquefaction according to depth
d_z: Layer thickness (ft)
LPI: Liquefaction potential index value for test point

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

:: Post-earthquake settlement of dry sands ::

Depth (ft)	Ic	Kc	Qc1n	Qc1n,cs	N1,60 (blows)	Vs (ft/s)	Gmax (tsf)	CSR	Shear, γ (%)	Svol,15 (%)	Nc	ev (%)	Settle. (in)
0.33	2.79	4.67	18.82	87.85	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
0.49	2.64	3.57	26.68	95.27	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
0.66	2.42	2.40	40.43	97.09	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
0.82	2.17	1.61	60.55	97.27	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
0.98	1.99	1.28	80.09	102.71	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
1.15	1.87	1.16	96.94	112.62	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
1.31	1.80	1.11	105.06	116.50	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
1.48	1.78	1.09	103.12	112.29	22	709.3	250	0.26	0.018	0.02	10.08	0.01	0.001
1.64	1.80	1.11	91.54	101.48	20	680.0	238	0.26	0.024	0.02	10.08	0.02	0.001
1.80	1.86	1.15	76.64	88.22	17	644.2	219	0.26	0.035	0.04	10.08	0.03	0.001
1.97	1.99	1.29	61.52	79.09	16	627.2	216	0.26	0.044	0.06	10.08	0.05	0.002
2.13	2.12	1.49	49.40	73.76	16	610.9	212	0.26	0.054	0.07	10.08	0.06	0.002
2.30	2.26	1.81	41.41	75.10	17	609.2	220	0.26	0.056	0.07	10.08	0.06	0.002
2.46	2.38	2.22	33.89	75.22	18	595.1	216	0.26	0.068	0.08	10.08	0.06	0.002
2.62	2.40	2.33	30.83	71.87	18	577.7	208	0.26	0.090	0.10	10.08	0.09	0.003
2.79	2.46	2.58	26.58	68.61	17	556.1	196	0.26	0.133	0.16	10.08	0.13	0.005
2.95	2.45	2.54	25.34	64.48	16	540.3	188	0.26	0.184	0.24	10.08	0.20	0.008
3.12	2.49	2.73	23.77	64.84	17	536.1	189	0.26	0.201	0.25	10.08	0.21	0.009
3.28	2.53	2.93	25.04	73.28	19	563.8	219	0.26	0.117	0.12	10.08	0.10	0.004
3.45	2.57	3.17	26.69	84.54	23	598.2	259	0.26	0.069	0.06	10.08	0.05	0.002
3.61	2.64	3.55	30.10	106.79	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
3.77	2.66	3.73	34.26	127.90	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
3.94	2.69	3.93	38.42	151.13	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
4.10	2.71	4.07	40.27	164.07	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
4.27	2.71	4.04	42.01	169.87	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
4.43	2.67	3.76	42.20	158.65	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
4.59	2.61	3.37	42.16	142.19	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000
4.76	2.57	3.13	40.74	127.70	34	736.4	498	0.26	0.022	0.01	10.08	0.01	0.000
4.92	2.65	3.62	36.50	132.16	0	0.0	0	0.26	0.000	0.00	0.00	0.00	0.000

Total estimated settlement: 0.04

:: Post-earthquake settlement due to soil liquefaction ::

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
5.09	146.60	2.00	0.00	1.00	0.00	5.25	164.10	2.00	0.00	1.00	0.00
5.41	180.10	2.00	0.00	1.00	0.00	5.58	198.22	2.00	0.00	1.00	0.00
5.74	208.02	2.00	0.00	1.00	0.00	5.91	210.09	2.00	0.00	1.00	0.00
6.07	199.08	2.00	0.00	1.00	0.00	6.23	177.20	2.00	0.00	1.00	0.00
6.40	158.32	2.00	0.00	1.00	0.00	6.56	155.27	2.00	0.00	1.00	0.00
6.73	173.40	2.00	0.00	1.00	0.00	6.89	194.96	2.00	0.00	1.00	0.00
7.05	208.75	2.00	0.00	1.00	0.00	7.22	215.28	2.00	0.00	1.00	0.00
7.38	207.83	2.00	0.00	1.00	0.00	7.55	202.94	2.00	0.00	1.00	0.00
7.71	202.57	2.00	0.00	1.00	0.00	7.87	211.18	2.00	0.00	1.00	0.00
8.04	215.33	2.00	0.00	1.00	0.00	8.20	213.53	2.00	0.00	1.00	0.00
8.37	207.47	2.00	0.00	1.00	0.00	8.53	195.13	2.00	0.00	1.00	0.00
8.69	179.54	2.00	0.00	1.00	0.00	8.86	160.32	2.00	0.00	1.00	0.00
9.02	144.06	2.00	0.00	1.00	0.00	9.19	133.07	2.00	0.00	1.00	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
9.35	128.01	2.00	0.00	1.00	0.00	9.51	130.72	2.00	0.00	1.00	0.00
9.68	136.42	2.00	0.00	1.00	0.00	9.84	137.96	2.00	0.00	1.00	0.00
10.01	139.40	2.00	0.00	1.00	0.00	10.17	142.45	2.00	0.00	1.00	0.00
10.34	146.70	2.00	0.00	1.00	0.00	10.50	144.45	2.00	0.00	1.00	0.00
10.66	131.31	2.00	0.00	1.00	0.00	10.83	107.90	2.00	0.00	1.00	0.00
10.99	90.97	2.00	0.00	1.00	0.00	11.16	81.10	2.00	0.00	1.00	0.00
11.32	76.78	0.34	2.90	1.00	0.06	11.48	75.16	0.33	2.95	1.00	0.06
11.65	75.24	0.33	2.95	1.00	0.06	11.81	76.37	0.33	2.91	1.00	0.06
11.98	72.73	0.31	3.03	1.00	0.06	12.14	67.91	0.30	3.21	1.00	0.06
12.30	68.04	0.29	3.20	1.00	0.06	12.47	73.19	0.31	3.02	1.00	0.06
12.63	75.68	0.32	2.94	1.00	0.06	12.80	77.86	0.33	2.87	1.00	0.06
12.96	71.50	0.30	3.08	1.00	0.06	13.12	74.33	0.31	2.98	1.00	0.06
13.29	84.73	0.36	2.68	1.00	0.05	13.45	88.21	0.38	2.59	1.00	0.05
13.62	93.25	2.00	0.00	1.00	0.00	13.78	111.95	2.00	0.00	1.00	0.00
13.94	143.88	2.00	0.00	1.00	0.00	14.11	199.73	2.00	0.00	1.00	0.00
14.27	252.11	2.00	0.00	1.00	0.00	14.44	273.63	2.00	0.00	1.00	0.00
14.60	284.48	2.00	0.00	1.00	0.00	14.76	290.76	2.00	0.00	1.00	0.00
14.93	307.76	2.00	0.00	1.00	0.00	15.09	309.15	2.00	0.00	1.00	0.00
15.26	291.61	2.00	0.00	1.00	0.00	15.42	268.02	2.00	0.00	1.00	0.00
15.58	246.98	2.00	0.00	1.00	0.00	15.75	243.50	2.00	0.00	1.00	0.00
15.91	246.32	2.00	0.00	1.00	0.00	16.08	252.15	2.00	0.00	1.00	0.00
16.24	247.03	2.00	0.00	1.00	0.00	16.40	230.11	2.00	0.00	1.00	0.00
16.57	198.33	2.00	0.00	1.00	0.00	16.73	170.12	1.35	0.00	1.00	0.00
16.90	149.36	0.98	0.61	1.00	0.01	17.06	136.36	0.79	1.29	1.00	0.02
17.23	128.12	0.69	1.73	1.00	0.04	17.39	128.90	0.70	1.71	1.00	0.03
17.55	137.33	0.80	1.28	1.00	0.02	17.72	136.95	0.79	1.28	1.00	0.03
17.88	139.57	0.83	1.25	1.00	0.02	18.05	143.63	0.88	0.92	1.00	0.02
18.21	164.39	1.22	0.29	1.00	0.01	18.37	184.34	1.64	0.00	1.00	0.00
18.54	202.73	2.00	0.00	1.00	0.00	18.70	216.63	2.00	0.00	1.00	0.00
18.87	221.34	2.00	0.00	1.00	0.00	19.03	214.37	2.00	0.00	1.00	0.00
19.19	199.94	2.00	0.00	1.00	0.00	19.36	189.22	1.74	0.00	1.00	0.00
19.52	182.40	1.58	0.00	1.00	0.00	19.69	179.01	1.50	0.00	1.00	0.00
19.85	177.10	1.46	0.00	1.00	0.00	20.01	174.21	1.39	0.00	1.00	0.00
20.18	171.62	1.34	0.20	1.00	0.00	20.34	169.62	1.30	0.20	1.00	0.00
20.51	166.88	1.24	0.28	1.00	0.01	20.67	165.59	1.22	0.29	1.00	0.01
20.83	166.37	1.23	0.28	1.00	0.01	21.00	162.04	1.15	0.29	1.00	0.01
21.16	150.04	2.00	0.00	1.00	0.00	21.33	127.58	2.00	0.00	1.00	0.00
21.49	114.24	2.00	0.00	1.00	0.00	21.65	110.90	2.00	0.00	1.00	0.00
21.82	102.27	2.00	0.00	1.00	0.00	21.98	93.64	0.38	2.47	1.00	0.05
22.15	94.00	0.38	2.46	1.00	0.05	22.31	96.48	0.39	2.41	1.00	0.05
22.47	100.99	0.42	2.32	1.00	0.04	22.64	102.64	0.43	2.29	1.00	0.05
22.80	106.88	0.46	2.21	1.00	0.04	22.97	108.68	0.48	2.18	1.00	0.04
23.13	110.94	0.49	2.15	1.00	0.04	23.30	111.60	2.00	0.00	1.00	0.00
23.46	110.89	2.00	0.00	1.00	0.00	23.62	110.32	2.00	0.00	1.00	0.00
23.79	106.91	2.00	0.00	1.00	0.00	23.95	105.28	2.00	0.00	1.00	0.00
24.12	103.29	2.00	0.00	1.00	0.00	24.28	105.70	2.00	0.00	1.00	0.00
24.44	109.40	2.00	0.00	1.00	0.00	24.61	116.84	2.00	0.00	1.00	0.00
24.77	127.89	2.00	0.00	1.00	0.00	24.94	154.47	2.00	0.00	1.00	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
25.10	181.39	2.00	0.00	1.00	0.00	25.26	202.42	2.00	0.00	1.00	0.00
25.43	201.51	2.00	0.00	1.00	0.00	25.59	183.39	1.55	0.00	1.00	0.00
25.76	155.65	1.02	0.59	1.00	0.01	25.92	134.35	2.00	0.00	1.00	0.00
26.08	137.17	2.00	0.00	1.00	0.00	26.25	156.97	2.00	0.00	1.00	0.00
26.41	183.94	2.00	0.00	1.00	0.00	26.58	201.53	2.00	0.00	1.00	0.00
26.74	202.45	2.00	0.00	1.00	0.00	26.90	188.85	1.67	0.00	1.00	0.00
27.07	178.15	1.43	0.00	1.00	0.00	27.23	179.35	1.46	0.00	1.00	0.00
27.40	190.80	1.72	0.00	1.00	0.00	27.56	203.55	2.00	0.00	1.00	0.00
27.72	202.64	2.00	0.00	1.00	0.00	27.89	189.62	2.00	0.00	1.00	0.00
28.05	159.95	2.00	0.00	1.00	0.00	28.22	129.94	2.00	0.00	1.00	0.00
28.38	112.58	2.00	0.00	1.00	0.00	28.54	105.34	2.00	0.00	1.00	0.00
28.71	105.56	0.45	2.24	1.00	0.05	28.87	111.98	0.50	2.13	1.00	0.04
29.04	126.02	0.63	1.93	1.00	0.04	29.20	139.63	0.79	1.25	1.00	0.02
29.36	153.45	0.98	0.59	1.00	0.01	29.53	169.04	1.25	0.20	1.00	0.00
29.69	179.10	1.45	0.00	1.00	0.00	29.86	189.17	1.68	0.00	1.00	0.00
30.02	208.01	2.00	0.00	1.00	0.00	30.19	238.80	2.00	0.00	1.00	0.00
30.35	267.77	2.00	0.00	1.00	0.00	30.51	282.86	2.00	0.00	1.00	0.00
30.68	270.02	2.00	0.00	1.00	0.00	30.84	234.18	2.00	0.00	1.00	0.00
31.01	200.67	2.00	0.00	1.00	0.00	31.17	194.66	1.82	0.00	1.00	0.00
31.33	196.81	1.87	0.00	1.00	0.00	31.50	188.73	1.67	0.00	1.00	0.00
31.66	176.50	1.40	0.00	1.00	0.00	31.83	170.35	1.28	0.20	1.00	0.00
31.99	163.28	1.15	0.40	1.00	0.01	32.15	154.27	1.00	0.59	1.00	0.01
32.32	145.29	0.86	0.90	1.00	0.02	32.48	141.26	0.81	1.23	1.00	0.02
32.65	138.15	0.77	1.27	1.00	0.03	32.81	132.77	0.70	1.64	1.00	0.03
32.97	122.83	0.60	1.97	1.00	0.04	33.14	114.37	0.52	2.09	1.00	0.04
33.30	107.68	0.46	2.20	1.00	0.04	33.47	105.57	0.45	2.24	1.00	0.05
33.63	108.47	0.47	2.19	1.00	0.04	33.79	112.87	0.50	2.12	1.00	0.04
33.96	117.03	0.54	2.05	1.00	0.04	34.12	124.21	0.61	1.96	1.00	0.04
34.29	138.65	0.77	1.26	1.00	0.03	34.45	151.03	0.94	0.85	1.00	0.02
34.61	162.64	1.13	0.40	1.00	0.01	34.78	172.31	1.31	0.20	1.00	0.00
34.94	152.67	2.00	0.00	1.00	0.00	35.11	126.33	2.00	0.00	1.00	0.00
35.27	102.73	2.00	0.00	1.00	0.00	35.43	101.36	2.00	0.00	1.00	0.00
35.60	100.85	2.00	0.00	1.00	0.00	35.76	99.04	2.00	0.00	1.00	0.00
35.93	98.02	2.00	0.00	1.00	0.00	36.09	98.30	2.00	0.00	1.00	0.00
36.26	99.99	2.00	0.00	1.00	0.00	36.42	103.16	2.00	0.00	1.00	0.00
36.58	107.54	2.00	0.00	1.00	0.00	36.75	111.65	2.00	0.00	1.00	0.00
36.91	112.85	2.00	0.00	1.00	0.00	37.08	113.02	2.00	0.00	1.00	0.00
37.24	111.65	2.00	0.00	1.00	0.00	37.40	117.29	2.00	0.00	1.00	0.00
37.57	126.42	2.00	0.00	1.00	0.00	37.73	137.16	2.00	0.00	1.00	0.00
37.90	139.60	2.00	0.00	1.00	0.00	38.06	136.51	2.00	0.00	1.00	0.00
38.22	126.44	2.00	0.00	1.00	0.00	38.39	116.34	2.00	0.00	1.00	0.00
38.55	106.66	2.00	0.00	1.00	0.00	38.72	103.95	2.00	0.00	1.00	0.00
38.88	104.06	2.00	0.00	1.00	0.00	39.04	105.35	2.00	0.00	1.00	0.00
39.21	101.90	2.00	0.00	1.00	0.00	39.37	96.99	2.00	0.00	1.00	0.00
39.54	92.16	2.00	0.00	1.00	0.00	39.70	88.96	2.00	0.00	1.00	0.00
39.86	89.02	2.00	0.00	1.00	0.00	40.03	101.85	2.00	0.00	1.00	0.00
40.19	133.47	2.00	0.00	1.00	0.00	40.36	173.80	2.00	0.00	1.00	0.00
40.52	211.72	2.00	0.00	1.00	0.00	40.68	234.97	2.00	0.00	1.00	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
40.85	239.82	2.00	0.00	1.00	0.00	41.01	226.98	2.00	0.00	1.00	0.00
41.18	205.39	2.00	0.00	1.00	0.00	41.34	182.92	2.00	0.00	1.00	0.00
41.50	161.38	2.00	0.00	1.00	0.00	41.67	142.19	2.00	0.00	1.00	0.00
41.83	129.01	2.00	0.00	1.00	0.00	42.00	129.02	2.00	0.00	1.00	0.00
42.16	141.24	2.00	0.00	1.00	0.00	42.32	165.74	2.00	0.00	1.00	0.00
42.49	189.44	2.00	0.00	1.00	0.00	42.65	198.93	2.00	0.00	1.00	0.00
42.82	186.26	2.00	0.00	1.00	0.00	42.98	160.66	2.00	0.00	1.00	0.00
43.15	142.69	2.00	0.00	1.00	0.00	43.31	143.68	2.00	0.00	1.00	0.00
43.47	154.42	1.01	0.59	1.00	0.01	43.64	164.48	1.18	0.29	1.00	0.01
43.80	163.42	1.16	0.29	1.00	0.01	43.97	156.89	1.05	0.41	1.00	0.01
44.13	153.44	1.00	0.59	1.00	0.01	44.29	155.26	1.03	0.59	1.00	0.01
44.46	159.10	1.09	0.41	1.00	0.01	44.62	161.23	1.13	0.40	1.00	0.01
44.79	161.92	1.14	0.40	1.00	0.01	44.95	163.49	1.17	0.29	1.00	0.01
45.11	168.35	1.26	0.20	1.00	0.00	45.28	167.09	1.24	0.28	1.00	0.01
45.44	159.64	1.10	0.41	1.00	0.01	45.61	147.42	0.91	0.88	1.00	0.02
45.77	138.40	0.79	1.26	1.00	0.02	45.93	134.98	0.75	1.61	1.00	0.03
46.10	136.88	0.77	1.28	1.00	0.03	46.26	143.72	0.86	0.92	1.00	0.02
46.43	149.45	0.95	0.87	1.00	0.02	46.59	151.75	0.98	0.60	1.00	0.01
46.75	149.94	0.96	0.61	1.00	0.01	46.92	146.40	0.90	0.89	1.00	0.02
47.08	141.57	0.84	1.22	1.00	0.02	47.25	138.15	0.79	1.27	1.00	0.03
47.41	136.06	0.77	1.30	1.00	0.02	47.57	133.03	0.73	1.64	1.00	0.03
47.74	131.09	0.71	1.67	1.00	0.03	47.90	131.90	0.72	1.66	1.00	0.03
48.07	135.61	0.76	1.30	1.00	0.03	48.23	141.56	0.84	1.22	1.00	0.02
48.39	151.52	0.99	0.60	1.00	0.01	48.56	162.44	1.18	0.29	1.00	0.01
48.72	171.29	1.35	0.20	1.00	0.00	48.89	179.11	1.51	0.00	1.00	0.00
49.05	184.20	1.63	0.00	1.00	0.00	49.22	181.51	1.57	0.00	1.00	0.00
49.38	173.49	1.40	0.00	1.00	0.00	49.54	161.93	1.18	0.29	1.00	0.01
49.71	151.55	1.00	0.60	1.00	0.01	49.87	144.51	0.90	0.91	1.00	0.02
50.04	138.71	0.82	1.26	1.00	0.03	50.20	134.72	0.77	1.32	1.00	0.03

Total estimated settlement: 2.70

Abbreviations

$Q_{tn,cs}$:	Equivalent clean sand normalized cone resistance
FS:	Factor of safety against liquefaction
e_v (%):	Post-liquefaction volumentric strain
DF:	e_v depth weighting factor
Settlement:	Calculated settlement

:: Strength loss calculation (Robertson (2009) ::

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
0.33	11.73	18.82	4.67	87.85	2.79	N/A	N/A
0.49	16.63	26.68	3.57	95.27	2.64	N/A	N/A
0.66	25.20	40.43	2.40	97.09	2.42	N/A	N/A
0.82	37.74	60.55	1.61	97.27	2.17	N/A	N/A
0.98	49.90	80.09	1.28	102.71	1.99	N/A	N/A
1.15	60.40	96.94	1.16	112.62	1.87	N/A	N/A
1.31	65.47	105.06	1.11	116.50	1.80	N/A	N/A
1.48	64.27	103.12	1.09	112.29	1.78	N/A	N/A
1.64	57.07	91.54	1.11	101.48	1.80	N/A	N/A
1.80	47.80	76.64	1.15	88.22	1.86	N/A	N/A
1.97	38.40	61.52	1.29	79.09	1.99	N/A	N/A
2.13	30.87	49.40	1.49	73.76	2.12	N/A	N/A
2.30	25.90	41.41	1.81	75.10	2.26	N/A	N/A
2.46	21.23	33.89	2.22	75.22	2.38	N/A	N/A
2.62	19.33	30.83	2.33	71.87	2.40	N/A	N/A
2.79	16.70	26.58	2.58	68.61	2.46	N/A	N/A
2.95	15.93	25.34	2.54	64.48	2.45	N/A	N/A
3.12	14.97	23.77	2.73	64.84	2.49	N/A	N/A
3.28	15.77	25.04	2.93	73.28	2.53	N/A	N/A
3.45	16.80	26.69	3.17	84.54	2.57	N/A	N/A
3.61	18.93	30.10	3.55	106.79	2.64	N/A	N/A
3.77	21.54	34.26	3.73	127.90	2.66	N/A	N/A
3.94	24.13	38.42	3.93	151.13	2.69	N/A	N/A
4.10	25.30	40.27	4.07	164.07	2.71	N/A	N/A
4.27	26.39	42.01	4.04	169.87	2.71	N/A	N/A
4.43	26.51	42.20	3.76	158.65	2.67	N/A	N/A
4.59	26.50	42.16	3.37	142.19	2.61	N/A	N/A
4.76	25.62	40.74	3.13	127.70	2.57	N/A	N/A
4.92	23.00	36.50	3.62	132.16	2.65	N/A	N/A
5.09	20.61	32.66	4.49	146.60	2.76	5.10	5.10
5.25	22.30	35.35	4.64	164.10	2.78	5.43	5.43
5.41	29.85	47.46	3.79	180.10	2.67	7.18	7.18
5.58	37.95	60.46	3.28	198.22	2.59	0.76	0.76
5.74	43.05	68.65	3.03	208.02	2.55	0.78	0.78
5.91	42.66	67.99	3.09	210.09	2.56	0.77	0.77
6.07	39.56	63.00	3.16	199.08	2.57	0.76	0.76
6.23	33.94	53.95	3.28	177.20	2.59	0.74	0.74
6.40	27.08	42.91	3.69	158.32	2.66	5.88	5.88
6.56	21.92	34.60	4.49	155.27	2.76	4.68	4.68
6.73	21.65	34.16	5.08	173.40	2.83	4.55	4.55
6.89	26.31	41.63	4.68	194.96	2.79	5.46	5.46
7.05	31.34	49.70	4.20	208.75	2.73	6.43	6.43
7.22	35.17	55.84	3.86	215.28	2.68	7.11	7.11
7.38	37.81	60.07	3.46	207.83	2.62	7.54	7.54
7.55	39.52	62.79	3.23	202.94	2.58	0.76	0.76
7.71	37.29	59.18	3.42	202.57	2.62	7.22	7.22
7.87	35.75	56.70	3.72	211.18	2.66	6.82	6.82
8.04	35.16	55.73	3.86	215.33	2.68	6.61	6.61

:: Strength loss calculation (Robertson (2009) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
8.20	37.66	59.74	3.57	213.53	2.64	6.99	6.99
8.37	38.40	60.90	3.41	207.47	2.61	7.03	7.03
8.53	37.02	58.68	3.33	195.13	2.60	0.76	0.76
8.69	33.68	53.29	3.37	179.54	2.61	6.00	6.00
8.86	27.58	43.48	3.69	160.32	2.66	4.83	4.83
9.02	20.95	32.81	4.39	144.06	2.75	3.61	3.61
9.19	14.06	21.73	6.12	133.07	2.94	2.36	2.36
9.35	10.33	15.71	8.15	128.01	3.12	1.69	1.69
9.51	10.87	16.56	7.89	130.72	3.10	1.76	1.76
9.68	17.50	27.21	5.01	136.42	2.83	2.87	2.87
9.84	22.43	35.10	3.93	137.96	2.69	3.66	3.66
10.01	23.88	37.42	3.73	139.40	2.66	3.86	3.86
10.17	19.83	30.91	4.61	142.45	2.78	3.15	3.15
10.34	17.10	26.50	5.54	146.70	2.88	2.68	2.68
10.50	16.77	25.96	5.56	144.45	2.89	2.60	2.60
10.66	20.97	32.69	4.02	131.31	2.70	3.24	3.24
10.83	27.73	43.54	2.48	107.90	2.44	0.72	0.72
10.99	33.74	53.17	1.71	90.97	2.22	0.74	0.74
11.16	35.03	55.23	1.47	81.10	2.11	0.75	0.75
11.32	31.83	50.07	1.53	76.78	2.14	0.73	0.73
11.48	26.82	42.01	1.79	75.16	2.25	0.71	0.71
11.65	21.66	33.70	2.23	75.24	2.38	0.68	0.68
11.81	18.25	28.22	2.71	76.37	2.49	0.66	0.66
11.98	17.43	26.88	2.71	72.73	2.49	0.66	0.66
12.14	19.84	30.74	2.21	67.91	2.37	0.17	0.67
12.30	24.75	38.61	1.76	68.04	2.24	0.17	0.70
12.47	30.43	47.67	1.54	73.19	2.14	0.73	0.73
12.63	36.93	56.06	1.35	75.68	2.04	0.75	0.75
12.80	44.59	65.09	1.20	77.86	1.91	0.77	0.77
12.96	50.43	71.50	1.00	71.50	1.81	0.78	0.78
13.12	52.50	74.33	1.00	74.33	1.82	0.79	0.79
13.29	51.70	73.56	1.15	84.73	1.86	0.79	0.79
13.45	51.13	73.49	1.20	88.21	1.91	0.78	0.78
13.62	53.00	76.27	1.22	93.25	1.93	0.79	0.79
13.78	55.83	82.39	1.36	111.95	2.04	0.80	0.80
13.94	55.73	85.37	1.69	143.88	2.21	0.81	0.81
14.11	53.57	84.75	2.36	199.73	2.41	0.80	0.80
14.27	62.48	99.05	2.55	252.11	2.45	0.83	0.83
14.44	75.24	118.67	2.31	273.63	2.40	0.85	0.85
14.60	87.57	135.41	2.10	284.48	2.34	0.87	0.87
14.76	90.07	138.24	2.10	290.76	2.35	0.87	0.87
14.93	92.31	141.22	2.18	307.76	2.37	0.88	0.88
15.09	89.30	136.26	2.27	309.15	2.39	0.87	0.87
15.26	77.53	118.40	2.46	291.61	2.44	0.85	0.85
15.42	60.02	92.53	2.90	268.02	2.52	0.82	0.82
15.58	45.69	71.12	3.47	246.98	2.62	5.47	5.47
15.75	39.80	62.15	3.92	243.50	2.69	4.71	4.71
15.91	42.88	66.13	3.72	246.32	2.66	5.03	5.03

:: Strength loss calculation (Robertson (2009) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
16.08	51.43	77.66	3.25	252.15	2.59	0.79	0.79
16.24	56.30	83.59	2.96	247.03	2.54	0.80	0.80
16.40	58.33	85.14	2.70	230.11	2.49	0.80	0.80
16.57	61.18	86.97	2.28	198.33	2.39	0.81	0.81
16.73	68.68	94.43	1.80	170.12	2.25	0.82	0.82
16.90	76.05	101.20	1.48	149.36	2.11	0.83	0.83
17.06	79.67	103.49	1.32	136.36	2.01	0.83	0.83
17.23	80.13	102.49	1.25	128.12	1.96	0.83	0.83
17.39	79.86	101.91	1.26	128.90	1.97	0.83	0.83
17.55	81.49	104.32	1.32	137.33	2.01	0.83	0.83
17.72	86.40	109.12	1.26	136.95	1.96	0.84	0.84
17.88	98.56	121.63	1.15	139.57	1.85	0.86	0.86
18.05	117.16	139.89	1.03	143.63	1.68	0.88	0.88
18.21	139.06	164.39	1.00	164.39	1.59	0.90	0.90
18.37	156.36	184.34	1.00	184.34	1.52	0.92	0.92
18.54	172.49	202.73	1.00	202.73	1.46	0.93	0.93
18.70	184.89	216.63	1.00	216.63	1.42	0.94	0.94
18.87	189.59	221.34	1.00	221.34	1.41	0.95	0.95
19.03	184.29	214.37	1.00	214.37	1.43	0.94	0.94
19.19	172.55	199.94	1.00	199.94	1.47	0.93	0.93
19.36	163.95	189.22	1.00	189.22	1.50	0.92	0.92
19.52	158.62	182.40	1.00	182.40	1.53	0.92	0.92
19.69	156.25	179.01	1.00	179.01	1.55	0.91	0.91
19.85	155.12	177.10	1.00	177.10	1.57	0.91	0.91
20.01	153.12	174.21	1.00	174.21	1.57	0.91	0.91
20.18	151.39	171.62	1.00	171.62	1.56	0.91	0.91
20.34	150.12	169.62	1.00	169.62	1.54	0.90	0.90
20.51	148.22	166.88	1.00	166.88	1.54	0.90	0.90
20.67	147.55	165.59	1.00	165.59	1.54	0.90	0.90
20.83	148.72	166.37	1.00	166.37	1.58	0.90	0.90
21.00	144.69	161.49	1.00	162.04	1.65	0.90	0.90
21.16	121.59	137.33	1.09	150.04	1.78	0.87	0.87
21.33	86.92	99.92	1.28	127.58	1.98	0.83	0.83
21.49	54.76	64.22	1.78	114.24	2.24	0.77	0.77
21.65	38.84	45.92	2.42	110.90	2.42	0.72	0.72
21.82	32.49	38.21	2.68	102.27	2.48	0.70	0.70
21.98	29.85	34.82	2.69	93.64	2.48	0.69	0.69
22.15	28.74	33.39	2.81	94.00	2.51	0.68	0.68
22.31	28.52	33.05	2.92	96.48	2.53	0.68	0.68
22.47	28.97	33.49	3.02	100.99	2.55	0.68	0.68
22.64	29.99	34.52	2.97	102.64	2.54	0.69	0.69
22.80	30.42	34.92	3.06	106.88	2.55	0.69	0.69
22.97	30.90	35.32	3.08	108.68	2.56	0.69	0.69
23.13	30.54	34.78	3.19	110.94	2.58	0.69	0.69
23.30	29.07	32.96	3.39	111.60	2.61	2.44	2.44
23.46	26.30	29.68	3.74	110.89	2.66	2.18	2.18
23.62	23.36	26.20	4.21	110.32	2.73	1.91	1.91
23.79	21.03	23.39	4.57	106.91	2.77	1.70	1.70

:: Strength loss calculation (Robertson (2009) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
23.95	19.47	21.49	4.90	105.28	2.81	1.56	1.56
24.12	18.36	20.10	5.14	103.29	2.84	1.45	1.45
24.28	18.05	19.68	5.37	105.70	2.87	1.42	1.42
24.44	19.50	21.24	5.15	109.40	2.84	1.53	1.53
24.61	21.71	23.65	4.94	116.84	2.82	1.71	1.71
24.77	23.78	25.93	4.93	127.89	2.82	1.87	1.87
24.94	28.27	30.97	4.99	154.47	2.82	2.24	2.24
25.10	38.52	42.29	4.29	181.39	2.74	3.07	3.07
25.26	54.76	59.89	3.38	202.42	2.61	4.39	4.39
25.43	63.15	68.53	2.94	201.51	2.53	0.78	0.78
25.59	61.06	65.73	2.79	183.39	2.50	0.77	0.77
25.76	48.28	51.51	3.02	155.65	2.55	0.74	0.74
25.92	37.90	40.03	3.36	134.35	2.60	2.93	2.93
26.08	32.53	34.17	4.01	137.17	2.70	2.48	2.48
26.25	32.94	34.57	4.54	156.97	2.77	2.50	2.50
26.41	38.04	39.99	4.60	183.94	2.78	2.89	2.89
26.58	44.90	47.12	4.28	201.53	2.74	3.41	3.41
26.74	54.03	56.43	3.59	202.45	2.64	4.10	4.10
26.90	62.27	64.57	2.92	188.85	2.53	0.77	0.77
27.07	69.11	71.16	2.50	178.15	2.44	0.78	0.78
27.23	72.29	74.09	2.42	179.35	2.43	0.79	0.79
27.40	69.99	71.50	2.67	190.80	2.48	0.78	0.78
27.56	64.65	65.84	3.09	203.55	2.56	0.77	0.77
27.72	60.35	61.14	3.31	202.64	2.60	0.76	0.76
27.89	57.69	58.03	3.27	189.62	2.59	0.75	0.75
28.05	61.85	61.75	2.59	159.95	2.46	0.76	0.76
28.22	69.39	68.70	1.89	129.94	2.28	0.78	0.78
28.38	80.58	79.21	1.42	112.58	2.08	0.80	0.80
28.54	87.25	85.25	1.24	105.34	1.95	0.81	0.81
28.71	88.05	85.76	1.23	105.56	1.94	0.81	0.81
28.87	86.39	84.05	1.33	111.98	2.02	0.80	0.80
29.04	85.77	83.37	1.51	126.02	2.13	0.80	0.80
29.20	99.75	96.81	1.44	139.63	2.09	0.82	0.82
29.36	128.95	124.77	1.23	153.45	1.94	0.86	0.86
29.53	162.21	156.28	1.08	169.04	1.76	0.89	0.89
29.69	184.62	177.25	1.01	179.10	1.66	0.91	0.91
29.86	197.52	189.17	1.00	189.17	1.61	0.92	0.92
30.02	217.57	208.01	1.00	208.01	1.55	0.94	0.94
30.19	250.17	238.80	1.00	238.80	1.45	0.96	0.96
30.35	281.00	267.77	1.00	267.77	1.38	0.98	0.98
30.51	297.48	282.86	1.00	282.86	1.34	0.99	0.99
30.68	284.81	270.02	1.00	270.02	1.38	0.98	0.98
30.84	247.88	234.18	1.00	234.18	1.50	0.95	0.95
31.01	204.51	192.42	1.04	200.67	1.71	0.92	0.92
31.17	183.85	172.35	1.13	194.66	1.83	0.91	0.91
31.33	186.21	174.08	1.13	196.81	1.83	0.91	0.91
31.50	192.21	179.24	1.05	188.73	1.72	0.91	0.91
31.66	189.71	176.50	1.00	176.50	1.61	0.91	0.91

:: Strength loss calculation (Robertson (2009) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
31.83	183.61	170.35	1.00	170.35	1.52	0.90	0.90
31.99	176.45	163.28	1.00	163.28	1.54	0.90	0.90
32.15	167.19	154.27	1.00	154.27	1.57	0.89	0.89
32.32	157.93	145.29	1.00	145.29	1.59	0.88	0.88
32.48	153.93	141.26	1.00	141.26	1.60	0.88	0.88
32.65	150.94	138.15	1.00	138.15	1.59	0.87	0.87
32.81	145.44	132.77	1.00	132.77	1.60	0.87	0.87
32.97	134.97	122.83	1.00	122.83	1.63	0.86	0.86
33.14	121.88	110.37	1.04	114.37	1.70	0.84	0.84
33.30	111.15	100.15	1.08	107.68	1.76	0.83	0.83
33.47	106.68	95.74	1.10	105.57	1.79	0.82	0.82
33.63	108.95	97.56	1.11	108.47	1.81	0.82	0.82
33.79	115.05	102.93	1.10	112.87	1.79	0.83	0.83
33.96	122.16	109.24	1.07	117.03	1.75	0.84	0.84
34.12	133.06	119.02	1.04	124.21	1.71	0.85	0.85
34.29	151.19	135.29	1.02	138.65	1.68	0.87	0.87
34.45	168.70	151.03	1.00	151.03	1.63	0.89	0.89
34.61	181.90	162.64	1.00	162.64	1.61	0.90	0.90
34.78	193.03	172.31	1.00	172.31	1.59	0.91	0.91
34.94	164.17	145.52	1.05	152.67	1.72	0.88	0.88
35.11	121.73	106.41	1.19	126.33	1.90	0.84	0.84
35.27	66.11	55.96	1.84	102.73	2.26	0.75	0.75
35.43	46.13	38.03	2.67	101.36	2.48	0.70	0.70
35.60	36.12	29.09	3.47	100.85	2.62	2.05	2.05
35.76	30.93	24.46	4.05	99.04	2.71	1.73	1.73
35.93	28.30	22.09	4.44	98.02	2.76	1.56	1.56
36.09	26.99	20.87	4.71	98.30	2.79	1.48	1.48
36.26	26.73	20.55	4.87	99.99	2.81	1.46	1.46
36.42	27.09	20.76	4.97	103.16	2.82	1.47	1.47
36.58	28.53	21.88	4.92	107.54	2.82	1.55	1.55
36.75	30.19	23.17	4.82	111.65	2.80	1.64	1.64
36.91	30.79	23.58	4.79	112.85	2.80	1.67	1.67
37.08	29.55	22.43	5.04	113.02	2.83	1.59	1.59
37.24	28.23	21.23	5.26	111.65	2.85	1.51	1.51
37.40	28.86	21.64	5.42	117.29	2.87	1.54	1.54
37.57	31.17	23.42	5.40	126.42	2.87	1.66	1.66
37.73	34.94	26.40	5.20	137.16	2.85	1.87	1.87
37.90	39.07	29.72	4.70	139.60	2.79	2.10	2.10
38.06	40.18	30.54	4.47	136.51	2.76	2.15	2.15
38.22	38.05	28.73	4.40	126.44	2.75	2.03	2.03
38.39	33.75	25.13	4.63	116.34	2.78	1.77	1.77
38.55	30.29	22.25	4.79	106.66	2.80	1.57	1.57
38.72	27.92	20.23	5.14	103.95	2.84	1.43	1.43
38.88	26.66	19.12	5.44	104.06	2.87	1.36	1.36
39.04	27.23	19.49	5.40	105.35	2.87	1.38	1.38
39.21	28.02	20.09	5.07	101.90	2.83	1.42	1.42
39.37	27.62	19.73	4.91	96.99	2.82	1.39	1.39
39.54	25.93	18.32	5.03	92.16	2.83	1.30	1.30

:: Strength loss calculation (Robertson (2009) :: (continued)

Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
39.70	23.79	16.55	5.37	88.96	2.87	1.17	1.17
39.86	22.43	15.39	5.79	89.02	2.91	1.10	1.10
40.03	23.06	15.75	6.46	101.85	2.97	1.13	1.13
40.19	27.43	19.01	7.02	133.47	3.02	1.36	1.36
40.36	40.14	28.57	6.08	173.80	2.94	2.04	2.04
40.52	62.17	45.67	4.64	211.72	2.78	3.21	3.21
40.68	84.41	63.08	3.72	234.97	2.66	4.39	4.39
40.85	94.90	71.21	3.37	239.82	2.61	4.93	4.93
41.01	89.77	66.97	3.39	226.98	2.61	4.64	4.64
41.18	76.83	56.63	3.63	205.39	2.65	3.93	3.93
41.34	64.50	46.89	3.90	182.92	2.69	3.27	3.27
41.50	59.30	42.88	3.76	161.38	2.67	2.98	2.98
41.67	53.77	38.61	3.68	142.19	2.66	2.68	2.68
41.83	49.98	35.66	3.62	129.01	2.65	2.47	2.47
42.00	44.78	31.42	4.11	129.02	2.71	2.19	2.19
42.16	46.52	32.50	4.35	141.24	2.75	2.27	2.27
42.32	53.09	37.16	4.46	165.74	2.76	2.60	2.60
42.49	62.86	44.27	4.28	189.44	2.74	3.09	3.09
42.65	76.53	54.60	3.64	198.93	2.65	3.78	3.78
42.82	93.26	67.81	2.75	186.26	2.50	0.77	0.77
42.98	113.04	84.23	1.91	160.66	2.29	0.80	0.80
43.15	138.26	106.12	1.34	142.69	2.03	0.84	0.84
43.31	166.18	131.28	1.09	143.68	1.78	0.87	0.87
43.47	192.28	154.42	1.00	154.42	1.60	0.89	0.89
43.64	205.01	164.48	1.00	164.48	1.52	0.90	0.90
43.80	204.04	163.42	1.00	163.42	1.51	0.90	0.90
43.97	196.34	156.89	1.00	156.89	1.52	0.89	0.89
44.13	192.41	153.44	1.00	153.44	1.54	0.89	0.89
44.29	194.98	155.26	1.00	155.26	1.52	0.89	0.89
44.46	200.08	159.10	1.00	159.10	1.48	0.89	0.89
44.62	203.05	161.23	1.00	161.23	1.46	0.90	0.90
44.79	204.26	161.92	1.00	161.92	1.45	0.90	0.90
44.95	206.54	163.49	1.00	163.49	1.43	0.90	0.90
45.11	212.92	168.35	1.00	168.35	1.39	0.90	0.90
45.28	211.70	167.09	1.00	167.09	1.38	0.90	0.90
45.44	202.69	159.64	1.00	159.64	1.41	0.90	0.90
45.61	187.69	147.42	1.00	147.42	1.47	0.88	0.88
45.77	176.65	138.40	1.00	138.40	1.52	0.87	0.87
45.93	172.62	134.98	1.00	134.98	1.54	0.87	0.87
46.10	175.29	136.88	1.00	136.88	1.54	0.87	0.87
46.26	184.20	143.72	1.00	143.72	1.49	0.88	0.88
46.43	191.74	149.45	1.00	149.45	1.46	0.89	0.89
46.59	194.94	151.75	1.00	151.75	1.44	0.89	0.89
46.75	192.94	149.94	1.00	149.94	1.44	0.89	0.89
46.92	188.75	146.40	1.00	146.40	1.46	0.88	0.88
47.08	182.88	141.57	1.00	141.57	1.48	0.88	0.88
47.25	178.82	138.15	1.00	138.15	1.50	0.87	0.87
47.41	176.42	136.06	1.00	136.06	1.54	0.87	0.87

:: Strength loss calculation (Robertson (2009) :: (continued)

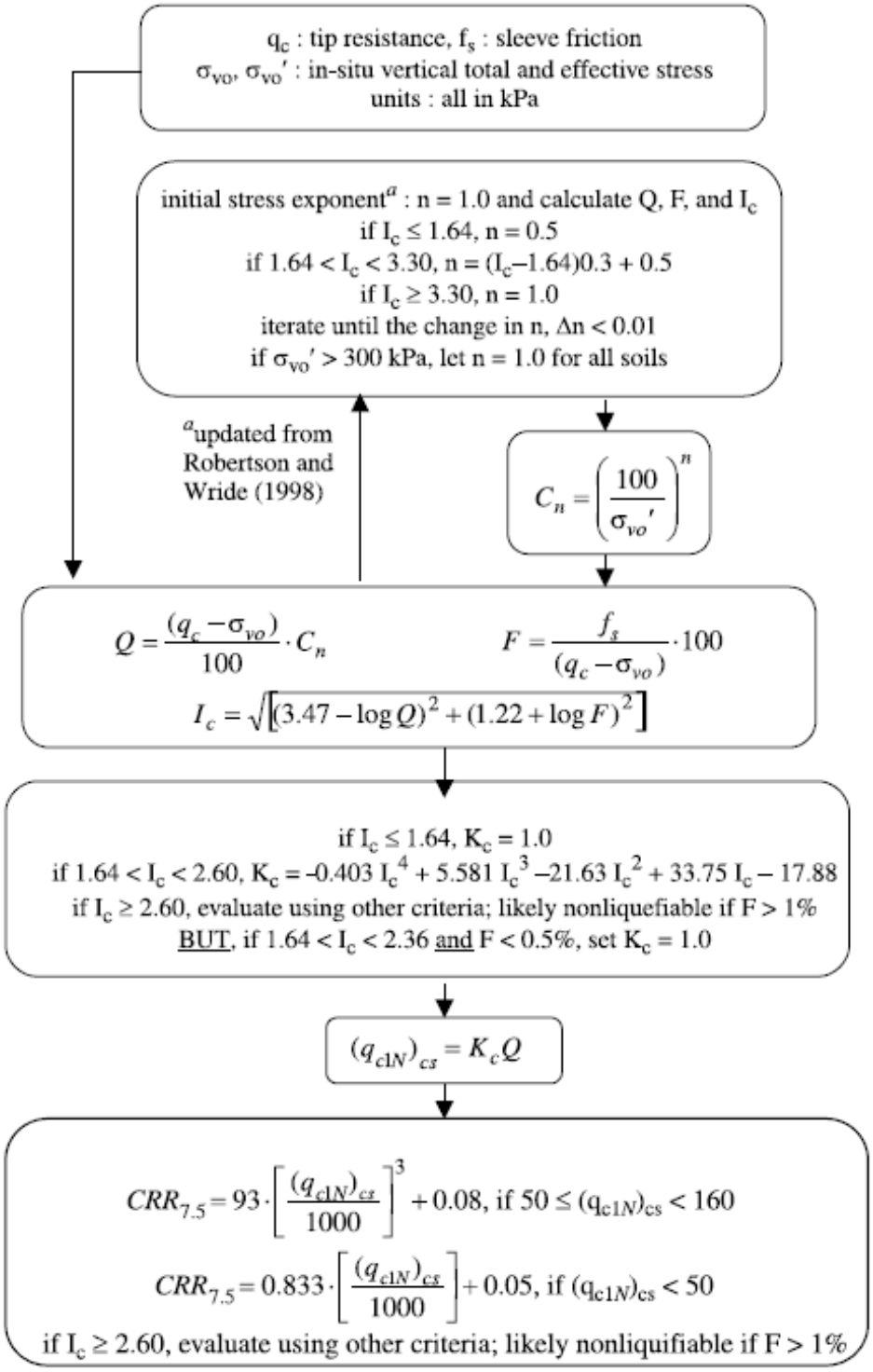
Depth (ft)	q_t (tsf)	Q_{tn}	K_c	$Q_{tn,cs}$	I_c	$S_{u(liq)}/\sigma'_v$	$S_{u(peak)}/\sigma'_v$
47.57	172.82	133.03	1.00	133.03	1.58	0.87	0.87
47.74	170.63	131.09	1.00	131.09	1.63	0.87	0.87
47.90	168.98	128.85	1.02	131.90	1.68	0.86	0.86
48.07	170.73	129.26	1.05	135.61	1.72	0.86	0.86
48.23	177.04	133.57	1.06	141.56	1.73	0.87	0.87
48.39	190.83	144.17	1.05	151.52	1.72	0.88	0.88
48.56	207.66	157.47	1.03	162.44	1.69	0.89	0.89
48.72	223.05	169.88	1.01	171.29	1.66	0.90	0.90
48.89	234.82	179.11	1.00	179.11	1.64	0.91	0.91
49.05	241.81	184.20	1.00	184.20	1.61	0.92	0.92
49.22	238.73	181.51	1.00	181.51	1.61	0.91	0.91
49.38	228.70	173.49	1.00	173.49	1.61	0.91	0.91
49.54	214.00	161.93	1.00	161.93	1.62	0.90	0.90
49.71	200.53	151.10	1.00	151.55	1.65	0.89	0.89
49.87	189.40	141.84	1.02	144.51	1.67	0.88	0.88
50.04	179.84	133.76	1.04	138.71	1.70	0.87	0.87
50.20	174.79	129.66	1.04	134.72	1.70	0.86	0.86

Abbreviations

q_t:	Total cone resistance
K_c:	Cone resistance correction factor due to fines
$Q_{tn,cs}$:	Adjusted and corrected cone resistance due to fines
I_c:	Soil behavior type index
$S_{u(liq)}/\sigma'_v$:	Calculated liquefied undrained strength ratio
$S_{u(peak)}/\sigma'_v$:	Calculated peak undrained strength ratio

Procedure for the evaluation of soil liquefaction resistance, NCEER (1998)

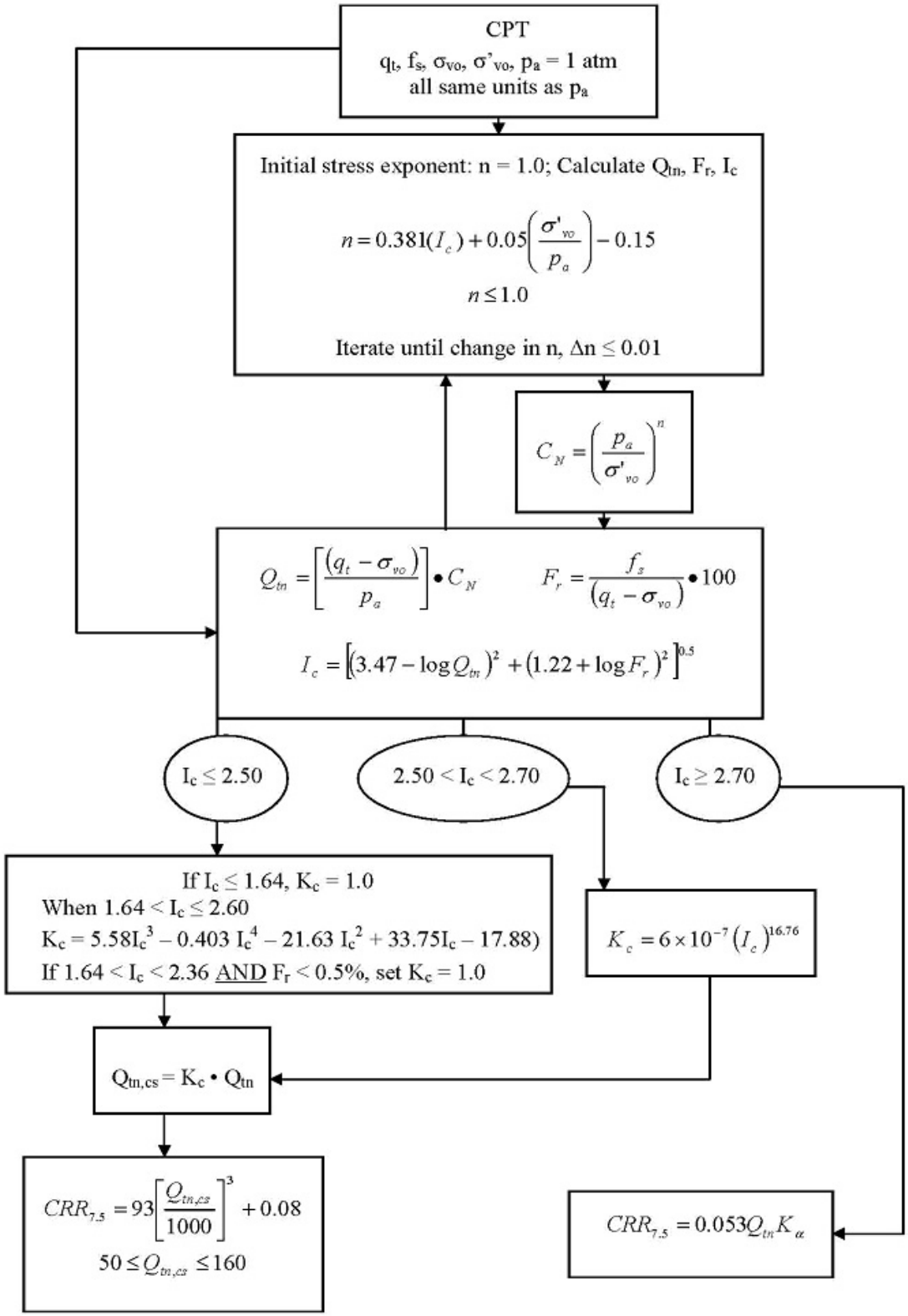
Calculation of soil resistance against liquefaction is performed according to the Robertson & Wride (1998) procedure. The procedure used in the software, slightly differs from the one originally published in NCEER-97-0022 (Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils). The revised procedure is presented below in the form of a flowchart[1]:



[1] "Estimating liquefaction-induced ground settlements from CPT for level ground", G. Zhang, P.K. Robertson, and R.W.I. Brachman

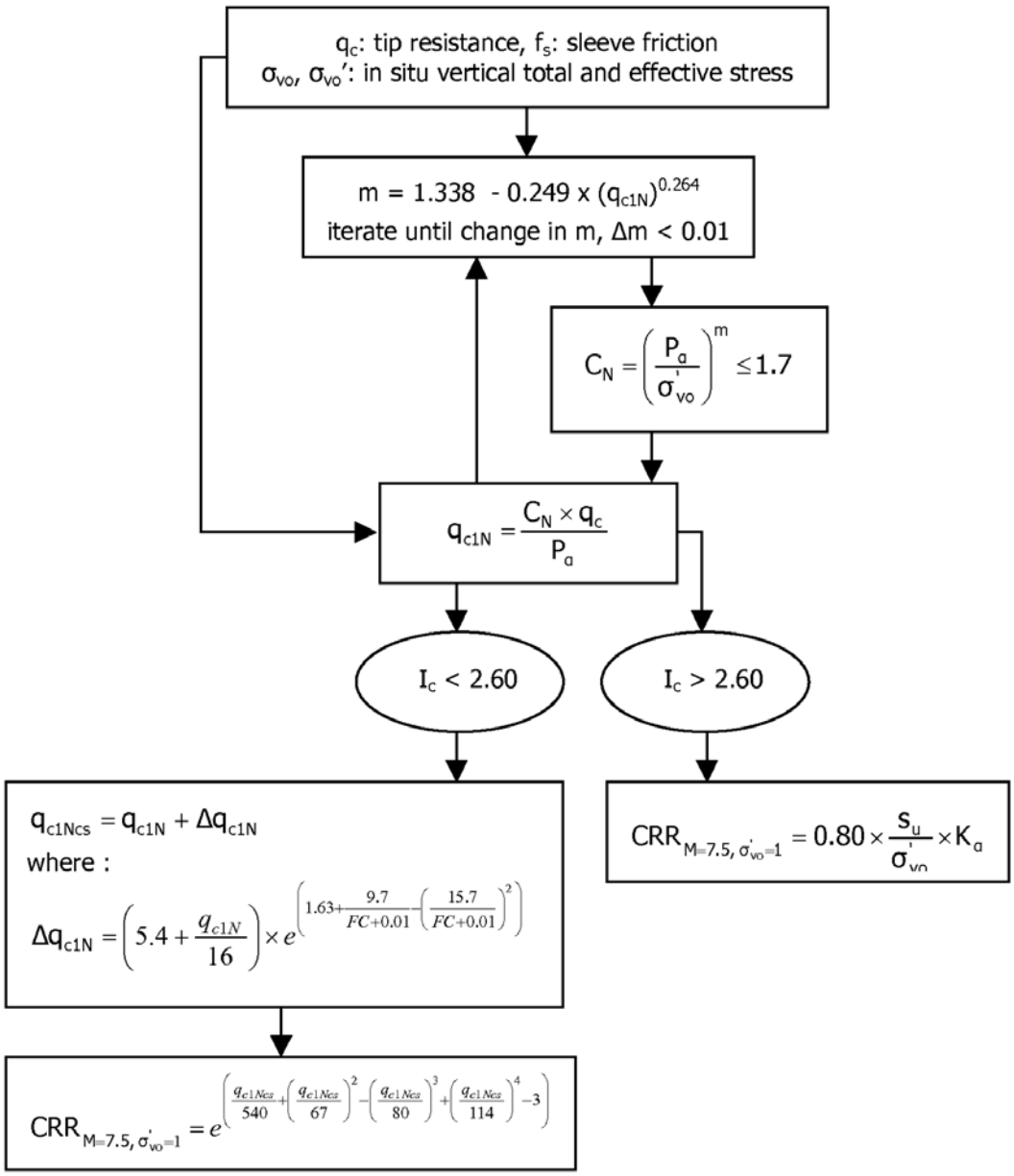
Procedure for the evaluation of soil liquefaction resistance (all soils), Robertson (2010)

Calculation of soil resistance against liquefaction is performed according to the Robertson & Wride (1998) procedure. This procedure used in the software, slightly differs from the one originally published in NCEER-97-0022 (Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils). The revised procedure is presented below in the form of a flowchart[1]:

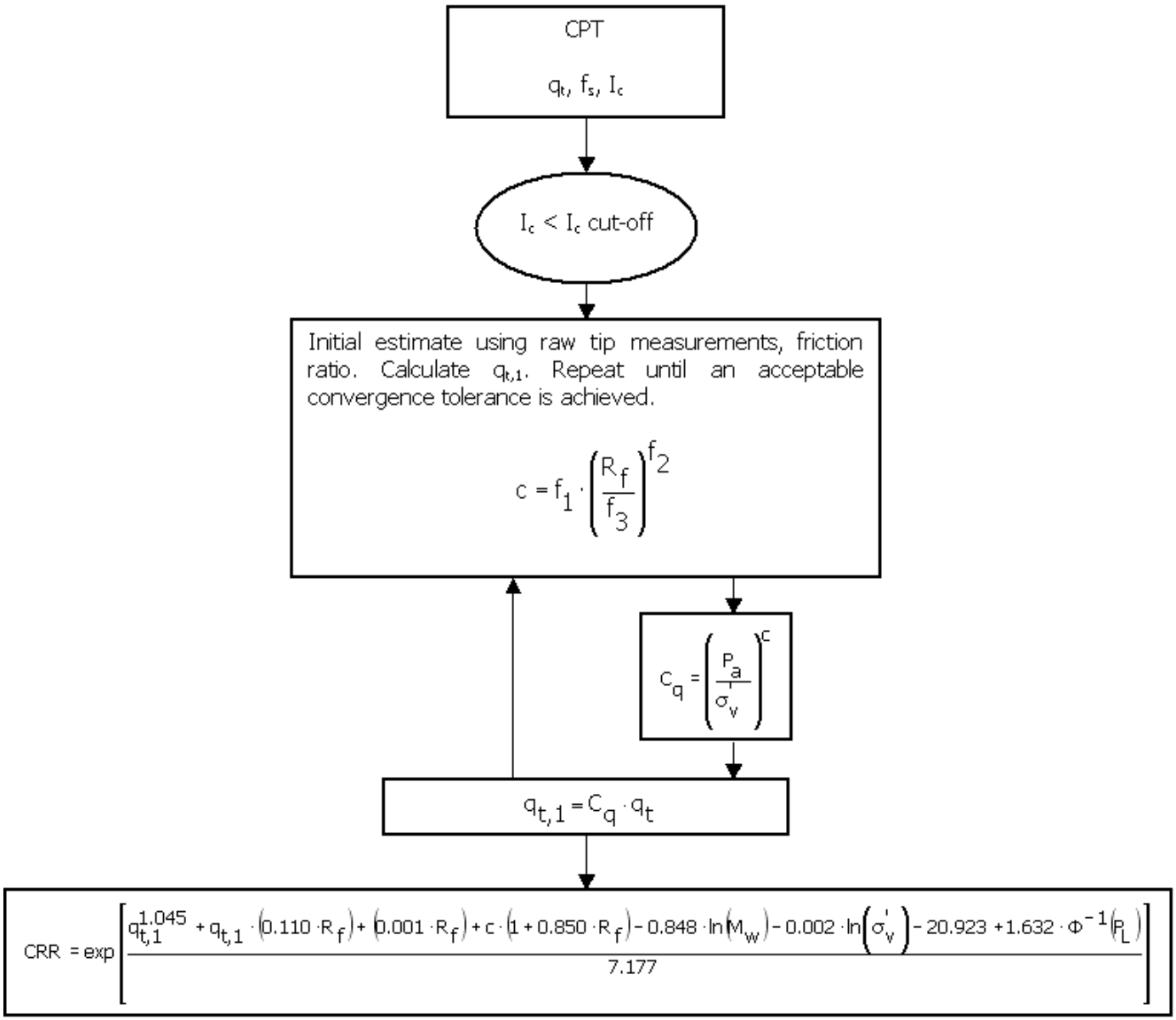


[1] P.K. Robertson, 2009. "Performance based earthquake design using the CPT", Keynote Lecture, International Conference on Performance-based Design in Earthquake Geotechnical Engineering – from case history to practice, IS-Tokyo, June 2009

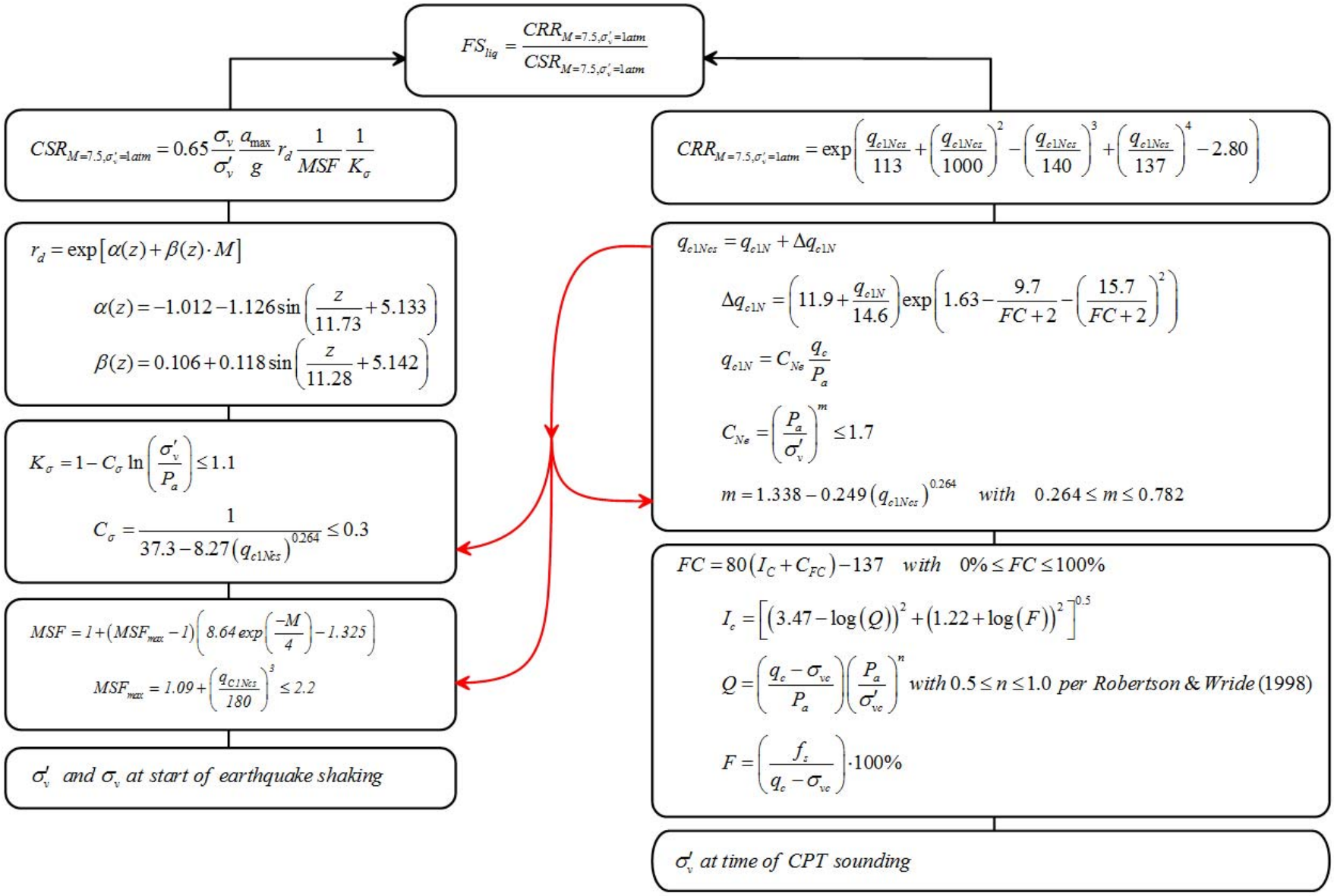
Procedure for the evaluation of soil liquefaction resistance, Idriss & Boulanger (2008)



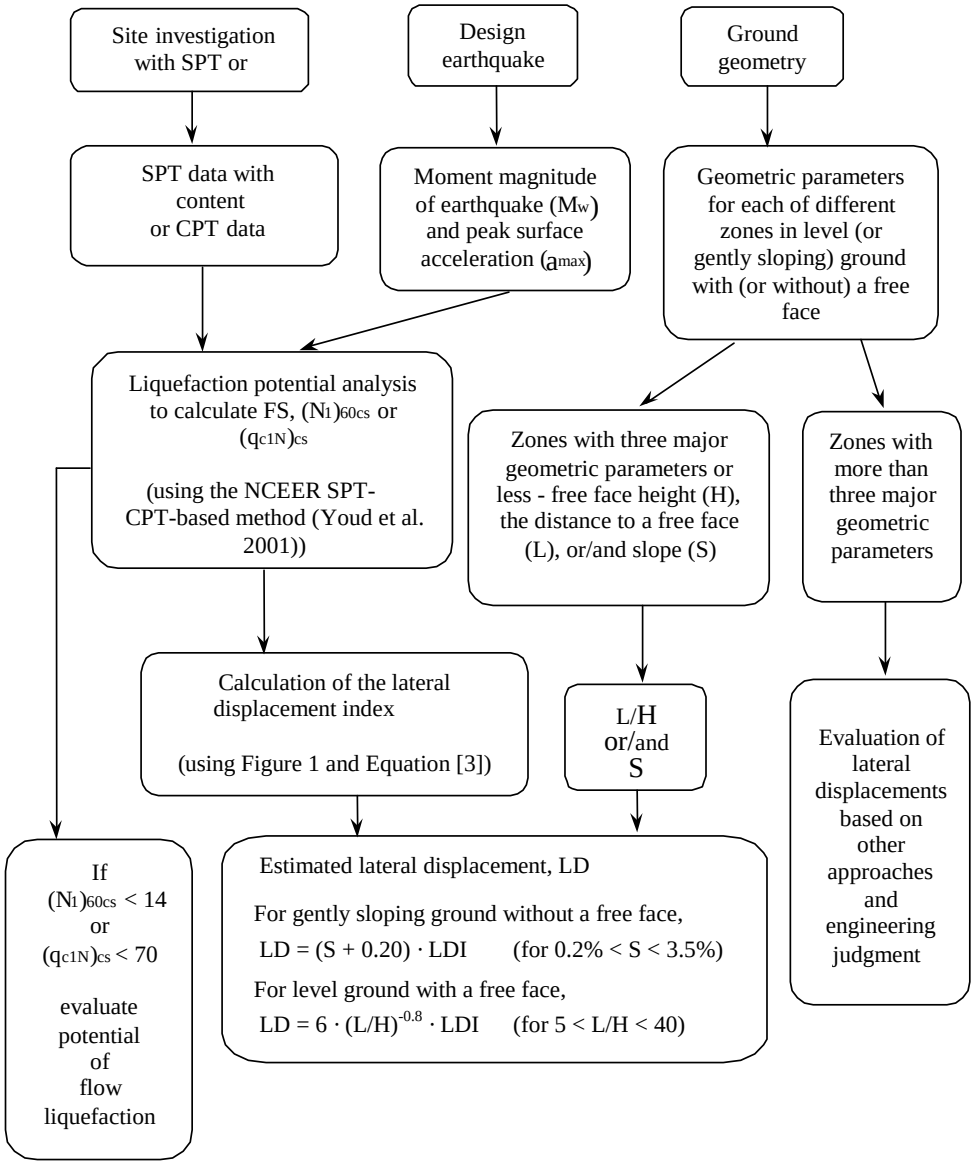
Procedure for the evaluation of soil liquefaction resistance (sandy soils), Moss et al. (2006)



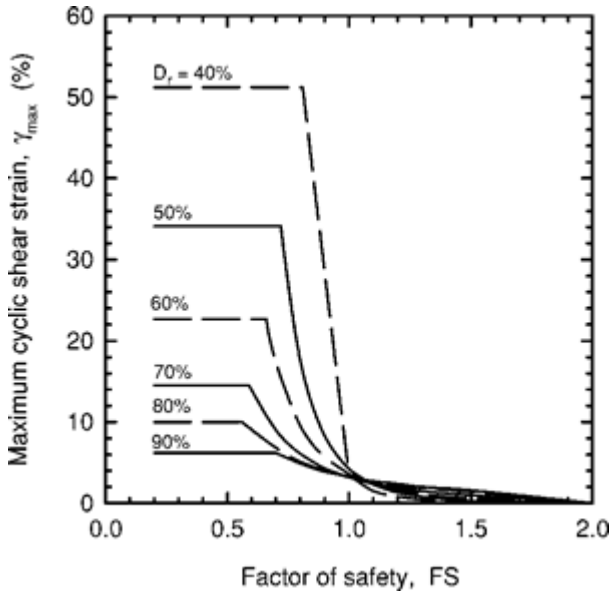
Procedure for the evaluation of soil liquefaction resistance, Boulanger & Idriss(2014)



Procedure for the evaluation of liquefaction-induced lateral spreading displacements



[1] Flow chart illustrating major steps in estimating liquefaction-induced lateral spreading displacements using the proposed approach



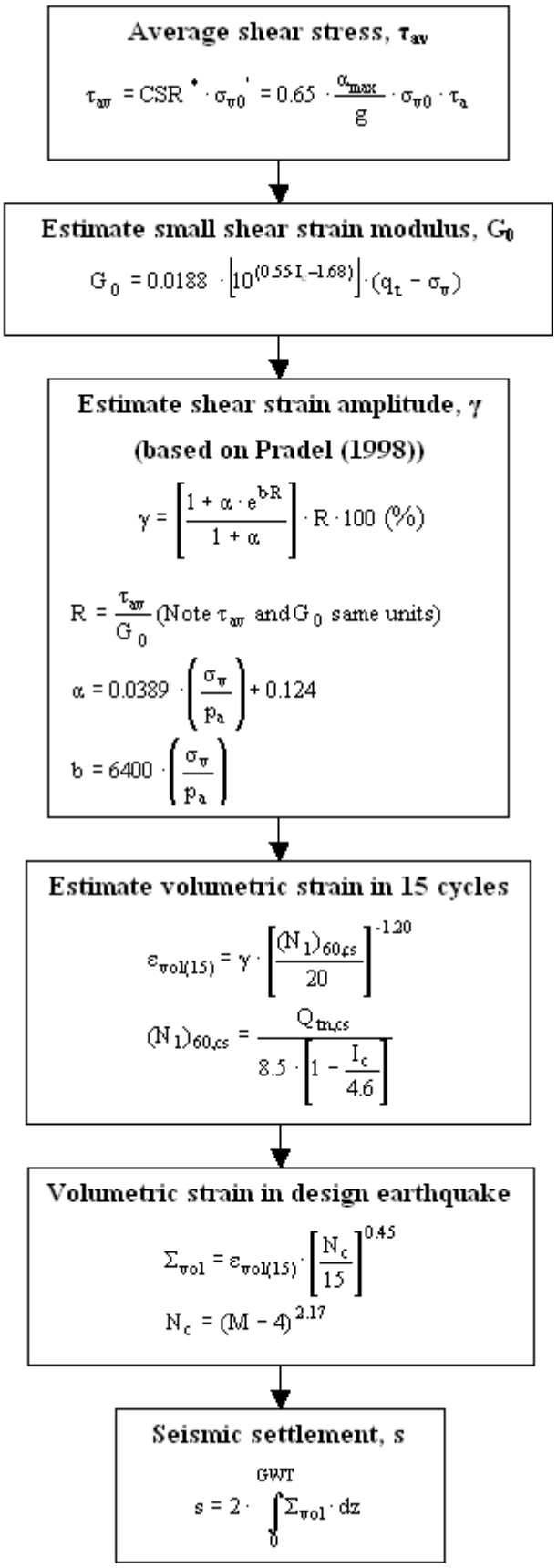
[1] **Figure 1**

$$LDI = \int_0^{z_{max}} \gamma_{max} dz$$

[1] **Equation [3]**

[1] "Estimating liquefaction-induced ground settlements from CPT for level ground", G. Zhang, P.K. Robertson, and R.W.I. Brachman

Procedure for the estimation of seismic induced settlements in dry sands



Robertson, P.K. and Lisheng, S., 2010, "Estimation of seismic compression in dry soils using the CPT" FIFTH INTERNATIONAL CONFERENCE ON RECENT ADVANCES IN GEOTECHNICAL EARTHQUAKE ENGINEERING AND SOIL DYNAMICS, Symposium in honor of professor I. M. Idriss, San Diego, CA

Liquefaction Potential Index (LPI) calculation procedure

Calculation of the Liquefaction Potential Index (LPI) is used to interpret the liquefaction assessment calculations in terms of severity over depth. The calculation procedure is based on the methology developed by Iwasaki (1982) and is adopted by AFPS.

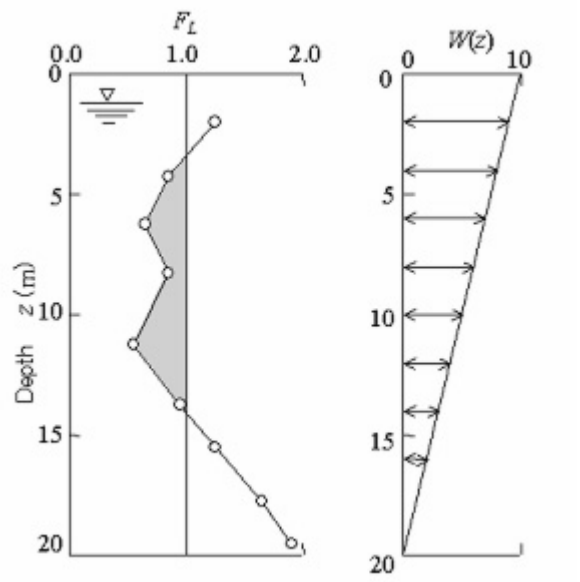
To estimate the severity of liquefaction extent at a given site, LPI is calculated based on the following equation:

$$\mathbf{LPI} = \int_0^{20} (10 - 0{,}5z) \times F_L \times dz$$

where:
F_L = 1 - F.S. when F.S. less than 1
F_L = 0 when F.S. greater than 1
z depth of measurment in meters

Values of LPI range between zero (0) when no test point is characterized as liquefiable and 100 when all points are characterized as susceptible to liquefaction. Iwasaki proposed four (4) discrete categories based on the numeric value of LPI:

- LPI = 0 : Liquefaction risk is very low
- 0 < LPI <= 5 : Liquefaction risk is low
- 5 < LPI <= 15 : Liquefaction risk is high
- LPI > 15 : Liquefaction risk is very high



Graphical presentation of the LPI calculation procedure

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APPENDIX D

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PHASE I ENVIRONMENTAL SITE ASSESSMENT

PROPOSED SCHOOL SITE – STOCKTON SITE I
CORNER OF WESTLAKE DRIVE & REGATTA LANE
STOCKTON, CALIFORNIA



PROJECT NUMBER: 2019-00014
June 6, 2019

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June 6, 2019
Project No. 2019-00014

Mr. Leonard Kahn
Chief Business Officer
1305 E. Vine Street
Lodi, CA 95240

Subject: Phase I Environmental Site Assessment
Stockton Site - I
Corner of Westlake Drive and Regatta Lane
Stockton, CA 95219
APN: 066-050-07, -08 (portion)

Dear Mr. Kahn:

We are pleased to present the following report, which contains the findings and conclusions of our Phase I Environmental Site Assessment conducted for the subject site. This report was designed to provide a Phase I Environmental Site Assessment in compliance with the ASTM E 1527-13 Standard and is in accordance with the All Appropriate Inquiries (AAI) rule standard. This report is also developed in compliance with the *Department of Toxic Substances Control Phase I Site Assessment Advisory: School Property Evaluations*, *Revised September 5, 2001*. Findings for this project have been provided in the body of the report and are listed in the executive summary.

Petralogix Engineering, Inc. uses professionals who meet the definition of Environmental Professional as defined in §312.10 of 40 CFR 312. As an environmental consulting company, we have the specific qualifications (based on education, professional certification, training, and experience) to assess properties. Petralogix has developed and performed the all appropriate inquiries in conformance with the standards and practices as set forth in 40 CFR 312.

We appreciate the opportunity to provide our expertise on this project and look forward to providing other services in the future. Please feel free to contact us if you have any questions.

Sincerely,
Petralogix Engineering, Inc.

PROFESSIONAL GEOLOGIST
Daniel Edward Kramer
No. 8657
STATE OF CALIFORNIA

Tonya R. Scheftner

Tonya R. Scheftner, Project Geologist
B.Sc. Geology, GIT No. 685

Daniel E. Kramer

Daniel E. Kramer, President
Professional Geologist No. 8657

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PHASE I ENVIRONMENTAL SITE ASSESSMENT – IMPORTANT CONSIDERATIONS AND LIMITATIONS

Contact Petralogix to Discuss all Questions

It is important to contact our firm whenever you have any questions. The value in retaining our company for your environmental consulting needs is that we are here to help and guide. No question or comment is unimportant to Petralogix. We can save our clients time, money, and confusion by discussing development components at critical times within a project's timeframe. We are here to help regarding possible environmental conditions that could affect your project.

Limitations of the Phase I Environmental Site Assessment (ESA)

When reviewing and considering the final Phase I ESA report it should be understood that it is not intended to be an all exhaustive end all review. Rather, a Phase I Environmental Site Assessment is written to provide database search results, third party information, observations, and professional opinions regarding a specific site for a specific project, under a specific timeframe.

There are many uncertainties that can exist about a property even with appropriate review being met under the requirements of the AAI and ASTM standards. Additional research can be performed to aid in a higher level of certainty about a site's historic environmental risk. The amount of research required to do this depends on the type of property, the risk tolerance of the client, and information developed in the course of the property review.

This Phase I ESA Report is useable for 180 days from the date of completion. The Report is produced for the client and project owner, and may not be used by a different entity or person without also satisfying the User's Responsibilities and having express consent from Petralogix Engineering, Inc.

Client & User Responsibilities

The ASTM Standard E1527-13 requires the user to be involved in the process and adequately inform professionals of their whole knowledge for a site. In order to meet the requirements to qualify for the innocent landowner defense within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) the following items must be performed.

- **Required** - review title and judicial records for environmental liens or activities and use limitations (AULs).
- **Must** - communicate any specialized knowledge or experience to the environmental professional that is material to recognized environmental conditions in connection to the property.
- **Must** - communicate any actual knowledge of environmental liens or AULs encumbering the property to the environmental professional.
- **Shall** - consider the relationship of the purchase price of the property to the fair market value. If the amount is lower, a written explanation of the lower value is required.
- **Must** - communicate commonly known or reasonably ascertainable information about recognized environmental conditions in connection to the property to the environmental professional.

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PHASE I ENVIRONMENTAL SITE ASSESSMENT
STOCKTON SITE I

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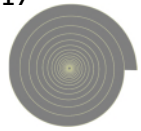

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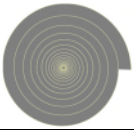
APPENDIX E



Historical Research Documentation

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Interview Certificates/Questionnaires

APPENDIX G

San Joaquin County Agricultural Commissioner Pesticide Permits

PHASE I ENVIRONMENTAL SITE ASSESSMENT

CORNER OF WESTLAKE DRIVE & REGATTA LANE

STOCKTON, CALIFORNIA

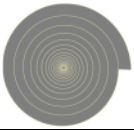
OUR PROJECT NO: 2019-00014

1.0 SUMMARY

Petralogix Engineering, Inc. has been retained by the Lodi Unified School District to conduct a Phase I Environmental Site Assessment for the property located at the corner of Westlake Drive & Regatta Lane, in Stockton, San Joaquin County, California. The site is currently one entire parcel plus a planned merge with a portion of the adjacent parcel; the site assessor parcel numbers (APNs) are 066-050-070-000 and portion of 066-050-080-000, respectively.

Our firm conducted a Public Records review, in which information was obtained from both federal and state databases. Petralogix uses Environmental Data Resources Inc. (EDR) to assist and supply many of these documents. In addition, we have supplemented this data with regional and local sources to determine whether or not obvious recognized or historically recognized environmental conditions (RECs) may exist (and/or be known to exist by regulatory agencies) for the site. The search radius for this investigation extended to adjoining properties, and properties within a search distance varying from one-eighth to one mile, depending on the information type that was being researched.

Background and past uses of the subject property were investigated in great detail. Sources describing the physical characteristics of the property, many of the surrounding properties, and the general region were compiled for review. These sources were studied in order to determine the topography, geologic setting, and groundwater depth and flow direction beneath the property. Site reconnaissance of the subject property was also performed. Immediate surroundings were also reviewed during our site reconnaissance. The complete data review and summary required for compliance (under the ASTM and AAI standards) can be found in the body of this document. This assessment was conducted under the supervision of Daniel E. Kramer, Chief Professional Geologist (PG#8657) and President of Petralogix.



1.1 Executive Summary

1.1.1 Findings

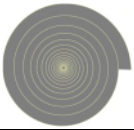
The site consists of vacant land. The overall parcel, pending a proposed property line adjustment, is approximately 19.36 acres in size. The current parcel includes a sewer lift station in the northeast corner, and an approximately 1.5-acre basin along the south-southeast portion of the property. The parcel is not fenced, however, there is a locked gate and k-rails at the entrance along the corner of Westlake Drive & Regatta Lane. The general vicinity consists of residential and agricultural use.

Based on the historical aerial photographs and topographic maps, the subject property was agricultural land from at least 1937 to 1998. Pesticides and herbicides may have been applied to the subject property during historic agricultural use; the subject property may have been impacted from persistent Organochlorine Pesticides (OCPs) therefore the historic agricultural use is considered an environmental concern to the site. Based on historical aerial photographs and topographic maps, the southeastern portion of the subject property may have had up to two historic structures present from at least 1937 to 1947; the former on-site structures were built and demolished prior the effect ban of asbestos containing building materials and lead paints and products. Therefore, the potential for lead-based paints and asbestsos located in the former structure locations is considered moderate to high, as well as the potential for heavy metals or total petroleum hydrocarbons. The demolished structures are considered a REC to the site.

Based on historical aerial photographs, beginning in at least 2006 and likely coinciding with tract housing development in the immediate area, the eastern half of the subject property appears to have disturbed earth with soil piles staged onsite. The soil piles may contain contaminants from unknown sources. In addition, an approximately 1.5-acre basin located on the southern boundary is developed from at least 2006; the basin may have been associated with construction activities and may contain contaminants from unknown sources. The soil piles and basin are considered Recognized Environmental Concerns.

One ground-mounted transformer located on concrete was observed in good condition located within the subject property boundary. Based on the observed condition and concrete foundation, the transformer is not considered an environmental concern.

Surrounding land appears to have been primarily agricultural land developed into residential and residential agricultural lots over time, with some commercial and industrial use interspersed. Three (3) ENVIROSTOR sites were reported within approximately 0.75 miles to 2.25 miles of the subject property. Based on a review of the ENVIROSTOR database, no RECs were identified in connection with the subject property.



ENVIRONMENTAL PROFESSIONAL?

A person who possesses sufficient specific education, training, and experience necessary to exercise professional judgment to develop opinions and conclusions regarding the presence of releases or threatened releases (per ASTM Standards E1527)

&

In California such a person must hold a current Professional Engineer's or Professional Geologist's license.

1.1.2 Conclusions

We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-13 for property located at the corner of Westlake Drive & Regatta Lane, Stockton, California, (the subject property). Any exceptions to, or deletions from, this practice are described in the Limitations Section of this report. This assessment identified the following recognized environmental conditions (RECs) in connection with the subject property:

- Pesticides and herbicides may have been applied to the subject property during possible agricultural use from at least 1937 to 1998 and may be impacted from persistent Organochlorine Pesticides (OCPs). The former agricultural use is considered a REC to the site.
- The southeastern portion of the subject property may have had up to two historic structures present from at 1937 to 1947. The former on-site structures were built and demolished prior the effect ban of asbestos containing building materials and lead paints and products. Therefore, the potential for lead-based paints and asbestsos located in the former structure locations is considered moderate to high, as well as the potential for heavy metals or total petroleum hydrocarbons. The demolished structures are considered a REC to the site.
- Based on historical aerial photographs, beginning in at least 2006 and likely coinciding with the tract housing development in the immediate area, the eastern half of the subject property appears to have disturbed earth with soil piles staged onsite. The soil piles may contain contaminants from unknown sources. In addition, an approximately 1.5-acre basin located on the southern boundary is developed from at least 2006. The basin may have been associated with construction activities and may contain contaminants from unknown sources. The soil piles and basin are considered Recognized Environmental Concerns.

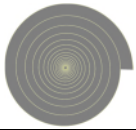
1.1.3 Recommendations

Further investigation is recommended to evaluate whether environmental media has been impacted by a release from historic agricultural practices, demolished structures, soil piles, and a basin potentially impacted by unknown activities.

2.0 INTRODUCTION

2.1 Purpose

In order to obtain State funding for school property acquisition or new construction, the California Educational Code (CEC) § 17213.1 requires a school district to conduct a comprehensive Phase I Environmental Site Assessments (ESA) be conducted to determine whether there has been, or may have been, a release of hazardous materials or the presence of naturally occurring hazardous material. The CEC requires DTSC to review the Phase I ESA and to make a determination regarding any need for further action or remediation. The main objective of any study should be to determine current and/or past occupants (or surrounding land uses) which could adversely impact property development, the environment, or the human health.



Performance of a Phase I Environmental Site Assessment according to ASTM Standard E1527-13 and the All Appropriate Inquiries (AAI) rule satisfies one of the requirements to qualify for landowner liability protections (LLPs) within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Under the Education Code, DTSC's review of Phase I ESAs is performed for the sole purpose of identifying RECs at the school site in accordance with the requirements of the Education Code, for determination of further investigation if necessary. DTSC's approval of a Phase I pursuant to Education Code § 17213.1(a) does not establish confirmation that the "All Appropriate Inquiry" has been conducted within the meaning of CERCLA.

The purpose of this Phase I Environmental Site Assessment is to identify to **the extent feasible**, pursuant to the processes prescribed by the AAI rule and in ASTM Standard E1527-13, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process,* recognized environmental conditions in connection with the property. Additional investigative procedures, designed to meet the due diligence criteria specified by many lending institutions, have also been implemented. As defined by ASTM[1] E1527-13, §1.1.1, the term "recognized environmental conditions" or (REC) refers to:

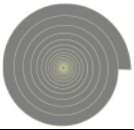
*"The presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any **release** to the environment; (2) under conditions indicative of a **release** to the environment; or (3) under conditions that pose a material threat of a future **release** to the environment."*

Under CERCLA the definition of a **release** is given as:

*42 U.S.C. § 9601(22) defines a "**release**" as "any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discharging of barrels, containers, and other closed receptacles containing any hazardous substances or pollutant or contaminant."*

It is important to note the issuance and consideration of Business Recognized Environmental Concerns, Historic Recognized Environmental Concerns (HREC), and/or Controlled Recognized Environmental Concerns (CREC). Each of these items is more clearly defined in the regulatory literature and standards. We have considered the application of these definitions as part of this review. We do this to help determine impact significance for sites which once had items of recognized concern due to use and or historic practice, but for which a cleanup or change of regulatory law and regulation has removed the hazardous condition from the site.

[1] American Society for Testing and Materials, www.astm.org



ASTM STANDARDS AND REQUIREMENTS

Phase I ESAs must be conducted in accordance with the current version of American Society for Testing and Materials International (ASTM) Standard E1527 "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process", ASTM International in conjunction with ASTM Standard E1528 "Standard Practice for Environmental Site Assessments: Transaction Screen Process", ASTM International. For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. Contact Petralogix to discuss these requirements in more detail. If preferred, we can come to your office and present a 30-minute power point on the ASTM Standard as topic for better understanding. Contact us at questions@petraolgix.com to setup a presentation.

2.2 Detailed Scope-of-Review

The scope of work performed to develop the information contained in this Phase I Environmental Site Assessment report includes:

1. Collecting available information concerning the property
2. Review of other data pertinent to the specific site
3. Conducting a site visit to assess physical features, observe adjacent land use, and gather evidence of indiscriminate and/or illegal waste disposal
4. Conducting a review of regulatory agencies' records
5. Contacting appropriate regulatory personnel,
6. Reviewing regulatory files regarding the property in question.
7. Detailed discussions with both the Client and all previous owners who are available to discuss the history of the site.

No previous environmental assessments were identified for review.

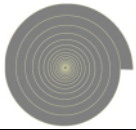
This Phase I Environmental Site Assessment discusses all work performed by Petralogix to date with regard to this specific project. The principal findings are outlined throughout the body of this text and are summarized in the conclusion of this report.

2.3 Significant Assumptions

No significant assumptions were made in the course of this assessment. To clarify, a significant assumption is defined in the following statement: "things and/or items that were based on speculative reports or study, or which were not verified through rigorous evaluation and objective review."

2.4 Limitations and Exceptions

This report was compiled as a Phase I Environmental Site Assessment for the subject project. This report contains information and data that was provided to Petralogix by a variety of outside sources. Petralogix cannot warrant the accuracy and/or completeness of the information which was provided to us by those sources.



When an assessment is completed without adequate subsurface exploration or chemical screening very little certainty (or conclusive statement) can be made about the conditions of the soil and groundwater beneath a particular site. As is the case with this study, uncertainty regarding latent subsurface conditions which may be the result of on-site or off-site sources exists. In order to best determine with certainty these conditions, physical testing would be required. *Therefore, the findings and conclusions of this report are not scientific certainty, but rather a statement of probability based on professional judgment.* ***These statements of probability are based on the data gathered during the course of this investigation.***

Petralogix is not able to represent that the site or adjoining land contains no hazardous waste, oil, underground storage tanks, or other latent condition beyond that detected or observed by Petralogix during the Phase I Environmental Site Assessment. Without physical tests and additional review for those sites, we can determine no definite answer. A possibility always exists for contaminants to migrate through surface water, air, or groundwater. An investigation to determine whether or not contaminants are present in the surface and subsurface soil is not within the scope of work required to produce the Phase I Environmental Site Assessment. Chemical analysis of soil and groundwater samples to quantify levels of contamination are also not within the scope of work required to develop a Phase I Environmental Site Assessment.

As discussed in ASTM E1527-13, it is never possible to eliminate all uncertainty from an investigation of this type:

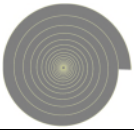
> No environmental site assessment can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with a property. Performance of this practice is intended to reduce, but not eliminate, uncertainty regarding the potential for recognized environmental conditions in connection with a property, and this practice recognizes reasonable limits of time and cost.

For this assessment, there were no specific limitations identified.

2.5 Special Terms and Conditions

As part of this certain materials are not fully evaluated including Asbestos, Mold, Radon, Vapor, or Lead. These are discussed and considered, but we are not proposing to provide characterization of these items (nor is characterization required or intended within the ASTM scope). Intention here is directed towards screening.

Our office has not been provided with any specific criteria for the development of this report that is separate from the general request to evaluate the property in question for possible problems related to toxic or hazardous agents. We have not been directed to address any specific questions concerning the site. If there is a need to conduct an investigation into a specific question not addressed in this report, please contact Petralogix immediately regarding your concerns.



2.6 User Reliance

This report was prepared for the exclusive use of Lodi Unified School District. No other person or entity is entitled to use or rely upon this report without specific written authorization from Petralogix. Such reliance is subject to the same limitations, terms, and conditions as our original contract with the above stated client(s). Petralogix specifically rejects any responsibility for unauthorized use of this report. Unauthorized use is any use that is not consented for by Petralogix in writing. This Phase I ESA is only reliable for 180 days from the date of the completion, June 6, 2019.

180 Day Limitation?

Phase I ESAs are only valid for 180 days. Many clients want a more detailed explanation of why. Over time, conditions may change at the site which cause an impact and form an environmental liability. *There are many examples of this happening. One value of retaining the same professional with time is that the revised and updated Phase I ESAs are generally more simplified than if using multiple consultants.*

3.0 SITE DESCRIPTION

3.1 Location and Legal Explanation

The subject property has no site address; the subject property is located at the corner of Westlake Drive & Regatta Lane, Stockton, San Joaquin County, California (APNs: 066-050-070, -080). Agricultural land borders the site to the north and west; Westlake Drive and Regatta Lane borders the site to the north and east, respectively. Bear Creek is adjacent south, followed by agricultural land. The site is located in Stockton and is generally surrounded by residential homes to the east and agricultural use north, south, and west, with some commercial use further east in the general vicinity.

A general location map (Vicinity Map – Plate 1) and a general site map showing survey photograph locations (Site Map – Plate 2) are attached to this report in **Appendix A**. Photographs from the onsite field survey of the subject property are attached to this report as **Appendix B**.

3.2 Site and Vicinity Features

The site consists of vacant land. The overall parcel, pending a proposed property line adjustment, is approximately 19.36 acres in size. The current parcel includes a sewer lift station in the northeast corner, and an approximately 1.5-acre basin along the south-southeast portion of the property. The parcel is not fenced, however, there is a locked gate and k-rails at the entrance along the corner of Westlake Drive & Regatta Lane. The general vicinity consists of residential and agricultural use.

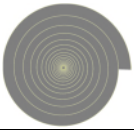
3.3 Current Use – Property

3.4 Descriptions of Structures, Roads, Other Improvements for the Site

The property is currently vacant land, with the exception of the sewer lift station located in the northeast corner of the subject property.

3.5 Current Uses - Adjoining Properties

To the north is Westlake Drive followed by agricultural land; west is agricultural land. To the east is Regatta Lane followed by residential tract homes. To the south is Bear Creek, followed by agricultural land.



3.6 Physical Setting

3.6.1 Topography

According to the most recent United States Geological Survey Topographic map covering the subject property and vicinity[2], the subject property is at an elevation of approximately 0 feet above mean sea level. The site is relatively flat. The general area slopes shallowly toward the west-southwest.

3.6.2 Geology and Soils

According to the most detailed Geologic Map covering the subject property and vicinity, the majority of the subject property consists of loose sand and silt, chiefly fluvial, compact silt, and very fine sand undifferentiated alluvial-fan deposits, derived from glaciated drainage basins of the Pleistocene aged Modesto Formation (Qm).[3]

Site soil consists of Ryde clay loam (0-2 percent slopes) and Guard clay loam (0-2 percent slopes) for western and eastern portions of the subject property, respectively. Ryde clay loam is very poorly drained with negligible runoff derived from herbaceous organic material derived from reeds and tules, and fine-loamy alluvium derived from mixed rock sources.[4] Guard clay loam is poorly drained with high runoff derived from alluvium and mixed rock sources.[5]

3.6.3 Hydrogeology

According to the San Joaquin County Spring 2016 and Fall 2016 Groundwater Reports[6] groundwater elevation contour map, groundwater elevation is approximately -22 feet below mean sea level (msl) during spring and -24 feet below msl during fall. The elevation at the site is approximately 0 feet msl, therefore, according to the regional groundwater elevation maps reviewed, depth to groundwater at the subject property is approximately 22 to 24 feet below ground surface (bgs). The groundwater flow direction is east with a gradient of approximately 4.5 and 5.5 feet per mile in the spring and fall, toward a cone of depression.

To supplement regional groundwater report information, groundwater data obtained on the California State Water Resources Control Board's GeoTracker Ambient Monitoring and Assessment (GAMA) website[7] was also reviewed. Groundwater elevation measurements recorded in groundwater monitoring well #02N5E01A006M, located approximately 1.25 miles northeast of the subject property indicates groundwater elevations have ranged from approximately -2.58 feet mean sea level (msl) and -11.58 feet msl as measured periodically between March 21, 2014 and October 17, 2016. Based on a review of the GAMA well data, it is likely depth to groundwater is approximately 3 to 12 feet below ground surface.

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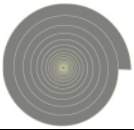
[2] US Geological Survey, 2015, 7.5' Topographic Map, California, Terminous Quadrangle.
[3] US Geological Survey Open File Report 79-933, Atwater, B., Marchand, D., 1979, Preliminary Geologic Map Showing Quaternary Deposits of the Lodi Quadrangle, California. Scale 1:24,000.
[4] UC Davis California Soil Resource Lab, SoilWeb.
[5] UC Davis California Soil Resource Lab, SoilWeb.
[6] San Joaquin County Flood Control and Water Conservation District, Spring 2016 and Fall 2016 Flood Control and Water Conservation District Reports.
[7] https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/Default.asp



4.0 USER PROVIDED DATA

4.1 Title Records

Chain of title reports were not provided by the client for Petralogix's use in preparing this report. Environmental Data Resources, Inc. (EDR) performed a Title Search to identify any Liens and AULs associated with the subject property located at the corner of Westlake Drive and Regatta Lane, San Joaquin County, California. EDR identified a deed for (APNs: 066-050-070, -080) recorded with the San Joaquin County Recorder dated December 31, 2014, identifying subject property owner as A.G. Spanos Companies. The previous owner was not identified.

> ***Orphan Sites***
>
> *An orphan site can be described as a toxic waste area where the polluter could not be identified, or the polluter refused to take action or pay for the cleanup. It therefore is of great significance for due diligence review.*

4.2 Environmental Liens or Activity and Use Limitations

EDR performed a Lien and AUL search for the subject property located at the corner of Westlake Drive and Regatta Lane, in Stockton, San Joaquin County, California (APNs: 060-050-070, and -080). No environmental liens or AULs were found for the subject property. In addition, Petralogix reviewed the California EPA Regulated Site Portal[8] and Department of Toxic Substances Control[9] (DTSC) databases. The subject property was not listed either of the databases.

4.3 Specialized Knowledge and Awareness

Ms. Vickie Brum indicated no specialized knowledge or experience that is important or relevant to assessing or identifying recognized environmental conditions in connection with the subject property.

4.4 Commonly Known or Reasonably Ascertainable Data

Ms. Vickie Brum indicates no knowledge of commonly known or reasonably ascertainable information related to the subject property that was relevant to this study or review.

4.5 Valuation Decrease for Environmental Maters

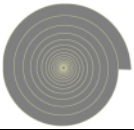
Ms. Vickie Brum indicates the knowledge of valuation reduction of the subject property due to any environmental issues, or otherwise, is not currently applicable to the subject property.

4.6 Owner, Property Manager, and Occupant Data

Ms. Vickie Brum indicates she is currently an employee representative for Lodi Unified School District.

[8] https://siteportal.calepa.ca.gov/nsite/

[9] https://www.envirostor.dtsc.ca.gov/public/map/?myaddress=stockton



4.7 Purpose for Performing Phase I ESA

Ms. Vickie Brum indicates the Phase I ESA has been requested for California Public Education (CPE) Requirements.

5.0 RECORDS EXAMINATION

In preparing this report, Petralogix has engaged the services of Environmental Data Resources, Inc. (EDR) of Milford, Connecticut. EDR provided Petralogix with a list and profile of the recorded sites within the project study area that have been identified by regulatory agencies of significance.

EDR's report #5583838.2s is included as **Appendix D**. The date of the latest agency version of each database searched by EDR and the date EDR acquired the latest update are noted in the EDR report as part of the record for this Phase I ESA.

The EDR governmental database search included a list of "orphan sites." Orphan sites are locations which have a physical existence, but whose exact location is "fuzzy" and therefore, requires additional review to determine relevance to the site in question. These sites were not depicted on the EDR radius map of identified sites. EDR identified 6 "orphan sites". The relevance of these sites is evaluated in section 5.3.3 below.

5.1 Standard Environmental Records

A variety of standard environmental record sources have been reviewed based on the data provided by EDR in order to complete this report. Information on what sources were reviewed and search distances associated with those sources is listed in table form in **Appendix C**.

5.2 Supplementary Environmental Records

In addition to the standard environmental record sources, additional environmental record sources have been reviewed as well. Those sources are listed on the last page of **Appendix C**.

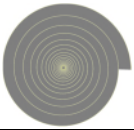
5.3 Environmental Record Discoveries

5.3.1 Subject Property

The subject property is not listed on any major EDR databases searched at this time.

5.3.2 Surrounding Sites

No adjacent sites were listed on the databases searched; three surrounding properties were listed on the ENVIROSTOR SCH databases searched via EDR. These sites are listed below and discussed in detail.



Facility Name	Location (miles)	Source	Comments
Manlio Silva Elementary School Scott Creek Drive	~ 2,000 feet N Cross-gradient	ENVIROSTOR SCH	The ENVIROSTOR database indicates DTSC oversaw an investigation for contaminants associated with agricultural row crops. No constituents of concern were identified. Date of completion reported as October 23, 2003. This is not considered a REC to the subject property.
Christa McAuliffe Middle School Canyon Circle/Atherton Road	~1.25 miles E Down-gradient	ENVIROSTOR SCH	The ENVIROSTOR database indicates no further action required for the school site after testing was performed in 2001 for potential contaminants of concern associated with historic agricultural use – row crops. This is not considered a REC to the subject property.
Future High School Sanctuary 4543 West Hammer Lane	~2.25 miles SE Down-gradient	ENVIROSTOR SCH	The location is listed as a DTSC school investigation site for constituents of concern associated with agricultural row crop use. No COCs were found and a no further action status was assigned on March 11, 2009. This is not considered a REC to the site.

No information material to RECs were identified based on the databases reviewed.

5.3.3 Orphan Sites

EDR identified 6 "orphan sites" without site addresses, site names, or databases assigned.

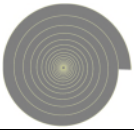
6.0 HISTORICAL USE DATA

6.1 Historical Aerial Photographs & Topographic Maps

Aerial photographs and topographic maps of the subject property provided by EDR were reviewed as part of this investigation:

Aerial Photograph Description Table

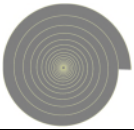
Date	Photo Description
1937 1940	The subject property appears to be agricultural rows crops, with a road trending north-south on the eastern boundary, leading to what appears to be two structures in the southeastern portion of the subject property. There is a levy followed by a slough adjacent south. Adjacent north, east, and west are agricultural row crops and irrigation ditches.



1957	The potential one to two structures are no longer present on the southeastern portion of subject property; the subject property consists of agricultural row crops. The general vicinity is similar to the previous photo.
1963 1968 1975 1984	The subject property and vicinity appear similar to previous photograph.
1993 1998	The subject property appears similar to the previous year (1984). The general vicinity appears similar to the previous year (1984) with the exception of what appears to be a small structure approximately 2,000 feet north of the slough.
2006	The subject property is no longer agricultural rows. The eastern half of the subject property appears to be disturbed earth; there is what appears to be a retention basin approximately 1.5 acres along the southern portion with approximately 3 acres of what appears to be soil spoils in the northeastern portion of the subject property. To the north of the subject property is now disturbed land with a new large manmade water feature extending to Westlake Drive. To the east is residential tract homes and residential tract home construction. To the south is the slough followed by agriculture.
2009 2012 2016	The subject property is similar to the previous year (2006), however the retention basin appears dry and there appears to be debris near the northwest corner of the basin. There appears to be a small structure adjacent east of the subject property, near the jog in the boundary. The other adjacent land and general vicinity appear similar to the previous photo.

Topographic Maps

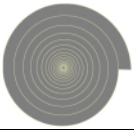
Date	Scale	Quadrangle	Map Description
1894	1:125,000	Lodi	The subject property is depicted as vacant. The surrounding land appears vacant. There are sloughs depicted on the western portion of the map.
1910	1:24,000	Headreach Castle	The subject property is depicted as vacant land in a marsh or swamp. There is a creek or channel adjacent south. The surrounding land appears vacant.
1939	1:24,000	Lodi	The subject property has a structure depicted in the southeast corner and an unimproved road that trends north-south in the eastern portion of the subject property; the road is adjacent west of



Date	Scale	Quadrangle	Map Description
1942 1947			the structure. The subject property has a levee trending east-west on the southern boundary. The surrounding area has several structures in the region indicated and unimproved roads and levees are depicted along the creek and sloughs. There are four structures depicted approximately one-quarter mile west and two structures depicted approximately one-quarter mile east of the subject property, respectively.
1952 1953 1968 1969	1:24,000	Terminous Lodi South	The subject property no longer has the structure depicted in the southeast corner. There are what appears to be irrigation canals depicted on the subject property. The two structures noted approximately one-quarter mile east are absent, and the structures noted approximately one-quarter mile west have increased from four to seven. The general vicinity has irrigation canals depicted.
1976 1978 1993 1997	1:24,000	Terminous Lodi South	The subject property appears similar to previous map. The vicinity appears similar to the previous map. Eight Mile Road is labeled approximately one-half mile north of the site, trending east-west.
2012	1:24,000	Terminous Lodi South	The subject property appears similar. There is now a road labeled W Atherton Road adjacent south. The map depicts a residential subdivision adjacent east of the subject property, and Interstate 5 approximately 1.5 miles east. The structures one-quarter mile west are now absent.

Based on the historical aerial photographs and topographic maps, the subject property was agricultural land from at least 1937 to 1998. The southeastern portion of the subject property may have had up to two historic structures present from at least 1937 to 1947. The former structures and historic agricultural use are environmental concerns to the site.

Based on historical aerial photographs, beginning in at least 2006 to 2009, the eastern half of the subject property appears to be disturbed earth with what appears to be soil piles; the disturbed earth and soil piles appear to coincide with the residential development adjacent east. In addition, an approximately 1.5-acre basin located on the southern boundary is developed from at least 2006 to 2016. The soil piles and basin represent a recognized environmental condition.



Surrounding land appears to have been primarily agricultural land developed into residential housing tracts, primarily east of the subject property. These photos and maps are included in **Appendix E**.

6.2 Sanborn Insurance Company Maps

An attempt was made by EDR to obtain Sanborn Insurance Company maps in order to determine what types of activities were conducted on the subject property and on adjoining properties. No Sanborn maps for the subject property were identified.

6.3 EDR Building Permit Search

An attempt was made by EDR to obtain Building Permit information. No building permits for the subject property were identified.

EDR obtained building permits for the adjoining properties for the years 2007, 2008, 2014, and 2018. No permits material to RECs were identified.

6.4 Local Street Directories

R.L. Polk Co., Publishers Directory and SBC Pacific Bell[10] for Stockton were reviewed, including issues dated approximately every five years from 1906 through 2014. No listings were available.

7.0 SITE RECONNAISSANCE

A visual reconnaissance of the subject property was conducted on March 14, 2019, by Tonya Scheftner. During the site visit, the weather was sunny and cool. A site map and photographs of the subject property are attached to this report in **Appendices A** and **B**.

7.1 Procedure and Restrictive Conditions

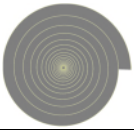
Access to the northwest corner of site was restricted due to dense shoulder high star thistle during reconnaissance visit.

7.2 Petralogix Site Visit Worksheet

Site Visit Observations	
Subject Property: Corner of Westlake Drive & Regatta Lane	**Weather: Sunny, warm**
Describe the current use of the property.	The subject property is currently vacant land. There is a septic pump station in the northeast corner of the site.
Describe evidence of historic uses on the property.	Concrete irrigation pipes observed.

[10] Provided by EDR.

Site Visit Observations	
Is there a Potable Water Source?	None observed.
Is there a Sewage Disposal Source?	No. However, there is a septic lift station for the City of Stockton observed in the northeast portion of the site.
Are there any onsite odors?	None observed.
Are there any pools of Liquid?	None observed.
Are there any electric or hydraulic equipment likely to contain PCBs?	One ground transformer observed in good condition on a concrete foundation located in the northeastern corner of the subject property.
Are there any storage tanks located onsite?	None observed.
Are there any drums or other containers located onsite?	None observed.
Observations – Structure Interior	
Are there any heating/cooling system?	Not applicable.
Are there any stains or corrosion?	Not applicable.
Are there any sumps or drains?	Not applicable.
Observations - Exterior	
Are there any Ponds, Lagoons, and/or Pits?	A basin was observed at the southeast boundary of the site.
Is there any stained soil or pavement visible onsite?	None observed.
Was there any solid waste storage or deposition onsite?	A minimal amount of household garbage was observed dumped along an unimproved dirt road/path in the eastern portion of the site, and some loose garbage was observed in the northeastern corner of the site.
Any noticeable wastewater discharges?	None observed.
Are there any wells or septic systems visible onsite?	One septic pump station observed.
Observations – Vicinity Area	
Describe the topography of property and vicinity.	The subject property and vicinity are relatively flat, with a levy located on the southern boundary.
Describe the current use of adjoining properties.	Adjacent north and west is agricultural land. Adjacent south is the Pixley Slough followed be agricultural land. Adjacent east is vacant land followed by residential tract housing.



Site Visit Observations	
Is there any evidence of past uses?	None observed.
Describe the current land uses in area.	Agricultural, Residential
Describe any evidence of past uses.	Agricultural

8.0 INTERVIEWS

8.1 Interview with Owner / Site Manager and Key Individuals

Ms. Karen Garrett, current Development Manager for The Spanos Corporation (Spanos) was interviewed via an owner questionnaire (**Appendix F**) regarding current and historical use of the subject property. The current property owner is Spanos, purchased in 2015. The previous property owners or any other persons with historical knowledge of the subject property were not indicated. Current use of the property is indicated as former agriculture land being prepared for development. There are no pesticides, paints, and other chemicals stored in containers greater than 5 gallons each at the subject property. There is previously known use of past agriculture with unknown pesticide application indicated. An Environmental Impact Report Draft for West Lake Villages, which includes the subject property was prepared in 2004 to assess overall environmental impacts relating to large scale development.

Ms. Vickie Brum, current Facilities Planner and employee for Lodi Unified School District was interviewed via a user questionnaire (**Appendix F**) regarding current and historical use of the subject property. Ms. Brum indicated the proposed future use of the property is for an elementary school. The Phase I ESA report is requested to satisfy California Public Education requirements.

8.2 Interviews with Local Government Offices

8.2.1 San Joaquin County Environmental Health Department

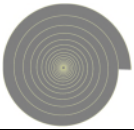
The San Joaquin County Environmental Health Department was contacted to determine whether any records were on file at that agency material to RECs in connection with the subject property with APNs 066-050-070, and -080. In addition, environmental records for the three adjacent parcels were requested.

No files were on record for the subject or adjacent properties. No RECs were identified in connection with the subject property.

8.2.2 San Joaquin County Assessor-Recorder

Petralogix submitted a search request of property records for the subject property available at the San Joaquin County Assessor-Recorder Office. Records identify the current property owner as Stockton Westlake, LLC. for APNs 066-050-070, and -080. Per the assessor-recorder office, the "Parent Parcel" for the subject property was divided into 30 parcels in April 2006, with the previous owner identified as Spanos Corporation.

8.2.3 San Joaquin Valley Air Pollution Control District



The San Joaquin Valley Air Pollution Control District (SJVAPCD) was contacted to determine whether any records were on file at that agency material to RECs in connection with the subject property. The SJVAPD identified no locations potentially emitting hazardous air emissions or handling hazardous or acutely hazardous materials and substances of waste.

8.2.4 City of Stockton Community Development

The City of Stockton Community Development Department was contacted to determine whether any records were on file at that agency material to RECs in connection with the subject property. According to Cat Pohlman of the agency, contacted via telephone on May 8, 2019, there is one permit for the subject property for a temporary sewer lift pump. This is not considered a REC.

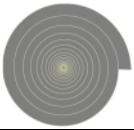
8.2.5 City of Stockton Fire Department

The City of Stockton Fire Department was contacted to determine whether any records were on file at that agency material to RECs in connection with the subject property. The representative confirmed the CUPA for the City of Stockton is the San Joaquin County Environmental Department.

8.2.6 San Joaquin County Office of Agricultural Commissioner

The San Joaquin County Office of Agricultural Commissioner was contacted to determine whether any records were on file at that agency material to RECs in connection with the subject property. The representative, Hiromi Hernandez, indicated that permits are kept for five years. According to the records available by the Agricultural Commissioner, the subject property is located in Reclamation District #2042 which covers M03N05E27 – M03N05E25 to M02N05E03 – M02N05E01. The parcel that encompasses the subject property (APNs 066-050-07 and 066-050-08) is M02N05E02. According to records provided by the Agricultural Commissioner, there is a Restricted Materials Permit No. 39-15-3900651 which covers the MN02N05E02 area in the year 2015 and, according to Hiromi Hernandez, M03N05E03 (Restricted Materials Permit No. 39-18-3900060) should have been entered as MN02N05E02 for 2016 through 2019. These permits indicate the 200 acres were farmed by George Biagi (Biagi Farms) as the applicant, with the actual application areas per pesticide not indicated and therefore unknown. The pesticides/pests list indicated in the permits include the following:

- Aluminum Phosphide for rodents;
- Zinc Phosphide for rodents;
- 2,4-D Amine for weeds;
- Paraquat for weeks;
- Carbaryl for larvae;
- Dicamba for weeds;
- Methomyl for larvae;
- Phorate for aphids;
- Zinc Phosphide for rodents;
- MCPA, Dimethylamine Salt for weeds;
- 2,4-D, Butyl Ester for weeds;
- 2,4-D, Diemthylamine Salt for weeds;
- Paraquat Dichloride for weeds; and
- Methidathion for larvae.



Conditional use permit conditions for the pesticides include restricted materials near schools where no applications of restricted materials shall be made by air or ground within 660 feet of a school in session, or when a school sponsored event is in progress. San Joaquin County Agricultural Commissioner permits are included in **Appendix G**.

9.0 MOLD ASSESSMENT SCREENING

Mold assessment screening is not applicable to the vacant subject property.

10.0 LEAD SCREENING EVALUATION

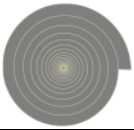
The onsite structures were built and demolished from the late 1930's to the late 1950's, prior to the effect ban of lead paints and products. We are not certified lead experts and lead inspection of building materials and intact structures are not a required part of a Phase I ESA evaluation under the ASTM Standard. However, the potential for lead-based paints and products leaching into the soil near the previous location of demolished structures is considered moderate to high. Due to the demolished buildings, lead may be present in the soil; the former structures are an environmental concern to the site.

11.0 ASBESTOS SCREENING EVALUATION

The onsite structures were built and demolished from the late 1930's to the late 1950's, prior to the effect ban of most asbestos constaining building materials. We are not certified asbestos experts and asbestos inspection of building materials and intact structures is not a required part of a Phase I ESA evaluation under the ASTM Standard. However, the potential for asbestos containing building material leaching into the soil near the previous location of the demolished structures is considered moderate to high. Due to the demolished structures, asbestos may be present in the soil where the former structures were previously located. The former demolished structures are therefore considered an environmental concern to the site.

12.0 RADON GAS ASSESSMENT

Radon gas emissions from the natural breakdown of elements in soil is a concern in many areas around the country. In particular, Radon gas can buildup in confined spaces such as tunnels and basements. A survey of the subject property was not conducted, but a review based on government data was performed. The area in question is listed on the US EPA Radon Check Map as having twenty (20) local tests historically performed. The Federal EPA Radon Zone for San Joaquin County is Zone 3, indoor average level <2 pCi/L. Based on this low potential, Radon is a low concern for the subject property.



13.0 VEC & VAPOR INTRUSION SCREENING

The EDR VEC App was used by our firm to perform a Tier 1 Screening for Vapor. This App provides integrated data, analytical tools, and professional reporting searches to help review available environmental records (**Appendx D**). Based on our review, the subject property does not have the potential to cause vapor intrustion/encroachment risk.

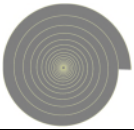
In addition, a search area of one-third of a mile was utilized in order to assess potential listings within the region which may have the potential to cause vapor intrusion/encroachment risk. Based on our review, there are no listings that may have the potential to cause vapor intrusion/encroachment risk.

14.0 DISCOVERIES & FINDINGS

- Based on the historical aerial photographs and topographic maps, the subject property was agricultural land from at least 1937 to 1998.
- The southeastern portion of the subject property may have had up to two historic structures present from at 1937 to 1947.
- Based on historical aerial photographs, beginning in at least 2006, the eastern half of the subject property appears to be disturbed earth with soil piles; the disturbed earth and soil piles appear to coincide with the residential development adjacent east. In addition, an approximately 1.5-acre basin located on the southern boundary is developed from at least 2006 to present.
- One ground mounted transformer on a concrete foundation is located on the subject property, observed in good condition.

15.0 PROFESSIONAL OPINIONS

- Pesticides and herbicides may have been applied to the subject property during possible agricultural use from at least 1937 to 1998 and may be impacted from persistent Organochlorine Pesticides (OCPs). The former agricultural use are environmental concerns to the site.
- The southeastern portion of the subject property may have had up to two historic structures present from at least 1937 to 1947. The former on-site structures were built and demolished prior the effect ban of asbestos containing building materials and lead paints and products. Therefore, the potential for lead-based paints and asbestsos located in the former structure locations is considered moderate to high, as well as the potential for heavy metals or total petroleum hydrocarbons. The demolished structures are considered a REC to the site.
- Based on historical aerial photographs, beginning in at least 2006 and likely coinciding with tract housing development in the immediate area, the eastern half of the subject property appears to have disturbed earth with soil piles staged onsite. The soil piles may contain contaminants from unknown sources. In addition, an approximately 1.5-acre basin located on the southern boundary is developed from at least 2006. The basin may have been associated with construction activities and may contain contaminants from unknown sources. The soil piles and basin are considered Recognized Environmental Concerns.
- The one ground mounted transformer observed on the subject property in good condition is not considered an environmental concern for the subject property.



16.0 FINAL CONCLUSIONS

We have performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-13 for the parcel located at the corner of Westlake Drive and Regatta Lane (APNs: 066-050-07, -08) (the subject property). Any exceptions to, or deletions from, this practice are described in the Limitations Section of this report.

This assessment has identified the following Recognized Environmental Conditions:

- Pesticides and herbicides may have been applied to the subject property during possible agricultural use from at least 1937 to 1998 and may be impacted from persistent Organochlorine Pesticides (OCPs). The former agricultural use are environmental concerns to the site.
- The southeastern portion of the subject property may have had up to two historic structures present from at 1937 to 1947. the former on-site structures were built and demolished prior the effect ban of asbestos containing building materials and lead paints and products. Therefore, the potential for lead-based paints and asbestos located in the former structure locations is considered moderate to high, as well as the potential for heavy metals or total petroleum hydrocarbons. The demolished structures are considered a REC to the site.
- Based on historical aerial photographs, beginning in at least 2009 and likely coinciding with tract housing development in the immediate area, the eastern half of the subject property appears to have disturbed earth with soil piles staged onsite. The soil piles may contain contaminants from unknown sources. In addition, an approximately 1.5-acre basin located on the southern boundary is developed from at least 2006. The basin may have been associated with construction activities and may contain contaminants from unknown sources. The soil piles and basin are considered Recognized Environmental Concerns.

17.0 RECOMMENDATIONS

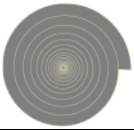
Further investigation is recommended to evaluate whether environmental media has been impacted by a release from historic agricultural practices, demolished structures, soil piles, and a basin potentially impacted by unknown activities.

18.0 SPECIFIC DEVIATIONS

No deviations have been taken from this standard.

19.0 ADDITIONAL SERVICES

No additional services were provided.



20.0 QUALIFICATIONS OF PETRALOGIX ENVIRONMENTAL PROFESSIONALS

Daniel Kramer, PG, CEG, PGp

Professional Experience:

Neil O. Anderson and Associates	2003 – 2005
Kleinfelder, Inc.	2005 – 2006
Neil O. Anderson and Associates	2006 – 2014
Petralogix Engineering, Inc.	2014 – Present

Education:
B.S., Geology, University of the Pacific, Galt, CA

Registrations:
California Professional Geologist, PG-8657
California Certified Engineering Geologist, CEG-2588
California Professional Geophysicist, PGp-1078
Oregon Registered Geologist, E2334

Professional Memberships:
Association of Engineering Geologist (AEG)
American Society of Civil Engineers (ASCE)

Tonya Scheftner, Project Geologist

Professional Experience:

Neil O. Anderson & Associates	2014 – 2015
Petralogix Engineering, Inc.	2015 – Present

Education:
B.S., Geology, California State University-Stanislaus, Turlock, CA

Certification:
Geologist-In-Training, GIT-685

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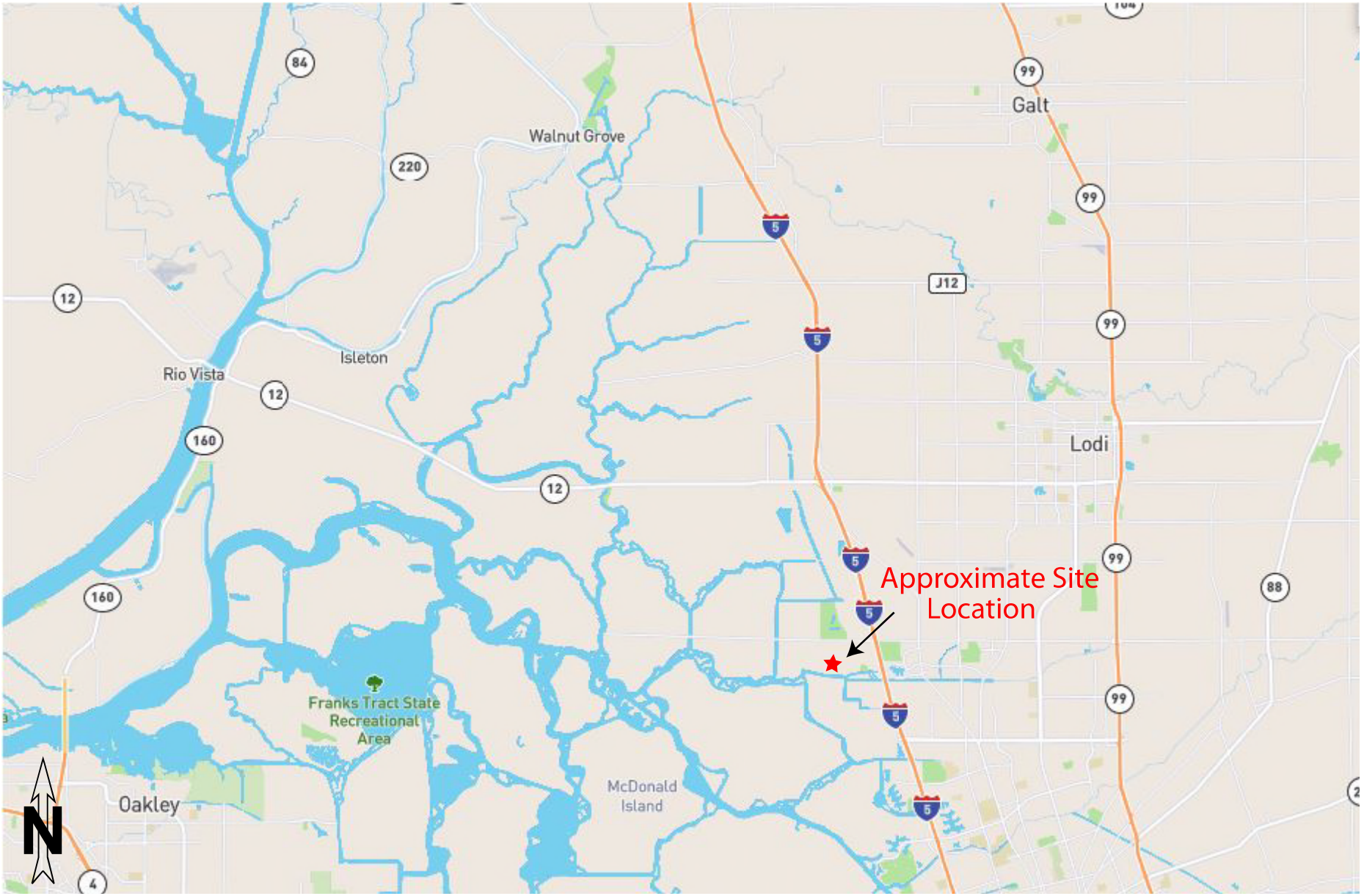
APPENDIX A



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Vicinity Map

Proposed School Site - Stockton Site I
Corner of Westlake Drive & Regatta Lane
Stockton, CA 95219

DATE: June 2019
JOB NUMBER: 2019-00014
SCALE: Not to Scale
DRAWN BY: TS
CHECKED BY: DK
PLATE: 1



Google Earth 2018

LEGEND

Approximate site boundary

★ Transformer

Photo No. and General Direction

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Site Map

Proposed School Site - Stockton Site I
Corner of Westlake Drive & Regatta Lane
Stockton, CA 95219

DATE: June 2019
JOB NUMBER: 2019-00014
SCALE: Not to Scale
DRAWN BY: TS
CHECKED BY: DK
PLATE: 2

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APPENDIX B



Figure 1 – View of northeastern boundary. Looking southwest.



Figure 2 – View of ground transformer, northeast corner of subject property.



Figure 3 – View of eastern boundary, looking south.



Figure 4– View of concrete slabs and pipe on property adjacent east, looking west.



Figure 5 – Southeast boundary, looking east toward adjacent properties.



Figure 6 – View of intake pipe on levy adjacent south of subject property, looking south.



Figure 7 – View of southern boundary, looking west.



Figure 8 – View of property adjacent south, looking northwest at retention pond.



Figure 9 – View concrete irrigation pipe.



Figure 10 – View of de minimis garbage.



Figure 11 – View of concrete irrigation pipe north of retention pond.



Figure 12 – View of north boundary of the parcel looking northwest.



Figure 13 – View of southwest boundary looking north.



Figure 14 – View of waste bins, southwest location on subject property.

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APPENDIX C

Databases Searches and Standard Distances Reviewed

Search Radius	Database Reviewed (EDR)
1 mile	**National Priority List (NPL)** Source: U.S. Environmental Protection Agency (US EPA). The NPL database is a subset of CERCLIS (see below). It identifies sites for priority cleanup under Superfund Programs. NPL sites may encompass relatively large areas, thus the larger search radius.
0.5 mile	**Delisted NPL List** Source: US EPA. The Delisted NPL database includes sites which have been deleted from the NPL due to a no further response being needed. The EPA uses the criteria of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) to select sites for deletion. Generally this is based on cleanup action.
0.5 mile	**Comprehensive Environmental Response Compensation and Liability Information System List (CERCLIS)** Source: US EPA. The CERCLIS database contains information on potentially hazardous waste sites that have been reported to the US EPA by states, municipalities, private companies, and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are included, proposed for inclusion, or in the screening phase for possible inclusion in the NPL.
0.5 mile	**CERCLIS "No Further Remedial Action Planned" (NFRAP)** Source: US EPA. The CERC-NFRAP database contains information on sites designated "No Further Remedial Action Planned" which have been removed from the CERCLIS database. NFRAP sites may be sites where no contamination was found following an initial investigation, where remedial action has been completed, or where the contamination was not serious enough to require Federal Superfund action or NPL consideration.
1 mile	**Corrective Action Report (CORRACTS)** Source: US EPA. CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.
0.5 mile	**Resource Conservation and Recovery Act "Treatment, Storage, and Disposal Facilities" (RCRA-TSDF)** Source: US EPA. The RCRA-TSDF database contains basic information on facilities that treat, store, or dispose of hazardous waste as defined by RCRA. This list is contained within the RCRAInfo database.
property and adjoining	**RCRA Large Quantity Generators (LQG) and Small Quantity Generators (SQG)** Source: US EPA. These lists are contained within the RCRAInfo database. Each site is categorized as one of the following: RCRA-LQG: Facilities that generate more than 1000 kg per month of non-acutely hazardous waste, or more than 1 kg per month of acutely hazardous waste. RCRA-SQG: Facilities that generate between 100 kg and 1000 kg per month of non-acutely hazardous waste.

Databases Searches and Standard Distances Reviewed

Search Radius	Database Reviewed (EDR)
property only	**Engineering Controls Sites List (US ENG CONTROLS)** Source: US EPA. The US ENG CONTROLS database is a list of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or affect human health.
property only	**Sites with Institutional Controls (US INST CONTROL)** Source: US EPA. The US INST CONTROL database lists sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation case requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.
property only	**Federal Emergency Response Notification System (ERNS)** Source: U.S. Coast Guard, National Response Center. ERNS database contains information on the reported releases of oil and hazardous substances.
1 mile	**ENVIROSTOR** Source: California EPA Department of Toxic Substances Control (DTSC). The ENVIROSTOR database identifies sites that have known contamination or sites for which there may be reasons to investigate further. The database includes NPL sites; State response sites including military facilities and State Superfund; Voluntary Cleanup sites; and school sites.
1 mile	**HIST CAL-SITES** Source: DTSC. The CAL-SITES database contains potential or confirmed hazardous substance release properties. In 1996, the EPA reevaluated and reduced the number of sites in this database. Cal-Sites is no longer updated and has been replaced by ENVIROSTOR.
0.5 mile	**Spills, Leaks, Investigations, and Cleanups (SLIC)** Source: State Water Resources Control Board (SWRCB). The SLIC list includes unauthorized discharges from spills and leaks, other than from underground storage tanks or other regulated sites.
0.5 mile	**Solid Waste Information System SWF/LF (SWIS)** Source: California Integrated Waste Management Board. The SWIS database contains an inventory of solid waste disposal facilities or landfills. These may be active or inactive facilities or open dumps that failed to meet RCRA Section 2004 criteria for solid waste landfills or disposal sites.
0.5 mile	**Geotracker's Leaking Underground Fuel Tank Report (LUST)** Source: SWRCB. The LUST database contains an inventory of reported leaking underground storage tank incidents.

Databases Searches and Standard Distances Reviewed

Search Radius	Database Reviewed (EDR)
0.5 mile	**Leaking Underground Storage Tanks on Indian Land (INDIAN LUST)** Source: US EPA. The INDIAN LUST database records leaking underground storage tanks on Indian land in Arizona, California, New Mexico, and Nevada.
property and adjoining	**Active UST Facilities (UST)** Source: SWRCB. The UST list contains an inventory of active underground storage tank facilities gathered from local regulatory agencies.
property and adjoining	**Facility Inventory Database (CA FID UST)** Source: Cal EPA. The CA FID UST database is a historical listing of active and inactive underground storage tank locations.
property and adjoining	**Hazardous Substance Storage Container Database (HIST UST)** Source: SWRCB. The HIST UST database is a historical listing of underground storage tanks.
property and adjoining	**Underground Storage Tanks on Indian Land (INDIAN UST)** Source: US EPA Region 9. The Indian UST database contains an inventory of underground storage tanks on Indian land.
property only	**Deed Restriction Listing (DEED)** Source: DTSC. The DEED database contains an inventory of Site Mitigation and Brownfields Reuse Program (SMBRP) facility sites with deed restrictions and Hazardous Waste Management Program (HWMP) facility sites with deed or land use restrictions. The SMBRP list includes active deed restrictions and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The HWMP list includes current or former hazardous waste facilities that have a recorded land use restriction at the local County recorder's office.
0.5 mile	**Voluntary Cleanup Program Properties (VCP)** Source: DTSC. The VCP database contains an inventory of low threat properties with either confirmed or unconfirmed releases in which the project proponents have requested that DTSC oversee investigation and/or cleanup activities.
1 mile	**US Brownfields** Source: US EPA. The US Brownfields database includes properties listed as Cooperative Agreement Recipients and properties addressed by Targeted Brownfields Assessments (TBA). EPA's TBA program is designed to help states, tribes, and municipalities minimize the uncertainties of contamination often associated with brownfields. States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the US EPA.

Databases Searches and Standard Distances Reviewed

Search Radius	Database Reviewed (EDR)
0.5 mile	**SLIC REG 5** Source: California Regional Water Quality Control Board Central Valley Region (5). The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.
0.5 mile	**Leaking Underground Storage Tanks (LUST) REG 5** Source: California Regional Water Quality Control Board Central Valley Region (5). The LUST database contains an inventory of reported leaking underground storage tank incidents.

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APPENDIX D

Site I - West Lakes Area
Corner of Westlake Drive and Regatta Lane
Stockton, CA 95219

Inquiry Number: 5629404.2s
April 23, 2019

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

CORNER OF WESTLAKE DRIVE AND REGATTA LANE
STOCKTON, CA 95219

COORDINATES

Latitude (North):	38.0465750 - 38° 2' 47.67''
Longitude (West):	121.3926060 - 121° 23' 33.38''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	641043.6
UTM Y (Meters):	4211996.5
Elevation:	0 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5619756 TERMINOUS, CA
Version Date:	2012
East Map:	5619734 LODI SOUTH, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140628
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
CORNER OF WESTLAKE DRIVE AND REGATTA LANE
STOCKTON, CA 95219

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	MANLIO SILVA ELEMENT	SCOTT CREEK DRIVE	ENVIROSTOR, SCH	Higher	2303, 0.436, North
2	CHRISTA MCAULIFFE MI	CANYON CIRCLE/ATHERT	ENVIROSTOR, SCH	Higher	4072, 0.771, East
3	FUTURE HIGH SCHOOL S	4543 WEST HAMMER LAN	ENVIROSTOR, SCH	Higher	5252, 0.995, SSE

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List

US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

LUST ---------- Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land
CPS-SLIC ---------- Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST ---------- Underground Storage Tank Listing
UST ---------- Active UST Facilities
AST ---------- Aboveground Petroleum Storage Tank Facilities
INDIAN UST ---------- Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP ---------- Voluntary Cleanup Priority Listing
VCP ---------- Voluntary Cleanup Program Properties

State and tribal Brownfields sites

BROWNFIELDS ---------- Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---------- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT ---------- Waste Management Unit Database
SWRCY ---------- Recycler Database
HAULERS ---------- Registered Waste Tire Haulers Listing
INDIAN ODI ---------- Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 ---------- Torres Martinez Reservation Illegal Dump Site Locations
ODI ---------- Open Dump Inventory
IHS OPEN DUMPS ---------- Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ---------- Delisted National Clandestine Laboratory Register

HIST Cal-Sites ---- Historical Calsites Database
SCH ---- School Property Evaluation Program
CDL ---- Clandestine Drug Labs
CERS HAZ WASTE ---- CERS HAZ WASTE
Toxic Pits ---- Toxic Pits Cleanup Act Sites
US CDL ---- National Clandestine Laboratory Register
PFAS ---- PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

SWEEPS UST ---- SWEEPS UST Listing
HIST UST ---- Hazardous Substance Storage Container Database
CERS TANKS ---- California Environmental Reporting System (CERS) Tanks
CA FID UST ---- Facility Inventory Database

Local Land Records

LIENS ---- Environmental Liens Listing
LIENS 2 ---- CERCLA Lien Information
DEED ---- Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ---- Hazardous Materials Information Reporting System
CHMIRS ---- California Hazardous Material Incident Report System
LDS ---- Land Disposal Sites Listing
MCS ---- Military Cleanup Sites Listing
SPILLS 90 ---- SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR ---- RCRA - Non Generators / No Longer Regulated
FUDS ---- Formerly Used Defense Sites
DOD ---- Department of Defense Sites
SCRD DRYCLEANERS ---- State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ---- Financial Assurance Information
EPA WATCH LIST ---- EPA WATCH LIST
2020 COR ACTION ---- 2020 Corrective Action Program List
TSCA ---- Toxic Substances Control Act
TRIS ---- Toxic Chemical Release Inventory System
SSTS ---- Section 7 Tracking Systems
ROD ---- Records Of Decision
RMP ---- Risk Management Plans
RAATS ---- RCRA Administrative Action Tracking System
PRP ---- Potentially Responsible Parties
PADS ---- PCB Activity Database System
ICIS ---- Integrated Compliance Information System
FTTS ---- FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS ---- Material Licensing Tracking System
COAL ASH DOE ---- Steam-Electric Plant Operation Data
COAL ASH EPA ---- Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER ---- PCB Transformer Registration Database
RADINFO ---- Radiation Information Database
HIST FTTS ---- FIFRA/TSCA Tracking System Administrative Case Listing

DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
DOCKET HWC	Hazardous Waste Compliance Docket Listing
UXO	Unexploded Ordnance Sites
ECHO	Enforcement & Compliance History Information
FUELS PROGRAM	EPA Fuels Program Registered Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
ICE	ICE
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
UIC GEO	UIC GEO (GEOTRACKER)
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
PROJECT	PROJECT (GEOTRACKER)
WDR	Waste Discharge Requirements Listing
CIWQS	California Integrated Water Quality System
CERS	CERS
WIP	Well Investigation Program Case List
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Auto	EDR Exclusive Historical Auto Stations

EXECUTIVE SUMMARY

EDR Hist Cleaner..... EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF..... Recovered Government Archive Solid Waste Facilities List
RGA LUST..... Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 01/28/2019 has revealed that there are 3 ENVIROSTOR sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
MANLIO SILVA ELEMENT Facility Id: 39010042 Status: No Action Required	***SCOTT CREEK DRIVE***	***N 1/4 - 1/2 (0.436 mi.)***	***1***	***8***
CHRISTA MCAULIFFE MI Facility Id: 39010021 Status: No Further Action	***CANYON CIRCLE/ATHERT***	***E 1/2 - 1 (0.771 mi.)***	***2***	***10***
FUTURE HIGH SCHOOL S Facility Id: 60000765 Status: No Further Action	***4543 WEST HAMMER LAN***	***SSE 1/2 - 1 (0.995 mi.)***	***3***	***13***

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 6 records.

Site Name	Database(s)
	CDL
	CDL
	CDL
	CDL
	CDL
	CDL

OVERVIEW MAP - 5629404.2S



Target Property

Sites at elevations higher than or equal to the target property

Sites at elevations lower than the target property

Manufactured Gas Plants

National Priority List Sites

Dept. Defense Sites

0 1/4 1/2 1 Miles

Indian Reservations BIA

Power transmission lines

100-year flood zone

500-year flood zone

National Wetland Inventory

State Wetlands

Areas of Concern

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Site I - West Lakes Area	CLIENT:	Petralogix
ADDRESS:	Corner of Westlake Drive and Regatta Lane Stockton CA 95219	CONTACT:	Tonya Scheftner
LAT/LONG:	38.046575 / 121.392606	INQUIRY #:	5629404.2s
		DATE:	April 23, 2019 1:25 pm

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DETAIL MAP - 5629404.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites

0 1/16 1/8 1/4 Miles

- Indian Reservations BIA
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Site I - West Lakes Area	CLIENT: Petralogix
ADDRESS: Corner of Westlake Drive and Regatta Lane Stockton CA 95219	CONTACT: Tonya Scheftner INQUIRY #: 5629404.2s
LAT/LONG: 38.046575 / 121.392606	DATE: April 23, 2019 1:28 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	0.001		0	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	1	2	NR	3
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
PFAS	0.001		0	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CERS TANKS	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	0.001		0	NR	NR	NR	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.001		0	NR	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.001		0	NR	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	0	0	1	2	0	3

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1
North
1/4-1/2
0.436 mi.
2303 ft.

MANLIO SILVA ELEMENTARY SCHOOL
SCOTT CREEK DRIVE
STOCKTON, CA 95219

ENVIROSTOR SCH | **S118756911 N/A**

Relative:
Higher

Actual:
0 ft.

ENVIROSTOR:

Facility ID:	39010042
Status:	No Action Required
Status Date:	09/25/2003
Site Code:	104339
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	11.42
NPL:	NO
Regulatory Agencies:	DTSC
Lead Agency:	DTSC
Program Manager:	Not reported
Supervisor:	Javier Hinojosa
Division Branch:	Northern California Schools & Santa Susana
Assembly:	13
Senate:	05
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	38.054
Longitude:	-121.391
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	NONE SPECIFIED No Contaminants found
Confirmed COC:	NONE SPECIFIED
Potential Description:	NMA
Alias Name:	LODI UNIFIED SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	LODI USD-MANLIO SILVA ELEMENTARY SCHOOL
Alias Type:	Alternate Name
Alias Name:	MANLIO SILVA ELEMENTARY SCHOOL
Alias Type:	Alternate Name
Alias Name:	104339
Alias Type:	Project Code (Site Code)
Alias Name:	39010042
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	09/03/2003
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	10/23/2003
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported

MANLIO SILVA ELEMENTARY SCHOOL (Continued) **S118756911**

Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

Facility ID: 39010042
Site Type: School Investigation
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED
Acres: 11.42
National Priorities List: NO
Cleanup Oversight Agencies: DTSC
Lead Agency: DTSC
Lead Agency Description: * DTSC
Project Manager: Not reported
Supervisor: Javier Hinojosa
Division Branch: Northern California Schools & Santa Susana
Site Code: 104339
Assembly: 13
Senate: 05
Special Program Status: Not reported
Status: No Action Required
Status Date: 09/25/2003
Restricted Use: NO
Funding: School District
Latitude: 38.054
Longitude: -121.391
APN: NONE SPECIFIED
Past Use: AGRICULTURAL - ROW CROPS
Potential COC: NONE SPECIFIED, No Contaminants found
Confirmed COC: NONE SPECIFIED
Potential Description: NMA
Alias Name: LODI UNIFIED SCHOOL DISTRICT
Alias Type: Alternate Name
Alias Name: LODI USD-MANLIO SILVA ELEMENTARY SCHOOL
Alias Type: Alternate Name
Alias Name: MANLIO SILVA ELEMENTARY SCHOOL
Alias Type: Alternate Name
Alias Name: 104339
Alias Type: Project Code (Site Code)
Alias Name: 39010042
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 09/03/2003
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo

MANLIO SILVA ELEMENTARY SCHOOL (Continued) **S118756911**

Completed Date:	10/23/2003
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

2
East
1/2-1
0.771 mi.
4072 ft.

CHRISTA MCAULIFFE MIDDLE SCHOOL **ENVIROSTOR** **S105628939**
CANYON CIRCLE/ATHERTON ROAD **SCH** **N/A**
STOCKTON, CA 95209

Relative:
Higher

Actual:
0 ft.

ENVIROSTOR:

Facility ID:	39010021
Status:	No Further Action
Status Date:	09/10/2001
Site Code:	104168
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	15.3
NPL:	NO
Regulatory Agencies:	DTSC
Lead Agency:	DTSC
Program Manager:	Not reported
Supervisor:	Juan Koponen
Division Branch:	Northern California Schools & Santa Susana
Assembly:	13
Senate:	05
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	38.04651
Longitude:	-121.3769
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	Arsenic Chlordane DDD DDE DDT Lead
Confirmed COC:	30001-NO 30004-NO 30006-NO 30007-NO 30008-NO 30013-NO
Potential Description:	SOIL
Alias Name:	CHRISTA MCAULIFFE MIDDLE SCHOOL
Alias Type:	Alternate Name
Alias Name:	LODI UNIFIED SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	LODI USD-CHRISTA MCAULIFFE
Alias Type:	Alternate Name
Alias Name:	104168
Alias Type:	Project Code (Site Code)
Alias Name:	39010021
Alias Type:	Envirostor ID Number

Completed Info:

CHRISTA MCAULIFFE MIDDLE SCHOOL (Continued) **S105628939**

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 09/10/2001
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: * Workplan
Completed Date: 01/08/2001
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 11/20/2000
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Inspections/Visit (Non LUR)
Completed Date: 02/20/2001
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 11/14/2001
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

Facility ID: 39010021
Site Type: School Investigation
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED
Acres: 15.3
National Priorities List: NO
Cleanup Oversight Agencies: DTSC
Lead Agency: DTSC
Lead Agency Description: * DTSC
Project Manager: Not reported
Supervisor: Juan Koponen
Division Branch: Northern California Schools & Santa Susana
Site Code: 104168
Assembly: 13
Senate: 05

CHRISTA MCAULIFFE MIDDLE SCHOOL (Continued) **S105628939**

Special Program Status:	Not reported
Status:	No Further Action
Status Date:	09/10/2001
Restricted Use:	NO
Funding:	School District
Latitude:	38.04651
Longitude:	-121.3769
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	Arsenic, Chlordane, DDD, DDE, DDT, Lead
Confirmed COC:	30001-NO, 30004-NO, 30006-NO, 30007-NO, 30008-NO, 30013-NO
Potential Description:	SOIL
Alias Name:	CHRISTA MCAULIFFE MIDDLE SCHOOL
Alias Type:	Alternate Name
Alias Name:	LODI UNIFIED SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	LODI USD-CHRISTA MCAULIFFE
Alias Type:	Alternate Name
Alias Name:	104168
Alias Type:	Project Code (Site Code)
Alias Name:	39010021
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Report
Completed Date:	09/10/2001
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	* Workplan
Completed Date:	01/08/2001
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	11/20/2000
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Inspections/Visit (Non LUR)
Completed Date:	02/20/2001
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	11/14/2001
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported

CHRISTA MCAULIFFE MIDDLE SCHOOL (Continued) **S105628939**

Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

3
SSE
1/2-1
0.995 mi.
5252 ft.

FUTURE HIGH SCHOOL SANCTUARY (SHIMA TRACT) **ENVIROSTOR** **S108936094**
4543 WEST HAMMER LANE **SCH** **N/A**
STOCKTON, CA 95215

Relative:
Higher

Actual:
0 ft.

ENVIROSTOR:
Facility ID: 60000765
Status: No Further Action
Status Date: 03/11/2009
Site Code: 104605
Site Type: School Investigation
Site Type Detailed: School
Acres: 52
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: Not reported
Supervisor: Mark Malinowski
Division Branch: Northern California Schools & Santa Susana
Assembly: 13
Senate: 05
Special Program: Not reported
Restricted Use: NO
Site Mgmt Req: NONE SPECIFIED
Funding: School District
Latitude: 38.03205
Longitude: -121.3844
APN: 071-130-007, 07113007
Past Use: AGRICULTURAL - ROW CROPS
Potential COC: Arsenic Chlordane DDD DDE DDT
Confirmed COC: 30001-NO 30004-NO 30006-NO 30007-NO 30008-NO No Contaminants found
Potential Description: SOIL
Alias Name: 071-130-007
Alias Type: APN
Alias Name: 07113007
Alias Type: APN
Alias Name: 104605
Alias Type: Project Code (Site Code)
Alias Name: 60000765
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 02/26/2008
Comments: PEA WP approved contingent changes outlined in the letter (Eliminate deep soil samples in tail-water ditch and add 2 additional ditch samples locations.)

Completed Area Name: PROJECT WIDE

FUTURE HIGH SCHOOL SANCTUARY (SHIMA TRACT) (Continued) **S108936094**

Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 03/10/2009
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 12/03/2007
Comments: Sent fully executed agreement to district.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

Facility ID: 60000765
Site Type: School Investigation
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED
Acres: 52
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP
Lead Agency: SMBRP
Lead Agency Description: DTSC - Site Cleanup Program
Project Manager: Not reported
Supervisor: Mark Malinowski
Division Branch: Northern California Schools & Santa Susana
Site Code: 104605
Assembly: 13
Senate: 05
Special Program Status: Not reported
Status: No Further Action
Status Date: 03/11/2009
Restricted Use: NO
Funding: School District
Latitude: 38.03205
Longitude: -121.3844
APN: 071-130-007, 07113007
Past Use: AGRICULTURAL - ROW CROPS
Potential COC: Arsenic, Arsenic, Chlordane, DDD, DDE, DDT
Confirmed COC: 30001-NO, 30004-NO, 30006-NO, 30007-NO, 30008-NO, No Contaminants found
Potential Description: SOIL
Alias Name: 071-130-007
Alias Type: APN
Alias Name: 07113007
Alias Type: APN
Alias Name: 104605
Alias Type: Project Code (Site Code)

FUTURE HIGH SCHOOL SANCTUARY (SHIMA TRACT) (Continued) **S108936094**

Alias Name: 60000765
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 02/26/2008
Comments: PEA WP approved contingent changes outlined in the letter (Eliminate deep soil samples in tail-water ditch and add 2 additional ditch samples locations.)

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 03/10/2009
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 12/03/2007
Comments: Sent fully executed agreement to district.

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

Count: 6 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
SAN JOAQUIN COUNTY	S107538191		CORNER OF STEINEGUL ROAD, AND		CDL
SAN JOAQUIN COUNTY	S107538166		CORNER OF HWY 26 & ALPINE RD		CDL
STOCKTON	S107538194		CORNER OF WEST LANE & E PINAL		CDL
STOCKTON	S107538138		CORNER OF 8-MILE RD & LOWER SA	95206	CDL
STOCKTON	S107537588		AT CORNER OF WEST LANE AND HAM	95209	CDL
STOCKTON	S118946780		IVY RD, CORNER OF ODELL RD	95206	CDL

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/14/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 18

Source: EPA
Telephone: N/A
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/14/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 18

Source: EPA
Telephone: N/A
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/14/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 18

Source: EPA
Telephone: N/A
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 92

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/14/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 34

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/14/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 34

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 02/22/2019
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 41

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 02/07/2019
Next Scheduled EDR Contact: 05/27/2019
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 01/31/2019
Date Data Arrived at EDR: 02/04/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 32

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/04/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 01/31/2019
Date Data Arrived at EDR: 02/04/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 32

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/04/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 02/04/2019
Date Data Arrived at EDR: 02/08/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 28

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/29/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/29/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/11/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 21

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 02/12/2019
Next Scheduled EDR Contact: 05/27/2019
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)

Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 12/11/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Quarterly

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/10/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/25/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/24/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/01/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 05/15/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 136

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/12/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases
UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/03/2019
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)
Military ust sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 12/11/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Quarterly

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/10/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/25/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/24/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/01/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/13/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/12/2018
Date Data Arrived at EDR: 05/18/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 63

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/29/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Quarterly

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing

A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 12/20/2018
Date Data Arrived at EDR: 12/21/2018
Date Made Active in Reports: 02/28/2019
Number of Days to Update: 69

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 12/17/2018
Date Data Arrived at EDR: 12/18/2018
Date Made Active in Reports: 01/11/2019
Number of Days to Update: 24

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/19/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 01/28/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/12/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 34

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 02/09/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/27/2019
Number of Days to Update: 43

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 05/27/2019
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 01/29/2019
Next Scheduled EDR Contact: 05/13/2019
Data Release Frequency: Varies

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 02/01/2019
Next Scheduled EDR Contact: 05/13/2019
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 02/24/2019
Date Data Arrived at EDR: 02/26/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 50

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/21/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 35

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/29/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/12/2018
Date Made Active in Reports: 08/06/2018
Number of Days to Update: 55

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Varies

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 10/22/2018
Date Data Arrived at EDR: 10/23/2018
Date Made Active in Reports: 11/30/2018
Number of Days to Update: 38

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 04/11/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Quarterly

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 02/24/2019
Date Data Arrived at EDR: 02/26/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 50

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/21/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 02/21/2019
Date Data Arrived at EDR: 02/22/2019
Date Made Active in Reports: 04/15/2019
Number of Days to Update: 52

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 03/11/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 12/04/2018
Date Data Arrived at EDR: 12/06/2018
Date Made Active in Reports: 12/14/2018
Number of Days to Update: 8

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 02/21/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing
Aboveground storage tank sites

Date of Government Version: 09/11/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/11/2018
Number of Days to Update: 29

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 01/31/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Varies

CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 10/22/2018
Date Data Arrived at EDR: 10/23/2018
Date Made Active in Reports: 11/30/2018
Number of Days to Update: 38

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/11/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Quarterly

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 02/28/2019
Date Data Arrived at EDR: 03/01/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 32

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/14/2019
Date Made Active in Reports: 03/21/2019
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 03/04/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 27

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 02/08/2019
Date Data Arrived at EDR: 02/08/2019
Date Made Active in Reports: 03/21/2019
Number of Days to Update: 41

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 10/24/2018
Date Data Arrived at EDR: 01/24/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 40

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 01/24/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/27/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 04/03/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/12/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/12/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 02/15/2019
Next Scheduled EDR Contact: 05/27/2019
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 01/31/2019
Date Data Arrived at EDR: 02/04/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 32

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 02/08/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 02/08/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/22/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 01/10/2018
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 2

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 02/20/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/14/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 18

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 02/01/2019
Date Data Arrived at EDR: 02/14/2019
Date Made Active in Reports: 03/21/2019
Number of Days to Update: 35

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/14/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 34
Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 09/14/2018
Date Data Arrived at EDR: 10/11/2018
Date Made Active in Reports: 12/07/2018
Number of Days to Update: 57
Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/10/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 04/08/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 03/07/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017
Date Data Arrived at EDR: 11/30/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 15
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 01/25/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/02/2019
Date Data Arrived at EDR: 01/03/2019
Date Made Active in Reports: 03/15/2019
Number of Days to Update: 71
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/02/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 12/03/2018
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/21/2019
Number of Days to Update: 51

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 01/29/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 02/11/2019
Date Made Active in Reports: 03/21/2019
Number of Days to Update: 38

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/05/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 02/13/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/11/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 01/31/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 10/11/2017
Date Made Active in Reports: 11/03/2017
Number of Days to Update: 23

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 02/22/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 03/11/2019
Date Data Arrived at EDR: 03/14/2019
Date Made Active in Reports: 03/21/2019
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 11/27/2018
Date Data Arrived at EDR: 02/27/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 33

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 03/01/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 03/01/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 09/10/2018
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 03/21/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/15/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 03/15/2019
Number of Days to Update: 10

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 01/17/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 74

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 03/01/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 03/03/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 04/09/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Quarterly

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 02/21/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 39

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 02/21/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 12/20/2018
Date Data Arrived at EDR: 12/21/2018
Date Made Active in Reports: 02/28/2019
Number of Days to Update: 69

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 03/26/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 09/11/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 09/19/2018
Number of Days to Update: 7

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 04/18/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Varies

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing

list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 01/23/2019
Date Data Arrived at EDR: 02/26/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 34

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 02/26/2019
Next Scheduled EDR Contact: 05/27/2019
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 02/27/2019
Date Data Arrived at EDR: 02/28/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 32

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 12/13/2018
Date Data Arrived at EDR: 01/17/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 47

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Annually

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 03/19/2019
Date Data Arrived at EDR: 03/22/2019
Date Made Active in Reports: 04/09/2019
Number of Days to Update: 18

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 03/22/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Varies

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/20/2018
Date Made Active in Reports: 08/06/2018
Number of Days to Update: 47

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 03/22/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 11/01/2018
Date Data Arrived at EDR: 11/02/2018
Date Made Active in Reports: 12/13/2018
Number of Days to Update: 41

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 01/10/2019
Date Data Arrived at EDR: 01/23/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 41

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 02/15/2019
Date Data Arrived at EDR: 02/19/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 14

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 02/11/2019
Next Scheduled EDR Contact: 05/27/2019
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 10/10/2018
Date Made Active in Reports: 11/16/2018
Number of Days to Update: 37

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 02/20/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 13

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 02/20/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 02/20/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 13

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/20/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 01/07/2019
Date Data Arrived at EDR: 01/08/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 56

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/09/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/12/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 34
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 02/20/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 28
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 02/11/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 23
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 02/12/2019
Next Scheduled EDR Contact: 05/27/2019
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 03/04/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/05/2019
Number of Days to Update: 31
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/12/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 34
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 09/19/2018
Date Data Arrived at EDR: 09/20/2018
Date Made Active in Reports: 10/19/2018
Number of Days to Update: 29
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 04/27/2018
Date Data Arrived at EDR: 06/13/2018
Date Made Active in Reports: 07/17/2018
Number of Days to Update: 34
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35
Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 07/11/2018
Date Made Active in Reports: 09/13/2018
Number of Days to Update: 64
Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 04/12/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9
Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 02/13/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Quarterly

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing
In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/12/2018
Date Made Active in Reports: 01/18/2019
Number of Days to Update: 37

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 03/05/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 28

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 10/22/2018
Date Data Arrived at EDR: 10/23/2018
Date Made Active in Reports: 11/30/2018
Number of Days to Update: 38

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 04/11/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

WIP: Well Investigation Program Case List

Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)

Produced water ponds sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 12/10/2018
Date Data Arrived at EDR: 12/11/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 03/25/2019
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 01/07/2019
Date Data Arrived at EDR: 01/08/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 59

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/08/2019
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 01/07/2019
Date Data Arrived at EDR: 01/08/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 58

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 04/08/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 01/24/2019
Date Data Arrived at EDR: 01/25/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 39

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 02/27/2019
Date Data Arrived at EDR: 02/28/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 32

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 02/14/2019
Date Data Arrived at EDR: 02/19/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 17

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 01/28/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 01/16/2019
Date Data Arrived at EDR: 02/05/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 28

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 01/28/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 02/27/2019
Date Data Arrived at EDR: 02/28/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 32

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 01/28/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 10/16/2018
Date Data Arrived at EDR: 10/18/2018
Date Made Active in Reports: 11/14/2018
Number of Days to Update: 27

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 03/29/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 12/11/2018
Date Data Arrived at EDR: 12/13/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 33

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 11/19/2018
Next Scheduled EDR Contact: 03/04/2019
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 01/18/2019
Date Data Arrived at EDR: 01/23/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 41

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 02/13/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

KERN COUNTY:

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 01/28/2019
Date Data Arrived at EDR: 02/07/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 29

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 01/31/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 02/14/2019
Date Data Arrived at EDR: 02/19/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 14

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 02/13/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 02/08/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/12/2019
Number of Days to Update: 28

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/17/2019
Date Data Arrived at EDR: 01/18/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 46

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 12/19/2018
Date Data Arrived at EDR: 01/10/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 56

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 01/14/2019
Date Data Arrived at EDR: 01/15/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 51

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/16/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 01/15/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 51

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 01/30/2019
Date Data Arrived at EDR: 02/01/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 34

Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/16/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21

Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Semi-Annually

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/10/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 54

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Annually

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 10/02/2018
Date Data Arrived at EDR: 10/05/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 28

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 02/20/2019
Date Data Arrived at EDR: 02/22/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 13

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 02/15/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 03/29/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/29/2018
Date Data Arrived at EDR: 08/31/2018
Date Made Active in Reports: 09/19/2018
Number of Days to Update: 19

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 02/21/2019
Date Data Arrived at EDR: 02/26/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 34

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 02/21/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 02/05/2019
Date Data Arrived at EDR: 02/07/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 26

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 04/01/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 02/21/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 02/21/2019
Date Data Arrived at EDR: 02/22/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 14

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 02/21/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 01/25/2019
Date Data Arrived at EDR: 01/29/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 35

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 01/28/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 01/02/2019
Date Data Arrived at EDR: 02/07/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 26

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/04/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 01/02/2019
Date Data Arrived at EDR: 02/08/2019
Date Made Active in Reports: 03/06/2019
Number of Days to Update: 26

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/04/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 01/02/2019
Date Data Arrived at EDR: 02/05/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 31

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/05/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 02/28/2019
Date Data Arrived at EDR: 03/01/2019
Date Made Active in Reports: 04/12/2019
Number of Days to Update: 42

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 01/14/2019
Date Data Arrived at EDR: 01/18/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 46

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 01/29/2019
Date Data Arrived at EDR: 01/31/2019
Date Made Active in Reports: 03/06/2019
Number of Days to Update: 34

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 01/29/2019
Date Data Arrived at EDR: 01/31/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 36

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 11/07/2018
Date Data Arrived at EDR: 01/04/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 60

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/02/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 11/07/2018
Date Data Arrived at EDR: 12/28/2018
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 67

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/02/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 11/15/2018
Date Data Arrived at EDR: 11/16/2018
Date Made Active in Reports: 12/13/2018
Number of Days to Update: 27

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 02/27/2019
Date Data Arrived at EDR: 02/28/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 33

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 02/19/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 03/04/2019
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 04/02/2019
Number of Days to Update: 28

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/05/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 56

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 10/22/2018
Date Data Arrived at EDR: 10/23/2018
Date Made Active in Reports: 11/30/2018
Number of Days to Update: 38

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

SAN DIEGO CO. SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

LUST SAN FRANCISCO: Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 01/31/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Quarterly

UST SAN FRANCISCO: Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/05/2018
Date Data Arrived at EDR: 11/06/2018
Date Made Active in Reports: 12/14/2018
Number of Days to Update: 38

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 01/31/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/18/2019
Next Scheduled EDR Contact: 07/01/2019
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 02/13/2019
Date Data Arrived at EDR: 02/15/2019
Date Made Active in Reports: 03/14/2019
Number of Days to Update: 27

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 02/13/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 12/03/2018
Date Data Arrived at EDR: 12/12/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 34

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 12/13/2018
Date Data Arrived at EDR: 12/18/2018
Date Made Active in Reports: 01/23/2019
Number of Days to Update: 36

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28

Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 02/13/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 02/13/2019
Date Data Arrived at EDR: 02/19/2019
Date Made Active in Reports: 03/06/2019
Number of Days to Update: 15

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 02/13/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22

Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 02/21/2019
Next Scheduled EDR Contact: 06/10/2019
Data Release Frequency: Annually

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 01/30/2019
Date Data Arrived at EDR: 02/01/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 34

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 01/31/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 02/13/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 02/13/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 11/29/2018
Date Data Arrived at EDR: 12/04/2018
Date Made Active in Reports: 01/11/2019
Number of Days to Update: 38

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/05/2019
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 04/03/2019
Number of Days to Update: 27

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 12/21/2018
Date Data Arrived at EDR: 12/27/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 19

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 03/25/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 01/08/2019
Date Data Arrived at EDR: 01/10/2019
Date Made Active in Reports: 03/06/2019
Number of Days to Update: 55

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 04/08/2019
Next Scheduled EDR Contact: 07/08/2019
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 12/11/2018
Date Data Arrived at EDR: 12/13/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 33

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 02/28/2019
Date Data Arrived at EDR: 03/01/2019
Date Made Active in Reports: 04/03/2019
Number of Days to Update: 33

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 02/27/2019
Next Scheduled EDR Contact: 06/17/2019
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 12/13/2018
Date Data Arrived at EDR: 12/18/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 28

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 01/31/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 01/18/2019
Date Data Arrived at EDR: 01/23/2019
Date Made Active in Reports: 03/06/2019
Number of Days to Update: 42

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 12/26/2018
Date Data Arrived at EDR: 12/27/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 19

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 01/31/2019
Next Scheduled EDR Contact: 05/20/2019
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 04/22/2019
Next Scheduled EDR Contact: 08/05/2019
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 12/26/2018
Date Data Arrived at EDR: 01/24/2019
Date Made Active in Reports: 02/28/2019
Number of Days to Update: 35

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 01/22/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/29/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Annually

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 02/07/2019
Next Scheduled EDR Contact: 05/27/2019
Data Release Frequency: Quarterly

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 12/26/2018
Date Data Arrived at EDR: 01/24/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 42

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 01/22/2019
Next Scheduled EDR Contact: 05/06/2019
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 02/26/2019
Date Data Arrived at EDR: 03/13/2019
Date Made Active in Reports: 04/03/2019
Number of Days to Update: 21

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/13/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 12/26/2018
Date Data Arrived at EDR: 01/03/2019
Date Made Active in Reports: 01/16/2019
Number of Days to Update: 13

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 03/29/2019
Next Scheduled EDR Contact: 07/15/2019
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 02/08/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/06/2019
Number of Days to Update: 22

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 01/28/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 02/11/2019
Date Data Arrived at EDR: 02/12/2019
Date Made Active in Reports: 03/04/2019
Number of Days to Update: 20

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 02/12/2019
Next Scheduled EDR Contact: 05/27/2019
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 07/13/2018
Date Made Active in Reports: 08/01/2018
Number of Days to Update: 19

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/10/2019
Next Scheduled EDR Contact: 07/22/2019
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 01/30/2019
Date Made Active in Reports: 02/14/2019
Number of Days to Update: 15

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 01/30/2019
Next Scheduled EDR Contact: 05/11/2019
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 10/23/2018
Date Made Active in Reports: 11/27/2018
Number of Days to Update: 35

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/15/2019
Next Scheduled EDR Contact: 07/29/2019
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 02/23/2018
Date Made Active in Reports: 04/09/2018
Number of Days to Update: 45

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 02/19/2019
Next Scheduled EDR Contact: 06/03/2019
Data Release Frequency: Annually

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/15/2018
Date Made Active in Reports: 07/09/2018
Number of Days to Update: 24

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/11/2019
Next Scheduled EDR Contact: 06/24/2019
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

SITE I - WEST LAKES AREA
CORNER OF WESTLAKE DRIVE AND REGATTA LANE
STOCKTON, CA 95219

TARGET PROPERTY COORDINATES

Latitude (North):	38.046575 - 38° 2' 47.67''
Longitude (West):	121.392606 - 121° 23' 33.38''
Universal Tranverse Mercator:	Zone 10
UTM X (Meters):	641043.6
UTM Y (Meters):	4211996.5
Elevation:	0 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5619756 TERMINOUS, CA
Version Date:	2012
East Map:	5619734 LODI SOUTH, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

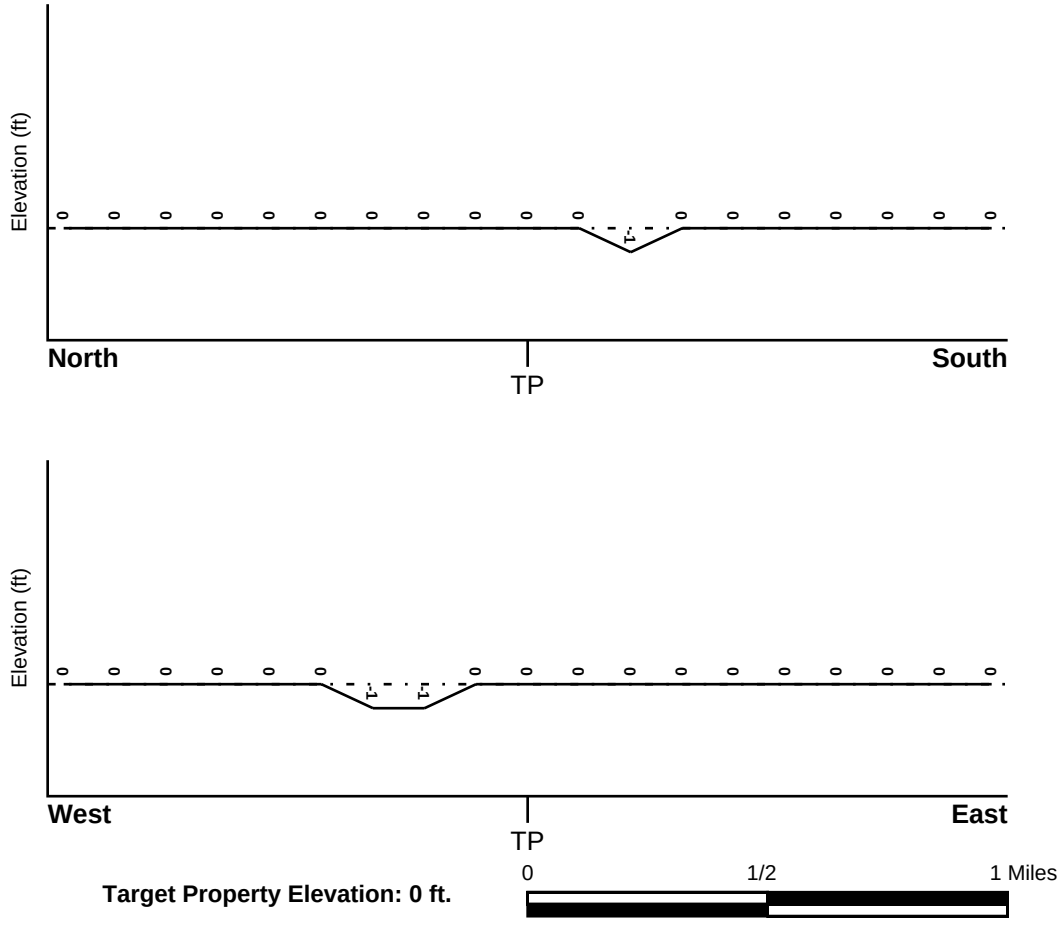
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General WSW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06077C0295F	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06077C0315F	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
TERMINOUS	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

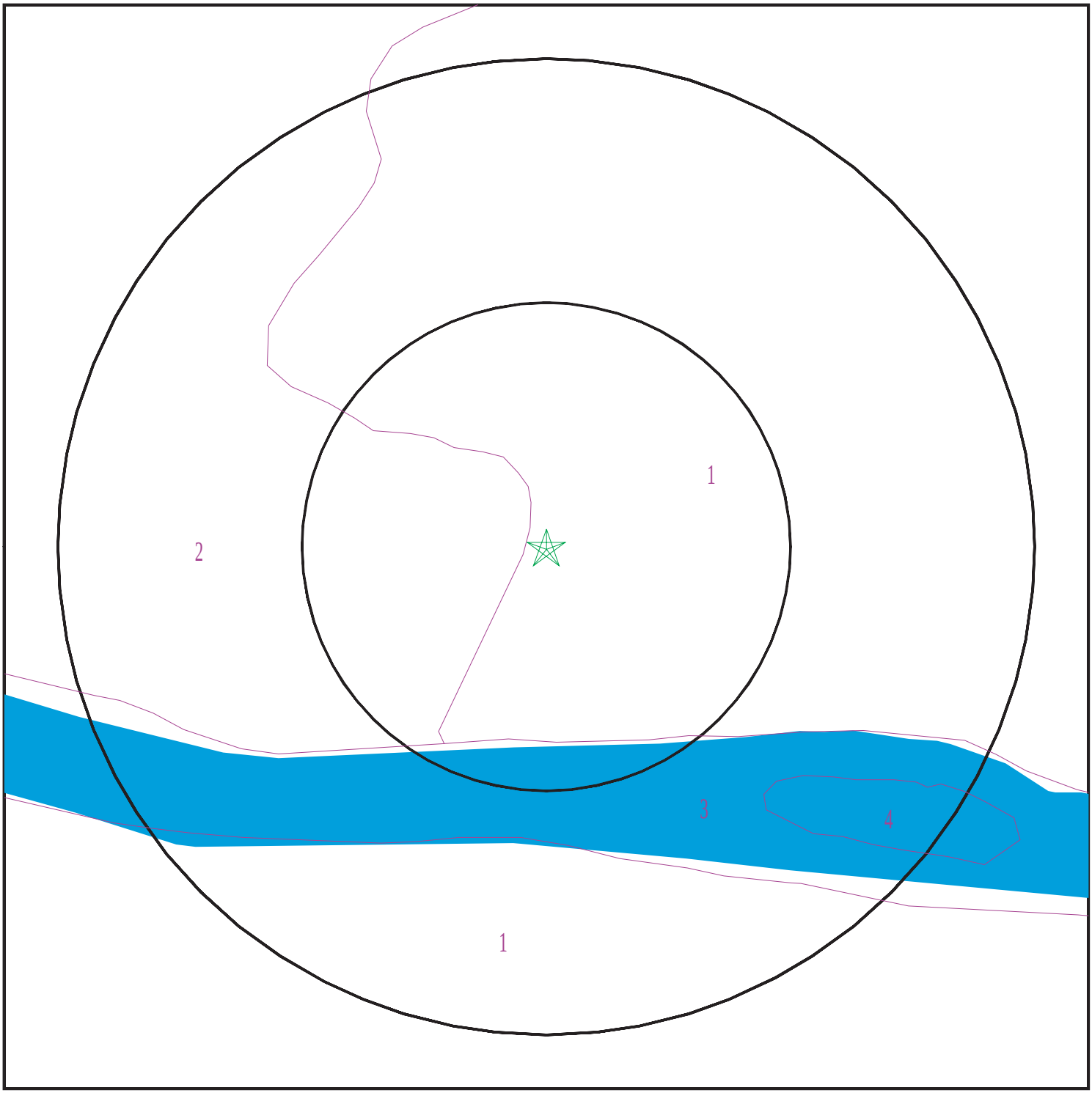
Era:	Cenozoic
System:	Quaternary
Series:	Quaternary
Code:	Q *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Stratifed Sequence

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5629404.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Site I - West Lakes Area	CLIENT:	Petralogix
ADDRESS:	Corner of Westlake Drive and Regatta Lane Stockton CA 95219	CONTACT:	Tonya Scheftner
LAT/LONG:	38.046575 / 121.392606	INQUIRY #:	5629404.2s
		DATE:	April 23, 2019 1:28 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: GUARD

Soil Surface Texture: clay loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Poorly drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 152 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	14 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 1.4 Min: 0.42	Max: 8.4 Min: 7.9
2	14 inches	72 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 1.4 Min: 0.42	Max: 8.4 Min: 7.9

Soil Map ID: 2

Soil Component Name: RYDE

Soil Surface Texture: clay loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Very poorly drained

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Hydric Status: All hydric

Corrosion Potential - Uncoated Steel: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 107 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	24 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Organic Clay or Organic Silt.	Max: 14 Min: 4	Max: 7.8 Min: 6.1
2	24 inches	62 inches	stratified muck to silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Organic Clay or Organic Silt.	Max: 14 Min: 4	Max: 7.8 Min: 6.1

Soil Map ID: 3

Soil Component Name: Water

Soil Surface Texture: clay loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class:
Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Not Reported

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

No Layer Information available.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 4

Soil Component Name: FLUVAQUENTS

Soil Surface Texture: stratified fine sandy loam to silt loam to silty clay loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Very poorly drained

Hydric Status: All hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 38 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	14 inches	59 inches	stratified fine sandy loam to silt loam to silty clay loam	Not reported	Not reported	Max: Min:	Max: Min:
2	0 inches	14 inches	silty clay loam	Not reported	Not reported	Max: Min:	Max: Min:

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 0.001 miles
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	USGS40000186719	1/8 - 1/4 Mile West
2	USGS40000186695	1/4 - 1/2 Mile SE
3	USGS40000186739	1/4 - 1/2 Mile North
4	USGS40000186746	1/2 - 1 Mile NE
5	USGS40000186757	1/2 - 1 Mile NNE
6	USGS40000186648	1/2 - 1 Mile SSE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

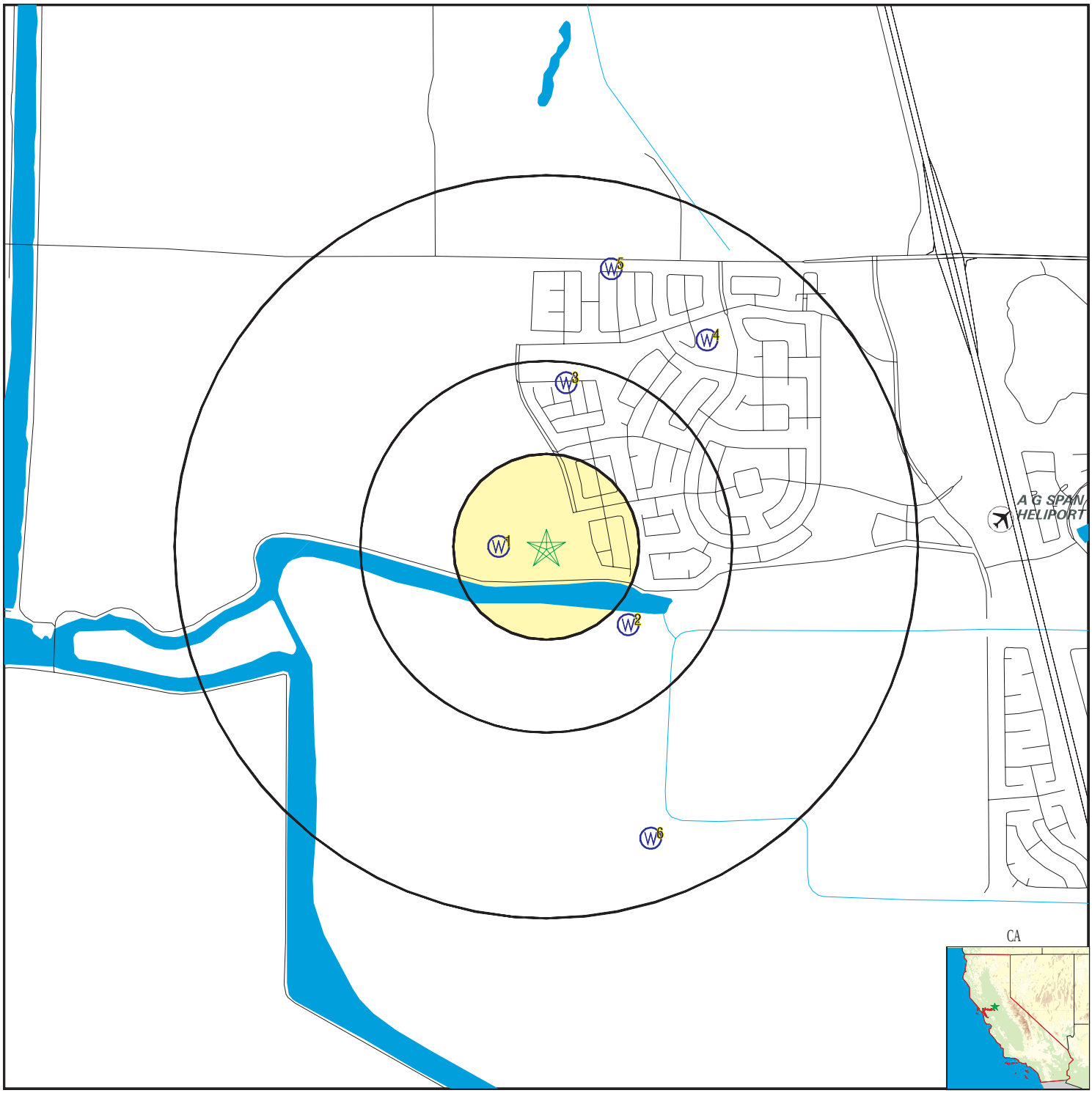
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

PHYSICAL SETTING SOURCE MAP - 5629404.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

0 1/4 1/2 1 Miles

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

N

No contour lines were detected within this map area.

SITE NAME:	Site I - West Lakes Area	CLIENT:	Petralogix
ADDRESS:	Corner of Westlake Drive and Regatta Lane Stockton CA 95219	CONTACT:	Tonya Scheftner
LAT/LONG:	38.046575 / 121.392606	INQUIRY #:	5629404.2s
		DATE:	April 23, 2019 1:28 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
1 **West** **1/8 - 1/4 Mile** **Higher**	**FED USGS**	**USGS40000186719**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	002N005E02R003M	Type:	Well
Description:	Not Reported	HUC:	18040003
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

	Database	EDR ID Number
2 **SE** **1/4 - 1/2 Mile** **Higher**	**FED USGS**	**USGS40000186695**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	002N005E02R002M	Type:	Well
Description:	Not Reported	HUC:	18040003
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	46
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

	Database	EDR ID Number
3 **North** **1/4 - 1/2 Mile** **Higher**	**FED USGS**	**USGS40000186739**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	002N005E02H002M	Type:	Well
Description:	Not Reported	HUC:	18020109
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	48
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation

	Database	EDR ID Number
4 **NE** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS40000186746**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	002N005E01C001M	Type:	Well
Description:	Not Reported	HUC:	18040003
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	8
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

	Database	EDR ID Number
5 **NNE** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS40000186757**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	002N005E02A001M	Type:	Well
Description:	Not Reported	HUC:	18040003
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	48
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

	Database	EDR ID Number
6 **SSE** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS40000186648**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	002N005E12M001M	Type:	Well
Description:	Not Reported	HUC:	18040003
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Central Valley aquifer system		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	47
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
95219	11	0

Federal EPA Radon Zone for SAN JOAQUIN County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for SAN JOAQUIN COUNTY, CA

Number of sites tested: 20

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	2.530 pCi/L	90%	10%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	2.050 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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petralogix

geophysics - environmental - geology

APPENDIX E

Site I - West Lakes Area

Corner of Westlake Drive and Regatta Lane

Stockton, CA 95219

Inquiry Number: 5629404.11

April 23, 2019

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

04/23/19

Site Name:

Site I - West Lakes Area
Corner of Westlake Drive and F
Stockton, CA 95219
EDR Inquiry # 5629404.11

Client Name:

Petralogix
26675 Bruella Rd
Galt, CA 95632
Contact: Tonya Scheftner

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	*Scale*	*Details*	*Source*
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1998	1"=500'	Acquisition Date: August 18, 1998	USGS/DOQQ
1993	1"=500'	Flight Date: May 23, 1993	USGS
1984	1"=500'	Flight Date: June 08, 1984	USDA
1975	1"=500'	Flight Date: November 11, 1975	Cartwright
1968	1"=500'	Flight Date: May 01, 1968	USGS
1963	1"=500'	Flight Date: June 01, 1963	USDA
1957	1"=500'	Flight Date: July 14, 1957	USDA
1940	1"=500'	Flight Date: May 27, 1940	USDA
1937	1"=500'	Flight Date: August 13, 1937	USDA

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INQUIRY #: 5629404.11

YEAR: 2016

= 500'

N

EDR



INQUIRY #: 5629404.11

YEAR: 2012

= 500'

N

EDR



INQUIRY #: 5629404.11

YEAR: 2009

= 500'

N

EDR



INQUIRY #: 5629404.11

YEAR: 2006

= 500'

N

EDR



INQUIRY #: 5629404.11

YEAR: 1998

= 500'

N

EDR



INQUIRY #: 5629404.11

YEAR: 1993

= 500'

N

EDR



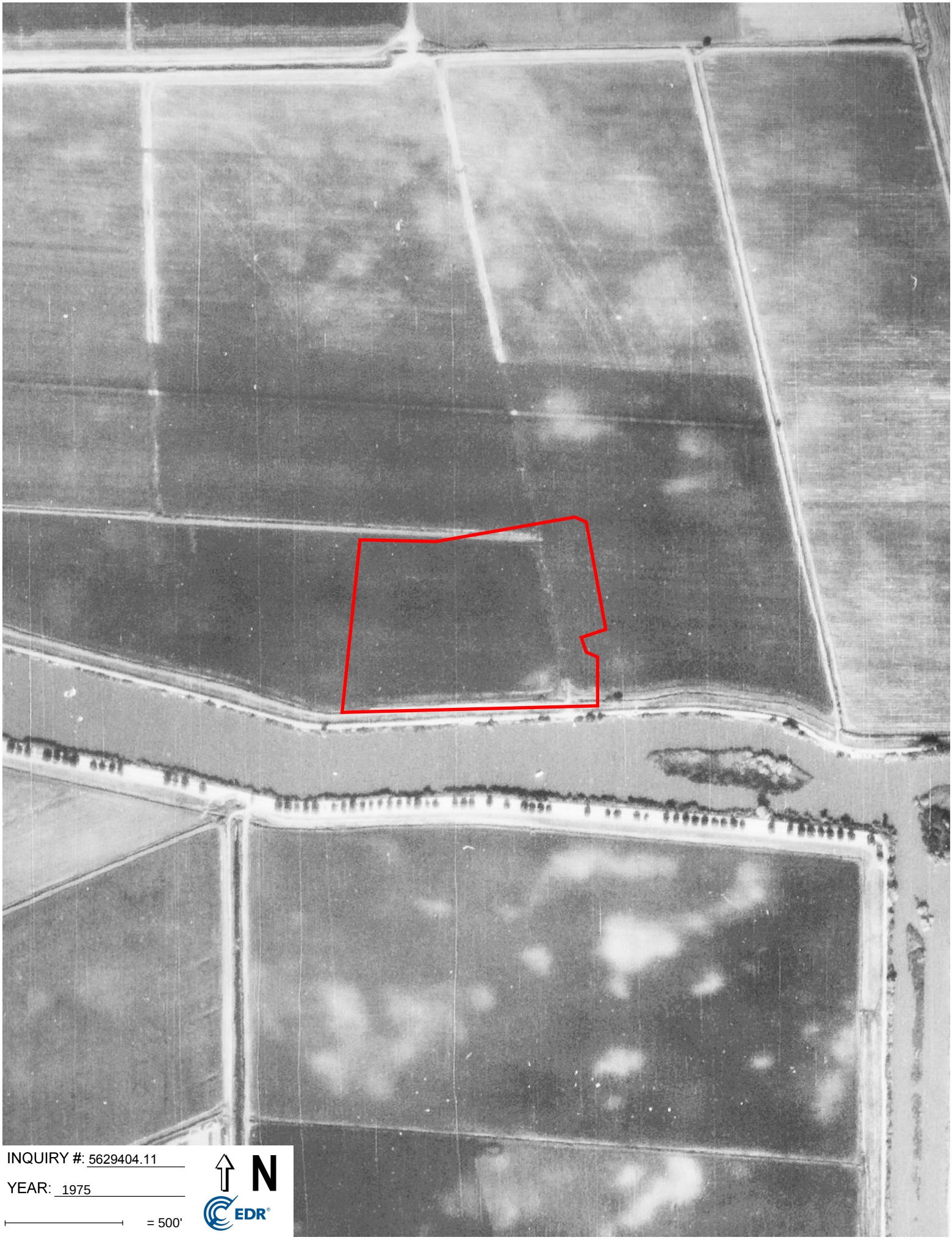
INQUIRY #: 5629404.11

YEAR: 1984

= 500'

N

EDR



INQUIRY #: 5629404.11

YEAR: 1975

= 500'

N

EDR



INQUIRY #: 5629404.11

YEAR: 1968

= 500'

N

EDR



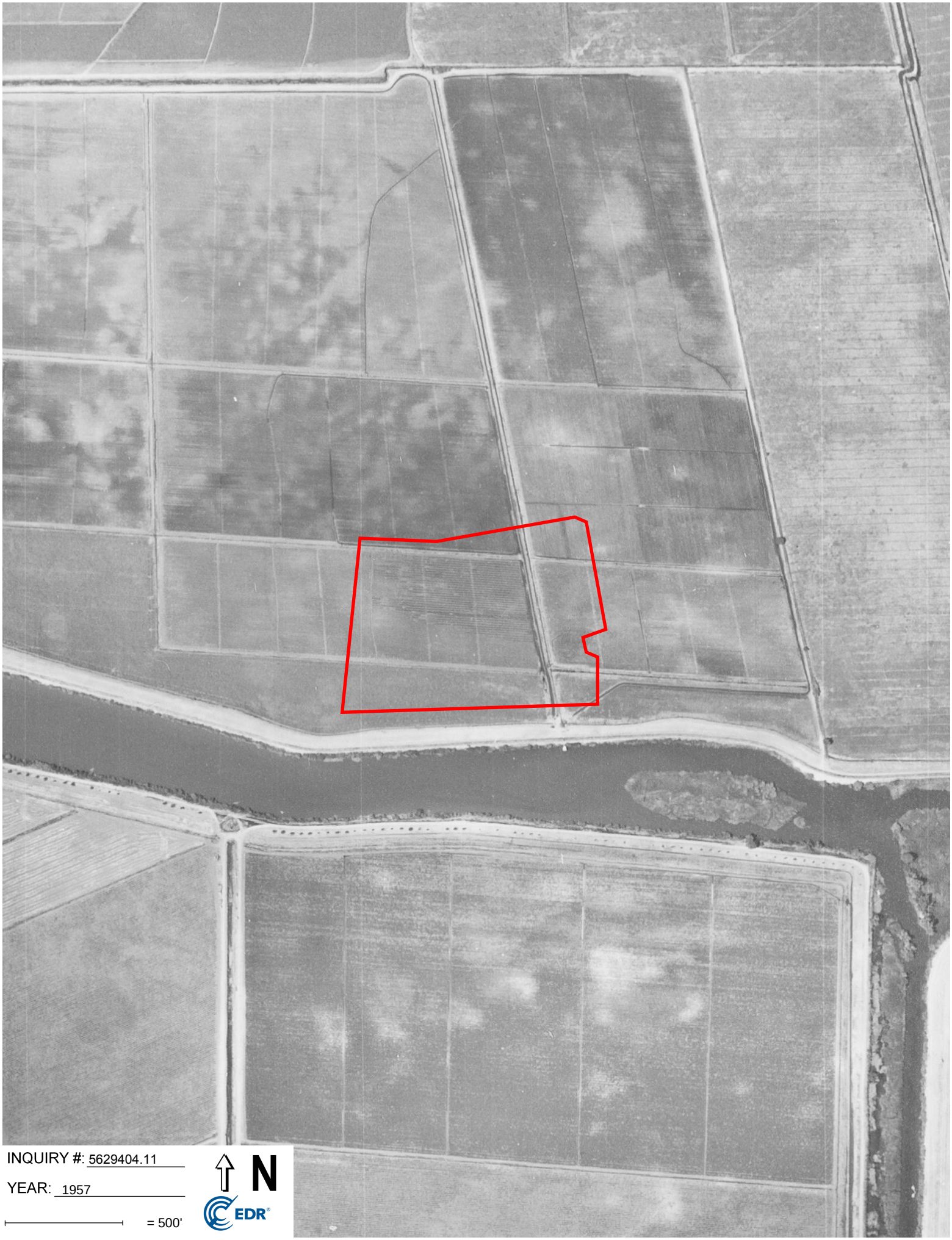
INQUIRY #: 5629404.11

YEAR: 1963

= 500'

N

EDR



INQUIRY #: 5629404.11

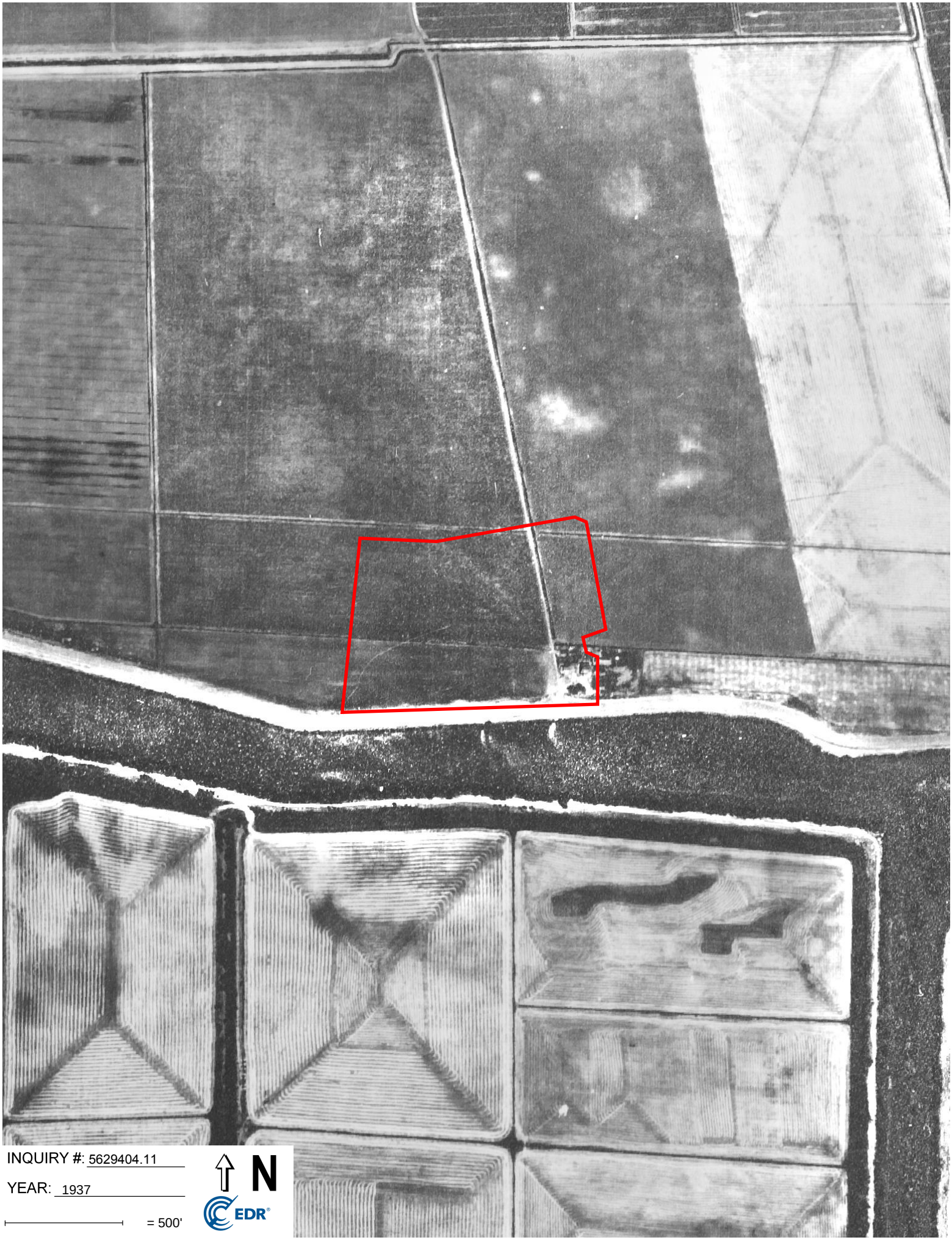
YEAR: 1957

= 500'

N

EDR


INQUIRY #: 5629404.11
YEAR: 1940
= 500'
N
EDR



INQUIRY #: 5629404.11

YEAR: 1937

= 500'

N

EDR

Site I - West Lakes Area

Corner of Westlake Drive and Regatta Lane

Stockton, CA 95219

Inquiry Number: 5629404.4

April 23, 2019

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

04/23/19

Site Name:	Client Name:
Site I - West Lakes Area	Petralogix
Corner of Westlake Drive and F	26675 Bruella Rd
Stockton, CA 95219	Galt, CA 95632
EDR Inquiry # 5629404.4	Contact: Tonya Scheftner

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Petralogix were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:		*Coordinates:*	
P.O.#	NA	**Latitude:**	38.046575 38° 2' 48" North
Project:	Site I - Phase I ESA	**Longitude:**	-121.392606 -121° 23' 33" West
		UTM Zone:	Zone 10 North
		UTM X Meters:	641040.09
		UTM Y Meters:	4212202.10
		Elevation:	0.00' above sea level

Maps Provided:

2012	1939
1997	1910
1993	1894
1976, 1978	
1968, 1969	
1952, 1953	
1947	
1942	

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2012 Source Sheets

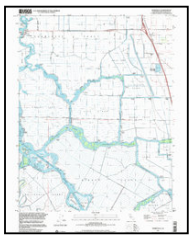


Terminous
2012
7.5-minute, 24000



Lodi South
2012
7.5-minute, 24000

1997 Source Sheets



Terminous
1997
7.5-minute, 24000
Aerial Photo Revised 1976

1993 Source Sheets



Terminous
1993
7.5-minute, 24000
Aerial Photo Revised 1974

1976, 1978 Source Sheets



Lodi South
1976
7.5-minute, 24000
Aerial Photo Revised 1976



Terminous
1978
7.5-minute, 24000
Aerial Photo Revised 1974

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1968, 1969 Source Sheets



Lodi South
1968
7.5-minute, 24000
Aerial Photo Revised 1967

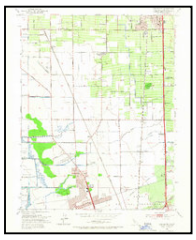


Terminous
1969
7.5-minute, 24000
Aerial Photo Revised 1968

1952, 1953 Source Sheets



Terminous
1952
7.5-minute, 24000
Aerial Photo Revised 1931



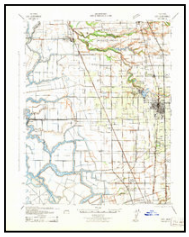
Lodi South
1953
7.5-minute, 24000
Aerial Photo Revised 1949

1947 Source Sheets



LODI
1947
15-minute, 50000

1942 Source Sheets

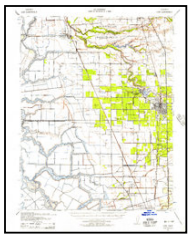


Lodi
1942
15-minute, 62500
Aerial Photo Revised 1939

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1939 Source Sheets



Lodi
1939
15-minute, 62500
Aerial Photo Revised 1939

1910 Source Sheets



Headreach
1910
7.5-minute, 31680



Castle
1910
7.5-minute, 31680

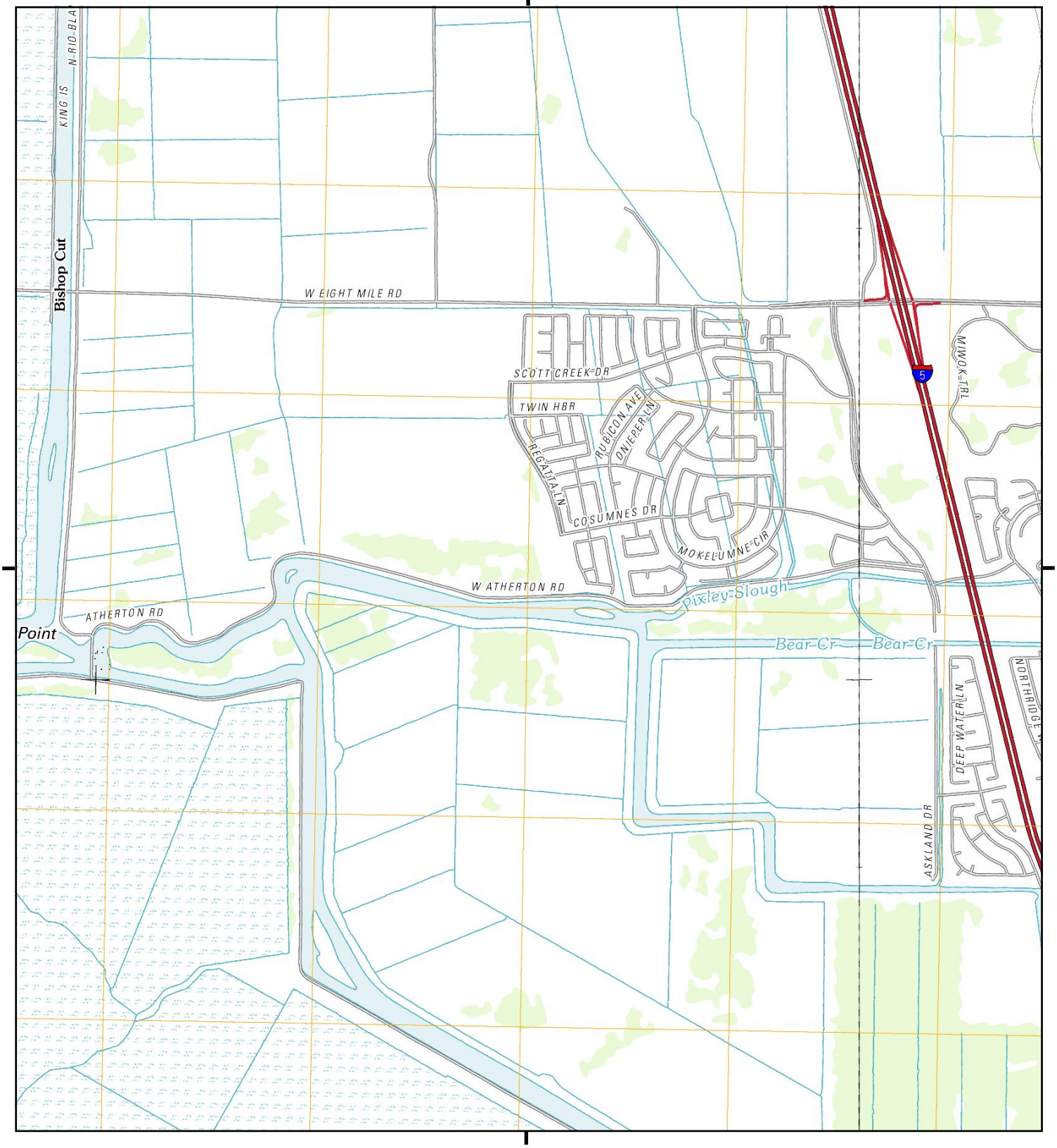
1894 Source Sheets



Lodi
1894
30-minute, 125000

Historical Topo Map

2012



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Terminous, 2012, 7.5-minute
E, Lodi South, 2012, 7.5-minute

SITE NAME: Site I - West Lakes Area
ADDRESS: Corner of Westlake Drive and Regatta La
Stockton, CA 95219
CLIENT: Petralogix

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Terminous, 1997, 7.5-minute

SITE NAME: Site I - West Lakes Area
ADDRESS: Corner of Westlake Drive and Regatta La
Stockton, CA 95219
CLIENT: Petralogix

N

Historical Topo Map

1993



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

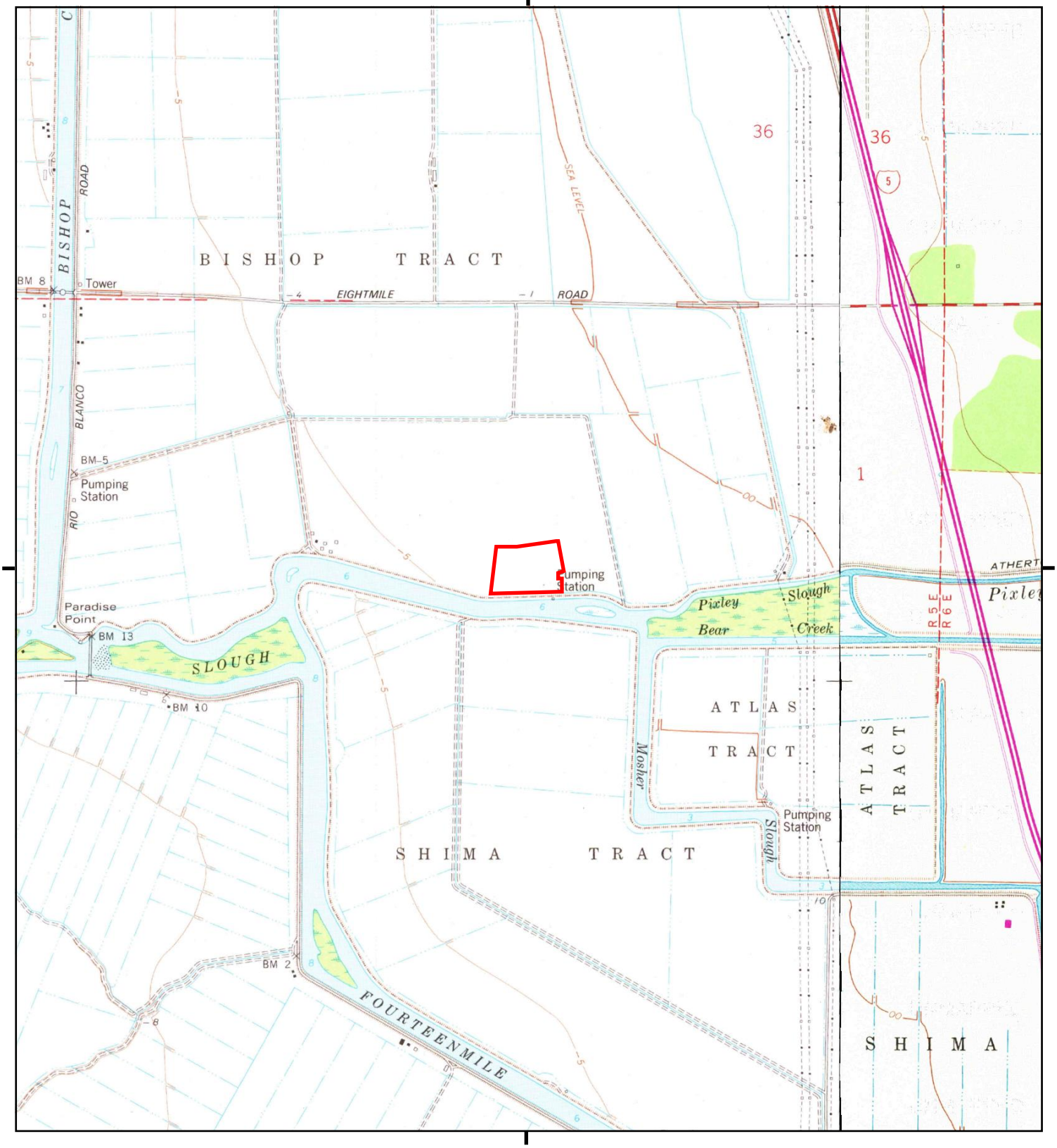
TP, Terminous, 1993, 7.5-minute

SITE NAME: Site I - West Lakes Area
ADDRESS: Corner of Westlake Drive and Regatta La
Stockton, CA 95219
CLIENT: Petralogix

N

Historical Topo Map

1976, 1978



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

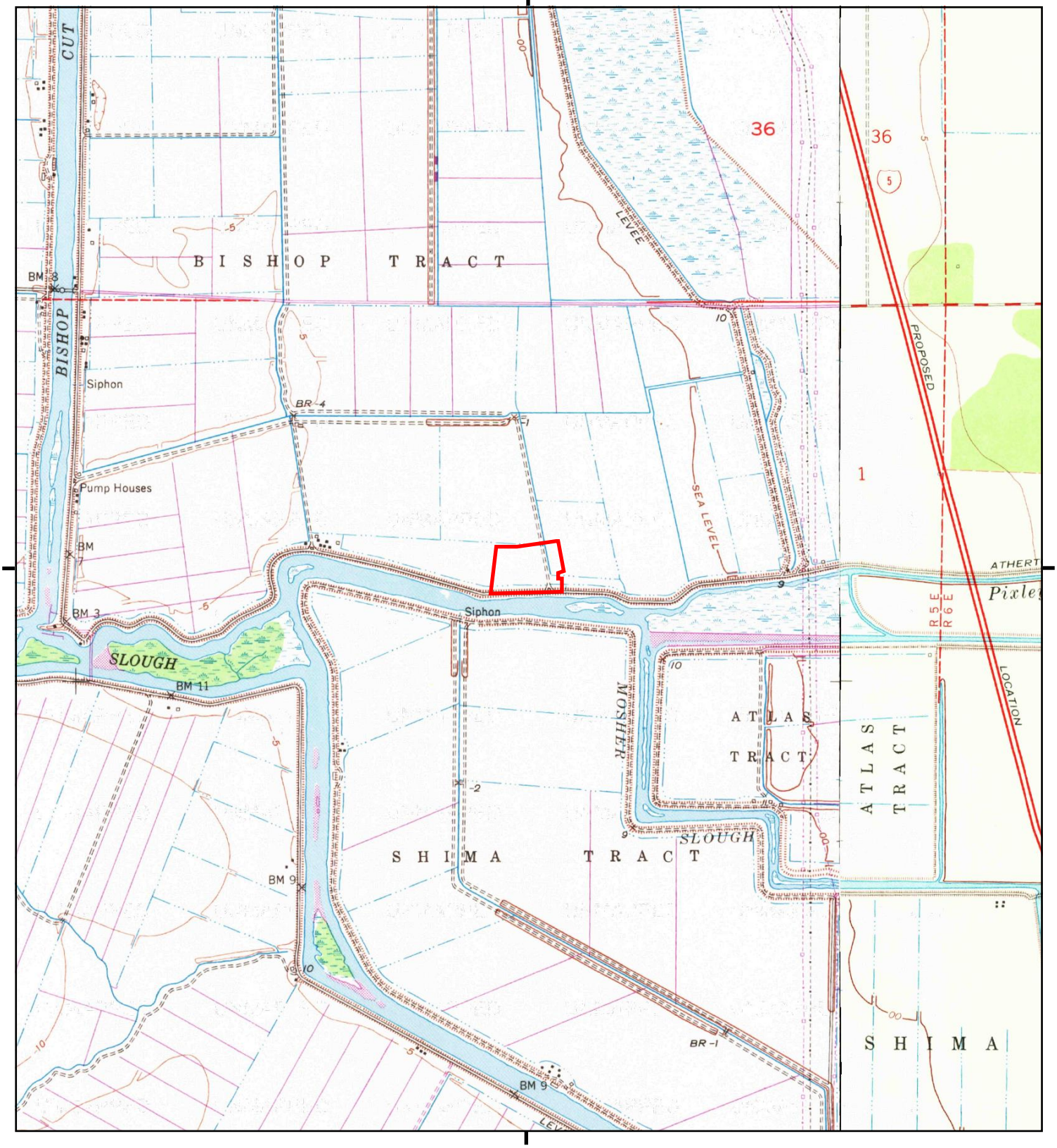
TP, Terminous, 1978, 7.5-minute
E, Lodi South, 1976, 7.5-minute

SITE NAME: Site I - West Lakes Area
ADDRESS: Corner of Westlake Drive and Regatta La
Stockton, CA 95219
CLIENT: Petralogix

N

Historical Topo Map

1968, 1969



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

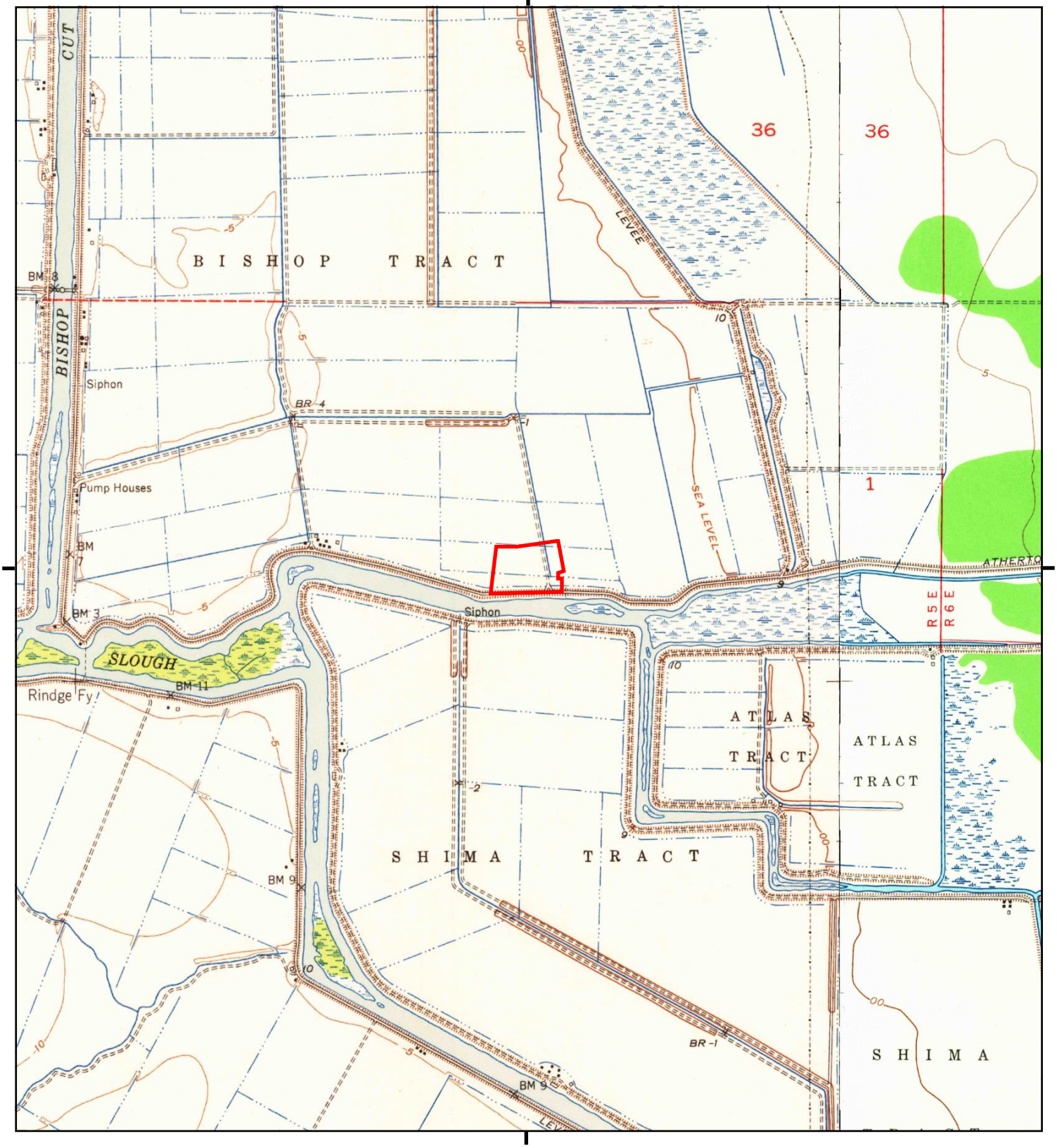
TP, Terminous, 1969, 7.5-minute
E, Lodi South, 1968, 7.5-minute

SITE NAME: Site I - West Lakes Area
ADDRESS: Corner of Westlake Drive and Regatta La
Stockton, CA 95219
CLIENT: Petralogix

N

Historical Topo Map

1952, 1953



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

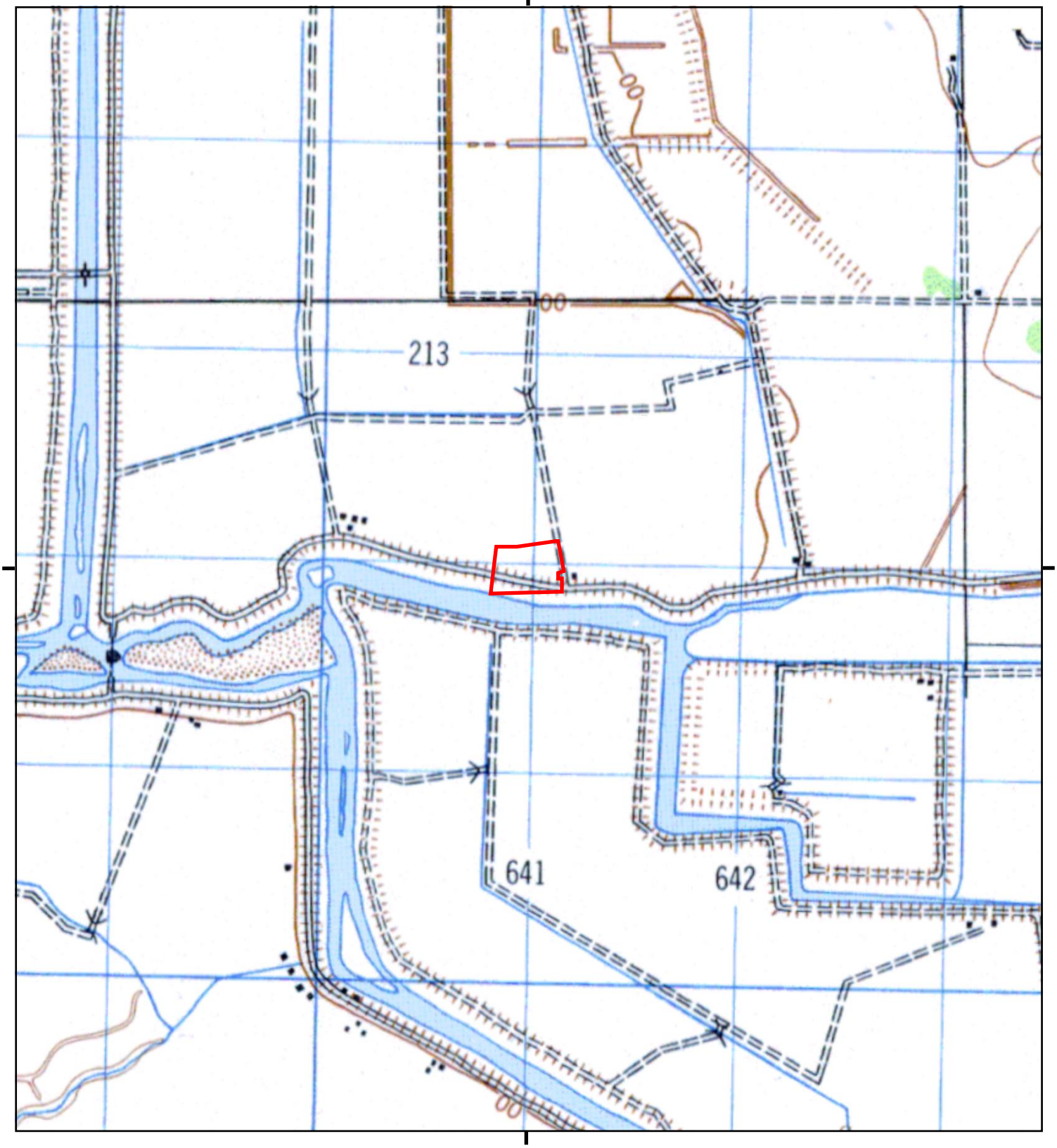
TP, Terminous, 1952, 7.5-minute
E, Lodi South, 1953, 7.5-minute

SITE NAME: Site I - West Lakes Area
ADDRESS: Corner of Westlake Drive and Regatta La
Stockton, CA 95219
CLIENT: Petralogix

N

Historical Topo Map

1947



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

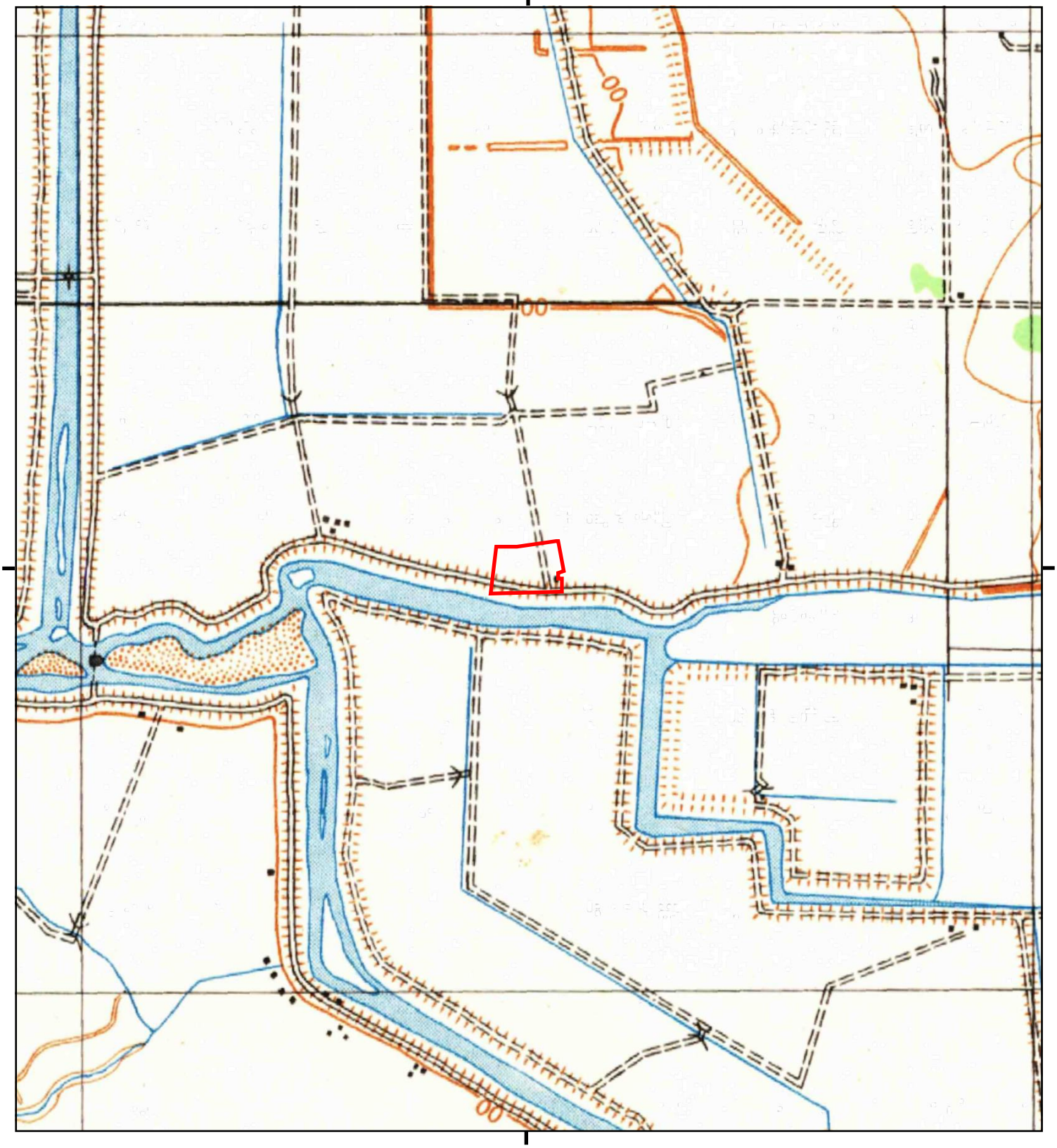
TP, LODI, 1947, 15-minute

SITE NAME: Site I - West Lakes Area
ADDRESS: Corner of Westlake Drive and Regatta La
Stockton, CA 95219
CLIENT: Petralogix

N

Historical Topo Map

1942



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

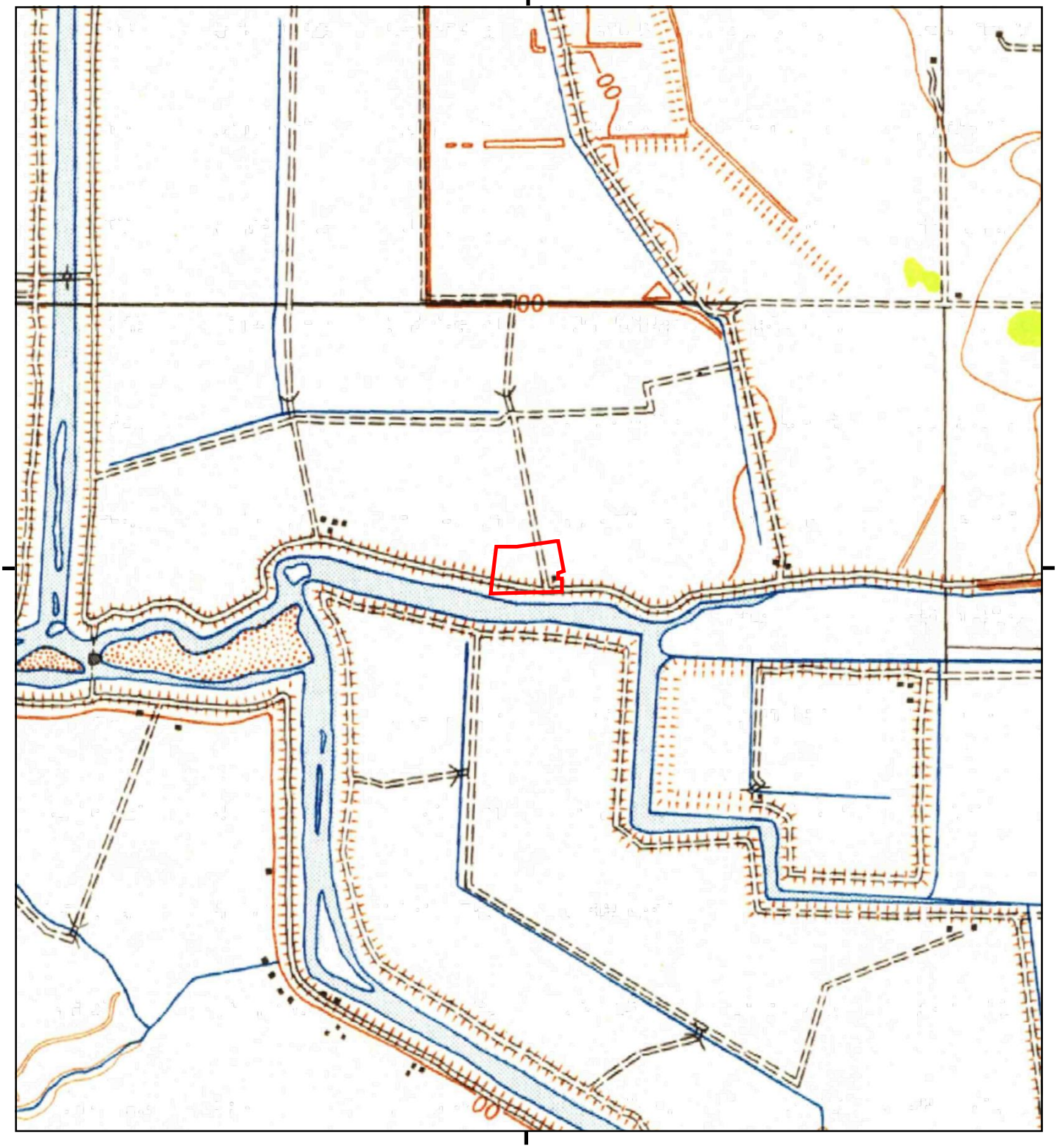
TP, Lodi, 1942, 15-minute

SITE NAME: Site I - West Lakes Area
ADDRESS: Corner of Westlake Drive and Regatta La
Stockton, CA 95219
CLIENT: Petralogix

N

Historical Topo Map

1939



This report includes information from the following map sheet(s).

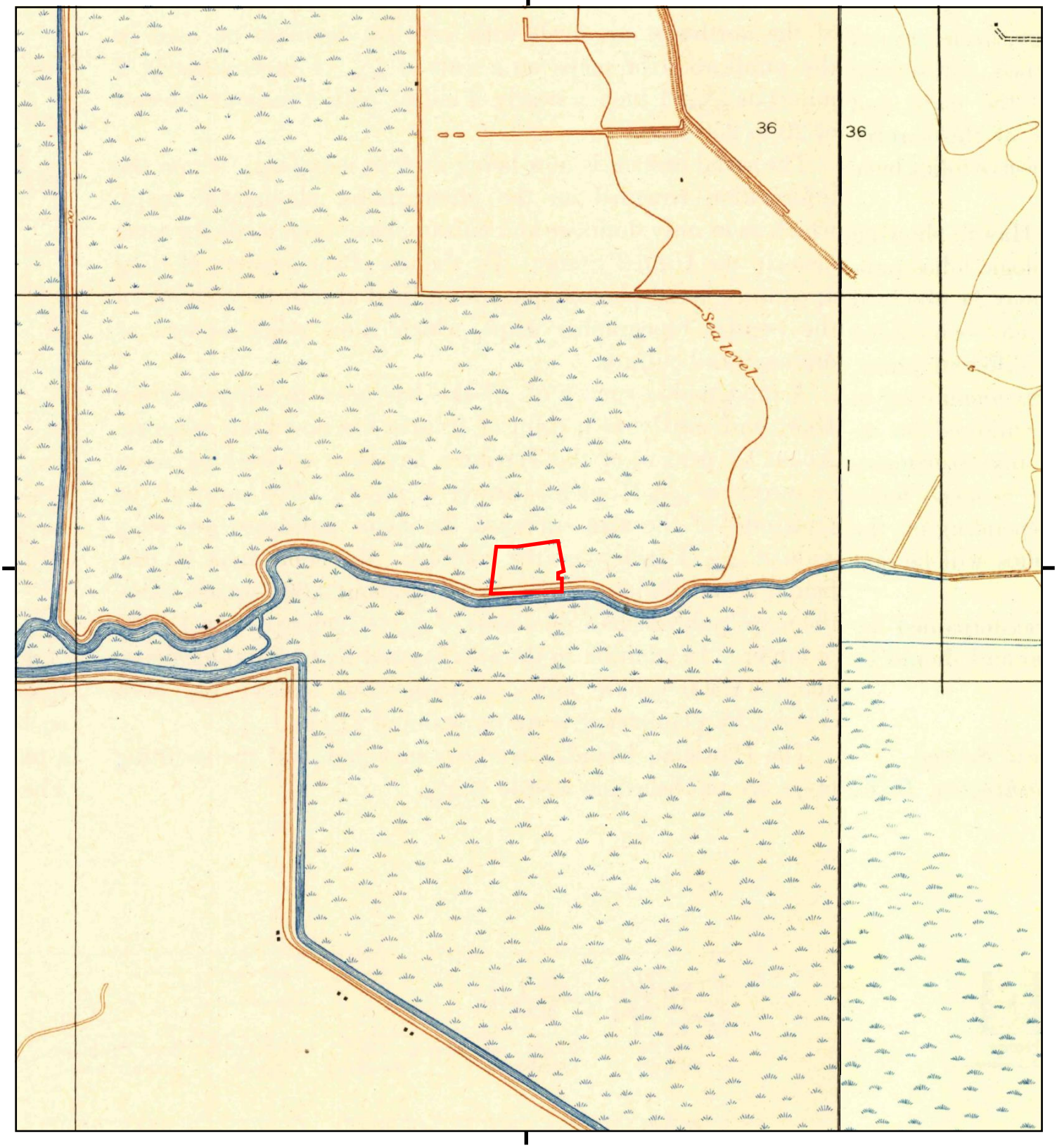
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Lodi, 1939, 15-minute

SITE NAME: Site I - West Lakes Area
ADDRESS: Corner of Westlake Drive and Regatta La
Stockton, CA 95219
CLIENT: Petralogix

N



This report includes information from the following map sheet(s).

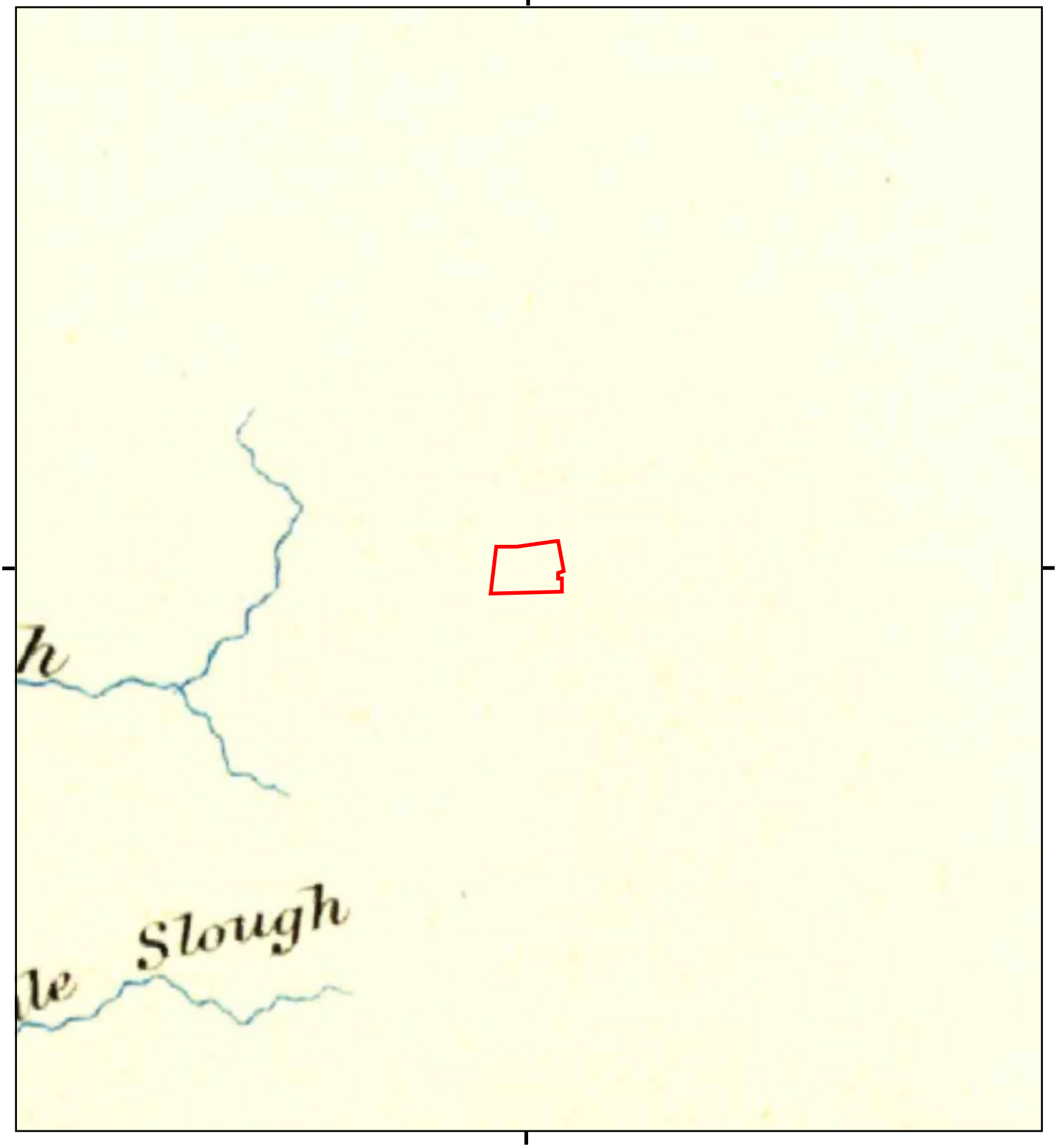
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Headreach, 1910, 7.5-minute
E, Castle, 1910, 7.5-minute

SITE NAME: Site I - West Lakes Area
ADDRESS: Corner of Westlake Drive and Regatta La
Stockton, CA 95219
CLIENT: Petralogix

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Lodi, 1894, 30-minute

SITE NAME: Site I - West Lakes Area
ADDRESS: Corner of Westlake Drive and Regatta La
Stockton, CA 95219
CLIENT: Petralogix

N

Site I - West Lakes Area
Corner of Westlake Drive and Regatta Lane
Stockton, CA 95219

Inquiry Number: 5629404.8
April 23, 2019

EDR Building Permit Report

Target Property and Adjoining Properties

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

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SECTION

About This Report

Executive Summary

Findings

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Please contact EDR at 1-800-352-0050
with any questions or comments.

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EDR BUILDING PERMIT REPORT

About This Report

The EDR Building Permit Report provides a practical and efficient method to search building department records for indications of environmental conditions. Generated via a search of municipal building permit records gathered from more than 1,600 cities nationwide, this report will assist you in meeting the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

Building permit data can be used to identify current and/or former operations and structures/features of environmental concern. The data can provide information on a target property and adjoining properties such as the presence of underground storage tanks, pump islands, sumps, drywells, etc., as well as information regarding water, sewer, natural gas, electrical connection dates, and current/former septic tanks.

ASTM and EPA Requirements

ASTM E 1527-13 lists building department records as a "standard historical source," as detailed in § 8.3.4.7: "Building Department Records - The term building department records means those records of the local government in which the property is located indicating permission of the local government to construct, alter, or demolish improvements on the property." ASTM also states that "Uses in the area surrounding the property shall be identified in the report, but this task is required only to the extent that this information is revealed in the course of researching the property itself."

EPA's Standards and Practices for All Appropriate Inquires (AAI) states: "§312.24: Reviews of historical sources of information. (a) Historical documents and records must be reviewed for the purposes of achieving the objectives and performance factors of §312.20(e) and (f). Historical documents and records may include, but are not limited to, aerial photographs, fire insurance maps, building department records, chain of title documents, and land use records."

Methodology

EDR has developed the EDR Building Permit Report through our partnership with BuildFax, the nation's largest repository of building department records. BuildFax collects, updates, and manages building department records from local municipal governments. The database now includes 30 million permits, on more than 10 million properties across 1,600 cities in the United States.

The EDR Building Permit Report comprises local municipal building permit records, gathered directly from local jurisdictions, including both target property and adjoining properties. Years of coverage vary by municipality. Data reported includes (where available): date of permit, permit type, permit number, status, valuation, contractor company, contractor name, and description.

Incoming permit data is checked at seven stages in a regimented quality control process, from initial data source interview, to data preparation, through final auditing. To ensure the building department is accurate, each of the seven quality control stages contains, on average, 15 additional quality checks, resulting in a process of approximately 105 quality control "touch points."

For more information about the EDR Building Permit Report, please contact your EDR Account Executive at (800) 352-0050.

EDR® Environmental Data Resources Inc

BUILDFAX® PROPERTY HISTORY

EXECUTIVE SUMMARY: SEARCH DOCUMENTATION

A search of building department records was conducted by Environmental Data Resources, Inc (EDR) on behalf of Petralogix on Apr 23, 2019.

TARGET PROPERTY

Corner of Westlake Drive and Regatta Lane
Stockton, CA 95219

SEARCH METHODS

EDR searches available lists for both the Target Property and Surrounding Properties.

RESEARCH SUMMARY

Building permits identified: **YES**

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Stockton

Year	*Source*	*TP*	*Adjoining*
2019	City of Stockton, Community Development Department		
2018	City of Stockton, Community Development Department		X
2017	City of Stockton, Community Development Department		
2016	City of Stockton, Community Development Department		
2015	City of Stockton, Community Development Department		
2014	City of Stockton, Community Development Department		X
2013	City of Stockton, Community Development Department		
2012	City of Stockton, Community Development Department		
2011	City of Stockton, Community Development Department		
2010	City of Stockton, Community Development Department		
2009	City of Stockton, Community Development Department		
2008	City of Stockton, Community Development Department		X
2007	City of Stockton, Community Development Department		X
2006	City of Stockton, Community Development Department		
2005	City of Stockton, Community Development Department		
2004	City of Stockton, Community Development Department		
2003	City of Stockton, Community Development Department		
2002	City of Stockton, Community Development Department		
2001	City of Stockton, Community Development Department		
2000	City of Stockton, Community Development Department		
1999	City of Stockton, Community Development Department		
1998	City of Stockton, Community Development Department		
1997	City of Stockton, Community Development Department		
1996	City of Stockton, Community Development Department		
1995	City of Stockton, Community Development Department		
1994	City of Stockton, Community Development Department		
1993	City of Stockton, Community Development Department		
1992	City of Stockton, Community Development Department		

EXECUTIVE SUMMARY: SEARCH DOCUMENTATION

Year	Source	TP	Adjoining
1991	City of Stockton, Community Development Department		

Name: JurisdictionName
Years: Years
Source: Source
Phone: Phone

BUILDING DEPARTMENT RECORDS SEARCHED

Name: Stockton
Years: 1991-2019
Source: City of Stockton, Community Development Department and Permit Center, STOCKTON, CA
Phone: (209) 937-8561

Name: Redding
Years: 1987-2019
Source: City of Redding, Development Services, Building Division, PETALUMA, CA
Phone: 530-225-4014

Name: San Joaquin County
Years: 1991-2019
Source: San Joaquin County, Permits and Licenses, LODI, CA
Phone: (209) 468-3124

Name: Santa Clara County Unincorporated Area
Years: 1960-2018
Source: Santa Clara County, Development Services Office, MORGAN HILL, CA
Phone: (408) 299-5700

TARGET PROPERTY FINDINGS

TARGET PROPERTY DETAIL

Corner of Westlake Drive and Regatta Lane
Stockton, CA 95219

No Permits Found

ADJOINING PROPERTY FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

BEACON PORT WAY

5941 BEACON PORT WAY

Date:	**4/20/2018**
Permit Type:	
Description:	**AA: Change-out installation of Gas - 040 gallon to Gas - 040 gallon, located inside building, screening not required. ***Valuation under $1000k*** **
Permit Description:	**OTC - Water Heater**
Work Class:	
Proposed Use:	
Permit Number:	1800003490
Status:	Issued
Valuation:	$1,340.00
Contractor Company:	
Contractor Name:	LEE'S HEATING AND AIR CONDITIONING CO

Date:	**10/19/2007**
Permit Type:	**SP**
Description:	**SWAN POOLS 639641 33108 STATE COMP INS 20108 5209 123107 C53 INGROUND GUNITE SWIMMING POOL 400 SQFT.**
Permit Description:	**PRIVATE SWIMMING POOL-------2L**
Work Class:	SWIMMING POOLS, SPAS & HOT TUBS - RES
Proposed Use:	SWIMMING POOL
Permit Number:	0700005337
Status:	CLOSED
Valuation:	$25,820.00
Contractor Company:	
Contractor Name:	SWAN POOLS AKA TR WILLARD INC

ADJOINING PROPERTY FINDINGS

Date:	**3/20/2007**
Permit Type:	**MP**
Description:	**Pulte Homes 517593 93007 OLD REPUBLIC 110106 06-84379 123106 REPLACE ALL HAZARDOUS, RAISED OR BROKEN CURB, GUTTER AND SIDEWALK. ENCROACHMENT PERMIT REQUIRED FOR ANY WORK IN CITY RIGHT-OF-WAY. NEW SFD; MP-2 EHANCED ELEVATION (2082) 4-BED/2.5-BATH/2-CAR GARAGE AT PARADISE VILLAGE/SPANOS PARK GRANUCCI PROPERTY SUBDIVISION**
Permit Description:	**MASTERED PLAN----------2L**
Work Class:	NEW RES-ONE FAMILY STRUCTURES, NEW CONSTRUCTION
Proposed Use:	ONE FAMILY STRUCTURES
Permit Number:	0700001206
Status:	CLOSED
Valuation:	$293,479.00
Contractor Company:	
Contractor Name:	GARY KOBAYASHI

BLUE ANCHOR LN

10041 BLUE ANCHOR LN

Date:	**7/13/2007**
Permit Type:	**MP**
Description:	**Pulte Homes 517593 93007 OLDREPUB 110107 84379 123107 REPLACE ALL HAZARDOUS, RAISED OR BROKEN CURB, GUTTER AND SIDEWALK. ENCROACHMENT PERMIT REQUIRED FOR ANY WORK IN CITY RIGHT-OF-WAY. NEW SFD; MP-2 EHANCED ELEVATION (2082) 4-BED/2.5-BATH/2-CAR GARAGE AT PARADISE VILLAGE/SPANOS PARK GRANUCCI PROPERTY SUBDIVISION**
Permit Description:	**MASTERED PLAN----------2L**
Work Class:	NEW RES-ONE FAMILY STRUCTURES, NEW CONSTRUCTION
Proposed Use:	ONE FAMILY STRUCTURES
Permit Number:	0700003649
Status:	CLOSED
Valuation:	$313,446.00
Contractor Company:	
Contractor Name:	GARY KOBAYASHI

ADJOINING PROPERTY FINDINGS

10049 BLUE ANCHOR LN

Date:	**7/13/2007**
Permit Type:	**MP**
Description:	**Pulte Homes 517593 93007 OLDREPUB 110107 84379 123107 B REPLACE ALL HAZARDOUS, RAISED OR BROKEN CURB, GUTTER AND SIDEWALK. ENCROACHMENT PERMIT REQUIRED FOR ANY WORK IN CITY RIGHT-OF-WAY. NEW SFD; MP-1 EN W/LOFT (2011) 4-BED/2.5-BATH/2-CAR GARAGE AT PARADISE VILLAGE/SPANOS PARK GRANUCCI PROPERTY SUBDIVISION**
Permit Description:	**MASTERED PLAN----------2L**
Work Class:	NEW RES-ONE FAMILY STRUCTURES, NEW CONSTRUCTION
Proposed Use:	ONE FAMILY STRUCTURES
Permit Number:	0700003648
Status:	CLOSED, PERMIT PRINTED
Valuation:	$322,061.00
Contractor Company:	
Contractor Name:	GARY KOBAYASHI

10105 BLUE ANCHOR LN

Date:	**8/25/2014**
Permit Type:	
Description:	**3.5 KW ROOF MOUNTED SOLAR PV SYSTEM**
Permit Description:	**OTC - Photovoltaic**
Work Class:	
Proposed Use:	
Permit Number:	1400003285
Status:	Finaled
Valuation:	$7,735.00
Contractor Company:	
Contractor Name:	SOLARCITY CORPORATION

ADJOINING PROPERTY FINDINGS

Date:	**7/13/2007**
Permit Type:	**MP**
Description:	**Pulte Homes 517593 93007 OLDREPUB 110107 84379 123107 REPLACE ALL HAZARDOUS, RAISED OR BROKEN CURB, GUTTER AND SIDEWALK. ENCROACHMENT PERMIT REQUIRED FOR ANY WORK IN CITY RIGHT-OF-WAY. NEW SFD; MP-3 ENHANCED (2054) 5-BED/3.5-BATH/2-CAR GARAGE AT PARADISE VILLAGE/SPANOS PARK GRANUCCI PROPERTY SUBDIVISION**
Permit Description:	**MASTERED PLAN----------2L**
Work Class:	NEW RES-ONE FAMILY STRUCTURES, NEW CONSTRUCTION
Proposed Use:	ONE FAMILY STRUCTURES
Permit Number:	0700003651
Status:	CLOSED
Valuation:	$331,665.00
Contractor Company:	
Contractor Name:	GARY KOBAYASHI

10113 BLUE ANCHOR LN

Date:	**8/6/2007**
Permit Type:	**MP**
Description:	**Pulte Homes 517593 93007 OLD REPUBLIC 110106 06-84379 123106 REPLACE ALL HAZARDOUS, RAISED OR BROKEN CURB, GUTTER AND SIDEWALK. ENCROACHMENT PERMIT REQUIRED FOR ANY WORK IN CITY RIGHT-OF-WAY. NEW SFD; MP-1-EN (2011) 4-BED/2.5-BATH/2-CAR GARAGE AT PARADISE VILLAGE/SPANOS PARK GRANUCCI PROPERTY SUBDIVISION**
Permit Description:	**MASTERED PLAN----------2L**
Work Class:	NEW RES-ONE FAMILY STRUCTURES, NEW CONSTRUCTION
Proposed Use:	ONE FAMILY STRUCTURES
Permit Number:	0700004052
Status:	CLOSED
Valuation:	$292,130.00
Contractor Company:	
Contractor Name:	GARY KOBAYASHI

ADJOINING PROPERTY FINDINGS

10119 BLUE ANCHOR LN

Date:	**3/14/2008**
Permit Type:	**MP**
Description:	**Pulte Homes 517593 93009 OLDREPUB 110107 84379 123107 B REPLACE ALL HAZARDOUS, RAISED OR BROKEN CURB, GUTTER AND SIDEWALK. ENCROACHMENT PERMIT REQUIRED FOR ANY WORK IN CITY RIGHT-OF-WAY. NEW SFD; MP-2 (2082) 4-BED/2.5-BATH/2-CAR GARAGE AT PARADISE VILLAGE/SPANOS PARK GRANUCCI PROPERTY SUBDIVISION**
Permit Description:	**MASTERED PLAN----------2L**
Work Class:	NEW RES-ONE FAMILY STRUCTURES, NEW CONSTRUCTION
Proposed Use:	ONE FAMILY STRUCTURES
Permit Number:	0700005519
Status:	CLOSED, FINAL INSPECTION COMPLETE
Valuation:	$310,942.00
Contractor Company:	
Contractor Name:	GARY KOBAYASHI

10131 BLUE ANCHOR LN

Date:	**11/16/2007**
Permit Type:	**SP**
Description:	**SWAN POOLS 639641 33108 STATE COMP INS 20108 5209 123107 C53 CONSTRUCTION OF INGROUND GUNITE POOL & SPA WITH HEATER**
Permit Description:	**PRIVATE SWIMMING POOL-------2L**
Work Class:	SWIMMING POOLS, SPAS & HOT TUBS - RES
Proposed Use:	SPA SWIMMING POOL
Permit Number:	0700005755
Status:	CLOSED
Valuation:	$43,700.00
Contractor Company:	
Contractor Name:	SWAN POOLS AKA TR WILLARD INC

ADJOINING PROPERTY FINDINGS

Date:	**4/20/2007**
Permit Type:	**MP**
Description:	**Pulte Homes 517593 93007 OLDREPUB NEED 110107 84379 123107 REPLACE ALL HAZARDOUS, RAISED OR BROKEN CURB, GUTTER AND SIDEWALK. ENCROACHMENT PERMIT REQUIRED FOR ANY WORK IN CITY RIGHT-OF-WAY. NEW SFD; MP-3 ENHANCED (2054) 5-BED/3.5-BATH/2-CAR GARAGE AT PARADISE VILLAGE/SPANOS PARK GRANUCCI PROPERTY SUBDIVISION**
Permit Description:	**MASTERED PLAN----------2L**
Work Class:	NEW RES-ONE FAMILY STRUCTURES, NEW CONSTRUCTION
Proposed Use:	ONE FAMILY STRUCTURES
Permit Number:	0700001943
Status:	CLOSED
Valuation:	$331,665.00
Contractor Company:	
Contractor Name:	GARY KOBAYASHI

10137 BLUE ANCHOR LN

Date:	**4/20/2007**
Permit Type:	**MP**
Description:	**Pulte Homes 517593 93007 OLDREPUB NEED 110107 84379 123107 REPLACE ALL HAZARDOUS, RAISED OR BROKEN CURB, GUTTER AND SIDEWALK. ENCROACHMENT PERMIT REQUIRED FOR ANY WORK IN CITY RIGHT-OF-WAY. NEW SFD; MP-2 EHANCED ELEVATION (2082) 4-BED/2.5-BATH/2-CAR GARAGE AT PARADISE VILLAGE/SPANOS PARK GRANUCCI PROPERTY SUBDIVISION**
Permit Description:	**MASTERED PLAN----------2L**
Work Class:	NEW RES-ONE FAMILY STRUCTURES, NEW CONSTRUCTION
Proposed Use:	ONE FAMILY STRUCTURES
Permit Number:	0700001965
Status:	CLOSED
Valuation:	$313,446.00
Contractor Company:	
Contractor Name:	GARY KOBAYASHI

ADJOINING PROPERTY FINDINGS

10145 BLUE ANCHOR LN

Date:	**4/24/2007**
Permit Type:	**MP**
Description:	**Pulte Homes 517593 93007 OLDREPUB NEED 110107 84379 123107 B REPLACE ALL HAZARDOUS, RAISED OR BROKEN CURB, GUTTER AND SIDEWALK. ENCROACHMENT PERMIT REQUIRED FOR ANY WORK IN CITY RIGHT-OF-WAY. NEW SFD; MP-1 EN W/LOFT (2011) 4-BED/2.5-BATH/2-CAR GARAGE AT PARADISE VILLAGE/SPANOS PARK GRANUCCI PROPERTY SUBDIVISION**
Permit Description:	**MASTERED PLAN----------2L**
Work Class:	NEW RES-ONE FAMILY STRUCTURES, NEW CONSTRUCTION
Proposed Use:	ONE FAMILY STRUCTURES
Permit Number:	0700002081
Status:	CLOSED
Valuation:	$322,061.00
Contractor Company:	
Contractor Name:	GARY KOBAYASHI

10153 BLUE ANCHOR LN

Date:	**4/20/2007**
Permit Type:	**MP**
Description:	**Pulte Homes 517593 93007 OLDREPUB NEED 110107 84379 123107 REPLACE ALL HAZARDOUS, RAISED OR BROKEN CURB, GUTTER AND SIDEWALK. ENCROACHMENT PERMIT REQUIRED FOR ANY WORK IN CITY RIGHT-OF-WAY. NEW SFD; MP-3 ENHANCED (2054) 5-BED/3.5-BATH/2-CAR GARAGE AT PARADISE VILLAGE/SPANOS PARK GRANUCCI PROPERTY SUBDIVISION**
Permit Description:	**MASTERED PLAN----------2L**
Work Class:	NEW RES-ONE FAMILY STRUCTURES, NEW CONSTRUCTION
Proposed Use:	ONE FAMILY STRUCTURES
Permit Number:	0700001942
Status:	CLOSED
Valuation:	$331,665.00
Contractor Company:	
Contractor Name:	GARY KOBAYASHI

GLOSSARY

General Building Department concepts

- **ICC:** The International Code Council. The governing body for the building/development codes used by all jurisdictions who've adopted the ICC guidelines. MOST of the US has done this. Canada, Mexico, and other countries use ICC codes books and guides as well. There are a few states who have added guidelines to the ICC codes to better fit their needs. For example, California has added seismic retrofit requirements for most commercial structures.
- **Building Department (Permitting Authority, Building Codes, Inspections Department, Building and Inspections):** This is the department in a jurisdiction where an owner or contractor goes to obtain permits and inspections for building, tearing down, remodeling, adding to, re-roofing, moving or otherwise making changes to any structure, Residential or Commercial.
- **Jurisdiction:** This is the geographic area representing the properties over which a Permitting Authority has responsibility.
- **GC:** General Contractor. Usually the primary contractor hired for any Residential or Commercial construction work.
- **Sub:** Subordinate contracting companies or subcontractors. Usually a "trades" contractor working for the GC. These contractors generally have an area of expertise in which they are licensed like Plumbing, Electrical, Heating and Air systems, Gas Systems, Pools etc. (called "trades").
- **Journeymen:** Sub contractors who have their own personal licenses in one or more trades and work for different contracting companies, wherever they are needed or there is work.
- **HVAC (Mechanical, Heating & Air companies):** HVAC = Heating, Ventilation, and Air Conditioning.
- **ELEC (Electrical, TempPole, TPole, TPower, Temporary Power, Panel, AMP Change, Power Release):** Electrical permits can be pulled for many reasons. The most common reason is to increase the AMPs of power in an electrical power panel. This requires a permit in almost every jurisdiction. Other commons reason for Electrical permits is to insert a temporary power pole at a new construction site. Construction requires electricity, and in a new development, power has yet to be run to the lot. The temporary power pole is usually the very first permit pulled for new development. The power is released to the home owner when construction is complete and this sometimes takes the form of a Power Release permit or inspection.
- **"Pull" a permit:** To obtain and pay for a building permit.
- **CBO:** Chief Building Official
- **Planning Department:** The department in the development process where the building /structural plans are reviewed for their completeness and compliance with building codes
- **Zoning Department:** The department in the development process where the site plans are reviewed for their compliance with the regulations associated with the zoning district in which they are situated.
- **Zoning District:** A pre-determined geographic boundary within a jurisdiction where certain types of structures are permitted / prohibited. Examples are Residential structure, Commercial/Retail structures, Industrial/Manufacturing structures etc. Each zoning district has regulations associated with it like the sizes of the lots, the density of the structures on the lots, the number of parking spaces required for certain types of structures on the lots etc.
- **PIN (TMS, GIS ID, Parcel#):** Property Identification Number and Tax Map System number.
- **State Card (Business license):** A license card issued to a contractor to conduct business.
- **Building Inspector (Inspector):** The inspector is a building department employee that inspects building construction for compliance to codes.
- **C.O.:** Certificate of Occupancy. This is the end of the construction process and designates that the owners now have permission to occupy a structure after its building is complete. Sometimes also referred to as a Certificate of Compliance.

GLOSSARY

Permit Content Definitions

- Permit Number: The alphanumerical designation assigned to a permit for tracking within the building department system. Sometimes the permit number gives clues to its role, e.g. a "PL" prefix may designate a plumbing permit.
- Description: A field on the permit form that allows the building department to give a brief description of the work being done. More often than not, this is the most important field for EP's to find clues to the prior use(s) of the property.
- Permit Type: Generally a brief designation of the type of job being done. For example BLDG-RES, BLDG-COM, ELEC, MECH etc.

Sample Building Permit Data

Date: Nov 09, 2000
Permit Type: Bldg -
New Permit Number: 101000000405
Status: Valuation: $1,000,000.00
Contractor Company: OWNER-BUILDER
Contractor Name:

Description: New one store retail (SAV-ON) with drive-thru pharmacy. Certificate of Occupancy.

Site I - West Lakes Area
Corner of Westlake Drive and Regatta Lane
Stockton, CA 95219

Inquiry Number: 5629404.5
April 23, 2019

The EDR-City Directory Abstract

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Executive Summary

Findings

City Directory Images

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Abstract is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Abstract includes a search and abstract of available city directory data. For each address, the directory lists the name of the corresponding occupant at five year intervals.

Business directories including city, cross reference and telephone directories were reviewed, if available, at approximately five year intervals for the years spanning 1906 through 2014. This report compiles information gathered in this review by geocoding the latitude and longitude of properties identified and gathering information about properties within 660 feet of the target property.

A summary of the information obtained is provided in the text of this report.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

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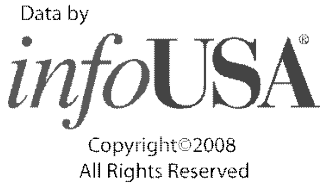

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. An "X" indicates where information was identified in the source and provided in this report.

Year	Source	TP	Adjoining	Text Abstract	Source Image
2014	EDR Digital Archive	-	-	-	-
2010	EDR Digital Archive	-	-	-	-
2005	EDR Digital Archive	-	-	-	-
2003	SBC PACIFIC BELL	-	-	-	-
1999	R. L. Polk Co., Publishers	-	-	-	-
1996	R. L. Polk Co., Publishers	-	-	-	-
1990	R. L. Polk Co., Publishers	-	-	-	-
1984	R. L. Polk Co., Publishers	-	-	-	-
1979	R.L. Polk CO.	-	-	-	-
1975	R.L. Polk CO.	-	-	-	-
1970	R. L. Polk Co., Publishers	-	-	-	-
1965	R. L. Polk Co., Publishers	-	-	-	-

EXECUTIVE SUMMARY

Year	Source	TP	Adjoining	Text Abstract	Source Image
1960	R. L. Polk Co., Publishers	-	-	-	-
1955	R. L. Polk Co.	-	-	-	-
1950	R. L. Polk Co., Publishers	-	-	-	-
1946	R. L. Polk Co., Publishers	-	-	-	-
1940	R. L. Polk Co., Publishers	-	-	-	-
1935	R. L. Polk Co. of California, Publishers	-	-	-	-
1930	R. L. Polk Co. of California, Publishers	-	-	-	-
1925	R. L. Polk Co. of California, Publishers	-	-	-	-
1921	Polk-Husted Directory Co., Publishers	-	-	-	-
1916	Polk-Husted Directory Co.	-	-	-	-
1911	Polk-Husted Directory	-	-	-	-
1906	A. KINGSBURY CO	-	-	-	-

EXECUTIVE SUMMARY

SELECTED ADDRESSES

The following addresses were selected by the client, for EDR to research. An "X" indicates where information was identified.

Address	*Type*	*Findings*
Cosumnes Drive	Client Entered	

FINDINGS

TARGET PROPERTY INFORMATION

ADDRESS

Corner of Westlake Drive and Regatta Lane
Stockton, CA 95219

FINDINGS DETAIL

Target Property research detail.

FINDINGS

ADJOINING PROPERTY DETAIL

The following Adjoining Property addresses were researched for this report. Detailed findings are provided for each address.

No Addresses Found

FINDINGS

ADJOINING PROPERTY: ADDRESSES NOT IDENTIFIED IN RESEARCH SOURCE

The following Adjoining Property addresses were researched for this report, and the addresses were not identified in research source.

Address Researched	Address Not Identified in Research Source
Cosumnes Drive	2014, 2010, 2005, 2003, 1999, 1996, 1990, 1984, 1979, 1975, 1970, 1965, 1960, 1955, 1950, 1946, 1940, 1935, 1930, 1925, 1921, 1916, 1911, 1906

TARGET PROPERTY: ADDRESS NOT IDENTIFIED IN RESEARCH SOURCE

The following Target Property addresses were researched for this report, and the addresses were not identified in the research source.

Address Researched	Address Not Identified in Research Source
Corner of Westlake Drive and Regatta Lane	2014, 2010, 2005, 2003, 1999, 1996, 1990, 1984, 1979, 1975, 1970, 1965, 1960, 1955, 1950, 1946, 1940, 1935, 1930, 1925, 1921, 1916, 1911, 1906

Site I - West Lakes Area
Corner of Westlake Drive and Regatta Lane
Stockton, CA 95219

Inquiry Number: 5629404.7
April 24, 2019

EDR Environmental Lien and AUL Search

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

EDR Environmental Lien and AUL Search

The EDR Environmental Lien and AUL Search Report provides results from a search of available current land title records for environmental cleanup liens and other activity and use limitations, such as engineering controls and institutional controls.

A network of professional, trained researchers, following established procedures, uses client supplied address information to:

- search for parcel information and/or legal description;
- search for ownership information;
- research official land title documents recorded at jurisdictional agencies such as recorders' offices, registries of deeds, county clerks' offices, etc.;
- access a copy of the deed;
- search for environmental encumbering instrument(s) associated with the deed;
- provide a copy of any environmental encumbrance(s) based upon a review of key words in the instrument(s) (title, parties involved, and description); and
- provide a copy of the deed or cite documents reviewed.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EDR Environmental Lien and AUL Search

TARGET PROPERTY INFORMATION

ADDRESS

Corner of Westlake Drive and Regatta Lane
Site I - West Lakes Area
Stockton, CA 95219

ENVIRONMENTAL LIEN

Environmental Lien: Found ☐ Not Found ☒

OTHER ACTIVITY AND USE LIMITATIONS (AULs)

AULs: Found ☐ Not Found ☒

RESEARCH SOURCE

Source 1:

San Joaquin Recorder
San Joaquin, CA

PROPERTY INFORMATION

Deed 1:

Type of Deed:	deed
Title is vested in:	Stockton Westlake Investment LLC
Title received from:	Spanos Family Partnership
Deed Dated	9/12/2014
Deed Recorded:	12/31/2014
Book:	NA
Page:	na
Volume:	na
Instrument:	na
Docket:	NA
Land Record Comments:	
Miscellaneous Comments:	
Legal Description:	See Exhibit
Legal Current Owner:	Stockton Westlake Invesment LLC
Parcel # / Property Identifier:	066-050-07, 066-050-08
Comments:	See Exhibit

Deed Exhibit 1

RECORDING REQUESTED BY:

Old Republic Title Company

Order No.: 1211022582-DC
APN: 066-050-07 thru 47 & 066-050-50

When Recorded Mail Document and Tax Statements to:

A.G. Spanos Companies
10100 Trinity Parkway
Stockton, CA 95219

Doc #: 2014-135371
12/31/2014 02:02:10 PM
Page 1 of 3 Fee: $20.00
Kenneth W. Blakemore
San Joaquin County Recorder
Paid By: OLD REPUBLIC TITLE COMPANY

SPACE ABOVE THIS LINE IS FOR RECORDER'S USE

Grant Deed

The undersigned grantor(s) declare(s):
Documentary Transfer Tax is 0.00
(X) computed on full value of property conveyed, or
( ) computed on full value less of liens and encumbrances remaining at time of sale.
( ) Unincorporated area: (x) City of Stockton

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,
Spanos Family Partnership, a California general partnership

hereby GRANT(S) to
Stockton Westlake Investment, LLC, a California limited liability company

that property in the City of Stockton, San Joaquin County, State of California, described as follows:
See "Exhibit A" attached hereto and made a part hereof.

Date: September 12, 2014

Spanos Family Partnership:

By: Michael Spanos, General Partner

By: _____

By: _____

State of California

County of San Joaquin

On December 17, 2014 before me, Aimee M. Goodman, a Notary Public, personally appeared Michael Spanos, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____

Name Aimee M. Goodman
(typed or printed)

(Area reserved for official notarial seal)

AIMEE M. GOODMAN
Commission # 2010618
Notary Public - California
San Joaquin County
My Comm. Expires Mar 9, 2017

EXHIBIT A

Parcel One:

Lots A, B, D and Lots 5 through 12, inclusive and Lots 15 through 27 inclusive and Lots 29 through 45, inclusive as shown and delineated on that certain Map entitled, "Tract No. 3357, Westlake Villages Unit No. 1", filed for record on February 9, 2006, in Book 40 of Maps and Plats, Page 57, as amended by Certificate of Correction recorded June 7, 2007, in Official Records under Recorder's Serial Number 2007-106289, San Joaquin County Records.

EXCEPTING THEREFROM the undivided interest in oil, gas, minerals and other hydrocarbon substances below a depth of 500 feet under the above real property with the right of surface entry, reserved in the Deed recorded February 10, 1989, in Official Records under Recorder's Serial Number 89011726, San Joaquin County Records.

APN: 066-050-07 through 066-050-14, inclusive; 066-050-17 through 066-050-29 inclusive; 066-050-31 through 47, inclusive; 066-050-48; 066-050-49 and 066-050-51

PARCEL TWO:

Lot C as shown on the map of "Tract No. 3357, Westlake Villages, Unit No. 1" as filed for record on February 9, 2006 in Book 40 of Maps and Plats, Page 57, as amended by Certificate of Correction recorded June 7, 2007 in Official Records under Recorder's Serial No. 2007-106289, San Joaquin County Records.

EXCEPTING THEREFROM:

A portion of said Lot C, more particularly described as follows:

Beginning at the Northeast corner of Lot 4, as shown on said map of "Westlake Villages, Unit No. 1", thence North 79°44'33" East, 10.00 feet; thence South 10°15'27" East, 86.90 feet; thence South 79°44'33" West, 10.00 feet to the Southeast corner of said Lot 4, thence North 10°15'27" West, 86.90 feet to the point of beginning.

ALSO EXCEPTING THEREFROM the undivided interest in oil, gas, minerals and other hydrocarbon substances below a depth of 500 feet under the above real property with the right of surface entry, reserved in the Deed recorded February 10, 1989, in Official Records under Recorder's Serial Number 89011726, San Joaquin County Records.

APN 066-050-50

12/19/14

Site I - West Lakes Area
Corner of Westlake Drive and Regatta Lane
Stockton, CA 95219

Inquiry Number: 5629404.6
April 23, 2019

The EDR Property Tax Map Report

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

EDR Property Tax Map Report

Environmental Data Resources, Inc.'s EDR Property Tax Map Report is designed to assist environmental professionals in evaluating potential environmental conditions on a target property by understanding property boundaries and other characteristics. The report includes a search of available property tax maps, which include information on boundaries for the target property and neighboring properties, addresses, parcel identification numbers, as well as other data typically used in property location and identification.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. **NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OR DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL, CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT.** Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction orforecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

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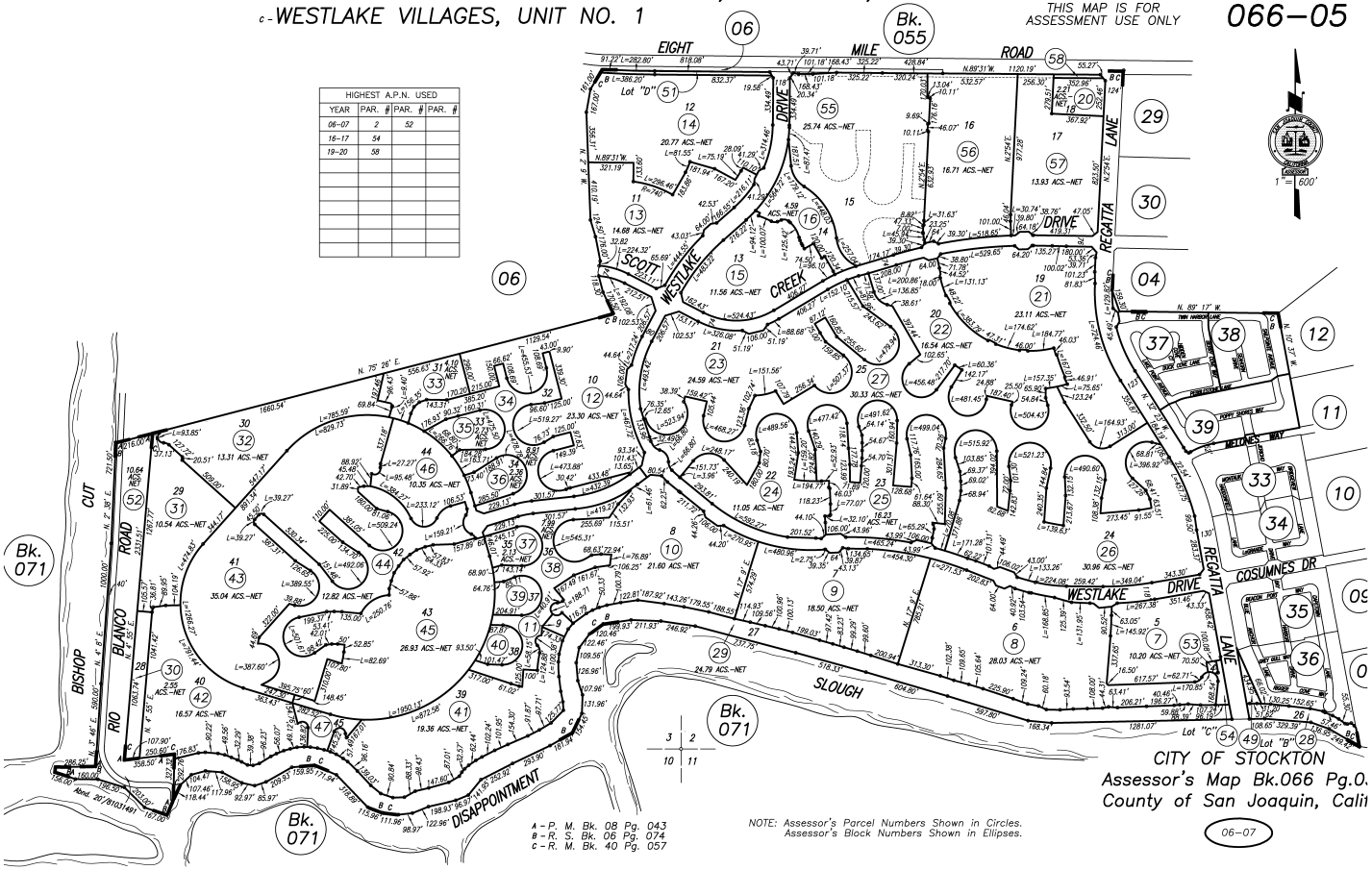
BISHOP TRACT & POR. SECS. 3 & 10, T.2N. R.5E., M.D.B.&M.
c-WESTLAKE VILLAGES, UNIT NO. 1

THIS MAP IS FOR ASSESSMENT USE ONLY

066–05

HIGHEST A.P.N. USED				
YEAR	PAR. #	PAR. #	PAR. #
06–07	2	52	
16–17	54		
19–20	58		

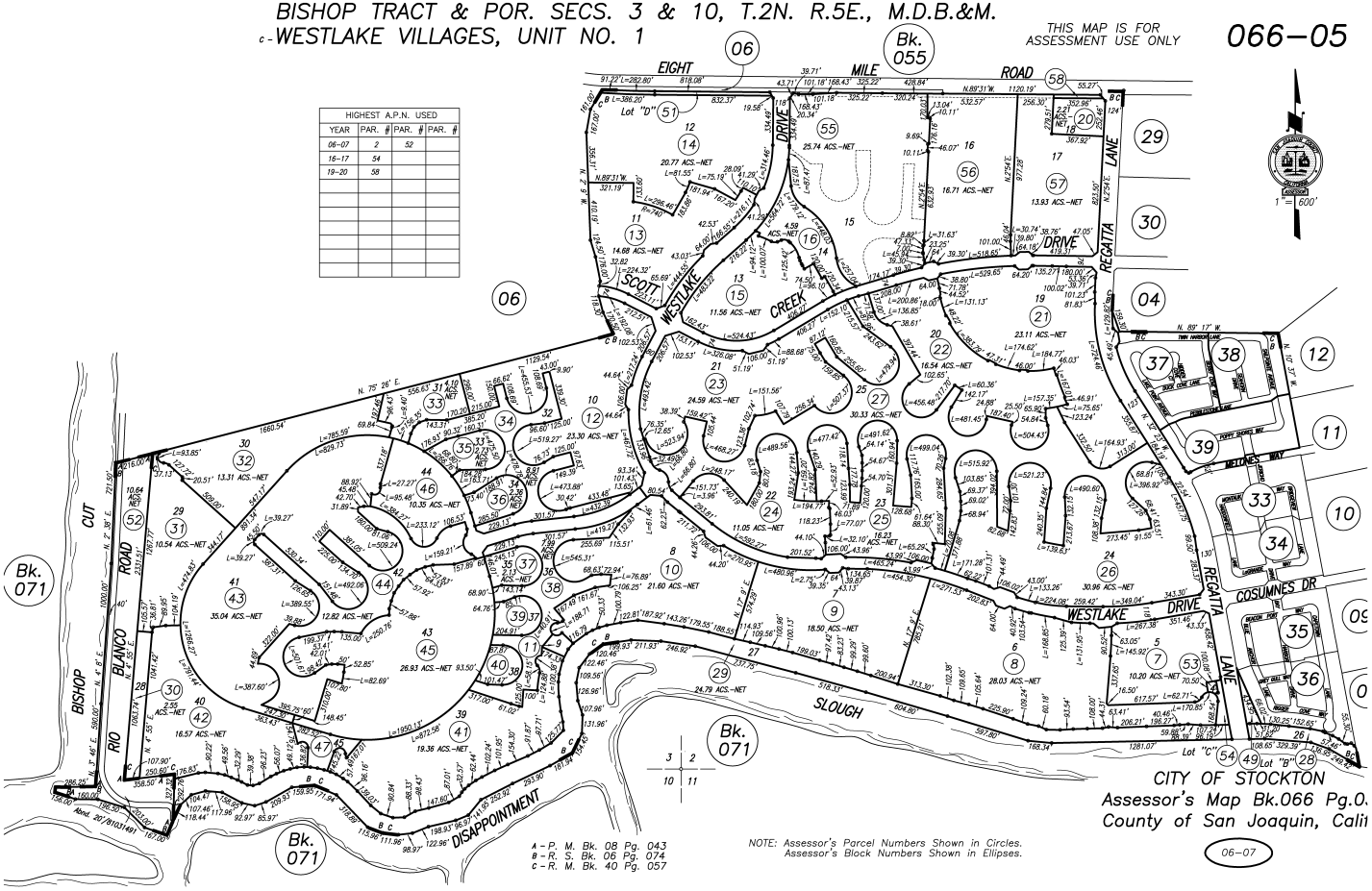


CITY OF STOCKTON
Assessor's Map Bk.066 Pg.0
County of San Joaquin, Calif

06–07

A - P. M. Bk. 08 Pg. 043
B - R. S. Bk. 06 Pg. 074
C - R. M. Bk. 40 Pg. 057

NOTE: Assessor's Parcel Numbers Shown in Circles.
Assessor's Block Numbers Shown in Ellipses.


BISHOP TRACT & POR. SECS. 3 & 10, T.2N. R.5E., M.D.B.&M.
c-WESTLAKE VILLAGES, UNIT NO. 1
THIS MAP IS FOR ASSESSMENT USE ONLY
066–05
Bk. 055
Bk. 071
EIGHT MILE ROAD
WESTLAKE DRIVE
REGATTA LANE
COSUMNES DR
SCOTT CREEK
SLOUGH
BISHOP CUT
BLANCO ROAD
RIO DISAPPOINTMENT
HIGHEST A.P.N. USED
YEAR PAR. # PAR. # PAR. #
06–07 2 52
16–17 54
19–20 58
1" = 600'
CITY OF STOCKTON
Assessor's Map Bk.066 Pg.0
County of San Joaquin, Cali
06–07
A - P. M. Bk. 08 Pg. 043
B - R. S. Bk. 06 Pg. 074
C - R. M. Bk. 40 Pg. 057
NOTE: Assessor's Parcel Numbers Shown in Circles.
Assessor's Block Numbers Shown in Ellipses.

Site I - West Lakes Area

Corner of Westlake Drive and Regatta Lane

Stockton, CA 95219

Inquiry Number: 5629404.3

April 23, 2019

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

04/23/19

Site Name:

Site I - West Lakes Area
Corner of Westlake Drive and F
Stockton, CA 95219
EDR Inquiry # 5629404.3

Client Name:

Petralogix
26675 Bruella Rd
Galt, CA 95632
Contact: Tonya Scheftner

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Petralogix were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 7F10-42C6-84A2

PO # NA

Project Site I - Phase I ESA

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 7F10-42C6-84A2

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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petralogix

geophysics - environmental - geology

APPENDIX F

petralogix

geophysics - environmental - geology

PHASE I ENVIRONMENTAL SITE ASSESSMENT - USER QUESTIONNAIRE
ASSESSOR PARCEL NUMBER(S):
066-050-070-000 & 066-050-080-000
STOCKTON, CALIFORNIA

Petralogix Engineering, Inc. is preparing a Phase I Environmental Site Assessment (Phase I ESA) for the above referenced property in order to assess the potential of onsite items which may be considered as Recognized Environmental Condition or Concern (RECs).

A Recognized Environmental Condition or Concern (REC) is one of the terms used to identify environmental liability within the context of a Phase I Environmental Site Assessment. ASTM defines the recognized environmental condition in the E1527-13 standard as "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment". De minimis conditions are not recognized environmental conditions.

We ask that you complete the following questionnaire and email it to tscheftner@petralogix.com. We will include this in the Phase I ESA report as an appendix. We appreciate your time and encourage you to call us at 209-770-0731 with any questions about this or any of the items contained with this document.

REQUIRED QUESTIONS

Please provide the following information to our firm in order to qualify for the Landowner Liability Protections (LLPs) offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the "Brownfields Amendments"). Failure to provide this information could result in a determination that "all appropriate inquiry" was not completed. Any information that is falsely recorded, or knowingly is wrong, could also lead to an incomplete defense. For this reason, if an area is unclear or if there is a possibility that further clarification could be presented by another person, then call our firm at 209-770-0731 to discuss.

		Yes	No
1.	**Environmental cleanup liens that are filed or recorded against the site (40 CFR 312.25).**		
	Are you aware of any environmental cleanup liens against the property that are filed or recorded under federal, tribal, state or local law? *(If yes, please discuss and attach any relevant documentation that may aid in determine the extent of this question.)*	☐	☑
		Yes	No
2.	**Activity and land use limitations that are in place on the site or that have been filed or recorded in a registry (40 CFR 312.26).**		
	Are you aware of any AULs, such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law? *(If yes, please discuss and attach relevant documentation.)*	☐	☑
		Yes	No
3.	**Specialized knowledge or experience of the person seeking to qualify for the LLP (40 CFR 312.28).**		
	As the user of this Environmental Site Assessment do you have any specialized knowledge or experience related to the property or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the property or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business? *(If yes, please discuss and attach relevant documentation.)*	☐	☑

		Yes	No	N/A
4.	**Relationship of the purchase price to the fair market value of the property if it were not contaminated (40 CFR 312.29).**			
	a. Does the purchase price being paid for this property reasonably reflect the fair market value of the property?	☐	☐	☑

26675 Bruella Road • Galt, CA 95632 • 209.400.5729

b.	If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the property? *(If yes, please discuss and attach relevant documentation, if any.)*	☐	☑

		Yes	No
5.	**Commonly known or reasonably ascertainable information about the property (40 CFR 312.30).**		
	Are you aware of commonly known or reasonably ascertainable information about the property that would help the environmental professional to identify conditions indicative of releases or threatened releases?	☐	☑
	For example, as user,		
a.	Do you know the past uses of the property? *(If yes, please discuss and attach relevant documentation, if any.)*	☐	☑
b.	Do you know of specific chemicals that are present or once were present at the property? *(If yes, please discuss and attach relevant documentation, if any.)*	☐	☑
c.	Do you know of spills or other chemical releases that have taken place at the property?	☐	☑
d.	Do you know of any environmental cleanups that have taken place at the property?	☐	☑

		Yes	No
6.	**The degree of obviousness of the presence or likely presence of contamination at the property, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31).**		
	As the user of this ESA, based on your knowledge and experience related to the property, are there any obvious indicators that point to the presence or likely presence of contamination at the property?	☐	☑

ADDITIONAL QUESTIONS

The following additional questions will assist the environmental professional in preparation of the Phase I ESA report.

1. Why have you requested this Phase I ESA?

   ☐ To qualify for Landowner Liability Protection

   ☑ Other Reason (please specify) CPG requirement

2. What is your relationship to the subject property?

   ☑ Buyer ☐ Lender

   ☐ Seller ☐ Other _____

3. a. What type is the subject property?

   ☐ Commercial ☑ Agricultural ☑ Vacant

   ☐ Residential ☐ Industrial ☐ Other _____

   b. What type of transaction is involved?

   Cash

4. Provide the complete and correct address of the property (if not indicated on page 1).

		Yes	No
5.	Are you aware of any former addresses or previous assessor's parcel numbers (APNs) for the subject property? Include previous addresses/APNs even if subject property was split from a larger parcel. *(If yes, please discuss.)*	☑	☐
6.	Do you have any other knowledge or experience with the property that may be pertinent to this investigation (for example, copies of previous environmental assessments, correspondence, etc. concerning the property and its environmental condition)? *(If yes, please discuss and attach relevant documentation, if any.)*	☐	☐

(ND) Karen?

7. What is the proposed future use of the subject property?

   Elementary School

8. Identify all additional parties who will rely on the Phase I ESA report (if any).

   Lodi Unified School District

9. Identify the site contact and how the contact can be reached.

   Karen Garrett, Spanos Co, 209-955-2574

   Vickie Brum, LUSD, 209-331-7223

Name:

Address:

Phone: See previous page

Relationship to property:

DOCUMENTS/PROCEEDINGS

The following questions refer to documents or proceedings with regard to the subject property of which the user may be aware.

		Yes	No	Copies to be provided?
1.	**Available Documents** Are you aware of the existence of any of the following documents for the subject property? *If so, please indicate whether you can provide copies of those documents to this office within reasonable time and cost constraints.*			
a.	Environmental site assessment reports (Karen ?)	☑	☐	☑
b.	Environment compliance audit reports	☐	☑	☐
c.	Environmental permits (for example, solid waste disposal permits, hazardous waste disposal permits, wastewater permits, NPDES permits, underground injection permits)	☐	☑	☐
d.	Registrations for underground and above-ground storage tanks	☐	☑	☐
e.	Registrations for underground injection systems	☐	☑	☐
f.	Material safety data sheets	☐	☑	☐
g.	Community right-to-know plan	☐	☑	☐
h.	Safety plans; preparedness and prevention plans; spill prevention, countermeasure, and control plans; etc.	☐	☑	☐
i.	Reports regarding hydrogeological conditions on the property or surrounding area	☐	☑	☐
j.	Notices or other correspondence from any government agency relating to past or current violations of environmental laws with respect to the property or relating to environmental liens encumbering the property	☐	☑	☐

		Yes	No	Copies to be provided?
k.	Hazardous waste generator notices or reports	☐	☑	☐
l.	Geotechnical studies	☐	☐	☑
m.	Risk assessments	☐	☑	☐
n.	Recorded Activity and Use Limitations (AULs)	☐	☑	☐

2. Proceedings Involving the Property Karen ?

Are you aware of any of the following related to the subject property? *(If so, please attach relevant documentation.)*

a.	Any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property?	☐	☑	☐
b.	Any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on or from the property?	☐	☑	☐
c.	Any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products?	☐	☑	☐

ENDORSEMENT:

As the User of the Phase I Environmental Site Assessment being prepared for the property (or the duly authorized representative of such User), I hereby certify that to the best of my knowledge, information, and belief the information disclosed above is true and correct.

Vickie Brum 5/29/19

Client (user) Signature Date

Vickie Brum

Client (user) Name (Please Print)

Contact Phone Number (209) 331-7223

PHASE I ENVIRONMENTAL SITE ASSESSMENT - OWNER/KEY SITE MANAGER QUESTIONNAIRE ASSESSOR PARCEL NUMBER(S): 066-050-070-000 & 066-050-080-000 STOCKTON, CALIFORNIA

At the request of Lodi Unified School District, Petralogix Engineering, Inc. is preparing a Phase I Environmental Site Assessment (Phase I ESA) for the above referenced property. Since you are the owner of the property, we ask that you designate someone as the key site manager or "person with the most knowledge of the property" to complete this form. Alternatively, you as the owner can complete it yourself considering that you are the most knowledgeable person. The designated person should complete the following questionnaire and email it to tscheftner@petralogix.com. If you have any questions about this do not hesitate to call us at 209-770-0731.

GENERAL INFORMATION

1. Current property owner:

Spanos
_____
Name

10100 Trinity Parkway #5, Stockton CA 95219
_____
Address

_____
Telephone

2015
_____
Year purchased

2. Previous property owner(s) and contact information (if this is not known please explain why):

   Name: Unknown

   Address: Farm land

   Telephone:

   Year purchased:

3. Any other person(s) with historical knowledge of property (if known):

   Name: Karen Garrett

   Address: Spanos Corporation

   Telephone: 209 955-2574

   Relationship to property: Development manager

4. Please describe current use(s) of property to your best ability (more detail is better which specifies factors about the property's impact form use: Former farm land
   Being prepped for development

5. Please describe any other known past use(s) of property, and approximate dates of each use: N/A

6. Please describe any other relevant historical information in your possession concerning the subject property. N/A

	Yes	No
7. Are you aware of any former addresses or previous assessor's parcel numbers (APNs) for the subject property? Include previous addresses/APNs even if subject property was split from a larger parcel. *(If yes, please discuss.)*	☑	☐

Was a big parcel split into villages for development

8. Are there any businesses using any portion of the property which are operated by an entity other than the property owner (including a tenant farming operation)? If yes, please provide contact name and phone number for each: ☐ ☑

9. To the best of your knowledge has the property ever been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility? ☐ ☑

10. To the best of your knowledge has any adjoining property ever been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility? ☐ ☑

11. Do you have any knowledge of the past or current existence of hazardous substances or petroleum products with respect to the property or any facility located on the property? ☐ ☑

Yes No

12. Are there any electrical transformers or capacitors on the property which are known to contain PCBs (polychlorinated biphenyls), or which may have been manufactured before 1980 and whose PCB content is unknown? ☐ ? ☑

13. Water is provided to the property by:

☑ A Well ☐ Irrigation District
☐ Public Water System ☐ None Available

Approximate age of system:

14. Wastewater disposal is provided to the property by:

☐ On-Site Septic System ☑ None Available
☐ Public Sewer System

Approximate age of system:

15. Are there any wastewaters generated and/or disposed of on the property other than storm water runoff and domestic sewage? Please describe. (Please attach copies of any wastewater discharge permits or licenses pertaining to operations on the property.) ☐ ☑

16. Are there any other types of liquid wastes or solid wastes generated at the property? Please describe how they are handled and disposed of. (Please attach copies of any waste disposal permits or licenses pertaining to operations on the property.) ☐ ☑

17. Are there any activities on the property which generate air pollutants, including fuel burning equipment? Please describe. (Please attach copies of any air permits or licenses pertaining to operations on the property.) ☐ ☑

STRUCTURES

	Yes	No
1. Are there currently any structures on the property? *For each existing building, please provide type of building and date of original construction and any substantial renovations:*	☐	☑
2. To the best of your knowledge, have there been any structures on the property in the past which have since been removed? *For each building known to have been removed, please provide type of building and approximate dates the building existed:*	☐	☑
3. How are the structures heated and cooled (e.g., central, wall-mounted unit, space heaters, etc.), and what powers the heating and cooling devices (e.g., electric, propane, fuel oil tank, fireplace, etc.)? N/A		
4. Are there any currently, or the best of your knowledge have there been previously, any flooring, drains, or walls located within the facility that are stained by substances other than water or are emitting foul odors?	☐	☑
6. If any buildings were constructed prior to 1980, is there any currently or was there previously lead-based paint applied to the building(s)?	☐	☑
a. If so, has a survey been conducted to assess the type, amount, location and condition of lead-based paint? (Please attach a copy of any survey report.)	☐	☑

STORAGE TANKS AND OTHER CHEMICAL STORAGE

1. Are there currently, or to the best of your knowledge have there been previously, any registered or unregistered gasoline, diesel, fuel oil or other chemical storage tanks (above or underground) located on the property? ☐ ? ☑ NO

2. Are there any pesticides, paints, or other chemicals stored or used on the property in drums, sacks, or other containers greater than 5 gallons each or 50 gallons in the aggregate? ☐ ? ☑ NO

3. If the answer to either question is "yes," please answer the questions below: N/A

   a. For each tank, please list substance stored and tank capacity:

	Yes	No
b. Have the tanks been inspected or tested for leakage? When was the most recent test? What were the results? *(Please attach copies of results if available.)*	☐	☐
c. For other storage containers, please describe the substances, quantities stored, and types of containers.		
e. Please attach copies of any permits or licenses pertaining to the use, storage, handling, or disposal of chemicals on the property.		

4. Have there been any spills, leaks, or other releases of chemicals on the property? *If so, please describe the chemicals and quantities released, any cleanup measures taken, and the results of any soil or groundwater samples performed to detect the presence of chemicals spilled, leaked, or released on the property.* ☐ ☑

INDUSTRIAL PROPERTIES

1. Is the property currently used for any industrial purpose? ☐ ☑

2. Has the property ever been previous used for an industrial purpose (other than the current use)? ☐ ☑

3. If the answer to either question is "yes," please answer the following:

a.	Has the property been used for disposal of any liquid or solid waste?	☐	☑
b.	Have evaporation or storage ponds been located on the property?	☐	☑
c.	Have wastewater treatment facilities, such as acid neutralization vaults, been located on the property?	☐	☑
d.	Are there raw chemical or waste chemical storage areas on the property?	☐	☑

If any of questions 3.a-d are answered "yes," please provide a description, including the location of all disposal sites, treatment facilities and storage areas, the type of chemicals or wastes handled at each site, the results of any soil or groundwater samples taken in the vicinity of each site, and the manner in which each site not presently in use was closed.

AGRICULTURAL PROPERTIES		Yes	No
1.	Is the property currently used for agricultural purposes, other than grazing or pasture land?	☑	☐
2.	To the best of your knowledge, has the property been used in the past for agricultural purposes, other than grazing or pasture land?	☑	☐
3.	If the answer to either question is "yes," please answer the following:		
a.	Have pesticides, herbicides or other agricultural chemicals been applied to the property? If so, please describe the locations where such pesticides, herbicides or chemicals were applied, and the type of pesticides, herbicides or chemicals applied in each area. *(Please attach copies of pesticide use reports if available.)*	☑	☐
b.	Have pesticides, herbicides or other agricultural chemicals been mixed, formulated, rinsed, or disposed of on the property? *If so, please describe the locations where such pesticides, herbicides or chemicals were mixed, formulated, rinsed, or disposed, and the type of pesticides, herbicides or chemicals mixed, formulated, rinsed or disposed of at each location.*	☐ ?	☑ NO

probably do not know what types

c. Has any soil or groundwater analysis been performed to detect pesticides, herbicides or chemicals used at the site? *If so, please provide a summary of the findings or attach the report(s).* Karen? ☐ ☑ NO

DOCUMENTS/PROCEEDINGS

		Yes	No	Copies to be provided?
1.	**Available Documents** Are you aware of the existence of any of the following documents for the subject property? *If so, please indicate whether you can provide copies of those documents to this office within reasonable time and cost constraints.*			
a.	Environmental site assessment reports	☑	☐	☑ yes
b.	Environment compliance audit reports	☐	☑	☐
c.	Environmental permits (for example, solid waste disposal permits, hazardous waste disposal permits, wastewater permits, NPDES permits, underground injection permits)	☐	☑	☐
d.	Registrations for underground and above-ground storage tanks	☐	☑	☐
e.	Registrations for underground injection systems	☐	☑	☐
f.	Material safety data sheets	☐	☑	☐
g.	Community right-to-know plan	☐	☑	☐
h.	Safety plans; preparedness and prevention plans; spill prevention, countermeasure, and control plans; etc.	☐	☑	☐
i.	Reports regarding hydrogeological conditions on the property or surrounding area	☐	☑	☐
j.	Notices or other correspondence from any government agency relating to past or current violations of environmental laws with respect to the property or relating to environmental liens encumbering the property	☐	☑	☐
k.	Hazardous waste generator notices or reports	☐	☑	☐
l.	Geotechnical studies } Karen	☑	☐	☑
m.	Risk assessments	☐	☑	☐
n.	Recorded Activity and Use Limitations (AULs)	☐	☑	☐

2. Proceedings Involving the Property
Are you aware of any of the following related to the subject property? *(If so, please attach relevant documentation.)*

a.	Any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property?	☐	☑	☐
b.	Any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on or from the property?	☐	☑	☐
c.	Any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products?	☐	☑	☐

ENDORSEMENT:

Being the present owner of the property (officer, general partner of the present owner, or the duly authorized representative) I am familiar with all of the operations presently conducted on the property. Furthermore, I certify that to the best of my knowledge, information, and belief the information disclosed above is true.

I hereby give permission to Petralogix Engineering, Inc. to enter the subject property, including all structures on the property, as necessary to complete the Phase I report.

Karen e Spanos Co to sign?

Signature date

Karen Garrett

Name (Please Print)

Development Manager

Relationship to property

Contact Phone Number (___) _____

petralogix

geophysics - environmental - geology

APPENDIX G

SAN JOAQUIN COUNTY AGRICULTURAL COMMISSIONERS OFFICE
2101 E EARHART AVE, SUITE 100
STOCKTON, CA 95206
Office: (209) 953-6000 Fax: (209) 953-6022
Email: stocktonag2@sjgov.org Web: www.co.san-joaquin.ca.us/agcomm

2015

ORIGINAL

RESTRICTED MATERIALS PERMIT: 39-15-3900060

Operator: BIAGI FARMS, GEORGE JR
8458 W EIGHT MILE RD
STOCKTON, CA 95219

Agent: BIAGI, GEORGE JR

3900060-2015-Version: 1
County District #: H
Issued on: 1/5/2015
Valid as of: 1/5/2015
Expires on: 12/31/2015
Primary Phone: [redacted]
Alternate Phone: ( ) -
Mobile Phone: [redacted]
Fax:
Phone:
License #: 3900053
Expiration: 12/31/2015

Certified Applicator: BIAGI,GEORGE G
8458 W EIGHT MILE RD
STOCKTON, CA 95219

Type of Use: Agricultural Use
Pesticide Possession: Possession and Use
Permit Duration: Seasonal
Employees Handle Pesticides
Permit Conditions: A, P, Q, B

Notices Of Intent required 24 hours prior to application of pesticide containing restricted materials

See condition detail for code descriptions.

Regulatory Notes:

I understand that this permit does not relieve me from liability for any damages to any persons or property caused by the use of these pesticides. I waive any claims of liability for damages against the County Department of Agriculture based on the issuance of this permit. I further understand that this permit may be revoked when pesticides are used in conflict with the manufacturer's labeling or in violation of applicable laws, regulations, and specific conditions of this permit. I authorize inspection at all reasonable times and whenever an emergency exists by the Department of Pesticide Regulation or the County Department of Agriculture of all areas treated or to be treated, storage facilities for pesticides or emptied containers and equipment used or to be used in the treatment. I have considered alternative and mitigation measures pursuant to Title 3, California Code of Regulations, section 6426. Taking into account economic, environmental, social, and technological factors, I have adopted those that are feasible and would substantially lessen any significant adverse impact on the environment.

[Form PR-ENF-125 (Rev 11/06) Pesticide Enforcement Branch]

Applicant: GEORGE BIAGI OWNER
(Name & Title)

Applicant Signature: GEORGE BIAGI Date: 1-5-15

Issuing Officer: Rod Julin Date: 12-19-14

CONTACT LIST

Name	Auth Rep.	Phone	License	Expiration	Contact Type
ALPINE HELICOPTER SERVICE		[redacted]	30969	12/31/2016	Pest Control Business
KG VINEYARD MANAGEMENT LLC			32946	12/31/2016	Pest Control Business
BIAGI,GEORGE G			3900053	12/31/2015	Private Applicator Certificate
MILLION, CHRIS L	yes		120025	12/31/2015	Agricultural Pest Control Advisor

PESTICIDES LIST

Number	Pesticide	Pests	Forms	Methods	Applicators
1050	CARBARYL	LARVAE	All Reg.	Air/Ground	PCB/Operator
2000	DICAMBA	WEEDS	Liquid	Ground	PCB/Operator
3830	METHOMYL	LARVAE	Liquid	Air/Ground	PCB/Operator
4780	PHORATE	APHIDS	All Reg.	Air/Ground	PCB/Operator
6260	ZINC PHOSPHIDE	RODENTS	Bait	Ground	PCB/Operator
7860	MCPA, DIMETHYLAMINE	BROADLEAF WEEDS	Liquid	Air/Ground	PCB/Operator
8041	2,4-DB	WEEDS	Liquid	Air/Ground	PCB/Operator
9801	2,4-D AMINE	WEEDS	Liquid	Air/Ground	PCB/Operator
16011	PARAQUAT	WEEDS	Liquid	Air/Ground	PCB/Operator
16890	METHIDATHION	LARVAE	Liquid	Air/Ground	PCB/Operator

SITES LIST

Site	Location | Site Name Commodity Name/Code	Quantity	District	Section (MTRS)
2-1	E/I-5 N/EIGHT MILE HAMMOND RANCH		G	M03N05E25
	ALFALFA / 23001-0	21.4 ACRES		
Pesticide #s:	3830 (METHOMYL), 8041 (2,4-DB), 16011 (PARAQUAT)			
	SOIL FUM/PREPLT / 40008-0	21.4 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)			
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV			
2-12	E/I-5 N/EIGHT MILE HAMMOND RANCH		G	M03N05E36
	ALFALFA / 23001-0	37.4 ACRES		
Pesticide #s:	3830 (METHOMYL), 8041 (2,4-DB), 16011 (PARAQUAT)			
	SOIL FUM/PREPLT / 40008-0	37.4 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)			
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV			

LETTER OF AUTHORIZATION

(H)

To: San Joaquin County Agricultural Commissioner
2101 E. Earhart Ave, Suite 100
Stockton, CA 95206
Fax: 209-953-6022

From: Biagi Farms, George Jr
OPERATOR OF THE PROPERTY (PRINT NAME)

Biagi Farms PERMIT NUMBER 39-15-39000400
PERMIT NAME

8458 W. Eight Mile Rd.
ADDRESS

Stockton CA. 95219 [redacted]
CITY, STATE, ZIP PHONE

The authorized representative named below may represent me in obtaining a restricted material permit or operator identification number for use in San Joaquin County. I understand that this authorization does not relieve me of liability for violations of pesticide laws or regulations on my property. This authorization shall remain in effect until I revoke it in writing to the Agricultural Commissioner.

Signature: George Biagi Date: 1-5-15
OPERATOR OF THE PROPERTY

Title: Owner

Authorized Representative: Chris Million
PRINT NAME

I am the property operator's: [ ] employee; [ ] relative; [X] Employee PCA; [ ] other _____
SPECIFY

I hereby certify that the information above is correct to the best of my knowledge. I also understand that, in the event of violation of pesticide laws or regulations, I could be held liable either separately or together with the property operator.

Signature: _____ Phone: [redacted]
AUTHORIZED REPRESENTATIVE

3CCR 6420(a): *"Permits for agricultural use of a restricted material shall be issued in the name of the operator of the property to be treated. The permittee or when allowed by the commissioner (emphasis added), the permittee's authorized representative or licensed pest control adviser, shall sign the permit. The authorized representative or licensed pest control adviser shall provide the commissioner with written documentation from the permittee to act on his/her behalf."*

3CCR 6000: *"Operator of the property" means a person who owns the property and/or is legally entitled to possess or use the property through terms of a lease, rental contract, trust, or other management arrangement.*

cc: Hiromi

2-13	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E36
	ALFALFA / 23001-0 110.3 ACRES		
Pesticide #s:	3830 (METHOMYL), 8041 (2,4-DB), 16011 (PARAQUAT)		
	SOIL FUM/PREPLT / 40008-0 110.3 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

2-2	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E25
	ALFALFA / 23001-0 40 ACRES		
Pesticide #s:	3830 (METHOMYL), 8041 (2,4-DB), 16011 (PARAQUAT)		
	SOIL FUM/PREPLT / 40008-0 40 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

2-3	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E25
	ALFALFA / 23001-0 40.1 ACRES		
Pesticide #s:	3830 (METHOMYL), 8041 (2,4-DB), 16011 (PARAQUAT)		
	SOIL FUM/PREPLT / 40008-0 40.1 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

2-4	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E25
	ALFALFA / 23001-0 30 ACRES		
Pesticide #s:	3830 (METHOMYL), 8041 (2,4-DB), 16011 (PARAQUAT)		
	SOIL FUM/PREPLT / 40008-0 30 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

2-5	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E25
	ALFALFA / 23001-0 39.9 ACRES		
Pesticide #s:	3830 (METHOMYL), 8041 (2,4-DB), 16011 (PARAQUAT)		
	SOIL FUM/PREPLT / 40008-0 39.9 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

2-10	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E36
	BEAN DRIED / 15001-0 55.1 ACRES		
Pesticide #s:	1050 (CARBARYL), 3830 (METHOMYL), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 55.1 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

2-11	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E36
	BEAN DRIED / 15001-0 99.4 ACRES		
Pesticide #s:	1050 (CARBARYL), 3830 (METHOMYL), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 99.4 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

2-14	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E36
	BEAN DRIED / 15001-0 97 ACRES		
Pesticide #s:	1050 (CARBARYL), 3830 (METHOMYL), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 97 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

2-15	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E36
	BEAN DRIED / 15001-0 14.5 ACRES		
Pesticide #s:	1050 (CARBARYL), 3830 (METHOMYL), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 14.5 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

T12-A	CAMP T12 CK A LEACHING GWPA S/O HWY 12 W/O PEATLAND-ROVENTA MAP	G	M03N05E17
	BEAN DRIED / 15001-0 44.6 ACRES		
Pesticide #s:	1050 (CARBARYL), 3830 (METHOMYL), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 44.6 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

T12-C	CAMP T12 CK C LEACHING GWPA S/O HWY 12 , W/O PEATLAND -ROVENTA MAP	G	M03N05E17
	BEAN DRIED / 15001-0 32.7 ACRES		
Pesticide #s:	1050 (CARBARYL), 3830 (METHOMYL), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 32.7 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

9-A	CAMP 9 CK A/LEACHING GWPA S HWY 12 EAST CORREIA RD-ROVENTA MAP	G	M03N05E18
	BEAN DRIED / 15001-0 51 ACRES		
Pesticide #s:	1050 (CARBARYL), 3830 (METHOMYL), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 51 ACRES		
Pesticide #s:	9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

9-B	CAMP 9 CK B/LEACHING GWPA S HWY 12 EAST CORREIA RD-ROVENTA MAP	G	M03N05E18
	BEAN DRIED / 15001-0 49 ACRES		
Pesticide #s:	1050 (CARBARYL), 3830 (METHOMYL), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 49 ACRES		
Pesticide #s:	9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

10-H	CAMP 9CHK H/LEACHING GWPA S HWY 12 WEST CORREIA RD-ROVENTA MAP	G	M03N05E18
	BEAN DRIED / 15001-0 10.8 ACRES		
Pesticide #s:	1050 (CARBARYL), 3830 (METHOMYL), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 10.8 ACRES		
Pesticide #s:	9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

T12-D	CAMP T12, CHECK D LEACHING GWPA S/O HWY 12 , W/O PEATLAND-ROVENTA MAP	G	M03N05E17
	BEAN DRIED / 15001-0 32.7 ACRES		
Pesticide #s:	1050 (CARBARYL), 3830 (METHOMYL), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 32.7 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

T12-E	CAMP T12, CHECK E, LEACHING GWPA-ROVENTA MAP S/O HWY 12 , W/O PEATLANDROVENTA MAP	G	M03N05E17
	BEAN DRIED / 15001-0 34 ACRES		
Pesticide #s:	1050 (CARBARYL), 3830 (METHOMYL), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 34 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

T12-F	CAMP T12, CHECK F, LEACHING GWPA S/O HWY 12 , W/O PEATLAND-ROVENTA MAP	G	M03N05E17
	BEAN DRIED / 15001-0 33.2 ACRES		
Pesticide #s:	1050 (CARBARYL), 3830 (METHOMYL), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 33.2 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

T12-G	CAMP T12, CHECK G, LEACHING GWPA S/O HWY 12 , W/O PEATLAND-ROVENTA MAP	G	M03N05E17
	BEAN DRIED / 15001-0 42.5 ACRES		
Pesticide #s:	1050 (CARBARYL), 3830 (METHOMYL), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 42.5 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

T12-H	CAMP T12, CHECK H, LEACHING GWPA S/O HWY 12 , W/O PEATLAND-ROVENTA MAP	G	M03N05E17
	BEAN DRIED / 15001-0 21 ACRES		
Pesticide #s:	1050 (CARBARYL), 3830 (METHOMYL), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 21 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

T12-B	CAMP T12 CK B LEACHING GWPA CAMP T12 CKB LEACHING-GWPA	G	M03N05E17
	BEAN DRIED / 15001-0 44.2 ACRES		
Pesticide #s:	1050 (CARBARYL), 3830 (METHOMYL), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 44.2 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-1	THOMPSON RANCH, BISHOP TRACT, GWPA LEACH E/BISHOP SLOUGH N/EIGHT MILE RD	H	M03N05E34
	CORN FOR/FOD / 22005-0 25 ACRES		
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 25 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-10	THOMPSON RANCH, BISHOP TRACT, GWPA LEACH E/BISHOP SLOUGH N/EIGHT MILE RD	H	M03N05E34
	CORN FOR/FOD / 22005-0 42 ACRES		
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 42 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-11	THOMPSON RANCH, BISHOP TRACT, GWPA LEACH E/BISHOP SLOUGH N/EIGHT MILE RD	H	M03N05E34
	CORN FOR/FOD / 22005-0 38.4 ACRES		
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 38.4 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-12	THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHT MILE RD	H	M03N05E35
	CORN FOR/FOD / 22005-0 17 ACRES		
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 17 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-13	THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHT MILE RD	H	M03N05E35
	CORN FOR/FOD / 22005-0 8 ACRES		
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 8 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-14	THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 18 ACRES	H	M03N05E35
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 18 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

6-1	RINDGE TRACT GWPA LEACHING GWPA LEACHING **CORN FOR/FOD / 22005-0** 330 ACRES	H	M02N05E17
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 330 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

6-2	RINDGE TRACT GWPA LEACHING GWPA-LEACHING **CORN FOR/FOD / 22005-0** 146 ACRES	H	M02N05E17
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 146 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-4	THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 15 ACRES	H	M03N05E34
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 15 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-5	THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 41.2 ACRES	H	M03N05E34
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 41.2 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-6	THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 29.4 ACRES	H	M03N05E34
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 29.4 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-7	THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 24 ACRES	H	M03N05E34
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 24 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		
4-8	THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 28.1 ACRES	H	M03N05E34
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 28.1 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		
4-9	THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 23.4 ACRES	H	M03N05E34
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 23.4 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		
4-2	THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 30 ACRES	H	M03N05E34
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 30 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		
4-20	THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH S/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 27.7 ACRES	H	M03N05E35
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 27.7 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		
4-21	THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH S/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 30.8 ACRES	H	M03N05E35
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 30.8 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-25	THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH S/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 44 ACRES	H	M03N05E35
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 44 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-26	THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH S/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 55 ACRES	H	M03N05E35
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 55 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-3	THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 30 ACRES	H	M03N05E34
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 30 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-14A	THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 14 ACRES	H	M03N05E35
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 14 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-15	THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 28 ACRES	H	M03N05E35
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 28 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-16	THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 15 ACRES	H	M03N05E35
Pesticide #s:	1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 15 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-17 THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHT MILE RD H M03N05E35
CORN FOR/FOD / 22005-0 52 ACRES
Pesticide #s: 1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 52 ACRES
Pesticide #s: 2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)
Conditions: B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV

4-18 THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHT MILE RD H M03N05E35
CORN FOR/FOD / 22005-0 30 ACRES
Pesticide #s: 1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 30 ACRES
Pesticide #s: 2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)
Conditions: B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV

4-19 THOMPSON RANCH, BISHOP TRACT E/BISHOP SLOUGH N/EIGHT MILE RD H M03N05E35
CORN FOR/FOD / 22005-0 56 ACRES
Pesticide #s: 1050 (CARBARYL), 2000 (DICAMBA), 3830 (METHOMYL), 4780 (PHORATE), 9801 (2,4-D AMINE), 16011 (PARAQUAT), 16890 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 56 ACRES
Pesticide #s: 2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)
Conditions: B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV

9-3 MAP 9 SITE 9-3 S/EIGHT MILE RD E/ RIO BLANCO BISHOP TRACT H M03N05E03
SOIL FUM/PREPLT / 40008-0 201 ACRES
Pesticide #s: 2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)
WHEAT / 29139-0 201 ACRES
Pesticide #s: 2000 (DICAMBA), 4780 (PHORATE), 7860 (MCPA, DIMETHYLAMINE), 9801 (2,4-D AMINE), 16011 (PARAQUAT)
Conditions: B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV

7-1 ATLAS TRACT H M02N05E12
SOIL FUM/PREPLT / 40008-0 300 ACRES
Pesticide #s: 2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)
WHEAT / 29139-0 300 ACRES
Pesticide #s: 2000 (DICAMBA), 4780 (PHORATE), 7860 (MCPA, DIMETHYLAMINE), 9801 (2,4-D AMINE), 16011 (PARAQUAT)
Conditions: B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV

9-1 MAP 9 SITE 9-1 S/EIGHT MILE RD E/ RIO BLANCO BISHOP TRACT H M03N05E03
SOIL FUM/PREPLT / 40008-0 137 ACRES
Pesticide #s: 2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)
WHEAT / 29139-0 137 ACRES
Pesticide #s: 2000 (DICAMBA), 4780 (PHORATE), 7860 (MCPA, DIMETHYLAMINE), 9801 (2,4-D AMINE), 16011 (PARAQUAT)
Conditions: B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV

9-2	MAP 9 SITE 9-2 S/EIGHT MILE RD E/ RIO BLANCO BISHOP TRACT H		M03N05E03
	SOIL FUM/PREPLT / 40008-0 206 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
	WHEAT / 29139-0 206 ACRES		
Pesticide #s:	2000 (DICAMBA), 4780 (PHORATE), 7860 (MCPA, DIMETHYLAMINE), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

2-7	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E25
	SOIL FUM/PREPLT / 40008-0 79.8 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
	WHEAT / 29139-0 79.8 ACRES		
Pesticide #s:	2000 (DICAMBA), 4780 (PHORATE), 7860 (MCPA, DIMETHYLAMINE), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

2-6	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E25
	SOIL FUM/PREPLT / 40008-0 65.7 ACRES		
Pesticide #s:	2000 (DICAMBA), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
	WHEAT / 29139-0 65.7 ACRES		
Pesticide #s:	2000 (DICAMBA), 4780 (PHORATE), 7860 (MCPA, DIMETHYLAMINE), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

ALL	ATLAS TRACT	H	M02N05E12
	UNCUL NON-AG / 67000-0 75 ACRES		
Pesticide #s:	6260 (ZINC PHOSPHIDE), 8041 (2,4-DB), 9801 (2,4-D AMINE), 16011 (PARAQUAT)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

OPERATION-WIDE CONDITIONS

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WORKERS SAFETY SERIES ATTACHED

[ ] A-1 through A-11 General Information

PERMIT CONDITONS ATTACHED
[X] B- RM Use Near Schools
[ ] O- Aluminum Phosphide in Rodent Burrows
[X] P - General
[X] Q - Dicamba & Phenoxy Herbicides - Central Valley/Hazardous Area
[ ] R - Dicamba & Phenoxys - Special Hazardous Area
[ ] S - Metam Sodium, Metam Potassium, Dazomet
[ ] T - Aldicarb (Temik)
[ ] U - Endosulfan (Thiodan)
[ ] V - Rice Pesticides Program
[ ] - Attachments 1-5 Thiobencarb (Forms A,B)
[ ] W - Methyl Bromide / Sulfuryl Fluoride
[ ] - Soil within greenhouses

[ ] - Commodity
[ ] - Soil injection
[ ] - Tarped potting soil
[ ] - Single tree site

[ ] X - Furadan chemigation of grapes
[ ] Y - 1, 3 - Dichloropropene
[ ] Z - Other

GROUNDWATER PROTECTION PERMIT CONDITIONS

These conditions apply to pesticides labeled for agricultural, outdoor industrial, or outdoor institutional use that contain chemicals listed in 3CCR section 6800(a): ATRAZINE, SIMAZINE, BROMACIL, DIURON (except products with less than 7% diuron applied to foliage), PROMETON, BENTAZON, AND NORFLURAZON. Ground Water Protection Areas (GWPA), for San Joaquin County, are designated in the Department of Pesticide Regulation document EH03-05. A list of GWPAs may be obtained from the Commissioner's Office or DPR's website (www.cdpr.ca.gov/docs/gwp).

"Engineered rights of way" are defined as areas within a ground water protection area (GWPA) that are constructed in a way that results in increased runoff and collection of storm water, such as railroad ballasts and berms, public roadsides, and highway median strips or similar areas, but not canal or ditch banks or utility lines.

SPECIFIC GROUNDWATER PROTECTION PERMIT CONDITIONS ATTACHED

GWP-C & D Unlined canal and ditch banks
[ ] 1 - Percolation rate is less than or equal to 0.2 inches per hour
[ ] 2 - Applied six months prior to water run
[ ] 3 - All applications are prohibited below high water line

GWP-ROW Engineered rights-of-way within San Joaquin County GWPAs
[ ] 1A - Soil disturbance within 7 days
[ ] 1B - Incorporation
[ ] 1C - Applied between April 1 and July 31
[ ] 2 - Runoff passes through adjacent fully vegetated noncrop area
[ ] 3 - Compliance with NPDES permit
[ ] 4 - Runoff through adjacent area as overland flow

GWP-R Runoff GWPAs within San Joaquin County
[ ] 1 - Soil disturbance
[ ] 2 - Incorporated
[ ] 3 - Band treatment
[ ] 4 - Applied between April 1 and July 31
[ ] 5 - Runoff water held onsite
[ ] 6 - Runoff water stored offsite
[ ] 7 - Runoff to adjacent fallow field

GWP-L Leaching GWPAs within San Joaquin County
[ ] 1 - No irrigation
[ ] 2 - Bed or berm application
[ ] 3 - Managed irrigation

GWP-Director Director Approved Alternative Management Practices or Interim Use
[ ] 1 - Director approved alternative
[ ] 2 - Director approved interim use

Revised 11/11

P **General**

CONDITION - P - General

SAN JOAQUIN COUNTY AGRICULTURAL COMMISSIONERS OFFICE
2101 E EARHART AVE, SUITE 100
STOCKTON, CA 95206
Office: (209) 953-6000 Fax: (209) 953-6022
Email: stocktonag2@sjgov.org Web: www.co.san-joaquin.ca.us/agcomm

2015

RESTRICTED MATERIALS PERMIT: 39-15-3900651

ORIGINAL

Operator: RECLAMATION DISTRICT #2042
P O BOX 7424
STOCKTON, CA 95207

Agent: PELUCCA,DENNIS

3900651-2015-Version: 1
County District #: H
Issued on: 2/11/2015
Valid as of: 2/11/2015
Expires on: 12/31/2015
Primary Phone:
Alternate Phone: [redacted]
Mobile Phone: [redacted]
Fax:
Phone:
License #: 100872
Expiration: 12/31/2015

Certified Applicator: PELUCCA, DENNIS
PO BOX 6992
STOCKTON, CA 95206

Type of Use: Agricultural Use
Pesticide Possession: Possession and Use
Permit Duration: Seasonal
Employees Handle Pesticides
Permit Conditions: A, P, Q, O, B

Notices Of Intent required 24 hours prior to application of pesticide containing restricted materials

See condition detail for code descriptions.

Regulatory Notes:

I understand that this permit does not relieve me from liability for any damages to any persons or property caused by the use of these pesticides. I waive any claims of liability for damages against the County Department of Agriculture based on the issuance of this permit. I further understand that this permit may be revoked when pesticides are used in conflict with the manufacturer's labeling or in violation of applicable laws, regulations, and specific conditions of this permit. I authorize inspection at all reasonable times and whenever an emergency exists by the Department of Pesticide Regulation or the County Department of Agriculture of all areas treated or to be treated, storage facilities for pesticides or emptied containers and equipment used or to be used in the treatment. I have considered alternative and mitigation measures pursuant to Title 3, California Code of Regulations, section 6426. Taking into account economic, environmental, social, and technological factors, I have adopted those that are feasible and would substantially lessen any significant adverse impact on the environment.

[Form PR-ENF-125 (Rev 11/06) Pesticide Enforcement Branch]

Applicant: Ronald C. Cornacchini PCO
(Name & Title)
Applicant Signature: Ronald Cornacchini Date: 2-11-15
Issuing Officer: Rod Burke Date: 2-9-15

CONTACT LIST

Name	Auth Rep.	Phone	License	Expiration	Contact Type
PELUCCA, DENNIS			100872	12/31/2015	Qualified Applicator License
ALPINE HELICOPTER SERVICE		[redacted]	30969	12/31/2016	Pest Control Business
HAMILTON SERVICES		[redacted]	31516	12/31/2016	Pest Control Business
GIANNECCHINI, DONALD C	yes		107934	12/31/2016	Qualified Applicator License

PESTICIDES LIST

Number	Pesticide	Pests	Forms	Methods	Applicators
4840	ALUMINUM PHOSPHIDE	RODENTS	Fumigant	Ground	PCB/Operator
6260	ZINC PHOSPHIDE	RODENTS	Bait	Ground	PCB/Operator
9801	2,4-D AMINE	WEEDS	Liquid	Ground	PCB/Operator
16011	PARAQUAT	WEEDS	Liquid	Ground	PCB/Operator

SITES LIST

Site	Location | Site Name Commodity Name/Code	Quantity	District	Section (MTRS)
ALL	BISHOP TRACT GWPA-LEACHING		H	M03N05E34
	UNCUL NON-AG / 67000-0	200 ACRES		
Pesticide #s:	4840 (ALUMINUM PHOSPHIDE), 6260 (ZINC PHOSPHIDE), 9801 (2,4-D AMINE), 16011 (PARAQUAT)			
Conditions:	B - RM Use Near Schools, O - Aluminum & Magnesium Phosphide, P - General, Q - Dicamba & Phenoxy Herbicide CV			

OPERATION-WIDE CONDITIONS

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[ ] U - Endosulfan (Thiodan)
[ ] V - Rice Pesticides Program
    [ ] - Attachments 1-5 Thiobencarb (Forms A,B)
[ ] W - Methyl Bromide / Sulfuryl Fluoride
    [ ] - Soil within greenhouses

LETTER OF AUTHORIZATION

(H)

To: San Joaquin County Agricultural Commissioner
2101 E. Earhart Ave, Suite 100
Stockton, CA 95206
Fax: 209-953-6022

From: Dennis Pelucca
OPERATOR OF THE PROPERTY (PRINT NAME)

Reclamation Dist 2042 PERMIT NUMBER 3900657
PERMIT NAME

PO Box 7424
ADDRESS

Stockton, CA 95207
CITY, STATE, ZIP

[redacted]
PHONE

The authorized representative named below may represent me in obtaining a restricted material permit or operator identification number for use in San Joaquin County. I understand that this authorization does not relieve me of liability for violations of pesticide laws or regulations on my property. This authorization shall remain in effect until I revoke it in writing to the Agricultural Commissioner.

Signature: Dennis Pelucca Date: 2/11/2015
OPERATOR OF THE PROPERTY

Title: PCO

Authorized Representative: Donald Giannecchini
PRINT NAME

I am the property operator's: [ ] employee; [ ] relative; [ ] Employee PCA; [X] other PCO
SPECIFY

I hereby certify that the information above is correct to the best of my knowledge. I also understand that, in the event of violation of pesticide laws or regulations, I could be held liable either separately or together with the property operator.

Signature: Donald Giannecchini Phone: [redacted]
AUTHORIZED REPRESENTATIVE

3CCR 6420(a): *"Permits for agricultural use of a restricted material shall be issued in the name of the operator of the property to be treated. The permittee* ***or when allowed by the commissioner (emphasis added)****, the permittee's authorized representative or licensed pest control adviser, shall sign the permit. The authorized representative or licensed pest control adviser shall provide the commissioner with written documentation from the permittee to act on his/her behalf."*

3CCR 6000: *"Operator of the property" means a person who owns the property and/or is legally entitled to possess or use the property through terms of a lease, rental contract, trust, or other management arrangement.*

cc: Hiromi

[ ] - Commodity
[ ] - Soil injection
[ ] - Tarped potting soil
[ ] - Single tree site

[ ] X - Furadan chemigation of grapes
[ ] Y - 1, 3 - Dichloropropene
[ ] Z - Other

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[ ] 6 - Runoff water stored offsite
[ ] 7 - Runoff to adjacent fallow field

GWP-L Leaching GWPAs within San Joaquin County
[ ] 1 - No irrigation
[ ] 2 - Bed or berm application
[ ] 3 - Managed irrigation

GWP-Director Director Approved Alternative Management Practices or Interim Use
[ ] 1 - Director approved alternative
[ ] 2 - Director approved interim use

Revised 11/11

P **General**

CONDITION - P - General

In addition to all applicable laws, regulations, label restrictions and other more restrictive conditions of this permit, THE FOLLOWING CONDITIONS APPLY TO APPLICATIONS COVERED BY THIS PERMIT.

1. Maximum wind velocities for applications of Restricted Materials unless otherwise covered by the label, law, regulation, other permit conditions or environmental conditions at the application site are:

a. Spray - 12 m.p.h.
b. Dust - 8 m.p.h.
c. Pellets, granular or baits - 16 m.p.h.

2. No pesticide application shall be made or continued when there is the likelihood of contaminating any persons, non-target crops, animals or other public or private property.

3. Unless specifically named as a dust on this permit, NO DUST FORMULATIONS are allowed.

4. Apply pesticides covered by SLN(s) and Section 18(s) in conformance with the SLN(s) and Section 18(s).

5. A flagger is required at the application site for all AIR applications of Zinc Phosphide bait.

Revised 10/90

Q Dicamba & Phenoxy Herbicide CV

CONDITION - Q - DICAMBA AND PHENOXY HERBICIDES - CENTRAL VALLEY/HAZARDOUS AREA

In addition to all applicable laws, regulations and label restrictions, the CONDITIONS CHECKED BELOW APPLY to applications covered by this permit.

[X] 1. No ester formulation applications allowed.

[ ] 2. A smoke column is required at the application site for all Phenoxy and Dicamba applications by aircraft beginning March 16 and continuing through October 15.

[X] 3. Do not discharge material more than 10 feet above the crop or target.

[ ] 4. A drift reducing agent shall be added to the spray mixture at label rates.

[X] 5. Maximum wind velocity for Phenoxy herbicides - 10 m.p.h.

[X] 6. Maximum wind velocity for Dicamba - 10 m.p.h. EXCEPT when wind is moving in direction of sensitive crops, the maximum wind velocity - 5 m.p.h.

[ ] 7. No Dicamba application allowed in the vicinity of sensitive crops when the maximum temperature on the day of application is predicted to exceed 85 degrees fahrenheit. Predicted temperature for the following day will be determined by the NOAA - National Weather Service.

[ ] 8. Dicamba applications by aircraft are restricted to a minimum distance of 2 miles from the following susceptible crops: beans, grapes, sunflower, tomato, safflower, curcurbits, potatoes.

[ ] 9. Dicamba applications by ground are restricted to a minimum distance of 20 feet from the following susceptible crops: beans, safflower, tomato, curcurbits, potatoes and 1/4 mile from grapes and sunflowers.

[ ]10. No Dicamba or Phenoxy herbicide applications allowed beginning March 16 and continuing through October 15, and until grape leaves in the vicinity of the treated area are "browned off".

Revised 10/90

O **Aluminum & Magnesium Phosphide**

Use in Rodent Burrow Fumigations

These use conditions are based on a determination by the California Department of Pesticide Regulation that exposure to phosphine fumigants is a risk to public safety.

1. Use is strictly prohibited around all residential areas, including single and multi-family residential properties, nursing homes, schools (except athletic fields where use may continue), day care facilities, and hospitals.
2. The products must only be used outdoors for control of burrowing pests, and are for use only on agricultural areas, orchards, non-crop areas (such as pasture and rangeland), golf courses, athletic fields, parks and recreational areas, cemeteries, airports, rights-of-way, earthen dams, and other non-residential institutional or industrial sites.
3. Products must not be applied in a burrow system that is within 100 feet of a building that is or may be occupied by people or domestic animals. This buffer zone for treatment around non-residential buildings that could be occupied by people or animals has been increased from 15 feet to 100 feet.
4. When this product is used in athletic fields or parks, the applicator must post a sign at entrances to the treated site containing the signal word DANGER/PELIGRO, skull and crossbones, the words: DO NOT ENTER/NO ENTRE, FIELD NOT FOR USE, the name and EPA registration number of the fumigant, and a 24-hour emergency response number. Signs may be removed 2 days after the final treatment.
5. When this product is used out-of-doors in a site frequented by people, other than an athletic field or park, the applicator shall post a sign at the application site containing the signal word DANGER/PELIGRO, skull and crossbones, the name and EPA registration number of the fumigant, and a 24-hour emergency response number. Signs may be removed 2 days after the final treatment.
6. Fumigant Management Plans must be written before all applications of phosphine products, including all burrowing pest fumigations. A Fumigant Management Plan is a written description of the steps designed to plan for a safe, legal and effective fumigation. The certified applicator and owner of the property to be fumigated must characterize the area to be treated and include all safety requirements in the plan before application.

B **RM Use Near Schools**

RESTRICTED MATERIALS USE NEAR SCHOOLS

No applications of Restricted Materials shall be made by air or ground within 660 feet of a school in session or when a school sponsored event is in progress. If the pesticide label or regulation requires a larger buffer area, the larger buffer shall apply. There will be no waiver of the required 24 hour Notice of Intent.

These conditions do not apply to the following ground applications:
1.Vertebrate pest control
2.Back-pack applications
3.Equipment where all nozzles are pointing down AND wind direction is periodically measured as moving away from the school site
4.Other CAC approved methods

NOTE: The uses of soil fumigants and their corresponding buffer zones are covered by DPR suggested permit conditions or by label.

SITE CONDITIONS

B **RM Use Near Schools**

RESTRICTED MATERIALS USE NEAR SCHOOLS

No applications of Restricted Materials shall be made by air or ground within 660 feet of a school in session or when a school sponsored event is in progress. If the pesticide label or regulation requires a larger buffer area, the larger buffer shall apply. There will be no waiver of the required 24 hour Notice of Intent.

These conditions do not apply to the following ground applications:
1.Vertebrate pest control

2.Back-pack applications
3.Equipment where all nozzles are pointing down AND wind direction is periodically measured as moving away from the school site
4.Other CAC approved methods

NOTE: The uses of soil fumigants and their corresponding buffer zones are covered by DPR suggested permit conditions or by label.

O Aluminum & Magnesium Phosphide

Use in Rodent Burrow Fumigations

These use conditions are based on a determination by the California Department of Pesticide Regulation that exposure to phosphine fumigants is a risk to public safety.

1. Use is strictly prohibited around all residential areas, including single and multi-family residential properties, nursing homes, schools (except athletic fields where use may continue), day care facilities, and hospitals.
2. The products must only be used outdoors for control of burrowing pests, and are for use only on agricultural areas, orchards, non-crop areas (such as pasture and rangeland), golf courses, athletic fields, parks and recreational areas, cemeteries, airports, rights-of-way, earthen dams, and other non-residential institutional or industrial sites.
3. Products must not be applied in a burrow system that is within 100 feet of a building that is or may be occupied by people or domestic animals. This buffer zone for treatment around non-residential buildings that could be occupied by people or animals has been increased from 15 feet to 100 feet.
4. When this product is used in athletic fields or parks, the applicator must post a sign at entrances to the treated site containing the signal word DANGER/PELIGRO, skull and crossbones, the words: DO NOT ENTER/NO ENTRE, FIELD NOT FOR USE, the name and EPA registration number of the fumigant, and a 24-hour emergency response number. Signs may be removed 2 days after the final treatment.
5. When this product is used out-of-doors in a site frequented by people, other than an athletic field or park, the applicator shall post a sign at the application site containing the signal word DANGER/PELIGRO, skull and crossbones, the name and EPA registration number of the fumigant, and a 24-hour emergency response number. Signs may be removed 2 days after the final treatment.
6. Fumigant Management Plans must be written before all applications of phosphine products, including all burrowing pest fumigations. A Fumigant Management Plan is a written description of the steps designed to plan for a safe, legal and effective fumigation. The certified applicator and owner of the property to be fumigated must characterize the area to be treated and include all safety requirements in the plan before application.

P General

CONDITION - P - General

In addition to all applicable laws, regulations, label restrictions and other more restrictive conditions of this permit, THE FOLLOWING CONDITIONS APPLY TO APPLICATIONS COVERED BY THIS PERMIT.

1. Maximum wind velocities for applications of Restricted Materials unless otherwise covered by the label, law, regulation, other permit conditions or environmental conditions at the application site are:

a. Spray - 12 m.p.h.
b. Dust - 8 m.p.h.
c. Pellets, granular or baits - 16 m.p.h.

2. No pesticide application shall be made or continued when there is the likelihood of contaminating any persons, non-target crops, animals or other public or private property.

3. Unless specifically named as a dust on this permit, NO DUST FORMULATIONS are allowed.

4. Apply pesticides covered by SLN(s) and Section 18(s) in conformance with the SLN(s) and Section 18(s).

5. A flagger is required at the application site for all AIR applications of Zinc Phosphide bait.

Revised 10/90

Q Dicamba & Phenoxy Herbicide CV

CONDITION - Q - DICAMBA AND PHENOXY HERBICIDES - CENTRAL VALLEY/HAZARDOUS AREA

In addition to all applicable laws, regulations and label restrictions, the CONDITIONS CHECKED BELOW APPLY to applications covered by this permit.

[X] 1. No ester formulation applications allowed.

[ ] 2. A smoke column is required at the application site for all Phenoxy and Dicamba applications by aircraft beginning March 16 and continuing through October 15.

[X] 3. Do not discharge material more than 10 feet above the crop or target.

[ ] 4. A drift reducing agent shall be added to the spray mixture at label rates.

[X] 5. Maximum wind velocity for Phenoxy herbicides - 10 m.p.h.

[X] 6. Maximum wind velocity for Dicamba - 10 m.p.h. EXCEPT when wind is moving in direction of sensitive crops, the maximum wind velocity - 5 m.p.h.

[ ] 7. No Dicamba application allowed in the vicinity of sensitive crops when the maximum temperature on the day of application is predicted to exceed 85 degrees
fahrenheit. Predicted temperature for the following day will be determined by the NOAA - National Weather Service.

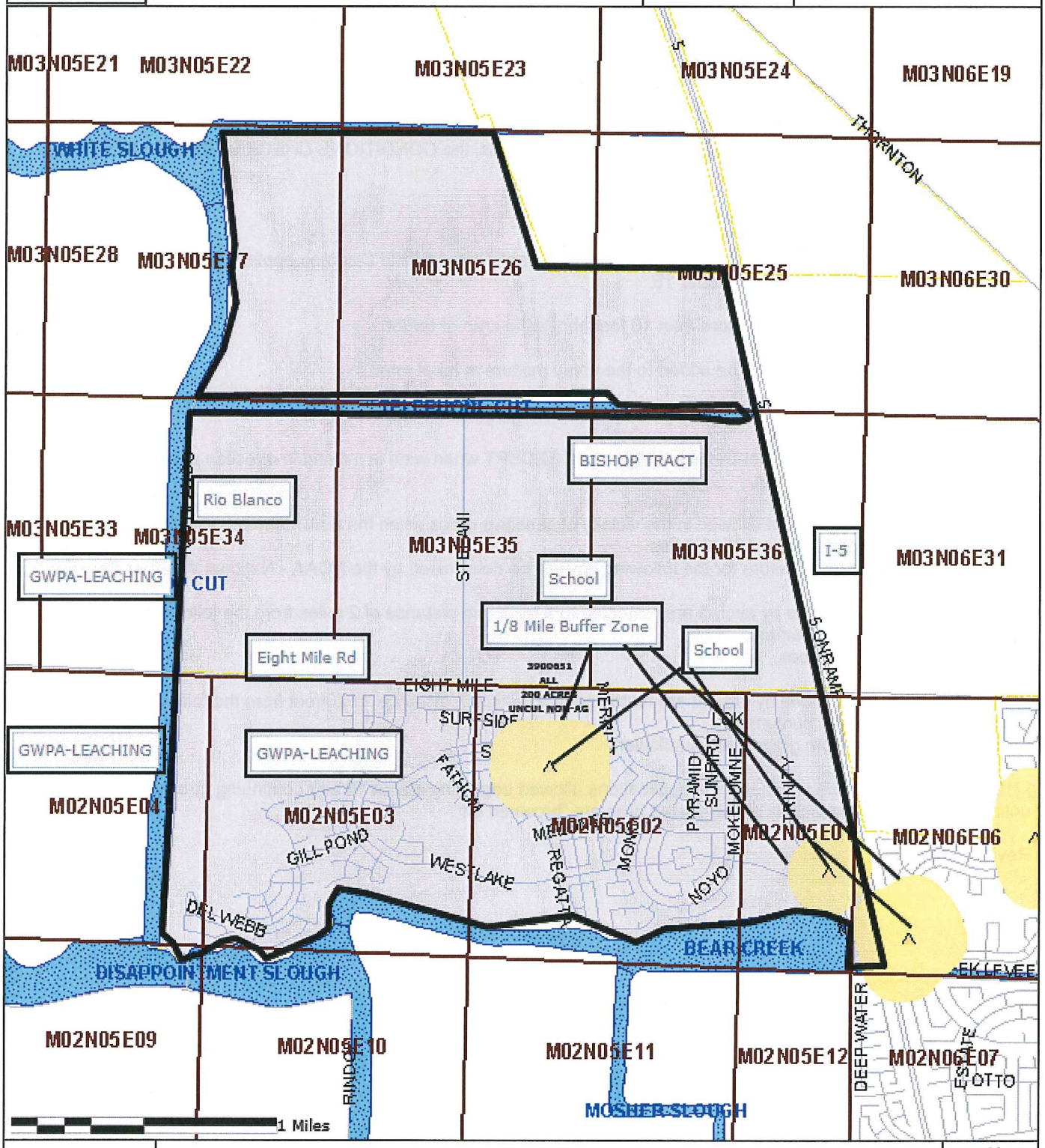
[ ] 8. Dicamba applications by aircraft are restricted to a minimum distance of 2 miles from the following susceptible crops: beans, grapes, sunflower, tomato,
safflower, curcurbits, potatoes.

[ ] 9. Dicamba applications by ground are restricted to a minimum distance of 20 feet from the following susceptible crops: beans, safflower, tomato, curcurbits,
potatoes and 1/4 mile from grapes and sunflowers.

[ ]10. No Dicamba or Phenoxy herbicide applications allowed beginning March 16 and continuing through October 15, and until grape leaves in the vicinity of the treated area are "browned off".

Revised 10/90

San Joaquin County	Permit Number:	3900651
Map 1	Created On:	2/9/2015
Bishop Tract	Operator:	RECLAMATION DISTRICT #2042



Included Sites:

SAN JOAQUIN COUNTY AGRICULTURAL COMMISSIONERS OFFICE
2101 E EARHART AVE, SUITE 100
STOCKTON, CA 95206
Office: (209) 953-6000 Fax: (209) 953-6022
Email: stocktonag2@sjgov.org Web: www.co.san-joaquin.ca.us/agcomm

2016

RESTRICTED MATERIALS PERMIT: 39-16-3900060

Operator: BIAGI FARMS, GEORGE JR
8458 W EIGHT MILE RD
STOCKTON, CA 95219

Agent: BIAGI, GEORGE JR

3900060-2016-Version: 1
County District #:H
Issued on: 2/1/16
Valid as of: ~~01/01/2016~~ 2/1/16
Expires on: 12/31/2016
Primary Phone: [redacted]
Alternate Phone: ( ) -
Mobile Phone: [redacted]
Fax:
Phone:
License #: 3900053
Expiration: 12/31/2018

Certified Applicator: BIAGI,GEORGE G
8458 W EIGHT MILE RD
STOCKTON, CA 95219

Type of Use: Agricultural Use
Pesticide Possession: Possession and Use
Permit Duration: Seasonal
Employees Handle Pesticides
Permit Conditions: A, P, Q, R, B

Notices Of Intent required 24 hours prior to application of pesticide containing restricted materials

See condition detail for code descriptions.

Regulatory Notes:

I understand that this permit does not relieve me from liability for any damages to any persons or property caused by the use of these pesticides. I waive any claims of liability for damages against the County Department of Agriculture based on the issuance of this permit. I further understand that this permit may be revoked when pesticides are used in conflict with the manufacturer's labeling or in violation of applicable laws, regulations, and specific conditions of this permit. I authorize inspection at all reasonable times and whenever an emergency exists by the Department of Pesticide Regulation or the County Department of Agriculture of all areas treated or to be treated, storage facilities for pesticides or emptied containers and equipment used or to be used in the treatment. I have considered alternative and mitigation measures pursuant to Title 3, California Code of Regulations, section 6426. Taking into account economic, environmental, social, and technological factors, I have adopted those that are feasible and would substantially lessen any significant adverse impact on the environment.

[Form PR-ENF-125 (Rev 11/06) Pesticide Enforcement Branch]

Applicant: GEORGE BIAGI
(Name & Title)

Applicant Signature: George Biagi Date: 2-1-16

Issuing Officer: Rod Sailer Date: 1-29-16

CONTACT LIST

Name	Auth Rep.	Phone	License	Expiration	Contact Type
ALPINE HELICOPTER SERVICE		[redacted]	30969	12/31/2016	Pest Control Business
KG VINEYARD MANAGEMENT LLC		[redacted]	32946	12/31/2016	Pest Control Business
PELUCCA, DENNIS	yes		74128	12/31/2017	Agricultural Pest Control Advisor
BIAGI,GEORGE G		[redacted]	3900053	12/31/2018	Private Applicator Certificate
DELTA GROWERS			34357	12/31/2016	Pesticide Control Dealer

PESTICIDES LIST

Number	Pesticide	Pests	Forms	Methods	Applicators
105	CARBARYL	LARVAE	All Reg.	Air/Ground	PCB/Operator
200	DICAMBA	WEEDS	Liquid	Ground	PCB/Operator
383	METHOMYL	LARVAE	Liquid	Air/Ground	PCB/Operator
478	PHORATE	APHIDS	All Reg.	Air/Ground	PCB/Operator
626	ZINC PHOSPHIDE	RODENTS	Bait	Ground	PCB/Operator
786	MCPA, DIMETHYLAMINE SALT	BROADLEAF WEEDS	Liquid	Air/Ground	PCB/Operator
804	2,4-D, BUTYL ESTER	WEEDS	Liquid	Air/Ground	PCB/Operator
806	2,4-D, DIMETHYLAMINE SALT	WEEDS	Liquid	Air/Ground	PCB/Operator
1601	PARAQUAT DICHLORIDE	WEEDS	Liquid	Air/Ground	PCB/Operator
1689	METHIDATHION	LARVAE	Liquid	Air/Ground	PCB/Operator

SITES LIST

Site	Location | Site Name Commodity Name/Code	Quantity	District	Section (MTRS)
MR-4	N/W CORREIA RD & WHITE SLOUGH MOLINI RANCH		G	M03N04E24
	BEAN DRIED / 15001-0	16 ACRES		
Pesticide #s:	105 (CARBARYL), 383 (METHOMYL), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)			
	SOIL FUM/PREPLT / 40008-0	16 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)			
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV			
T12-F	CAMP T12, CHECK F, LEACHING GWPA S/O HWY 12 , W/O PEATLAND-ROVENTA MAP		G	M03N05E17
	BEAN DRIED / 15001-0	33.2 ACRES		
Pesticide #s:	105 (CARBARYL), 383 (METHOMYL), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)			
	SOIL FUM/PREPLT / 40008-0	33.2 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)			
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV			

T12-G	CAMP T12, CHECK G, LEACHING GWPA S/O HWY 12 , W/O PEATLAND-ROVENTA MAP	G	M03N05E17
	BEAN DRIED / 15001-0 42.5 ACRES		
Pesticide #s:	105 (CARBARYL), 383 (METHOMYL), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 42.5 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

T12-H	CAMP T12, CHECK H, LEACHING GWPA S/O HWY 12 , W/O PEATLAND-ROVENTA MAP	G	M03N05E17
	BEAN DRIED / 15001-0 21 ACRES		
Pesticide #s:	105 (CARBARYL), 383 (METHOMYL), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 21 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

9-A	CAMP 9 CK A/LEACHING GWPA S HWY 12 EAST CORREIA RD-ROVENTA MAP	G	M03N05E18
	BEAN DRIED / 15001-0 51 ACRES		
Pesticide #s:	105 (CARBARYL), 383 (METHOMYL), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 51 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

9-B	CAMP 9 CK B/LEACHING GWPA S HWY 12 EAST CORREIA RD-ROVENTA MAP	G	M03N05E18
	BEAN DRIED / 15001-0 49 ACRES		
Pesticide #s:	105 (CARBARYL), 383 (METHOMYL), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 49 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

10-H	CAMP 9CHK H/LEACHING GWPA S HWY 12 WEST CORREIA RD-ROVENTA MAP	G	M03N05E18
	BEAN DRIED / 15001-0 10.8 ACRES		
Pesticide #s:	105 (CARBARYL), 383 (METHOMYL), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 10.8 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

26-C	CAMP 26 CK C TERMINOUS ISL	G	M03N05E30
	BEAN DRIED / 15001-0 33.5 ACRES		
Pesticide #s:	105 (CARBARYL), 383 (METHOMYL), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 33.5 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

9-C	CAMP 9 CK C/LEACHING GWPA S HWY 12 EAST CORREIA RD-ROVENTA MAP	G	M03N05E18
	BEAN DRIED / 15001-0 34 ACRES		
Pesticide #s:	105 (CARBARYL), 383 (METHOMYL), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 34 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

9-E	CAMP 9 CK E/LEACHING GWPA S HWY 12 EAST CORREIA RD-ROVENTA MAP	G	M03N05E18
	BEAN DRIED / 15001-0 34 ACRES		
Pesticide #s:	105 (CARBARYL), 383 (METHOMYL), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 34 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

9-F	CAMP 9 CK F/LEACHING GWPA S HWY 12 EAST CORREIA RDROVENTA MAP	G	M03N05E18
	BEAN DRIED / 15001-0 37 ACRES		
Pesticide #s:	105 (CARBARYL), 383 (METHOMYL), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 37 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

9-GN	CAMP 9 CK G NORTH END S HWY 12 EAST CORREIA RD-ROVENTA MAP	G	M03N05E18
	BEAN DRIED / 15001-0 18 ACRES		
Pesticide #s:	105 (CARBARYL), 383 (METHOMYL), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 18 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

9-GS	CAMP 9 CK G SOUTH END/LEACH S HWY 12 EAST CORREIA RDROVENTA MAP	G	M03N05E19
	BEAN DRIED / 15001-0 27 ACRES		
Pesticide #s:	105 (CARBARYL), 383 (METHOMYL), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 27 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

MFR-10	N HWY 12 W I-5/LEACHING GWPA TERMINOUS ISL MOHR-FRY RANCH	G	M03N04E12
	BEAN DRIED / 15001-0 54 ACRES		
Pesticide #s:	105 (CARBARYL), 383 (METHOMYL), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 54 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

GB-16	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E25
	BEAN DRIED / 15001-0 15 ACRES		
Pesticide #s:	105 (CARBARYL), 383 (METHOMYL), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	WHEAT / 29139-0 15 ACRES		
Pesticide #s:	200 (DICAMBA), 478 (PHORATE), 786 (MCPA, DIMETHYLAMINE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 15 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

GB-17	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E25
	BEAN DRIED / 15001-0 46.6 ACRES		
Pesticide #s:	105 (CARBARYL), 383 (METHOMYL), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	WHEAT / 29139-0 46.6 ACRES		
Pesticide #s:	200 (DICAMBA), 478 (PHORATE), 786 (MCPA, DIMETHYLAMINE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 46.6 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

GB-18	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E25
	BEAN DRIED / 15001-0 62 ACRES		
Pesticide #s:	105 (CARBARYL), 383 (METHOMYL), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	WHEAT / 29139-0 62 ACRES		
Pesticide #s:	200 (DICAMBA), 478 (PHORATE), 786 (MCPA, DIMETHYLAMINE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 62 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

GB-19	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E25
	BEAN DRIED / 15001-0 59.6 ACRES		
Pesticide #s:	105 (CARBARYL), 383 (METHOMYL), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 59.6 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

GB-20	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E25
	BEAN DRIED / 15001-0 58.6 ACRES		
Pesticide #s:	105 (CARBARYL), 383 (METHOMYL), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 58.6 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-20 THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH S/EIGHTH MILE RD M03N05E35
FORAGE HAY/SLGE / 22000-0 27.7 ACRES
Pesticide #s: 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
CORN FOR/FOD / 22005-0 27.7 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 27.7 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA

4-21 THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH S/EIGHTH MILE RD M03N05E35
FORAGE HAY/SLGE / 22000-0
Pesticide #s: 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
CORN FOR/FOD / 22005-0 30.8 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 30.8 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA

4-25 THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH S/EIGHTH MILE RD M03N05E35
CORN FOR/FOD / 22005-0 44 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 44 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA

4-19 THOMPSON RANCH, BISHOP TRACT E/BISHOP SLOUGH N/EIGHT H MILE RD M03N05E35
CORN FOR/FOD / 22005-0 56 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 56 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA

4-26 THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH S/EIGHTH MILE RD M03N05E35
CORN FOR/FOD / 22005-0 55 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 55 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA

6-1	RINDGE TRACT GWPA LEACHING GWPA LEACHING	H	M02N05E17
	CORN FOR/FOD / 22005-0 330 ACRES		
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 330 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

6-2	RINDGE TRACT GWPA LEACHING GWPA-LEACHING	H	M02N05E17
	CORN FOR/FOD / 22005-0 146 ACRES		
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 146 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-10	THOMPSON RANCH, BISHOP TRACT, GWPA LEACH E/BISHOP SLOUGH N/EIGHT MILE RD	H	M03N05E34
	CORN FOR/FOD / 22005-0 42 ACRES		
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 42 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

4-11	THOMPSON RANCH, BISHOP TRACT, GWPA LEACH E/BISHOP SLOUGH N/EIGHT MILE RD	H	M03N05E34
	CORN FOR/FOD / 22005-0 38.4 ACRES		
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 38.4 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

4-12	THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHTH MILE RD	M03N05E35
	CORN FOR/FOD / 22005-0 17 ACRES	
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)	
	SOIL FUM/PREPLT / 40008-0 17 ACRES	
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)	
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA	

4-13 THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHTH MILE RD M03N05E35
CORN FOR/FOD / 22005-0 8 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 8 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA

4-14A THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHTH MILE RD M03N05E35
CORN FOR/FOD / 22005-0 14 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 14 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA

4-18 THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHTH MILE RD M03N05E35
CORN FOR/FOD / 22005-0 30 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 30 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA

9-2A S/EIGHT MILE RD E/RIO BLANCO H M02N05E03
CORN FOR/FOD / 22005-0 104.2 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 104.2 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA

9-3A S/EIGHT MILE RD E/RIO BLANCO H M02N05E03
CORN FOR/FOD / 22005-0 145.9 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 145.9 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA

2-12	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E36
	ALFALFA / 23001-0 37.4 ACRES		
Pesticide #s:	383 (METHOMYL), 804 (2,4-D, BUTYL ESTER), 1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 37.4 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

2-13	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E36
	ALFALFA / 23001-0 110.3 ACRES		
Pesticide #s:	383 (METHOMYL), 804 (2,4-D, BUTYL ESTER), 1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 110.3 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

7-1	ATLAS TRACT S/EIGHT MILE RD W/I-5	H	M02N05E12
	WHEAT / 29139-0 266.4 ACRES		
Pesticide #s:	200 (DICAMBA), 478 (PHORATE), 786 (MCPA, DIMETHYLAMINE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 266.4 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

9-3	MAP 9 SITE 9-3 S/EIGHT MILE RD E/ RIO BLANCO BISHOP TRACT	H	M03N05E03
	WHEAT / 29139-0 55.1 ACRES		
Pesticide #s:	200 (DICAMBA), 478 (PHORATE), 786 (MCPA, DIMETHYLAMINE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 201 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

9-1	MAP 9 SITE 9-1 S/EIGHT MILE RD E/ RIO BLANCO BISHOP TRACT	H	M03N05E03
	WHEAT / 29139-0 135.5 ACRES		
Pesticide #s:	200 (DICAMBA), 478 (PHORATE), 786 (MCPA, DIMETHYLAMINE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 135.5 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

9-2	MAP 9 SITE 9-2 S/EIGHT MILE RD E/ RIO BLANCO BISHOP TRACT	H	M03N05E03
	WHEAT / 29139-0 101.8 ACRES		
Pesticide #s:	200 (DICAMBA), 478 (PHORATE), 786 (MCPA, DIMETHYLAMINE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 206 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

9-4	THE RESERVE N/EIGHT MILE RD E/RIO BLANCO	H	M03N05E35
	WHEAT / 29139-0 21.9 ACRES		
Pesticide #s:	200 (DICAMBA), 478 (PHORATE), 786 (MCPA, DIMETHYLAMINE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 21.9 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

9-5	THE RESERVE N/EIGHT MILE RD E/RIO BLANCO	H	M03N05E35
	WHEAT / 29139-0 24.7 ACRES		
Pesticide #s:	200 (DICAMBA), 478 (PHORATE), 786 (MCPA, DIMETHYLAMINE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 24.7 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

9-6	THE RESERVE GOLF COURSSE N/EIGHT MILE RD E/RIO BLANCO	H	M03N05E35
	WHEAT / 29139-0 16.4 ACRES		
Pesticide #s:	200 (DICAMBA), 478 (PHORATE), 786 (MCPA, DIMETHYLAMINE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 16.4 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

ROW	RIGHT-OF-WAYS ALL LOCATIONS	H	M02N05E12
	RIGHTS OF WAY / 40-0 75 ACRES		
Pesticide #s:	626 (ZINC PHOSPHIDE), 804 (2,4-D, BUTYL ESTER), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

OPERATION-WIDE CONDITIONS

A **Table of Contents**

A - PERMIT CONDITIONS - TABLE OF CONTENTS

WORKERS SAFETY SERIES ATTACHED

[ ] A-1 through A-10 Ag PSIS
[ ] N-1 through N-8 Non Ag PSIS

PERMIT CONDITONS ATTACHED
[X] B- RM Use Near Schools
[ ] C- Non-ag Permit, Notice of Intent
[ ] D- Chlorpyrifos
[ ] M- Methyl bromide Field Fumigation
[ ] O- Aluminum Phosphide in Rodent Burrows
[X] P - General
[X] Q - Dicamba & Phenoxy Herbicides - Central Valley

[ ] QL- Dicambe & Phenoxy Herbicides - N/Eight Mile
[X] R - Dicamba & Phenoxy - Special Hazardous Area
[ ] S - Metam Sodium, Metam Potassium, Dazomet
[ ] T - Chloropicrin/Products w/Pic, Field Fumigation
[ ] V - Rice Pesticides Program
[ ] W - Tree Hole Fumigation
[ ] Y - 1,3-Dichloropropene (100%)
[ ] Z - Commodity Fumigation

GROUNDWATER PROTECTION PERMIT CONDITIONS

These conditions apply to pesticides labeled for agricultural, outdoor industrial, or outdoor institutional use that contain chemicals listed in 3CCR section 6800(a): ATRAZINE, SIMAZINE, BROMACIL, DIURON (except products with less than 7% diuron applied to foliage), PROMETON, BENTAZON, AND NORFLURAZON. Ground Water Protection Areas (GWPA), for San Joaquin County, are designated in the Department of Pesticide Regulation document EH03-05. A list of GWPAs may be obtained from the Commissioner's Office or DPR's website (www.cdpr.ca.gov/docs/gwp).

"Engineered rights of way" are defined as areas within a ground water protection area (GWPA) that are constructed in a way that results in increased runoff and collection of storm water, such as railroad ballasts and berms, public roadsides, and highway median strips or similar areas, but not canal or ditch banks or utility lines.

SPECIFIC GROUNDWATER PROTECTION PERMIT CONDITIONS ATTACHED

GWP-C & D Unlined canal and ditch banks
[ ] 1 - Percolation rate is less than or equal to 0.2 inches per hour
[ ] 2 - Applied six months prior to water run
[ ] 3 - All applications are prohibited below high water line

GWP-ROW Engineered rights-of-way within San Joaquin County GWPAs
[ ] 1A - Soil disturbance within 7 days
[ ] 1B - Incorporation
[ ] 1C - Applied between April 1 and July 31
[ ] 2 - Runoff passes through adjacent fully vegetated noncrop area
[ ] 3 - Compliance with NPDES permit
[ ] 4 - Runoff through adjacent area as overland flow

GWP-R Runoff GWPAs within San Joaquin County
[ ] 1 - Soil disturbance
[ ] 2 - Incorporated
[ ] 3 - Band treatment
[ ] 4 - Applied between April 1 and July 31
[ ] 5 - Runoff water held onsite
[ ] 6 - Runoff water stored offsite
[ ] 7 - Runoff to adjacent fallow field

GWP-L Leaching GWPAs within San Joaquin County
[ ] 1 - No irrigation
[ ] 2 - Bed or berm application
[ ] 3 - Managed irrigation

GWP-Director Director Approved Alternative Management Practices or Interim Use
[ ] 1 - Director approved alternative
[ ] 2 - Director approved interim use

Revised 11/15

P **General**

CONDITION - P - General

In addition to all applicable laws, regulations, label restrictions and other more restrictive conditions of this permit, THE FOLLOWING CONDITIONS APPLY TO APPLICATIONS COVERED BY THIS PERMIT.

1. Maximum wind velocities for applications of Restricted Materials unless otherwise covered by the label, law, regulation, other permit conditions or environmental conditions at the application site are:

a. Spray - 12 m.p.h.
b. Dust - 8 m.p.h.
c. Pellets, granular or baits - 16 m.p.h.

2. No pesticide application shall be made or continued when there is the likelihood of contaminating any persons, non-target crops, animals or other public or private property.

3. Unless specifically named as a dust on this permit, NO DUST FORMULATIONS are allowed.

4. Apply pesticides covered by SLN(s) and Section 18(s) in conformance with the SLN(s) and Section 18(s).

5. A flagger is required at the application site for all AIR applications of Zinc Phosphide bait.

Revised 10/90

Q **Dicamba & Phenoxy Herbicide CV**

CONDITION - Q - DICAMBA AND PHENOXY HERBICIDES - CENTRAL VALLEY/

In addition to all applicable laws, regulations and label restrictions, the CONDITIONS CHECKED BELOW APPLY to applications covered by this permit.

[X] 1. No ester formulation applications allowed.

[X] 2. Do not discharge material more than 10 feet above the crop or target.

[X] 3. A drift reducing agent shall be added to the spray mixture at label rates.

[X] 4. Maximum wind velocity for Phenoxy herbicides - 10 m.p.h.

[X] 5. Maximum wind velocity for Dicamba - 10 m.p.h. EXCEPT when wind is moving in direction of sensitive crops, the maximum wind velocity - 5 m.p.h.

Revised 11/15

R **Dicamba & Phenoxy Herbicide SA**

CONDITION - R - DICAMBA AND PHENOXY HERBICIDES - SPECIAL HAZARDOUS AREA

In addition to all applicable laws, regulations, label restrictions, the and other conditions of this permit, the conditions listed below apply to applications in the Hazardous Area in San Joaquin County beginning March 16 and continuing through October 15.

1. A drift reducing agent shall be added to the spray mixture at the label rates.

2. No Phenoxy application shall be made when the wind velocity is less than 2 m.p.h. or in excess of 7 m.p.h.

3. No Dicamba applications allowed when wind exceeds 5 m.p.h.

4. No Dicamba application allowed when the maximum temperature on the day of application is predicted to exceed 85

degrees fahrenheit. Predicted temperature for the following day will be determined by the NOAA National Weather Service.

5. Air applications are prohibited, except as follows: KING ISLAND, EMPIRE TRACT, BISHOP TRACT, RIO BLANCO TRACT, BOULDIN ISLAND, STATEN ISLAND. Monitoring of application by a Commissioner's representative is required. Applicator shall inform the Agricultural Commissioner's Office of the specific time of application. Application shall not begin until the Commissioner's representative is on site, or approval has been received from the Commissioner's representative.

Revised 11/15

B **RM Use Near Schools**

CONDITION B REST. MAT. USE NEAR SCHOOLS
No applications of Restricted Materials shall be made by air or ground within 660 feet of a school in session or when a school sponsored event is in progress. If the pesticide label or regulation requires a larger buffer area, the larger buffer shall apply. There will be no waiver of the required 24 hour Notice of Intent.

These conditions do not apply to the following ground applications:
1.Vertebrate pest control
2.Back-pack applications
3.Equipment where all nozzles are pointing down AND wind direction is periodically measured as moving away from the school site
4.Other CAC approved methods

NOTE: The uses of soil fumigants and their corresponding buffer zones are covered by DPR suggested permit conditions or by label.

SITE CONDITIONS

B **RM Use Near Schools**

CONDITION B REST. MAT. USE NEAR SCHOOLS
No applications of Restricted Materials shall be made by air or ground within 660 feet of a school in session or when a school sponsored event is in progress. If the pesticide label or regulation requires a larger buffer area, the larger buffer shall apply. There will be no waiver of the required 24 hour Notice of Intent.

These conditions do not apply to the following ground applications:
1.Vertebrate pest control
2.Back-pack applications
3.Equipment where all nozzles are pointing down AND wind direction is periodically measured as moving away from the school site
4.Other CAC approved methods

NOTE: The uses of soil fumigants and their corresponding buffer zones are covered by DPR suggested permit conditions or by label.

P **General**

CONDITION - P - General

In addition to all applicable laws, regulations, label restrictions and other more restrictive conditions of this permit, THE FOLLOWING CONDITIONS APPLY TO APPLICATIONS COVERED BY THIS PERMIT.

1. Maximum wind velocities for applications of Restricted Materials unless otherwise covered by the label, law, regulation, other permit conditions or environmental conditions at the application site are:

a. Spray - 12 m.p.h.
b. Dust - 8 m.p.h.
c. Pellets, granular or baits - 16 m.p.h.

2. No pesticide application shall be made or continued when there is the likelihood of contaminating any persons, non-target crops, animals or other public or private property.

3. Unless specifically named as a dust on this permit, NO DUST FORMULATIONS are allowed.

4. Apply pesticides covered by SLN(s) and Section 18(s) in conformance with the SLN(s) and Section 18(s).

5. A flagger is required at the application site for all AIR applications of Zinc Phosphide bait.

Revised 10/90

Q Dicamba & Phenoxy Herbicide CV

CONDITION - Q - DICAMBA AND PHENOXY HERBICIDES - CENTRAL VALLEY/

In addition to all applicable laws, regulations and label restrictions, the CONDITIONS CHECKED BELOW APPLY to applications covered by this permit.

[X] 1. No ester formulation applications allowed.

[X] 2. Do not discharge material more than 10 feet above the crop or target.

[X] 3. A drift reducing agent shall be added to the spray mixture at label rates.

[X] 4. Maximum wind velocity for Phenoxy herbicides - 10 m.p.h.

[X] 5. Maximum wind velocity for Dicamba - 10 m.p.h. EXCEPT when wind is moving in direction of sensitive crops, the maximum wind velocity - 5 m.p.h.

Revised 11/15

R Dicamba & Phenoxy Herbicide SA

CONDITION - R - DICAMBA AND PHENOXY HERBICIDES - SPECIAL HAZARDOUS AREA

In addition to all applicable laws, regulations, label restrictions, the and other conditions of this permit, the conditions listed below apply to applications in the Hazardous Area in San Joaquin County beginning March 16 and continuing through October 15.

1. A drift reducing agent shall be added to the spray mixture at the label rates.

2. No Phenoxy application shall be made when the wind velocity is less than 2 m.p.h. or in excess of 7 m.p.h.

3. No Dicamba applications allowed when wind exceeds 5 m.p.h.

4. No Dicamba application allowed when the maximum temperature on the day of application is predicted to exceed 85 degrees fahrenheit. Predicted temperature for the following day will be determined by the NOAA National Weather Service.

5. Air applications are prohibited, except as follows: KING ISLAND, EMPIRE TRACT, BISHOP TRACT, RIO BLANCO TRACT, BOULDIN ISLAND, STATEN ISLAND. Monitoring of application by a Commissioner's representative is required. Applicator

shall inform the Agricultural Commissioner's Office of the specific time of application. Application shall not begin until the Commissioner's representative is on site, or approval has been received from the Commissioner's representative.

Revised 11/15

APPLICATION - RESTRICTED MATERIALS PERMIT - SUPPLEMENT

PERMIT NO. 3900060

PAGE NO.

BIAGI FARMS, GEORGETOWN — ACTIVATE SITE

LOCATION	SEC	TWN	RNG	MAP ID	COMMODITY	ACRES/ UNITS	PESTICIDES	PESTS	F*	M**	RATE	DILUTION/ VOLUME	APPL	DATE/ TIMING
N/W Corner Rd 8 White				MP-5	Beans	R.J								
0.														
1.														
2.														
3.														
4.														
5.														
6.														
7.														
8.														
9.														
0.														
1.														
2.														
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5.														
6.														
7.														
8.														
9.														
0.														
1.														

*Formulation: L–Liquid B–Bait D–Dust F–Fumigant G–Granules P–Wettable Powder O–Other

**Method: A–Air F–Fumigation Gr–Ground O–Other

APPLICANT SIGNATURE Jennifer Rebuca Auth. Agent DATE 7/5/2016

ISSUED BY [signature] DATE 7-7-16

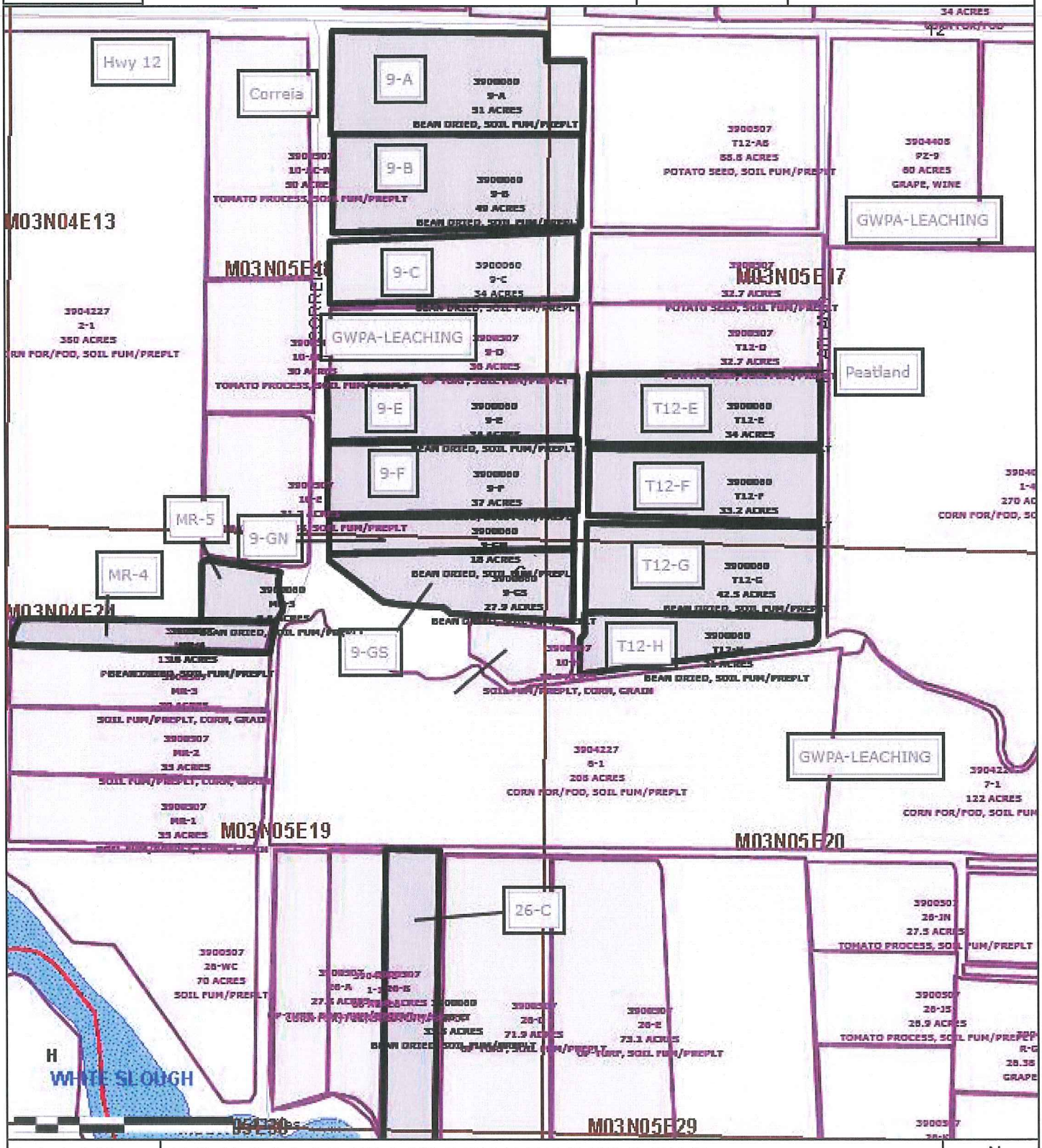
DISTRIBUTION: WHITE & YELLOW - COUNTY AGRICULTURAL COMMISSIONER; PINK & GOLD - PERMITTEE

OSP 08 109802

STATE OF CALIFO
DEPARTMENT OF PESTICIDE REGULA
PR-ENF-125A (REV. 10/07) Page 1

Jul. 5. 2016 3:05PM Delta Growers Inc. No. 0293 P. 2
Jul. 5. 2016 3:25PM No. 4025 Received Time

San Joaquin County	Permit Number:	3900060
Map T12	Created On:	7/8/2016
S/Hwy 12 W/Peatland	Operator:	BIAGI FARMS, GEORGE JR



Included Sites:	10-H, 26-C, 9-A, 9-B, MR-4, MR-5, T12-E, T12-F, T12-G, T12-H

Received Time Jun. 29. 2016 8:44AM No. 3764

APPLICATION - RESTRICTED MATERIALS PERMIT - SUPPLEMENT

PERMIT NO. 3900060

PAGE NO.

BI GI FARMS, GEORGE JR. ACTIVATE SITES

DC/ ON	SEC	TWN	RNG	MAP ID	COMMODITY	ACRES/ UNITS	PESTICIDES	PESTS	F*	M**	RATE	DILUTION/ VOLUME	APPL	DATE/ TIMING
0. THOMPSON RANCH	34	3N	5E	46	CORN FOR FOD	29.4	ADD ALL PESTICIDES	THE SAME						AS
1. BISHOP TRACT							OTHER CORN FOR FOD SITES ON PERMIT							
2.	34	3N	5E	48	CORN FOR FOD	28.1								
3.														
4.	34	3N	5E	49	CORN FOR FOD	23.4								
5.														
6.														
7.														
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9.														
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0.														
1.														

*Formulation: L–Liquid B–Bait D–Dust F–Fumigant G–Granules WP–Wettable Powder O–Other

**Method: A–Air F–Fumigation Gr–Ground O–Other

APPLICANT SIGNATURE Jessica Pelayo Authorized Agent DATE 6/29/2016

ISSUED BY [signature] DATE 6-28-16

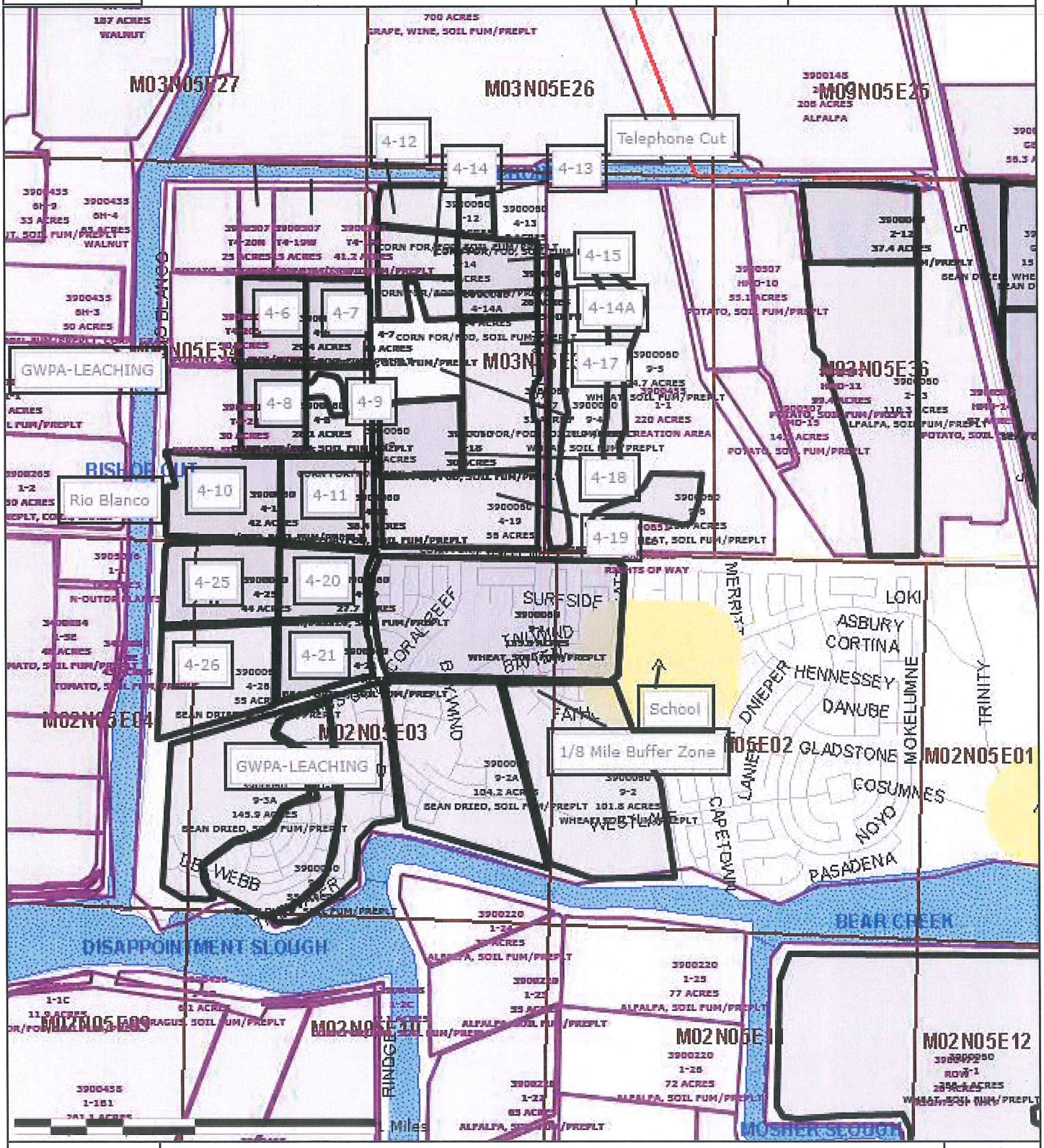
DISTRIBUTION: WHITE & YELLOW - COUNTY AGRICULTURAL COMMISSIONER; PINK & GOLD - PERMITTEE

OSP 08 109802

STATE OF CALIFORNIA
DEPARTMENT OF PESTICIDE REGULATION
PR-ENF-125A (REV. 10/07) Page 1 of 1

Jun. 29. 2016 8:24AM Delta Growers Inc. No. 0191 P. 2

San Joaquin County	Permit Number:	3900060
Map 4	Created On:	6/28/2016
Thompson Ranch, Bishop Tract	Operator:	BIAGI FARMS, GEORGE JR



Included Sites:	4-10, 4-11, 4-12, 4-13, 4-14, 4-14A, 4-15, 4-17, 4-18, 4-19, 4-20, 4-21, 4-25, 4-26, 4-6, 4-7, 4-8, 4-9

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Received Time Jun. 22. 2016 3:53PM No. 3484

APPLICATION - RESTRICTED MATERIALS PERMIT - SUPPLEMENT

PERMIT NO. 3900060

PAGE NO.

BIAGI FARMS, GEORGE JR — ACTIVATE SITES

Jun. 22. 2016 3:33PM Delta Growers Inc. No. 0115 P. 2

	LOCATION	SEC	TWN	RNG	MAP ID	COMMODITY	ACRES/ UNITS	PESTICIDES	PESTS	F*	M**	RATE	DILUTION/ VOLUME	APPL	DATE/ TIMING
1.	THOMPSON RANCH,				#7	CORN/FOD	24	ADD PESTICIDES SAME	AS			OTHER			
2.	BISHOP TRACT				#15	CORN/FOD	28	CORN/FOD	SITES ON			PERMIT			
3.					#17	CORN/FOD	52								
4.					#14	CORN/FOD	18								
5.															
6.															
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31.															

*Formulation: L–Liquid B–Bait D–Dust F–Fumigant G–Granules WP–Wettable Powder O–Other

**Method: A–Air F–Fumigation Gr–Ground O–Other

APPLICANT SIGNATURE Dennis Pelregon Authd Agent DATE 6/22/2016

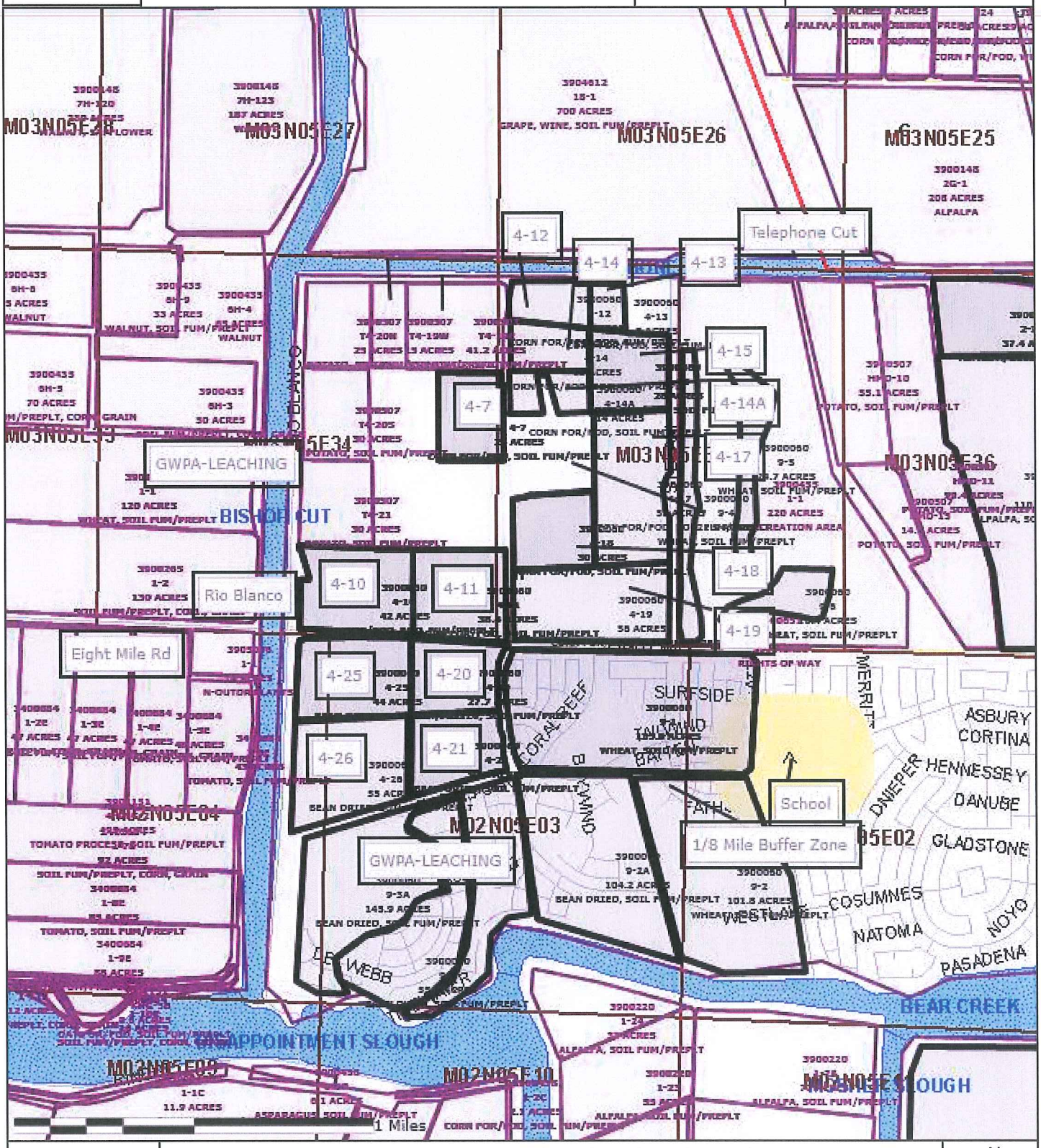
ISSUED BY Rod Parker DATE 6-27-16

DISTRIBUTION: WHITE & YELLOW - COUNTY AGRICULTURAL COMMISSIONER; PINK & GOLD - PERMITTEE

OSP 08 109802

STATE OF CALIFORNI
DEPARTMENT OF PESTICIDE REGULATIO
PR-ENF-125A (REV. 10/07) Page 1 of

San Joaquin County	Permit Number:	3900060
Map 4	Created On:	6/22/2016
Thompson Ranch, Bishop Tract	Operator:	BIAGI FARMS, GEORGE JR



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APPLICATION - RESTRICTED MATERIALS PERMIT - SUPPLEMENT

PERMIT NO. 39 00060

PAGE NO.

Received Time Apr. 7. 2016 3:00PM No. 9259

Apr. 7. 2016 2:43PM Delta Growers Inc. No. 8780 P. 3

BIAGI FARMS GEORGE JR — CHANCE COMMODITY

LOCATION	SEC	TWN	RNG	MAP ID	COMMODITY	ACRES/ UNITS	PESTICIDES	PESTS	F*	M**	RATE	DILUTION/ VOLUME	APPL	DATE/ TIMING
S/ BISHOP SCHOOL S/				4-25	DRIED BEANS	44	PESTICIDES: CARBARYL (105)							
E/ EIGHT MILE				4-26		55	METHOMYL (383)					PARAQUAT-		
				4-30		27.7	DICHLORIDE (1601)					METHIATION (6		
				4-31		30.8								
S/ EIGHT MILE RD				9-3A		145.9								
E/ RIO BONITO				9-7A		104.7								
18.														
19.														
20.														
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*Formulation: L–Liquid B–Bait D–Dust F–Fumigant G–Granules WP–Wettable Powder O–Other

**Method: A–Air F–Fumigation Gr–Ground O–Other

APPLICANT SIGNATURE [signature] DATE 3-31-16

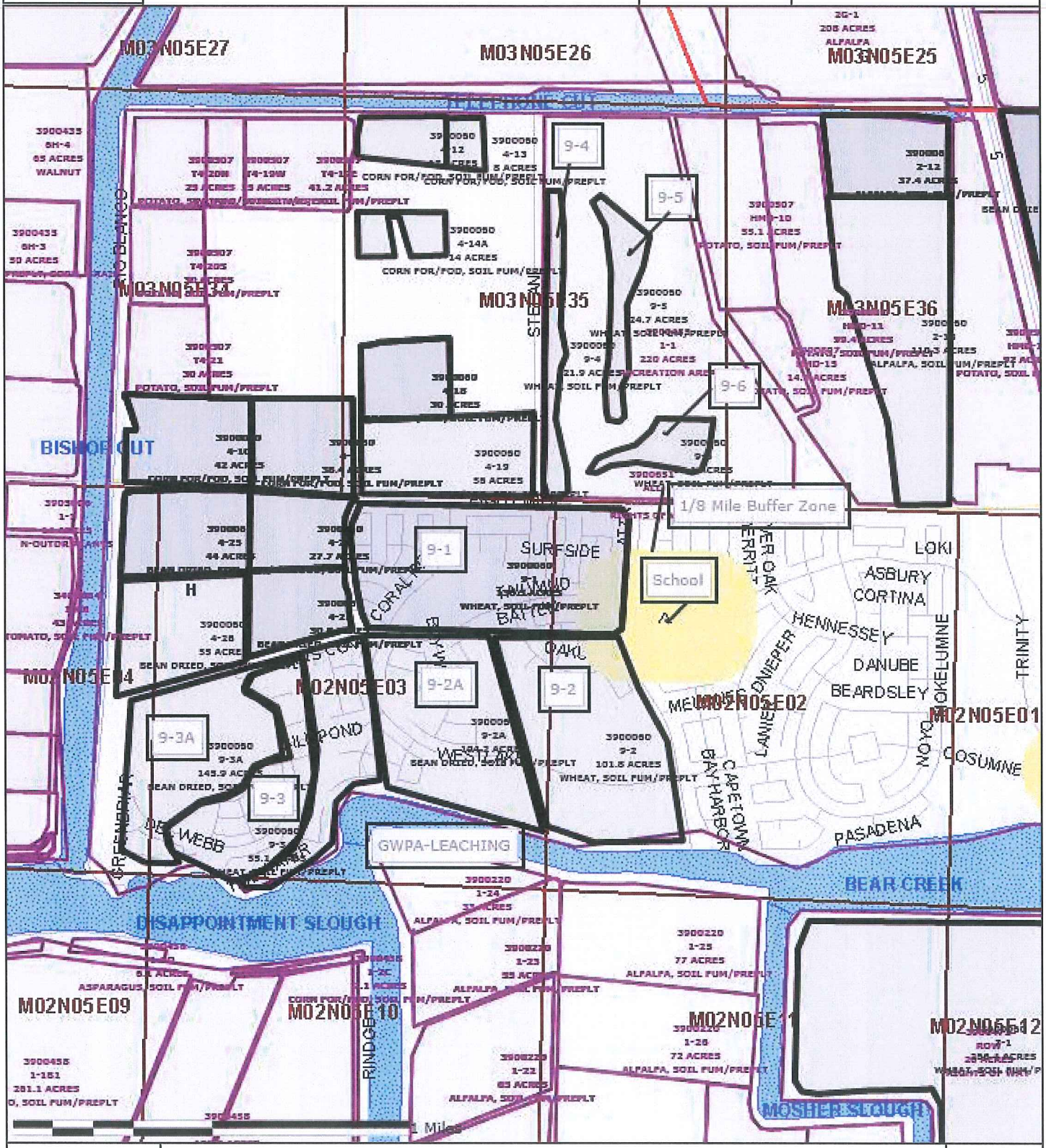
ISSUED BY [signature] DATE 3-31-16

DISTRIBUTION: WHITE & YELLOW - COUNTY AGRICULTURAL COMMISSIONER; PINK & GOLD - PERMITTEE

OSP 08 109802

STATE OF CALIFORNIA
DEPARTMENT OF PESTICIDE REGULATION
PR-ENF-125A (REV. 10/07) Page 1 of 1

San Joaquin County	Permit Number:	3900060
Map 9	Created On:	3/31/2016
Bishop Tract	Operator:	BIAGI FARMS, GEORGE JR



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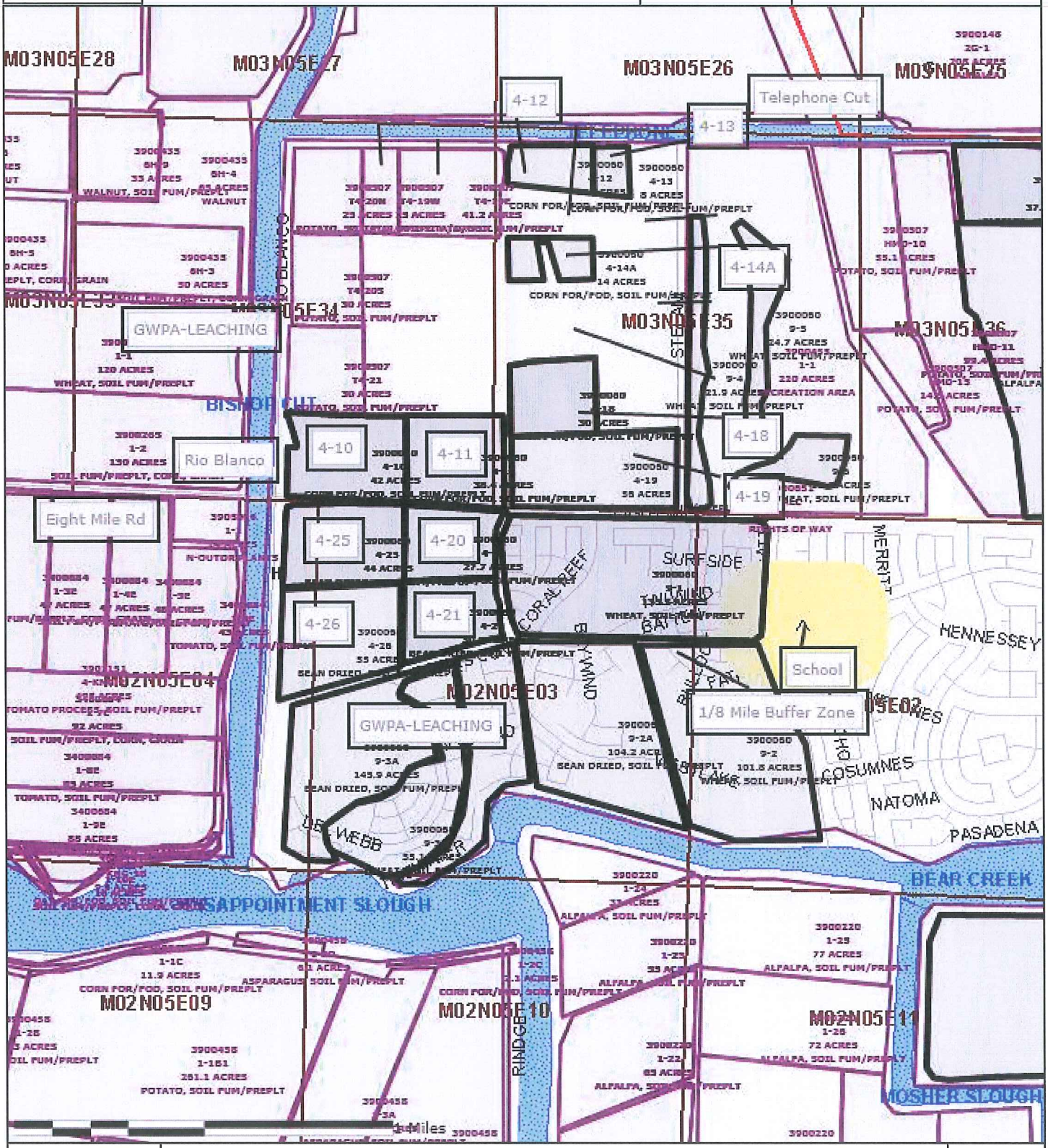
	San Joaquin County	Permit Number:	3900060
	Map 4	Created On:	3/31/2016
	Thompson Ranch, Bishop Tract	Operator:	BIAGI FARMS, GEORGE JR



Included Sites:	4-10, 4-11, 4-12, 4-13, 4-14A, 4-18, 4-19, 4-20, 4-21, 4-25, 4-26

Received Time Apr. 7. 2016 3:00PM No. 9259

APPLICATION - RESTRICTED MATERIALS PERMIT - SUPPLEMENT

PERMIT NO. 3900060

BIAGI FARMS GEORGE JR — ADD SITE / CHANGE COMMODITY

PAGE NO.

LOCATION	SEC	TWN	RNG	MAP ID	COMMODITY	ACRES/ UNITS	PESTICIDES	PESTS	F*	M**	RATE	DILUTION/ VOLUME	APPL	DATE/ TIMING
7 ERMINDIS ISLAND	12	3N	4E	MFR-10	PROCESS TOMATO	54	PESTICIDES: CHLORPYRIFOS (105)							
8 MOHR-FRY RANCH							METHOMYL (383)	PYRAQUAT DICHLORIDE (61						
9														
10														
11														
12 S/EIGHT MILE E/RIO BLANCO	03	3N	5E	9-3	SAFFLOWER	50	PARAQUAT DICHLORIDE				(1601)			
13														
14														
15														
16														
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*Formulation: L–Liquid B–Bait D–Dust F–Fumigant G–Granules WP–Wettable Powder O–Other

**Method: A–Air F–Fumigation Gr–Ground O–Other

APPLICANT SIGNATURE /s/ Jennifer Pelleu Authorized Agent DATE 4/7/2016

ISSUED BY Rob Jantz DATE 4-5-16

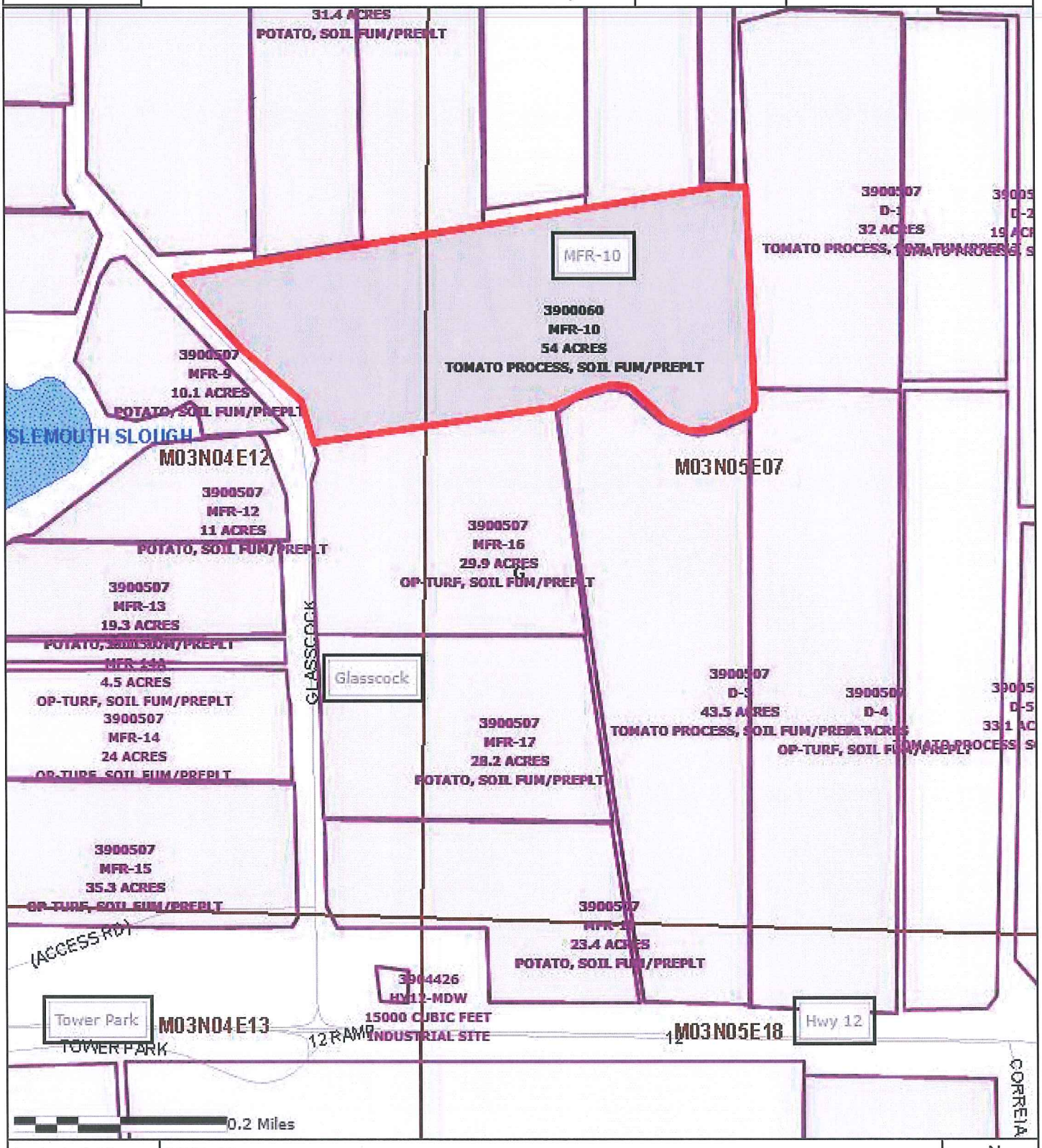
DISTRIBUTION: WHITE & YELLOW - COUNTY AGRICULTURAL COMMISSIONER; PINK & GOLD - PERMITTEE

OSP 08 109802

STATE OF CALIFORNIA
DEPARTMENT OF PESTICIDE REGULATION
PR-EMF-125A (REV. 10/07) Page 1 of 1

Apr. 7. 2016 2:43PM Delta Growers Inc. No. 8780 P. 4

San Joaquin County	Permit Number:	3900060
MFR-10	Created On:	4/5/2016
N/Hwy 12 E/Glasscock	Operator:	BIAGI FARMS, GEORGE JR



Included Sites:	MFR-10

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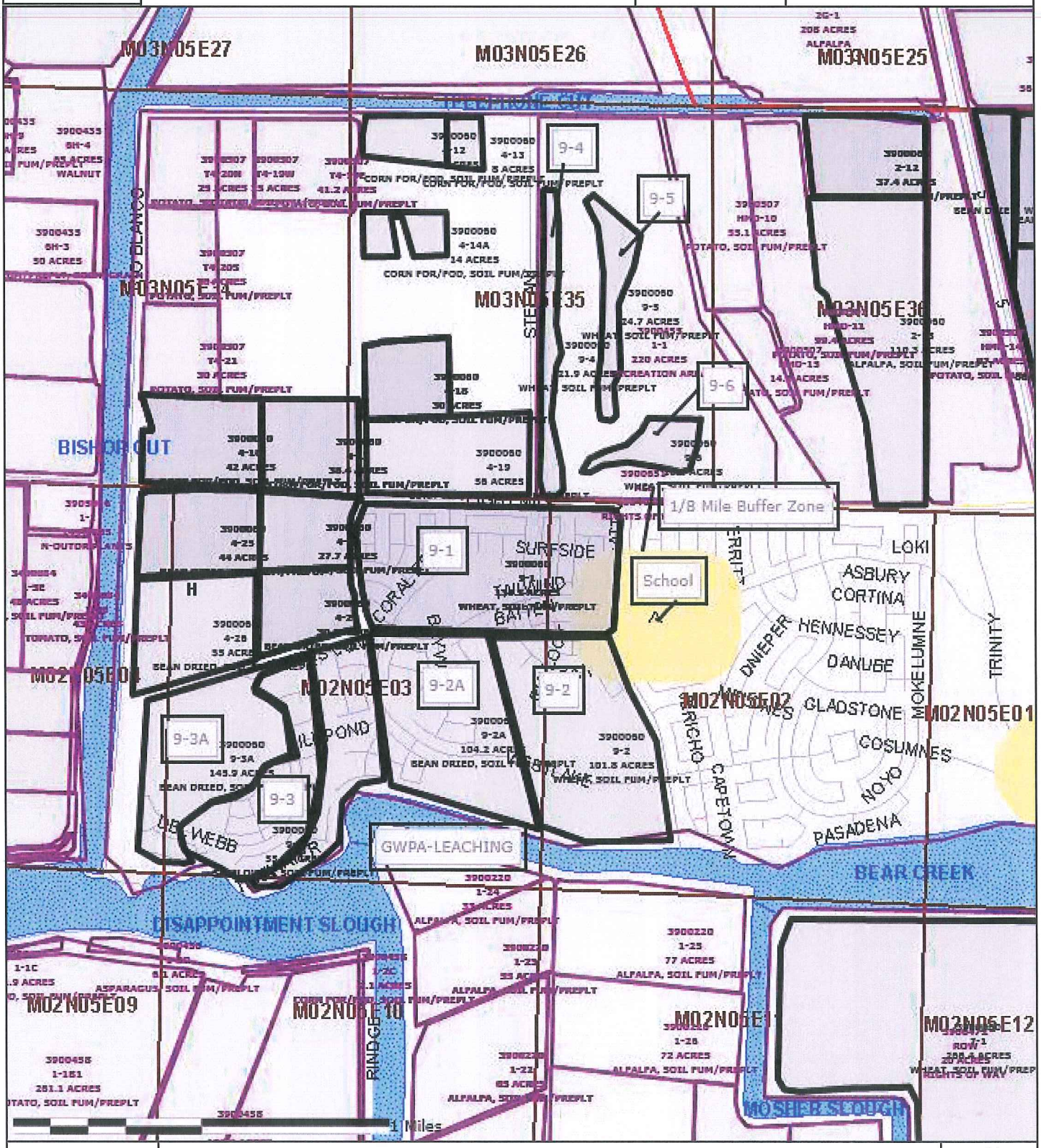
San Joaquin County	Permit Number:	3900060
Map 9	Created On:	4/5/2016
Bishop Tract	Operator:	BIAGI FARMS, GEORGE JR



Included Sites:	9-1, 9-2, 9-2A, 9-3, 9-3A, 9-4, 9-5, 9-6

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APPLICATION - RESTRICTED MATERIALS PERMIT - SUPPLEMENT

PERMIT NO. 3900060

BIAGI, GEORGE ~~CROP CHANGE~~ Remove Site

PAGE NO. 4

LOCATION	SEC	TWN	RNG	MAP ID	COMMODITY	ACRES/ UNITS	PESTICIDES	PESTS	F*	M**	RATE	DILUTION/ VOLUME	APPL	DATE/ TIMING
7.						~~0.0~~								
8.						~~0.0~~								
9.						~~0.0~~								
10.						~~0.0~~								
11.						~~0.0~~								
12.						~~0.0~~								
13.				10-H	Remove	10.8								
14.				MFR-10	Remove	54.0								
15.				12-E	Beans	34.0	Same as other sites							
16.														
17.														
18.														
19.														
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*Formulation: L--Liquid B--Bait D--Dust F--Fumigant G--Granules WP--Wettable Powder O--Other

**Method: A--Air F--Fumigation Gr--Ground O--Other

APPLICANT SIGNATURE _____ DATE _____

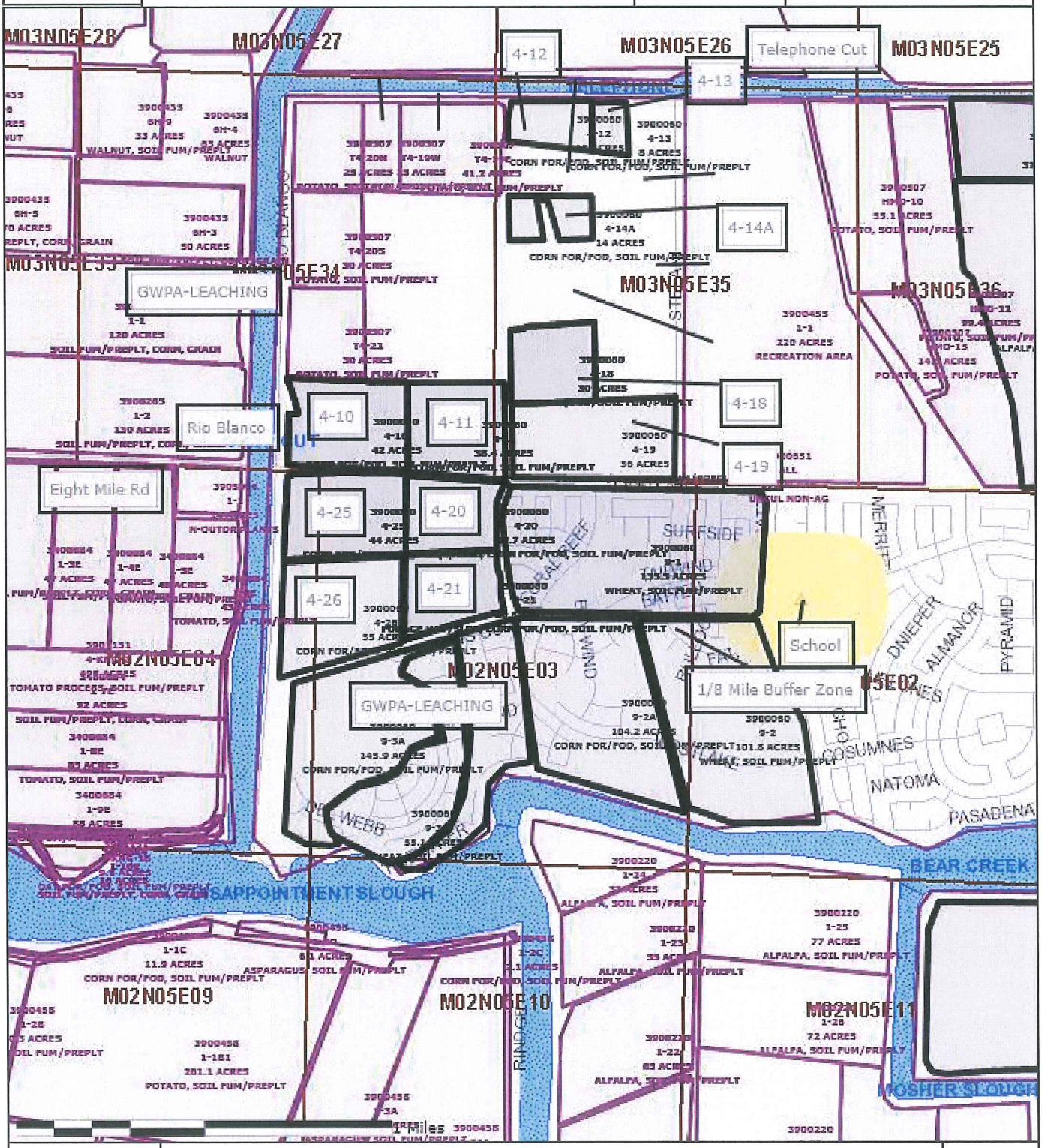
ISSUED BY _____ DATE 2/29/16

DISTRIBUTION: WHITE & YELLOW - COUNTY AGRICULTURAL COMMISSIONER; PINK & GOLD - PERMITTEE

OSP 08 109802

STATE OF CALIFORNIA
DEPARTMENT OF PESTICIDE REGULATION
PR-ENF-125A (REV. 10/07) Page 1 of 1

	San Joaquin County	Permit Number:	3900060
	Map 4	Created On:	1/5/2016
	Thompson Ranch, Bishop Tract	Operator:	BIAGI FARMS, GEORGE JR



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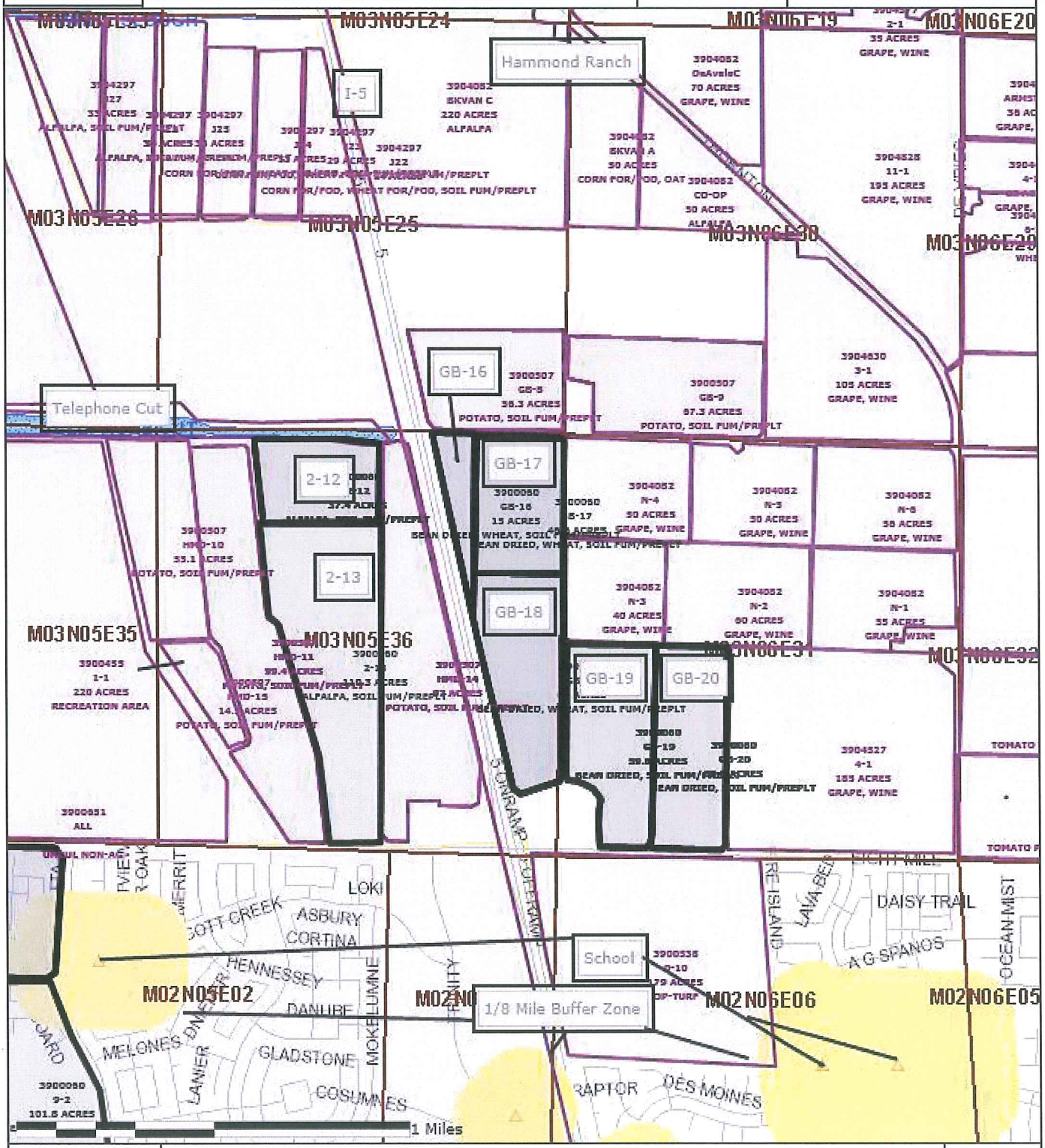
San Joaquin County	Permit Number:	3900060
Map 2	Created On:	1/5/2016
Hammond Ranch	Operator:	BIAGI FARMS, GEORGE JR



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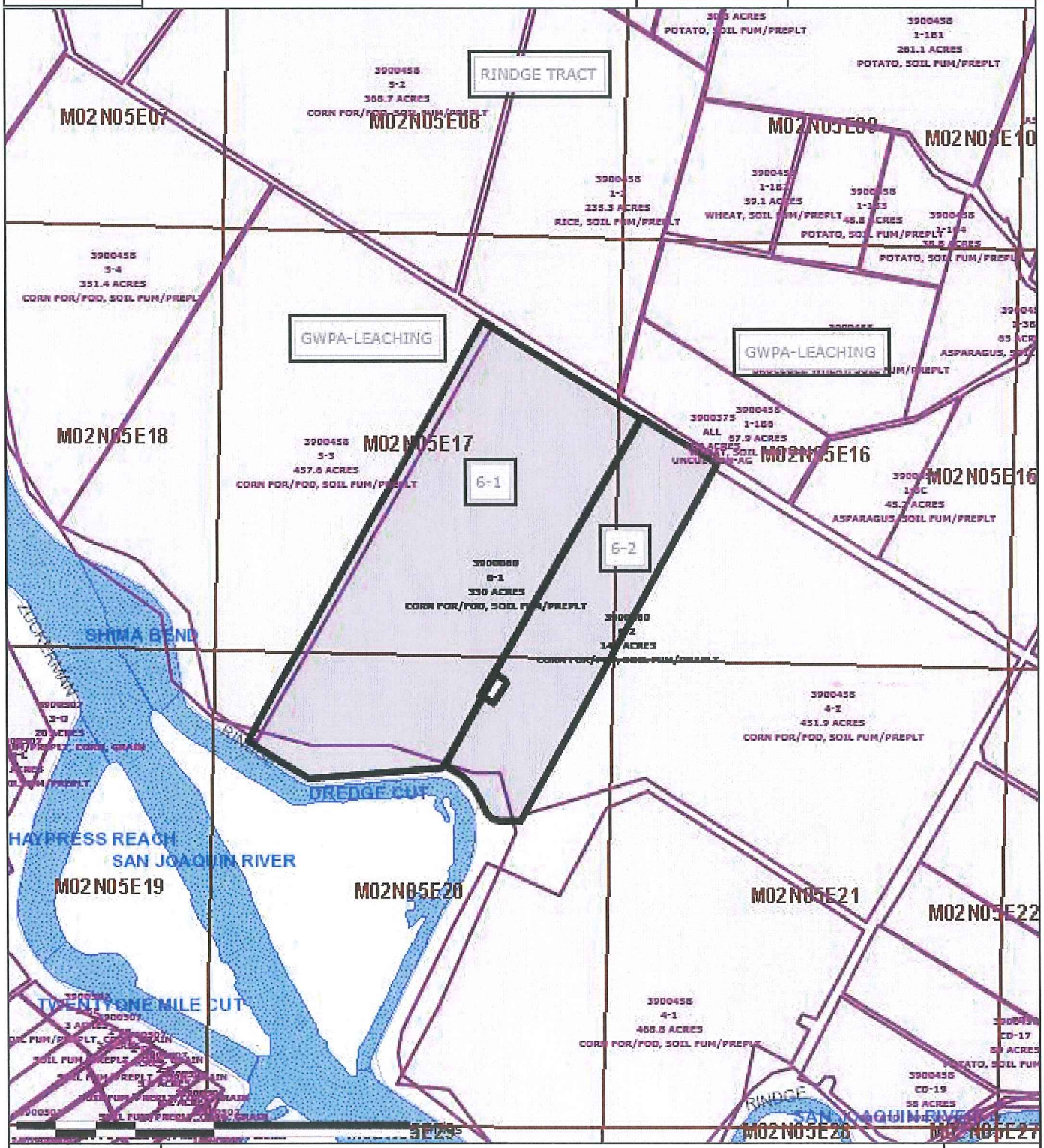
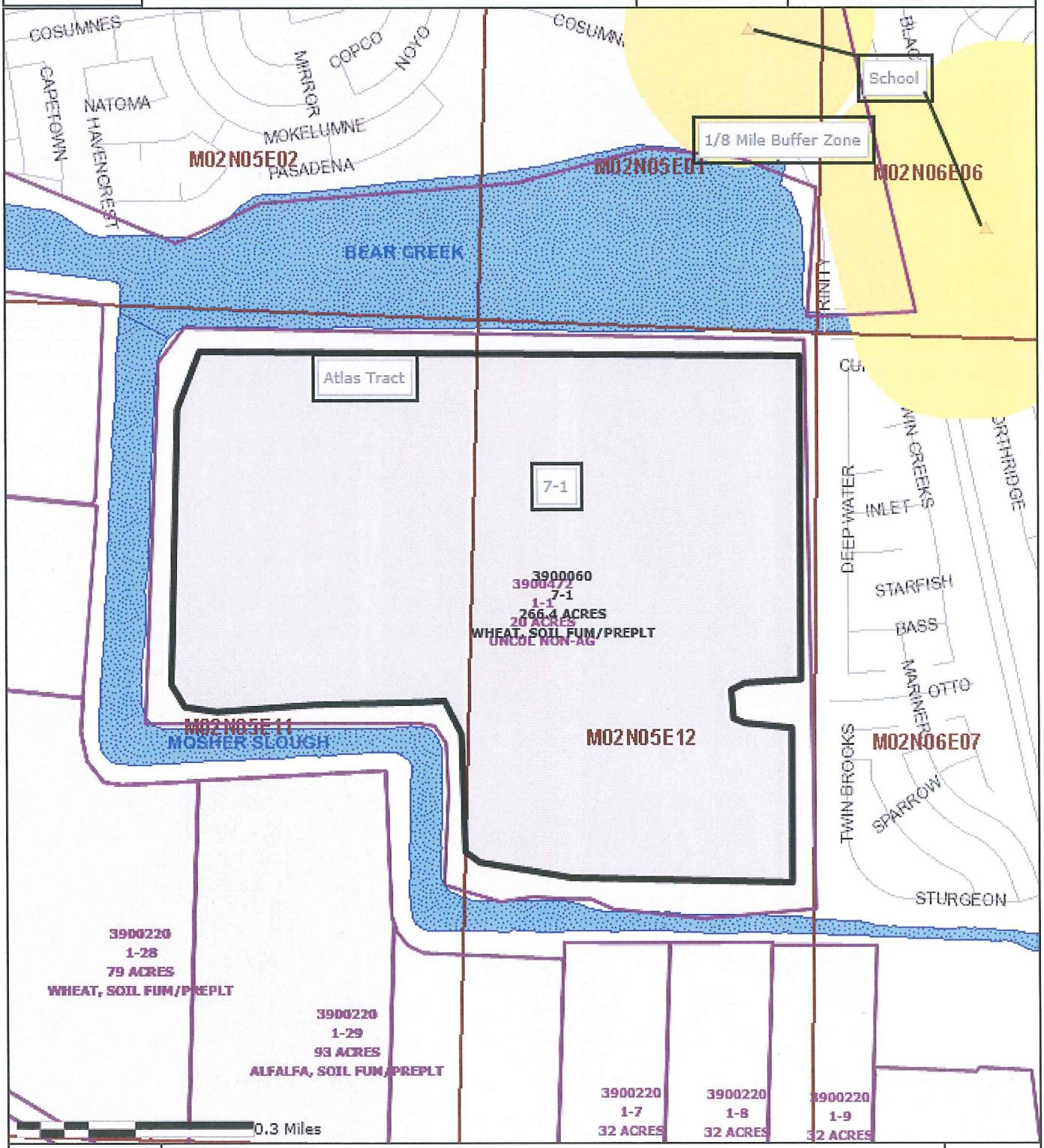
San Joaquin County	Permit Number:	3900060
Map 6	Created On:	1/5/2016
RIndge Tract	Operator:	BIAGI FARMS, GEORGE JR



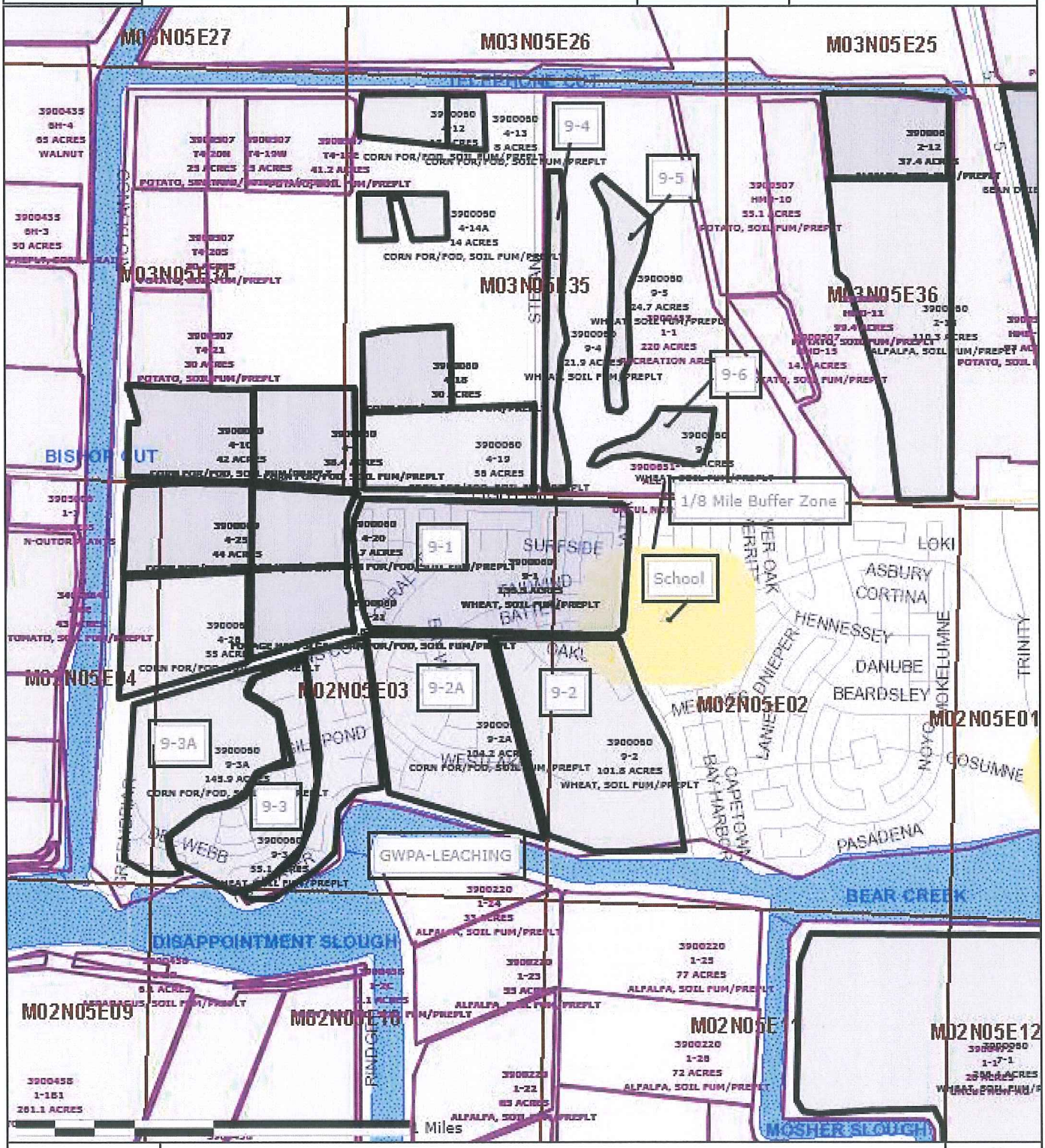
Included Sites:	6-1, 6-2

San Joaquin County	Permit Number:	3900060
Map 7	Created On:	1/5/2016
Atlas Tract	Operator:	BIAGI FARMS, GEORGE JR



Included Sites:	7-1

San Joaquin County	Permit Number:	3900060
Map 9	Created On:	1/5/2016
Bishop Tract	Operator:	BIAGI FARMS, GEORGE JR



Included Sites:	9-1, 9-2, 9-2A, 9-3, 9-3A, 9-4, 9-5, 9-6

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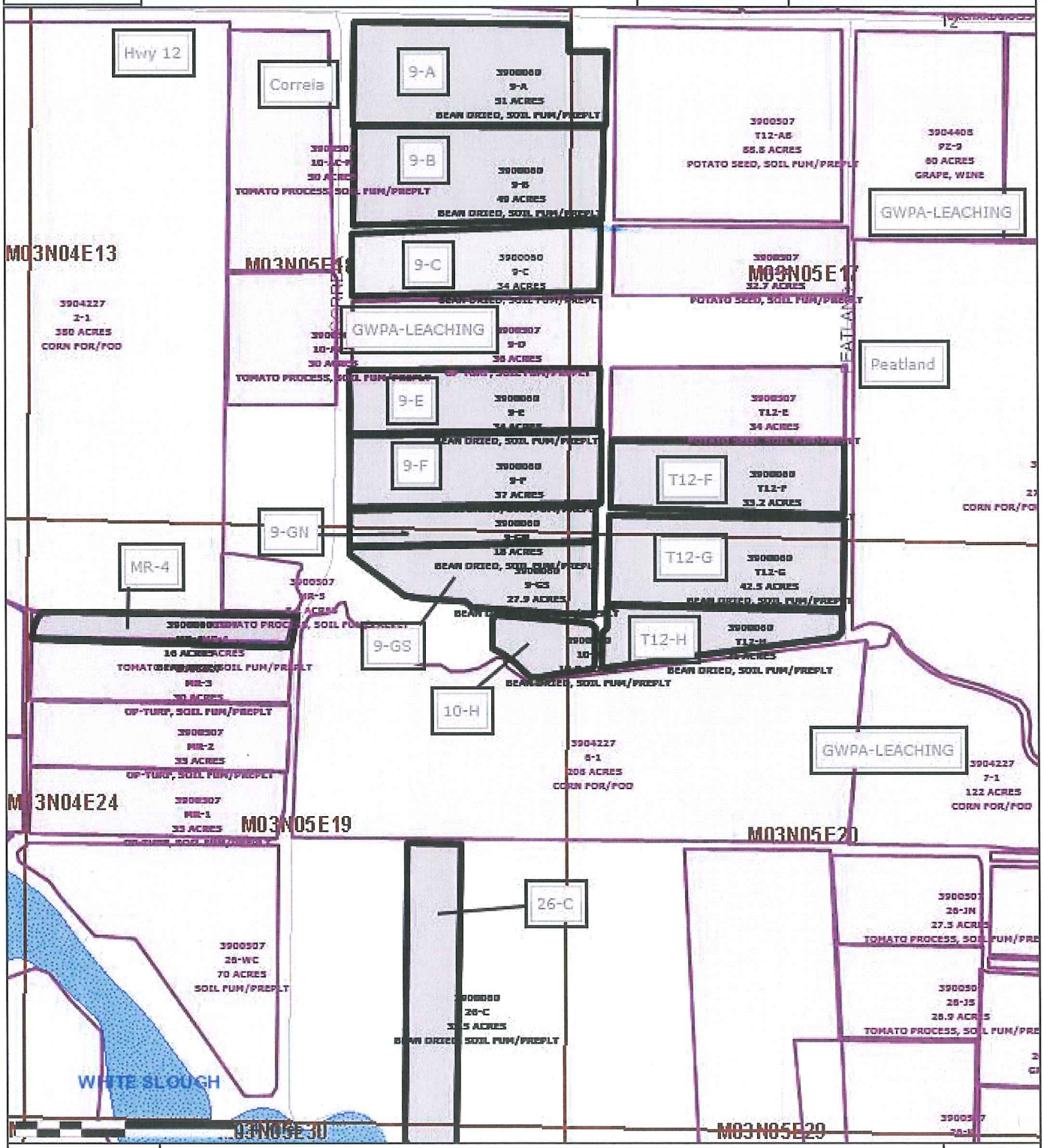
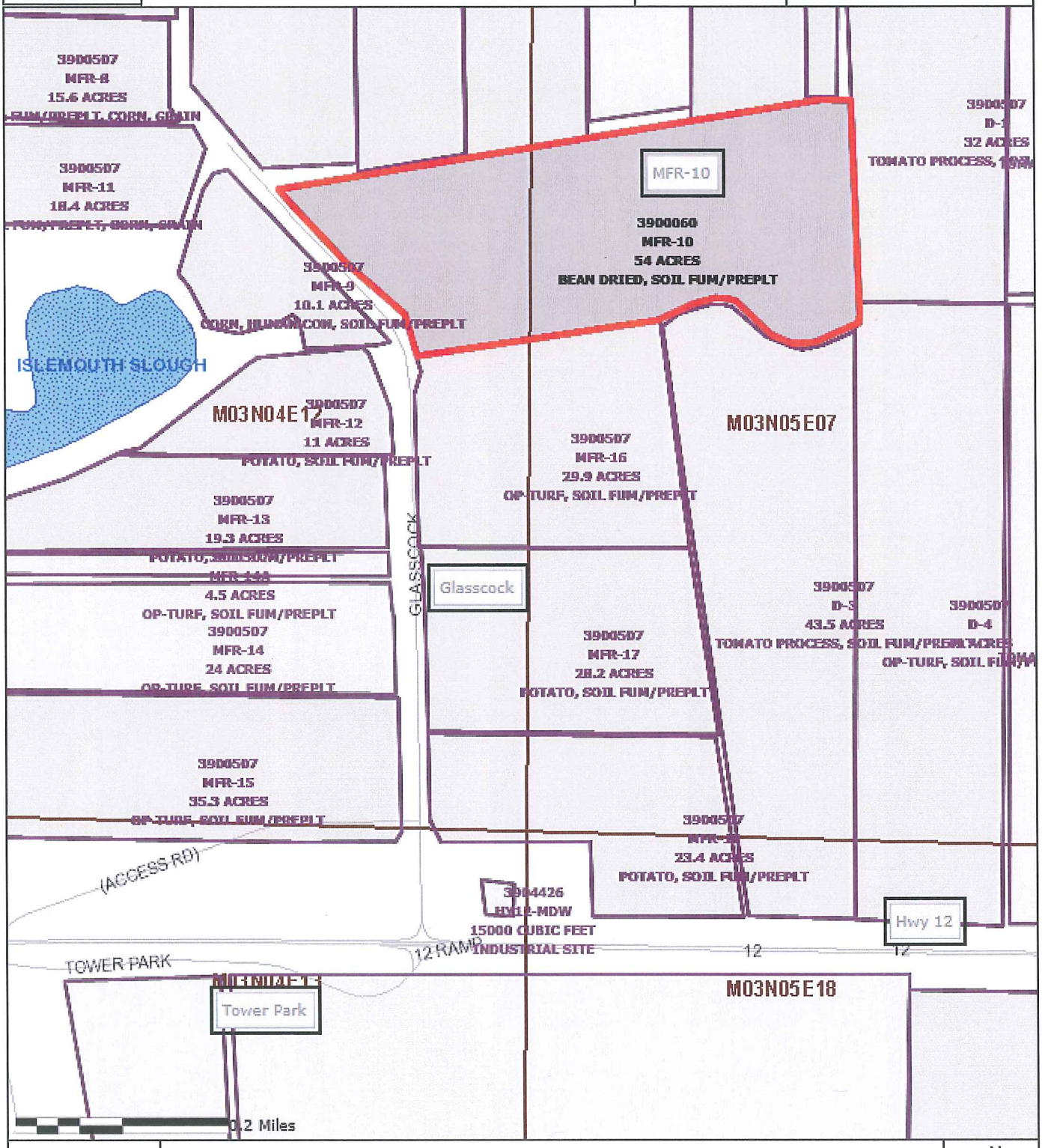
San Joaquin County	Permit Number:	3900060
Map T12	Created On:	1/5/2016
S/Hwy 12 W/Peatland	Operator:	BIAGI FARMS, GEORGE JR



Included Sites:	10-H, 26-C, 9-A, 9-B, MR-4, T12-F, T12-G, T12-H

San Joaquin County	Permit Number:	3900060
MFR-10	Created On:	1/29/2016
N/Hwy 12 E/Glasscock	Operator:	BIAGI FARMS, GEORGE JR



Included Sites:	MFR-10

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SAN JOAQUIN COUNTY AGRICULTURAL COMMISSIONERS OFFICE
2101 E EARHART AVE, SUITE 100
STOCKTON, CA 95206
Office: (209) 953-6000 Fax: (209) 953-6022
Email: stocktonag2@sjgov.org Web: www.co.san-joaquin.ca.us/agcomm

RESTRICTED MATERIALS PERMIT: 39-17-3900060

Operator: BIAGI FARMS, GEORGE JR
8458 W EIGHT MILE RD
STOCKTON, CA 95219

Agent: BIAGI, GEORGE JR

3900060-2017-Version: 1
County District #:H
Issued on: 02/14/2017 CLR
Valid as of:1/3/2017
Expires on:12/31/2017
Primary Phone: [redacted]
Alternate Phone: ( ) -
Mobile Phone: [redacted]
Fax:
Phone:
License #:3900053
Expiration:12/31/2018

Certified Applicator: BIAGI, GEORGE G
8458 W EIGHT MILE RD
STOCKTON, CA 95219

Type of Use: Agricultural Use
Pesticide Possession: Possession and Use
Permit Duration: Seasonal
Employees Handle Pesticides
Permit Conditions: A, P, Q, R, B, QL

Notices Of Intent required 24 hours prior to application of pesticide containing restricted materials

See condition detail for code descriptions.

Regulatory Notes:

I understand that this permit does not relieve me from liability for any damages to any persons or property caused by the use of these pesticides. I waive any claims of liability for damages against the County Department of Agriculture based on the issuance of this permit. I further understand that this permit may be revoked when pesticides are used in conflict with the manufacturer's labeling or in violation of applicable laws, regulations, and specific conditions of this permit. I authorize inspection at all reasonable times and whenever an emergency exists by the Department of Pesticide Regulation or the County Department of Agriculture of all areas treated or to be treated, storage facilities for pesticides or emptied containers and equipment used or to be used in the treatment. I have considered alternative and mitigation measures pursuant to Title 3, California Code of Regulations, section 6426. Taking into account economic, environmental, social, and technological factors, I have adopted those that are feasible and would substantially lessen any significant adverse impact on the environment.

[Form PR-ENF-125 (Rev 11/06) Pesticide Enforcement Branch]

Applicant: George Biagi Jr Owner
(Name & Title)

Applicant Signature: _____ Date: _____

Issuing Officer: Rod Julian Date: 1-3-17

CONTACT LIST

Name	Auth Rep.	Phone	License	Expiration	Contact Type
ALPINE HELICOPTER SERVICE		[redacted]	30969	12/31/2018	Pest Control Business
KG VINEYARD MANAGEMENT LLC		[redacted]	32946	12/31/2018	Pest Control Business
PELUCCA, DENNIS	yes		74128	12/31/2017	Agricultural Pest Control Advisor
BIAGI, GEORGE G		[redacted]	3900053	12/31/2018	Private Applicator Certificate
DELTA GROWERS		[redacted]	34357	12/31/2018	Pesticide Control Dealer

PESTICIDES LIST

Number	Pesticide	Pests	Forms	Methods	Applicators
105	CARBARYL	LARVAE	All Reg.	Air/Ground	PCB/Operator
200	DICAMBA	WEEDS	Liquid	Ground	PCB/Operator
383	METHOMYL	LARVAE	Liquid	Air/Ground	PCB/Operator
478	PHORATE	APHIDS	All Reg.	Air/Ground	PCB/Operator
626	ZINC PHOSPHIDE	RODENTS	Bait	Ground	PCB/Operator
786	MCPA, DIMETHYLAMINE SALT	BROADLEAF WEEDS	Liquid	Air/Ground	PCB/Operator
804	2,4-D, BUTYL ESTER	WEEDS	Liquid	Air/Ground	PCB/Operator
806	2,4-D, DIMETHYLAMINE SALT	WEEDS	Liquid	Air/Ground	PCB/Operator
1601	PARAQUAT DICHLORIDE	WEEDS	Liquid	Air/Ground	PCB/Operator
1689	METHIDATHION	LARVAE	Liquid	Air/Ground	PCB/Operator

SITES LIST

Site	Location | Site Name Commodity Name/Code	Quantity	District	Section (MTRS)
4-1	THOMPSON RANCH, BISHOP TRACT, GWPA LEACH E/BISHOP SLOUGH N/EIGHT MILE RD		H	M03N05E34
	CORN FOR/FOD / 22005-0	25 ACRES		
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)			
	SOIL FUM/PREPLT / 40008-0	25 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)			
Conditions:	B - RM Use Near Schools, P - General, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA			
4-2	THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD		H	M03N05E34
	CORN FOR/FOD / 22005-0	30 ACRES		
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)			
	SOIL FUM/PREPLT / 40008-0	30 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)			
Conditions:	B - RM Use Near Schools, P - General, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA			

4-20	THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH S/EIGHTH MILE RD **CORN FOR/FOD / 22005-0** 27.7 ACRES	M03N05E35
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 27.7 ACRES	
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)	
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA	

4-21	THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH S/EIGHTH MILE RD **CORN FOR/FOD / 22005-0** 30.8 ACRES	M03N05E35
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 30.8 ACRES	
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)	
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA	

4-25	THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH S/EIGHTH MILE RD **CORN FOR/FOD / 22005-0** 44 ACRES	M03N05E35
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 44 ACRES	
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)	
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA	

4-26	THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH S/EIGHTH MILE RD **CORN FOR/FOD / 22005-0** 55 ACRES	M03N05E35
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 55 ACRES	
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)	
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA	

4-3	THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 30 ACRES	H	M03N05E34
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 30 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA		

4-4	THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD	H	M03N05E34
	CORN FOR/FOD / 22005-0 15 ACRES		
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 15 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA		

4-5	THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD	H	M03N05E34
	CORN FOR/FOD / 22005-0 41.2 ACRES		
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 41.2 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA		

6-1	RINDGE TRACT GWPA LEACHING GWPA LEACHING	H	M02N05E17
	CORN FOR/FOD / 22005-0 330 ACRES		
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 330 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

6-2	RINDGE TRACT GWPA LEACHING GWPA-LEACHING	H	M02N05E17
	CORN FOR/FOD / 22005-0 146 ACRES		
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 146 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

HMD-10	HAMMOND RANCH E/I-5 N/EIGHT MILE	H	M03N05E36
	CORN FOR/FOD / 22005-0 55.1 ACRES		
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 55.1 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA		

HMD-11	HAMMOND RANCH E/I-5 N/EIGHT MILE	H	M03N05E36
	CORN FOR/FOD / 22005-0 99.4 ACRES		
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 99.4 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA		

HMD-14	HAMMOND RANCH E/I-5 N/EIGHT MILE	G	M03N05E36
	CORN FOR/FOD / 22005-0 97 ACRES		
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 97 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA		

HMD-15	HAMMOND RANCH E/I-5 N/EIGHT MILE	G	M03N05E36
	CORN FOR/FOD / 22005-0 14.5 ACRES		
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)		
	SOIL FUM/PREPLT / 40008-0 14.5 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA		

2-12	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E36
	ALFALFA / 23001-0 37.4 ACRES		
Pesticide #s:	383 (METHOMYL), 804 (2,4-D, BUTYL ESTER), 1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 37.4 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

2-13	E/I-5 N/EIGHT MILE HAMMOND RANCH	G	M03N05E36
	ALFALFA / 23001-0 110.3 ACRES		
Pesticide #s:	383 (METHOMYL), 804 (2,4-D, BUTYL ESTER), 1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 110.3 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

7-1	ATLAS TRACT S/EIGHT MILE RD W/I-5	H	M02N05E12
	SAFFLOWER / 29129-0 266.4 ACRES		
Pesticide #s:	1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 266.4 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV		

9-1	MAP 9 SITE 9-1 S/EIGHT MILE RD E/ RIO BLANCO BISHOP TRACT	H	M03N05E03
	SAFFLOWER / 29129-0 135.5 ACRES		
Pesticide #s:	1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 135.5 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

9-6	THE RESERVE GOLF COURSSE N/EIGHT MILE RD E/RIO BLANCO	H	M03N05E35
	SAFFLOWER / 29129-0 16.4 ACRES		
Pesticide #s:	1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 16.4 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

9-4	THE RESERVE N/EIGHT MILE RD E/RIO BLANCO	H	M03N05E35
	SAFFLOWER / 29129-0 21.9 ACRES		
Pesticide #s:	1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 21.9 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

9-5	THE RESERVE N/EIGHT MILE RD E/RIO BLANCO	H	M03N05E35
	SAFFLOWER / 29129-0 24.7 ACRES		
Pesticide #s:	1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 24.7 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

9-2	MAP 9 SITE 9-2 S/EIGHT MILE RD E/ RIO BLANCO BISHOP TRACT	H	M03N05E03
	SAFFLOWER / 29129-0 101.8 ACRES		
Pesticide #s:	1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 101.8 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

9-3	MAP 9 SITE 9-3 S/EIGHT MILE RD E/ RIO BLANCO BISHOP TRACT	H	M03N05E03
	SAFFLOWER / 29129-0 50 ACRES		
Pesticide #s:	1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 55.1 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

9-2A	S/EIGHT MILE RD E/RIO BLANCO	H	M02N05E03
	SAFFLOWER / 29129-0 104.2 ACRES		
Pesticide #s:	1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 104.2 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

9-3A	S/EIGHT MILE RD E/RIO BLANCO	H	M02N05E03
	SAFFLOWER / 29129-0 145.9 ACRES		
Pesticide #s:	1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 145.9 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

4-16	THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHTH MILE RD	M03N05E35
	WHEAT / 29139-0 15 ACRES	
Pesticide #s:	200 (DICAMBA), 478 (PHORATE), 786 (MCPA, DIMETHYLAMINE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)	
	SOIL FUM/PREPLT / 40008-0 15 ACRES	
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)	
Conditions:	B - RM Use Near Schools, P - General, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA	

ROW	RIGHT-OF-WAYS ALL LOCATIONS	H	M02N05E12
	RIGHTS OF WAY / 40-0 75 ACRES		
Pesticide #s:	626 (ZINC PHOSPHIDE), 804 (2,4-D, BUTYL ESTER), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - RM Use Near Schools, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

OPERATION-WIDE CONDITIONS

A **Table of Contents**

A - PERMIT CONDITIONS - TABLE OF CONTENTS

WORKERS SAFETY SERIES ATTACHED

[ ] A-1 through A-10 Ag PSIS
[ ] N-1 through N-8 Non Ag PSIS

PERMIT CONDITONS ATTACHED
[X] B- RM Use Near Schools
[ ] C- Non-ag Permit, Notice of Intent
[ ] D- Chlorpyrifos
[ ] M- Methyl bromide Field Fumigation
[ ] O- Aluminum Phosphide in Rodent Burrows
[X] P - General
[ ] Q - Dicamba & Phenoxy Herbicides - Central Valley
[ ] QL- Dicambe & Phenoxy Herbicides - N/Eight Mile
[ ] R - Dicamba & Phenoxy - Special Hazardous Area
[ ] S - Metam Sodium, Metam Potassium, Dazomet
[ ] T - Chloropicrin/Products w/Pic, Field Fumigation
[ ] V - Rice Pesticides Program
[ ] W - Tree Hole Fumigation
[ ] Y - 1,3-Dichloropropene (100%)
[ ] Z - Commodity Fumigation

GROUNDWATER PROTECTION PERMIT CONDITIONS

These conditions apply to pesticides labeled for agricultural, outdoor industrial, or outdoor institutional use that contain chemicals listed in 3CCR section 6800(a): ATRAZINE, SIMAZINE, BROMACIL, DIURON (except products with less than 7% diuron applied to foliage), PROMETON, BENTAZON, AND NORFLURAZON. Ground Water Protection Areas (GWPA), for San Joaquin County, are designated in the Department of Pesticide Regulation document EH03-05. A list of GWPAs may be obtained from the Commissioner's Office or DPR's website (www.cdpr.ca.gov/docs/gwp).

"Engineered rights of way" are defined as areas within a ground water protection area (GWPA) that are constructed in a way that results in increased runoff and collection of storm water, such as railroad ballasts and berms, public roadsides, and highway median strips or similar areas, but not canal or ditch banks or utility lines.

SPECIFIC GROUNDWATER PROTECTION PERMIT CONDITIONS ATTACHED

GWP-C & D Unlined canal and ditch banks
[ ] 1 - Percolation rate is less than or equal to 0.2 inches per hour
[ ] 2 - Applied six months prior to water run
[ ] 3 - All applications are prohibited below high water line

GWP-ROW Engineered rights-of-way within San Joaquin County GWPAs
[ ] 1A - Soil disturbance within 7 days
[ ] 1B - Incorporation
[ ] 1C - Applied between April 1 and July 31
[ ] 2 - Runoff passes through adjacent fully vegetated noncrop area
[ ] 3 - Compliance with NPDES permit
[ ] 4 - Runoff through adjacent area as overland flow

GWP-R Runoff GWPAs within San Joaquin County
[ ] 1 - Soil disturbance
[ ] 2 - Incorporated
[ ] 3 - Band treatment
[ ] 4 - Applied between April 1 and July 31
[ ] 5 - Runoff water held onsite
[ ] 6 - Runoff water stored offsite
[ ] 7 - Runoff to adjacent fallow field

GWP-L Leaching GWPAs within San Joaquin County
[ ] 1 - No irrigation
[ ] 2 - Bed or berm application
[ ] 3 - Managed irrigation

GWP-Director Director Approved Alternative Management Practices or Interim Use
[ ] 1 - Director approved alternative
[ ] 2 - Director approved interim use

Revised 11/15

P **General**

CONDITION - P - General

In addition to all applicable laws, regulations, label restrictions and other more restrictive conditions of this permit, THE FOLLOWING CONDITIONS APPLY TO APPLICATIONS COVERED BY THIS PERMIT.

1. Maximum wind velocities for applications of Restricted Materials unless otherwise covered by the label, law, regulation, other permit conditions or environmental conditions at the application site are:

a. Spray - 12 m.p.h.
b. Dust - 8 m.p.h.
c. Pellets, granular or baits - 16 m.p.h.

2. No pesticide application shall be made or continued when there is the likelihood of contaminating any persons, non-target crops, animals or other public or private property.

3. Unless specifically named as a dust on this permit, NO DUST FORMULATIONS are allowed.

4. Apply pesticides covered by SLN(s) and Section 18(s) in conformance with the SLN(s) and Section 18(s).

5. A flagger is required at the application site for all AIR applications of Zinc Phosphide bait.

Revised 10/90

Q **Dicamba & Phenoxy Herbicide CV**

CONDITION - Q - DICAMBA AND PHENOXY HERBICIDES - CENTRAL VALLEY/

In addition to all applicable laws, regulations and label restrictions, the CONDITIONS CHECKED BELOW APPLY to applications covered by this permit.

[X] 1. No ester formulation applications allowed.

[X] 2. Do not discharge material more than 10 feet above the crop or target.

[X] 3. A drift reducing agent shall be added to the spray mixture at label rates.

[X] 4. Maximum wind velocity for Phenoxy herbicides - 10 m.p.h.

[X] 5. Maximum wind velocity for Dicamba - 10 m.p.h. EXCEPT when wind is moving in direction of sensitive crops, the maximum wind velocity - 5 m.p.h.

Revised 11/15

R **Dicamba & Phenoxy Herbicide SA**

CONDITION - R - DICAMBA AND PHENOXY HERBICIDES - SPECIAL HAZARDOUS AREA

In addition to all applicable laws, regulations, label restrictions, the and other conditions of this permit, the conditions listed below apply to applications in the Hazardous Area in San Joaquin County beginning March 16 and continuing through October 15.

1. A drift reducing agent shall be added to the spray mixture at the label rates.

2. No Phenoxy application shall be made when the wind velocity is less than 2 m.p.h. or in excess of 7 m.p.h.

3. No Dicamba applications allowed when wind exceeds 5 m.p.h.

4. No Dicamba application allowed when the maximum temperature on the day of application is predicted to exceed 85 degrees fahrenheit. Predicted temperature for the following day will be determined by the NOAA National Weather Service.

5. Air applications are prohibited, except as follows: KING ISLAND, EMPIRE TRACT, BISHOP TRACT, RIO BLANCO TRACT, BOULDIN ISLAND, STATEN ISLAND. Monitoring of application by a Commissioner's representative is required. Applicator shall inform the Agricultural Commissioner's Office of the specific time of application. Application shall not begin until the Commissioner's representative is on site, or approval has been received from the Commissioner's representative.

Revised 11/15

B **RM Use Near Schools**

CONDITION B REST. MAT. USE NEAR SCHOOLS
No applications of Restricted Materials shall be made by air or ground within 1320 feet of a school in session or when a school sponsored event is in progress. If the pesticide label or regulation requires a larger buffer area, the larger buffer shall apply. There will be no waiver of the required 24 hour Notice of Intent.

These conditions do not apply to the following ground applications:
1.Vertebrate pest control
2.Back-pack applications
3.Equipment where all nozzles are pointing down AND wind direction is periodically measured as moving away from the school site
4.Other CAC approved methods

NOTE: The uses of soil fumigants and their corresponding buffer zones are covered by DPR suggested permit conditions or by label.

QL **Dicamba and Phenoxy**

CONDITION - QL - DICAMBA AND PHENOXY HERBICIDES - north Eight Mile Rd.

In addition to all applicable laws, regulations and label restrictions, the CONDITIONS CHECKED BELOW APPLY to applications covered by this permit.

[X] 1. No ester formulation applications allowed.

[X] 2. Do not discharge material more than 10 feet above the crop or target.

[X] 3. A drift reducing agent shall be added to the spray mixture at label rates.

[X] 4. Maximum wind velocity for Phenoxy herbicides - 10 m.p.h.

[X] 5. Maximum wind velocity for Dicamba - 10 m.p.h. EXCEPT when wind is moving in direction of sensitive crops, the maximum wind velocity - 5 m.p.h.

[X] 6. No Dicamba or Phenoxy herbicide applications allowed beginning March 16 and continuing through October 15, and until grape leaves in the vicinity of the treated area are "browned off".

Revised 11/15

SITE CONDITIONS

B **RM Use Near Schools**

CONDITION B REST. MAT. USE NEAR SCHOOLS
No applications of Restricted Materials shall be made by air or ground within 1320 feet of a school in session or when a school sponsored event is in progress. If the pesticide label or regulation requires a larger buffer area, the larger buffer shall apply. There will be no waiver of the required 24 hour Notice of Intent.

These conditions do not apply to the following ground applications:
1.Vertebrate pest control
2.Back-pack applications
3.Equipment where all nozzles are pointing down AND wind direction is periodically measured as moving away from the school site
4.Other CAC approved methods

NOTE: The uses of soil fumigants and their corresponding buffer zones are covered by DPR suggested permit conditions or by label.

P **General**

CONDITION - P - General

In addition to all applicable laws, regulations, label restrictions and other more restrictive conditions of this permit, THE FOLLOWING CONDITIONS APPLY TO APPLICATIONS COVERED BY THIS PERMIT.

1. Maximum wind velocities for applications of Restricted Materials unless otherwise covered by the label, law, regulation, other permit conditions or environmental conditions at the application site are:

a. Spray - 12 m.p.h.
b. Dust - 8 m.p.h.
c. Pellets, granular or baits - 16 m.p.h.

2. No pesticide application shall be made or continued when there is the likelihood of contaminating any persons, non-target crops, animals or other public or private property.

3. Unless specifically named as a dust on this permit, NO DUST FORMULATIONS are allowed.

4. Apply pesticides covered by SLN(s) and Section 18(s) in conformance with the SLN(s) and Section 18(s).

5. A flagger is required at the application site for all AIR applications of Zinc Phosphide bait.

Revised 10/90

Q **Dicamba & Phenoxy Herbicide CV**

CONDITION - Q - DICAMBA AND PHENOXY HERBICIDES - CENTRAL VALLEY/

In addition to all applicable laws, regulations and label restrictions, the CONDITIONS CHECKED BELOW APPLY to applications covered by this permit.

[X] 1. No ester formulation applications allowed.

[X] 2. Do not discharge material more than 10 feet above the crop or target.

[X] 3. A drift reducing agent shall be added to the spray mixture at label rates.

[X] 4. Maximum wind velocity for Phenoxy herbicides - 10 m.p.h.

[X] 5. Maximum wind velocity for Dicamba - 10 m.p.h. EXCEPT when wind is moving in direction of sensitive crops, the maximum wind velocity - 5 m.p.h.

Revised 11/15

QL **Dicamba and Phenoxy**

CONDITION - QL - DICAMBA AND PHENOXY HERBICIDES - north Eight Mile Rd.

In addition to all applicable laws, regulations and label restrictions, the CONDITIONS CHECKED BELOW APPLY to applications covered by this permit.

[X] 1. No ester formulation applications allowed.

[X] 2. Do not discharge material more than 10 feet above the crop or target.

[X] 3. A drift reducing agent shall be added to the spray mixture at label rates.

[X] 4. Maximum wind velocity for Phenoxy herbicides - 10 m.p.h.

[X] 5. Maximum wind velocity for Dicamba - 10 m.p.h. EXCEPT when wind is moving in direction of sensitive crops, the maximum wind velocity - 5 m.p.h.

[X] 6. No Dicamba or Phenoxy herbicide applications allowed beginning March 16 and continuing through October 15, and until grape leaves in the vicinity of the treated area are "browned off".

Revised 11/15

R **Dicamba & Phenoxy Herbicide SA**

CONDITION - R - DICAMBA AND PHENOXY HERBICIDES - SPECIAL HAZARDOUS AREA

In addition to all applicable laws, regulations, label restrictions, the and other conditions of this permit, the conditions listed below apply to applications in the Hazardous Area in San Joaquin County beginning March 16 and continuing through October 15.

1. A drift reducing agent shall be added to the spray mixture at the label rates.

2. No Phenoxy application shall be made when the wind velocity is less than 2 m.p.h. or in excess of 7 m.p.h.

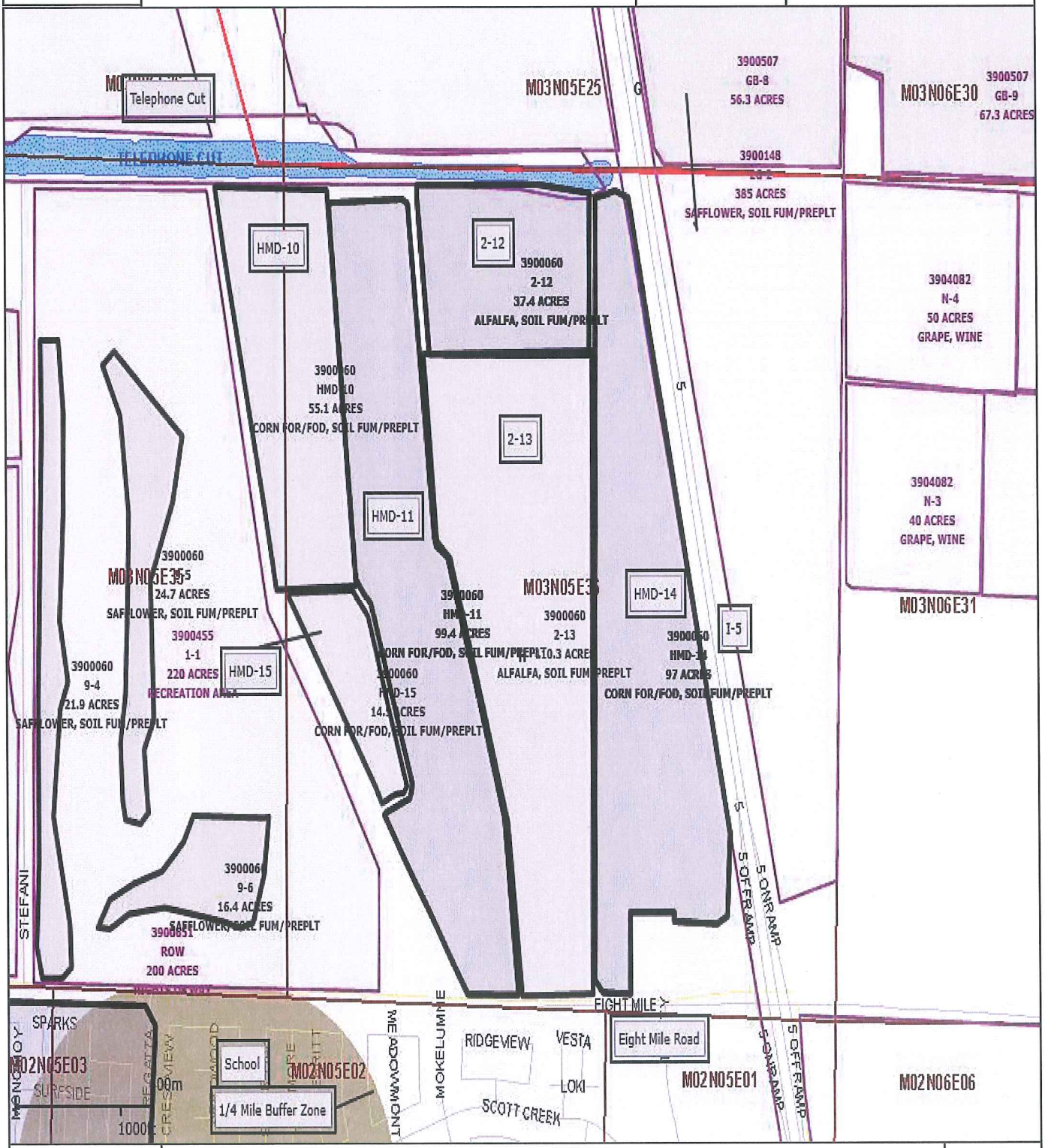
3. No Dicamba applications allowed when wind exceeds 5 m.p.h.

4. No Dicamba application allowed when the maximum temperature on the day of application is predicted to exceed 85 degrees fahrenheit. Predicted temperature for the following day will be determined by the NOAA National Weather Service.

5. Air applications are prohibited, except as follows: KING ISLAND, EMPIRE TRACT, BISHOP TRACT, RIO BLANCO TRACT, BOULDIN ISLAND, STATEN ISLAND. Monitoring of application by a Commissioner's representative is required. Applicator shall inform the Agricultural Commissioner's Office of the specific time of application. Application shall not begin until the Commissioner's representative is on site, or approval has been received from the Commissioner's representative.

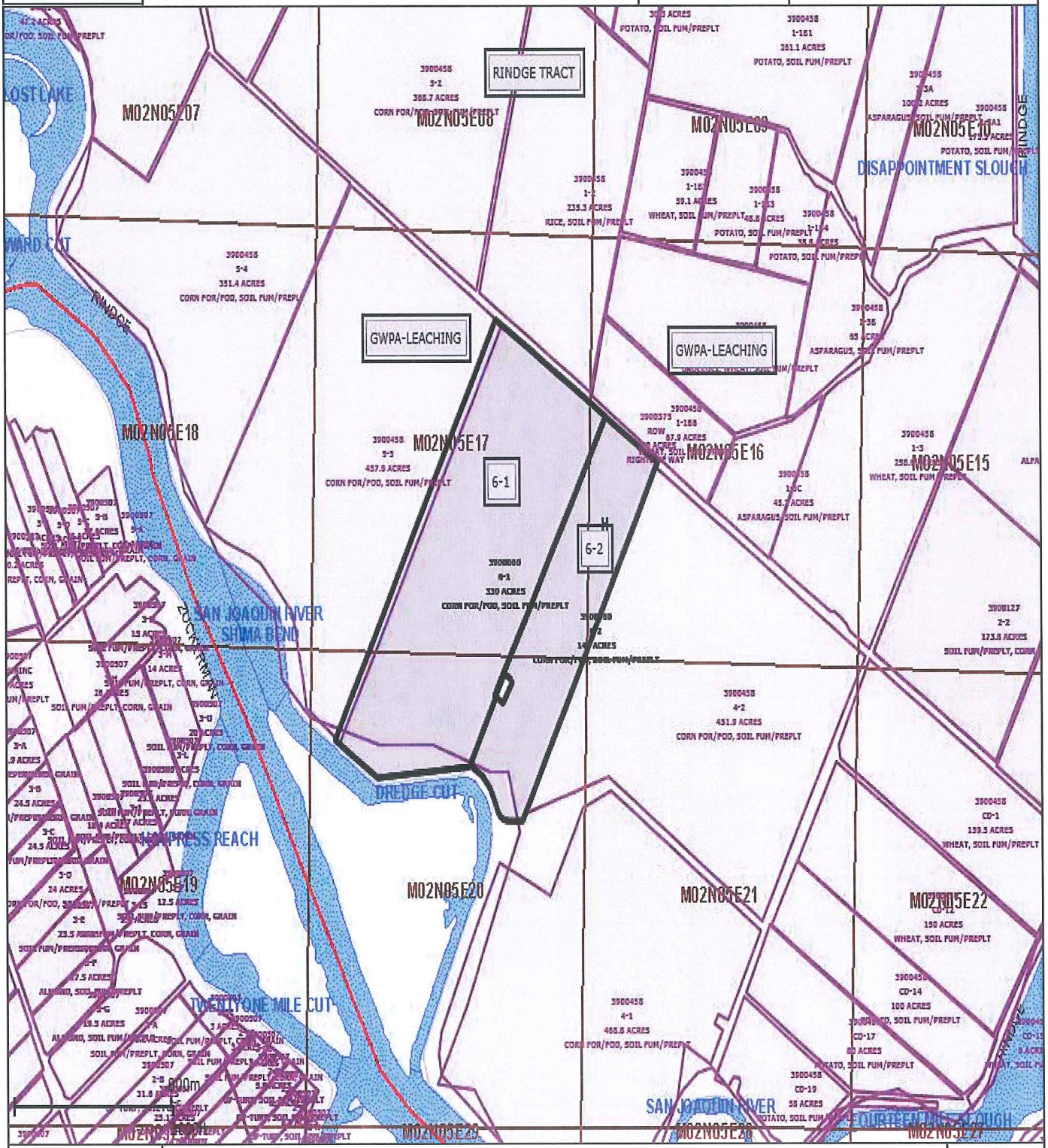
Revised 11/15

San Joaquin County	Permit Number:	3900060
Map 2	Created On:	1/3/2017
Hammond Ranch	Operator:	BIAGI FARMS, GEORGE JR



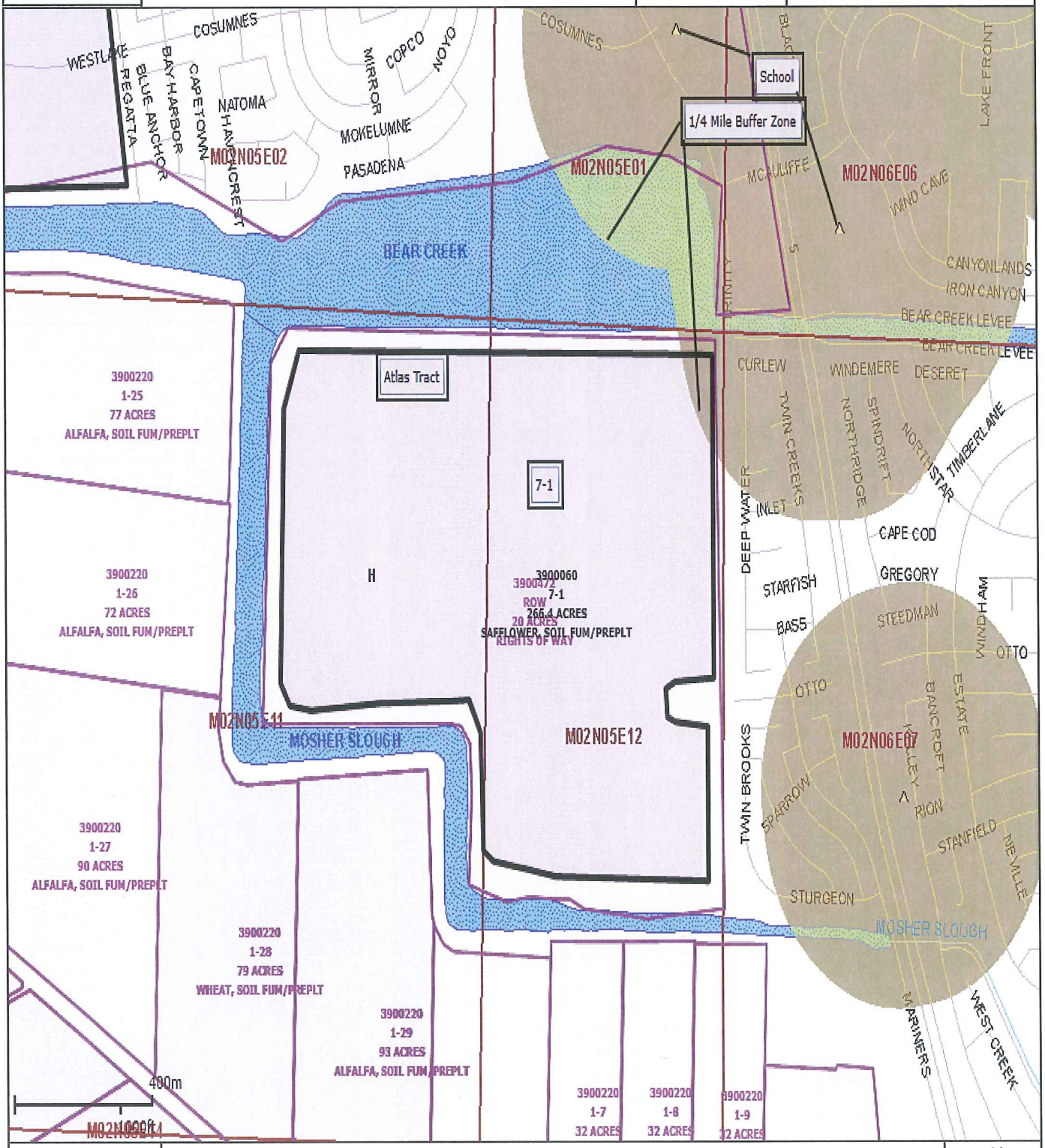
Included Sites:	2-12, 2-13, HMD-10, HMD-11, HMD-14, HMD-15

San Joaquin County	Permit Number:	3900060
Map 6	Created On:	1/3/2017
RIndge Tract	Operator:	BIAGI FARMS, GEORGE JR



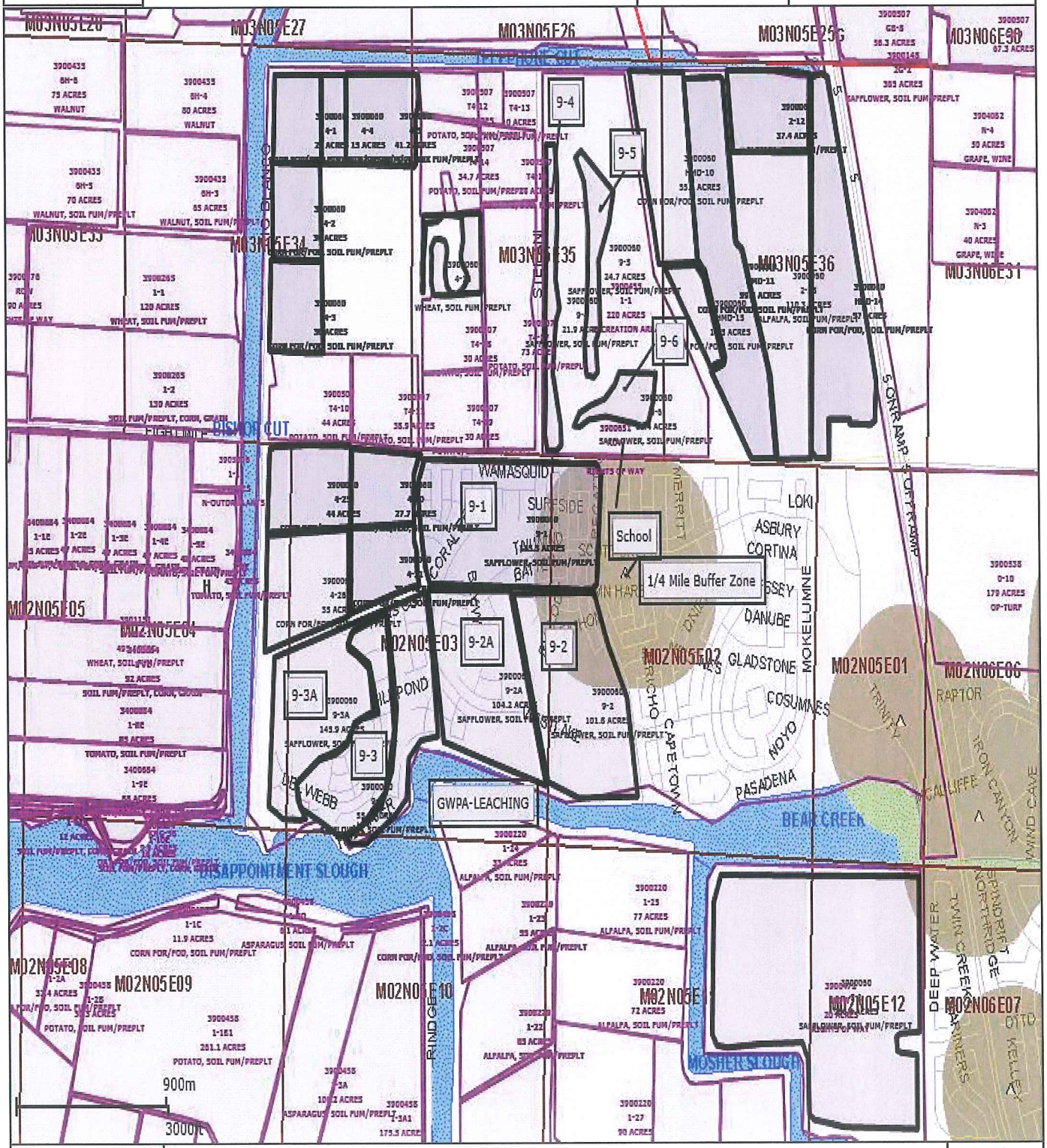
Included Sites:	6-1, 6-2

San Joaquin County	Permit Number:	3900060
Map 7	Created On:	1/3/2017
Atlas Tract	Operator:	BIAGI FARMS, GEORGE JR



Included Sites:	7-1

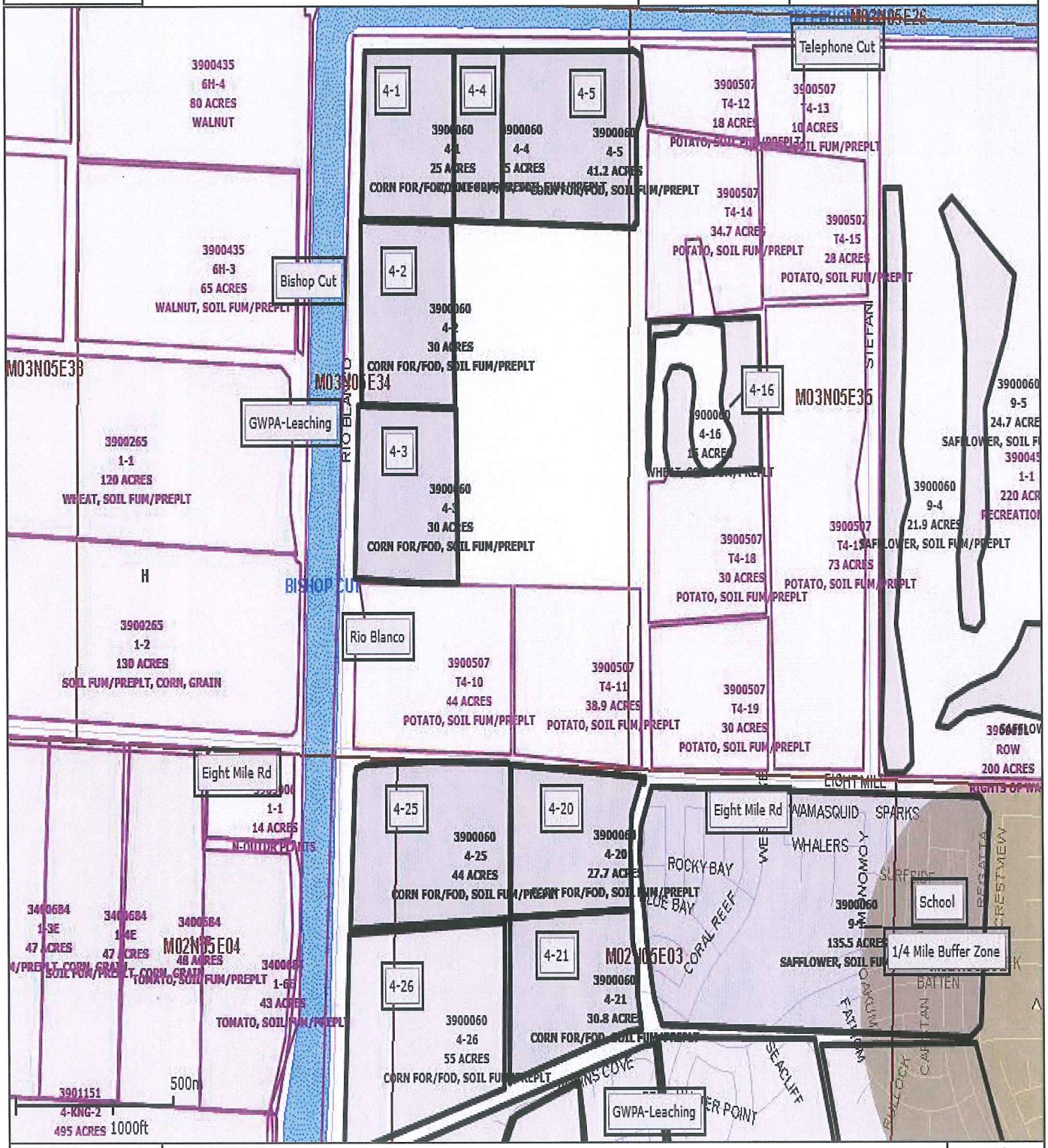
San Joaquin County	Permit Number:	3900060
Map 9	Created On:	1/3/2017
Bishop Tract	Operator:	BIAGI FARMS, GEORGE JR



Included Sites:	9-1, 9-2, 9-2A, 9-3, 9-3A, 9-4, 9-5, 9-6

N
W E
S

San Joaquin County	Permit Number:	3900060
Map 1	Created On:	1/3/2017
Thompson Ranch, Bishop Tract	Operator:	BIAGI FARMS, GEORGE JR



Included Sites:	4-1, 4-16, 4-2, 4-20, 4-21, 4-25, 4-26, 4-3, 4-4, 4-5

SAN JOAQUIN COUNTY AGRICULTURAL COMMISSIONERS OFFICE
2101 E EARHART AVE, SUITE 100
STOCKTON, CA 95206
Office: (209) 953-6000 Fax: (209) 953-6022
Email: stocktonag2@sjgov.org Web: www.co.san-joaquin.ca.us/agcomm

2018

RESTRICTED MATERIALS PERMIT: 39-18-3900060

Operator: BIAGI FARMS, GEORGE JR
8458 W EIGHT MILE RD
STOCKTON, CA 95219

Agent: BIAGI, GEORGE JR

3900060-2018-Version: 1
County District #:H
Issued on: 1.12.2018 EnB
Valid as of:
Expires on:12/31/2018
Primary Phone: [redacted]
Alternate Phone: ( ) -
Mobile Phone: [redacted]
Fax:
Phone:
License #:3900053
Expiration:12/31/2018

Certified Applicator: BIAGI, GEORGE G
8458 W EIGHT MILE RD
STOCKTON, CA 95219

Type of Use: Agricultural Use
Pesticide Possession: Possession and Use
Permit Duration: Seasonal
Employees Handle Pesticides
Permit Conditions: A, P, Q, R, B, QL

Notices Of Intent required 24 hours prior to application of pesticide containing restricted materials

See condition detail for code descriptions.

Regulatory Notes:

I understand that this permit does not relieve me from liability for any damages to any persons or property caused by the use of these pesticides. I waive any claims of liability for damages against the County Department of Agriculture based on the issuance of this permit. I further understand that this permit may be revoked when pesticides are used in conflict with the manufacturer's labeling or in violation of applicable laws, regulations, and specific conditions of this permit. I authorize inspection at all reasonable times and whenever an emergency exists by the Department of Pesticide Regulation or the County Department of Agriculture of all areas treated or to be treated, storage facilities for pesticides or emptied containers and equipment used or to be used in the treatment. I have considered alternative and mitigation measures pursuant to Title 3, California Code of Regulations, section 6426. Taking into account economic, environmental, social, and technological factors, I have adopted those that are feasible and would substantially lessen any significant adverse impact on the environment.

[Form PR-ENF-125 (Rev 11/06) Pesticide Enforcement Branch]

Applicant: GEORGE BIAGI
(Name & Title)

Applicant Signature: George Biagi Date: 1-12-18

Issuing Officer: Rod Julin Date: 1-9-18

CONTACT LIST

Name	Auth Rep.	Phone	License	Expiration	Contact Type
ALPINE HELICOPTER SERVICE		[redacted]	30969	12/31/2018	Pest Control Business
KG VINEYARD MANAGEMENT LLC		[redacted]	32946	12/31/2018	Pest Control Business
PELUCCA, DENNIS	yes		74128	12/31/2019	Agricultural Pest Control Advisor
BIAGI, GEORGE G		[redacted]	3900053	12/31/2018	Private Applicator Certificate
DELTA GROWERS		[redacted]	34357	12/31/2018	Pesticide Control Dealer

PESTICIDES LIST

Number	Pesticide	Pests	Forms	Methods	Applicators
105	CARBARYL	LARVAE	All Reg.	Air/Ground	PCB/Operator
200	DICAMBA	WEEDS	Liquid	Ground	PCB/Operator
383	METHOMYL	LARVAE	Liquid	Air/Ground	PCB/Operator
478	PHORATE	APHIDS	All Reg.	Air/Ground	PCB/Operator
626	ZINC PHOSPHIDE	RODENTS	Bait	Ground	PCB/Operator
786	MCPA, DIMETHYLAMINE SALT	BROADLEAF WEEDS	Liquid	Air/Ground	PCB/Operator
804	2,4-D, BUTYL ESTER	WEEDS	Liquid	Air/Ground	PCB/Operator
806	2,4-D, DIMETHYLAMINE SALT	WEEDS	Liquid	Air/Ground	PCB/Operator
1601	PARAQUAT DICHLORIDE	WEEDS	Liquid	Air/Ground	PCB/Operator
1689	METHIDATHION	LARVAE	Liquid	Air/Ground	PCB/Operator

SITES LIST

Site	Location | Site Name Commodity Name/Code	Quantity	District	Section (MTRS)
4-1	THOMPSON RANCH, BISHOP TRACT, GWPA LEACH E/BISHOP SLOUGH N/EIGHT MILE RD **CORN FOR/FOD / 22005-0**	25 ACRES	H	M03N05E34
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)			
	SOIL FUM/PREPLT / 40008-0	25 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)			
Conditions:	B - Pesticide Use Near Schoolsites, P - General, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA			

4-10 THOMPSON RANCH, BISHOP TRACT, GWPA LEACH E/BISHOP SLOUGH N/EIGHT MILE RD H M03N05E34
CORN FOR/FOD / 22005-0 42 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 42 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA

4-11 THOMPSON RANCH, BISHOP TRACT, GWPA LEACH E/BISHOP SLOUGH N/EIGHT MILE RD H M03N05E34
CORN FOR/FOD / 22005-0 38.4 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 38.4 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA

4-12 THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHTH MILE RD M03N05E35
CORN FOR/FOD / 22005-0 17 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 17 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA

4-13 THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHTH MILE RD M03N05E35
CORN FOR/FOD / 22005-0 8 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 8 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA

4-14 THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHTH MILE RD M03N05E35
CORN FOR/FOD / 22005-0 18 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 18 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV

4-14A THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHTH MILE RD M03N05E35
CORN FOR/FOD / 22005-0 14 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 14 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA

4-15 THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHTH MILE RD M03N05E35
CORN FOR/FOD / 22005-0 28 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 28 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV

4-16 THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHTH MILE RD M03N05E35
CORN FOR/FOD / 22005-0 15 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 15 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA

4-17 THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHTH MILE RD M03N05E35
CORN FOR/FOD / 22005-0 52 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 52 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV

4-18 THOMPSON RANCH, BISHOP TRACT, E/BISHOP SLOUGH N/EIGHTH MILE RD M03N05E35
CORN FOR/FOD / 22005-0 30 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 30 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA

4-19 THOMPSON RANCH, BISHOP TRACT E/BISHOP SLOUGH N/EIGHT H MILE RD M03N05E35
CORN FOR/FOD / 22005-0 56 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 56 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA

4-2 THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD H M03N05E34
CORN FOR/FOD / 22005-0 30 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 30 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA

4-3 THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD H M03N05E34
CORN FOR/FOD / 22005-0 30 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 30 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA

4-4 THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD H M03N05E34
CORN FOR/FOD / 22005-0 15 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 15 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA

4-5 THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD H M03N05E34
CORN FOR/FOD / 22005-0 41.2 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 41.2 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA

4-6	THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 29.4 ACRES	H	M03N05E34
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 29.4 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-7	THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 24 ACRES	H	M03N05E34
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 24 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-8	THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 28.1 ACRES	H	M03N05E34
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 28.1 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV		

4-9	THOMPSON RANCH, BISHOP TRACT GWPA LEAC E/BISHOP SLOUGH N/EIGHT MILE RD **CORN FOR/FOD / 22005-0** 23.4 ACRES	H	M03N05E34
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 23.4 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV		

6-2	RINDGE TRACT GWPA LEACHING GWPA-LEACHING **CORN FOR/FOD / 22005-0** 146 ACRES	H	M02N05E17
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 146 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV		

6-1	RINDGE TRACT GWPA LEACHING GWPA LEACHING **CORN FOR/FOD / 22005-0** 330 ACRES	H	M02N05E17
Pesticide #s:	105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION) **SOIL FUM/PREPLT / 40008-0** 330 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV		

HMD-10 HAMMOND RANCH E/I-5 N/EIGHT MILE H M03N05E36
CORN FOR/FOD / 22005-0 55.1 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 55.1 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA

HMD-11 HAMMOND RANCH E/I-5 N/EIGHT MILE H M03N05E36
CORN FOR/FOD / 22005-0 99.4 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 99.4 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA

HMD-14 HAMMOND RANCH E/I-5 N/EIGHT MILE G M03N05E36
CORN FOR/FOD / 22005-0 97 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 97 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA

HMD-15 HAMMOND RANCH E/I-5 N/EIGHT MILE G M03N05E36
CORN FOR/FOD / 22005-0 14.5 ACRES
Pesticide #s: 105 (CARBARYL), 200 (DICAMBA), 383 (METHOMYL), 478 (PHORATE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE), 1689 (METHIDATHION)
SOIL FUM/PREPLT / 40008-0 14.5 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, QL - Dicamba and Phenoxy, R - Dicamba & Phenoxy Herbicide SA

2-12 E/I-5 N/EIGHT MILE HAMMOND RANCH G M03N05E36
ALFALFA / 23001-0 37.4 ACRES
Pesticide #s: 383 (METHOMYL), 804 (2,4-D, BUTYL ESTER), 1601 (PARAQUAT DICHLORIDE)
SOIL FUM/PREPLT / 40008-0 37.4 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA

2-13 E/I-5 N/EIGHT MILE HAMMOND RANCH G M03N05E36
ALFALFA / 23001-0 110.3 ACRES
Pesticide #s: 383 (METHOMYL), 804 (2,4-D, BUTYL ESTER), 1601 (PARAQUAT DICHLORIDE)
SOIL FUM/PREPLT / 40008-0 110.3 ACRES
Pesticide #s: 200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)
Conditions: B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA

9-6	THE RESERVE GOLF COURSSE N/EIGHT MILE RD E/RIO BLANCO H		M03N05E35
	WHEAT / 29139-0 16.4 ACRES		
Pesticide #s:	200 (DICAMBA), 478 (PHORATE), 786 (MCPA, DIMETHYLAMINE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 16.4 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

9-4	THE RESERVE N/EIGHT MILE RD E/RIO BLANCO	H	M03N05E35
	WHEAT / 29139-0 21.9 ACRES		
Pesticide #s:	200 (DICAMBA), 478 (PHORATE), 786 (MCPA, DIMETHYLAMINE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 21.9 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

9-5	THE RESERVE N/EIGHT MILE RD E/RIO BLANCO	H	M03N05E35
	WHEAT / 29139-0 24.7 ACRES		
Pesticide #s:	200 (DICAMBA), 478 (PHORATE), 786 (MCPA, DIMETHYLAMINE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 24.7 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

9-3	MAP 9 SITE 9-3 S/EIGHT MILE RD E/ RIO BLANCO BISHOP TRACT H		M03N05E03
	WHEAT / 29139-0 50 ACRES		
Pesticide #s:	200 (DICAMBA), 478 (PHORATE), 786 (MCPA, DIMETHYLAMINE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 50 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

9-3A	S/EIGHT MILE RD E/RIO BLANCO	H	M02N05E03
	WHEAT / 29139-0 145.9 ACRES		
Pesticide #s:	200 (DICAMBA), 478 (PHORATE), 786 (MCPA, DIMETHYLAMINE), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
	SOIL FUM/PREPLT / 40008-0 145.9 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

ROW	RIGHT-OF-WAYS ALL LOCATIONS	H	M02N05E12
	RIGHTS OF WAY / 40-0 75 ACRES		
Pesticide #s:	626 (ZINC PHOSPHIDE), 804 (2,4-D, BUTYL ESTER), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

9-2A	S/EIGHT MILE RD E/RIO BLANCO	H	M02N05E03
	SOIL FUM/PREPLT / 40008-0 104.2 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

7-1	ATLAS TRACT S/EIGHT MILE RD W/I-5	H	M02N05E12
	SOIL FUM/PREPLT / 40008-0 266.4 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV		

9-1	MAP 9 SITE 9-1 S/EIGHT MILE RD E/ RIO BLANCO BISHOP TRACT	H	M03N05E03
	SOIL FUM/PREPLT / 40008-0 135.5 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

9-2	MAP 9 SITE 9-2 S/EIGHT MILE RD E/ RIO BLANCO BISHOP TRACT	H	M03N05E03
	SOIL FUM/PREPLT / 40008-0 101.8 ACRES		
Pesticide #s:	200 (DICAMBA), 806 (2,4-D, DIMETHYLAMINE), 1601 (PARAQUAT DICHLORIDE)		
Conditions:	B - Pesticide Use Near Schoolsites, P - General, Q - Dicamba & Phenoxy Herbicide CV, R - Dicamba & Phenoxy Herbicide SA		

OPERATION-WIDE CONDITIONS

A **Table of Contents**

A - PERMIT CONDITIONS - TABLE OF CONTENTS

WORKERS SAFETY SERIES ATTACHED

[ ] A-1 through A-10 Ag PSIS
[ ] N-1 through N-8 Non Ag PSIS

PERMIT CONDITONS ATTACHED
[X] B- RM Use Near Schools
[ ] C- Non-ag Permit, Notice of Intent
[ ] D- Chlorpyrifos
[ ] M- Methyl bromide Field Fumigation
[ ] O-
[X] P - General
[X] Q - Dicamba & Phenoxy Herbicides - Central Valley
[X] QL- Dicambe & Phenoxy Herbicides - N/Eight Mile
[X] R - Dicamba & Phenoxy - Special Hazardous Area
[ ] S - Metam Sodium, Metam Potassium, Dazomet
[ ] T - Chloropicrin/and in Combination Field Fume
[ ] V - Rice Pesticides Program
[ ] W - Tree Hole Fumigation
[ ] Y - 1,3-Dichloropropene (100%)
[ ] Z - Commodity Fumigation

GROUNDWATER PROTECTION PERMIT CONDITIONS

These conditions apply to pesticides labeled for agricultural, outdoor industrial, or outdoor institutional use that contain chemicals listed in 3CCR section 6800(a): ATRAZINE, SIMAZINE, BROMACIL, DIURON (except products with less than 7% diuron applied to foliage), PROMETON, BENTAZON, AND NORFLURAZON. Ground Water Protection Areas (GWPA), for San Joaquin County, are designated in the Department of Pesticide Regulation document EH03-05. A list of GWPAs may be obtained from the Commissioner's Office or DPR's website (www.cdpr.ca.gov/docs/gwp).

"Engineered rights of way" are defined as areas within a ground water protection area (GWPA) that are constructed in a way that results in increased runoff and collection of storm water, such as railroad ballasts and berms, public roadsides, and highway median strips or similar areas, but not canal or ditch banks or utility lines.

SPECIFIC GROUNDWATER PROTECTION PERMIT CONDITIONS ATTACHED

GWP-C & D Unlined canal and ditch banks
[ ] 1 - Percolation rate is less than or equal to 0.2 inches per hour
[ ] 2 - Applied six months prior to water run
[ ] 3 - All applications are prohibited below high water line

GWP-ROW Engineered rights-of-way within San Joaquin County GWPAs
[ ] 1A - Soil disturbance within 7 days
[ ] 1B - Incorporation
[ ] 1C - Applied between April 1 and July 31
[ ] 2 - Runoff passes through adjacent fully vegetated noncrop area
[ ] 3 - Compliance with NPDES permit
[ ] 4 - Runoff through adjacent area as overland flow

GWP-R Runoff GWPAs within San Joaquin County
[ ] 1 - Soil disturbance
[ ] 2 - Incorporated
[ ] 3 - Band treatment
[ ] 4 - Applied between April 1 and July 31
[ ] 5 - Runoff water held onsite
[ ] 6 - Runoff water stored offsite
[ ] 7 - Runoff to adjacent fallow field

GWP-L Leaching GWPAs within San Joaquin County
[ ] 1 - No irrigation
[ ] 2 - Bed or berm application
[ ] 3 - Managed irrigation

GWP-Director Director Approved Alternative Management Practices or Interim Use
[ ] 1 - Director approved alternative
[ ] 2 - Director approved interim use

Revised 11/15

P **General**

CONDITION - P - General

In addition to all applicable laws, regulations, label restrictions and other more restrictive conditions of this permit, THE FOLLOWING CONDITIONS APPLY TO APPLICATIONS COVERED BY THIS PERMIT.

1. Maximum wind velocities for applications of Restricted Materials unless otherwise covered by the label, law, regulation, other permit conditions or environmental conditions at the application site are:

a. Spray - 12 m.p.h.
b. Dust - 8 m.p.h.
c. Pellets, granular or baits - 16 m.p.h.

2. No pesticide application shall be made or continued when there is the likelihood of contaminating any persons, non-target crops, animals or other public or private property.

3. Unless specifically named as a dust on this permit, NO DUST FORMULATIONS are allowed.

4. Apply pesticides covered by SLN(s) and Section 18(s) in conformance with the SLN(s) and Section 18(s).

5. A flagger is required at the application site for all AIR applications of Zinc Phosphide bait.

Revised 10/90

Q **Dicamba & Phenoxy Herbicide CV**

CONDITION - Q - DICAMBA AND PHENOXY HERBICIDES - CENTRAL VALLEY/

In addition to all applicable laws, regulations and label restrictions, the CONDITIONS CHECKED BELOW APPLY to applications covered by this permit.

[X] 1. No ester formulation applications allowed.

[X] 2. Do not discharge material more than 10 feet above the crop or target.

[X] 3. A drift reducing agent shall be added to the spray mixture at label rates.

[X] 4. Maximum wind velocity for Phenoxy herbicides - 10 m.p.h.

[X] 5. Maximum wind velocity for Dicamba - 10 m.p.h. EXCEPT when wind is moving in direction of sensitive crops, the maximum wind velocity - 5 m.p.h.

Revised 11/15

R **Dicamba & Phenoxy Herbicide SA**

CONDITION - R - DICAMBA AND PHENOXY HERBICIDES - SPECIAL HAZARDOUS AREA

In addition to all applicable laws, regulations, label restrictions, the and other conditions of this permit, the conditions listed below apply to applications in the Hazardous Area in San Joaquin County beginning March 16 and continuing through October 15.

1. A drift reducing agent shall be added to the spray mixture at the label rates.

2. No Phenoxy application shall be made when the wind velocity is less than 2 m.p.h. or in excess of 7 m.p.h.

3. No Dicamba applications allowed when wind exceeds 5 m.p.h.

4. No Dicamba application allowed when the maximum temperature on the day of application is predicted to exceed 85 degrees fahrenheit. Predicted temperature for the following day will be determined by the NOAA National Weather Service.

5. Air applications are prohibited, except as follows: KING ISLAND, EMPIRE TRACT, BISHOP TRACT, RIO BLANCO TRACT, BOULDIN ISLAND, STATEN ISLAND. Monitoring of application by a Commissioner's representative is required. Applicator shall inform the Agricultural Commissioner's Office of the specific time of application. Application shall not begin until the Commissioner's representative is on site, or approval has been received from the Commissioner's representative.

Revised 11/15

B **Pesticide Use Near Schoolsites**

CONDITION B Pesticide Use Near Schools/Day cares
All pesticide applications for production of an agricultural commodity within 1/4 mile (1,320 feet) of a school or day care shall follow Title 3 California Code of Regulations sections 6690, 6691 and 6692. This includes applications of adjuvants and 25(b) pesticides.
Schools include: Public K-12 schools, including publicly-funded charter schools.
Daycares include: Licensed child day care facilities, except family day care homes, as defined by Health and Safety Code.
Application restrictions are in effect Monday-Friday, 6am-6pm, while school is in session.

QL **Dicamba and Phenoxy**

CONDITION - QL - DICAMBA AND PHENOXY HERBICIDES - north Eight Mile Rd.

In addition to all applicable laws, regulations and label restrictions, the CONDITIONS CHECKED BELOW APPLY to applications covered by this permit.

[X] 1. No ester formulation applications allowed.

[X] 2. Do not discharge material more than 10 feet above the crop or target.

[X] 3. A drift reducing agent shall be added to the spray mixture at label rates.

[X] 4. Maximum wind velocity for Phenoxy herbicides - 10 m.p.h.

[X] 5. Maximum wind velocity for Dicamba - 10 m.p.h. EXCEPT when wind is moving in direction of sensitive crops, the maximum wind velocity - 5 m.p.h.

[X] 6. No Dicamba or Phenoxy herbicide applications allowed beginning March 16 and continuing through October 15, and until grape leaves in the vicinity of the treated area are "browned off".

Revised 11/15

SITE CONDITIONS

B **Pesticide Use Near Schoolsites**

CONDITION B Pesticide Use Near Schools/Day cares
All pesticide applications for production of an agricultural commodity within 1/4 mile (1,320 feet) of a school or day care shall follow Title 3 California Code of Regulations sections 6690, 6691 and 6692. This includes applications of adjuvants and 25(b) pesticides.
Schools include: Public K-12 schools, including publicly-funded charter schools.
Daycares include: Licensed child day care facilities, except family day care homes, as defined by Health and Safety Code.
Application restrictions are in effect Monday-Friday, 6am-6pm, while school is in session.

P **General**

CONDITION - P - General

In addition to all applicable laws, regulations, label restrictions and other more restrictive conditions of this permit, THE FOLLOWING CONDITIONS APPLY TO APPLICATIONS COVERED BY THIS PERMIT.

1. Maximum wind velocities for applications of Restricted Materials unless otherwise covered by the label, law, regulation, other permit conditions or environmental
conditions at the application site are:

a. Spray - 12 m.p.h.
b. Dust - 8 m.p.h.
c. Pellets, granular or baits - 16 m.p.h.

2. No pesticide application shall be made or continued when there is the likelihood of contaminating any persons, non-target crops, animals or other public or private property.

3. Unless specifically named as a dust on this permit, NO DUST FORMULATIONS are allowed.

4. Apply pesticides covered by SLN(s) and Section 18(s) in conformance with the SLN(s) and Section 18(s).

5. A flagger is required at the application site for all AIR applications of Zinc Phosphide bait.

Revised 10/90

Q **Dicamba & Phenoxy Herbicide CV**

CONDITION - Q - DICAMBA AND PHENOXY HERBICIDES - CENTRAL VALLEY/

In addition to all applicable laws, regulations and label restrictions, the CONDITIONS CHECKED BELOW APPLY to applications covered by this permit.

[X] 1. No ester formulation applications allowed.

[X] 2. Do not discharge material more than 10 feet above the crop or target.

[X] 3. A drift reducing agent shall be added to the spray mixture at label rates.

[X] 4. Maximum wind velocity for Phenoxy herbicides - 10 m.p.h.

[X] 5. Maximum wind velocity for Dicamba - 10 m.p.h. EXCEPT when wind is moving in direction of sensitive crops, the maximum wind velocity - 5 m.p.h.

Revised 11/15

QL **Dicamba and Phenoxy**

CONDITION - QL - DICAMBA AND PHENOXY HERBICIDES - north Eight Mile Rd.

In addition to all applicable laws, regulations and label restrictions, the CONDITIONS CHECKED BELOW APPLY to applications covered by this permit.

[X] 1. No ester formulation applications allowed.

[X] 2. Do not discharge material more than 10 feet above the crop or target.

[X] 3. A drift reducing agent shall be added to the spray mixture at label rates.

[X] 4. Maximum wind velocity for Phenoxy herbicides - 10 m.p.h.

[X] 5. Maximum wind velocity for Dicamba - 10 m.p.h. EXCEPT when wind is moving in direction of sensitive crops, the maximum wind velocity - 5 m.p.h.

[X] 6. No Dicamba or Phenoxy herbicide applications allowed beginning March 16 and continuing through October 15, and

until grape leaves in the vicinity of the treated area are "browned off".

Revised 11/15

R **Dicamba & Phenoxy Herbicide SA**

CONDITION - R - DICAMBA AND PHENOXY HERBICIDES - SPECIAL HAZARDOUS AREA

In addition to all applicable laws, regulations, label restrictions, the and other conditions of this permit, the conditions listed below apply to applications in the Hazardous Area in San Joaquin County beginning March 16 and continuing through October 15.

1. A drift reducing agent shall be added to the spray mixture at the label rates.

2. No Phenoxy application shall be made when the wind velocity is less than 2 m.p.h. or in excess of 7 m.p.h.

3. No Dicamba applications allowed when wind exceeds 5 m.p.h.

4. No Dicamba application allowed when the maximum temperature on the day of application is predicted to exceed 85 degrees fahrenheit. Predicted temperature for the following day will be determined by the NOAA National Weather Service.

5. Air applications are prohibited, except as follows: KING ISLAND, EMPIRE TRACT, BISHOP TRACT, RIO BLANCO TRACT, BOULDIN ISLAND, STATEN ISLAND. Monitoring of application by a Commissioner's representative is required. Applicator shall inform the Agricultural Commissioner's Office of the specific time of application. Application shall not begin until the Commissioner's representative is on site, or approval has been received from the Commissioner's representative.

Revised 11/15

APPLICATION - RESTRICTED MATERIALS PERMIT - SUPPLEMENT

PERMIT NO. 3900060

Biagi Farms / George Jr. remove sites

PAGE NO. _____

LOCATION	SEC	TWN	RNG	MAP ID	COMMODITY	ACRES/ UNITS	PESTICIDES	PESTS	F*	M**	RATE	DILUTION/ VOLUME	APPL	DATE/ TIMING
7. HMD-10 55.1 acres														
8.														
9. HMD-11 99.4 acres														
10.														
11. HMD-15 14.5 acres														
12.														
13.														
14.														
15.														
16.														
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29.														
30.														
31.														

*Formulation: L--Liquid B--Bait D--Dust F--Fumigant G--Granules WP--Wettable Powder O--Other

**Method: A--Air F--Fumigation Gr--Ground O--Other

APPLICANT SIGNATURE over the phone DATE 11/28/18

ISSUED BY [signature] DATE 11/28/18

DISTRIBUTION: COUNTY AGRICULTURAL COMMISSIONER; PERMITTEE

STATE OF CALIFORNIA
DEPARTMENT OF PESTICIDE REGULATION
PR-ENF-125A (REV. 10/07) Page 1 of 1

Print Form

APPLICATION - RESTRICTED MATERIALS PERMIT - SUPPLEMENT

PERMIT NO. 3900060

PAGE NO. _____

BIAGI FARMS, GEORGE JR — CHANGE COMMODITY/ADD SITE

LOCATION	SEC	TWN	RNG	MAP ID	COMMODITY	ACRES/ UNITS	PESTICIDES	PESTS	F*	M**	RATE	DILUTION/ VOLUME	APPL	DATE/ TIMING
7. E/BISHOP STOUGH N/	34	3N	5E	4-6	WHEAT	29.4								
8. EIGHT MILE RD				4-7	WHEAT	24								
9.				4-8	WHEAT	28.1								
10.				4-9	WHEAT	23.4								
11.														
12.														
13. E/BISHOP STOUGH	34	3N	5E	4-1A	WHEAT	10	ADD SITE ADD							
14. N/EIGHT MILE RD														
15.														
16.														
17.														
18. Harvard			HMD	44	Alfalfa	97								
19. corn to Alfalfa														
20. Site change Rm														
21.														
22.														
23.														
24.														
25.														
26.														
27.														
28.														
29.														
30.														
31.														

*Formulation: L--Liquid B--Bait D--Dust F--Fumigant G--Granules WP--Wettable Powder O--Other

**Method: A--Air F--Fumigation Gr--Ground O--Other

APPLICANT SIGNATURE George Biagi DATE 1-31-18

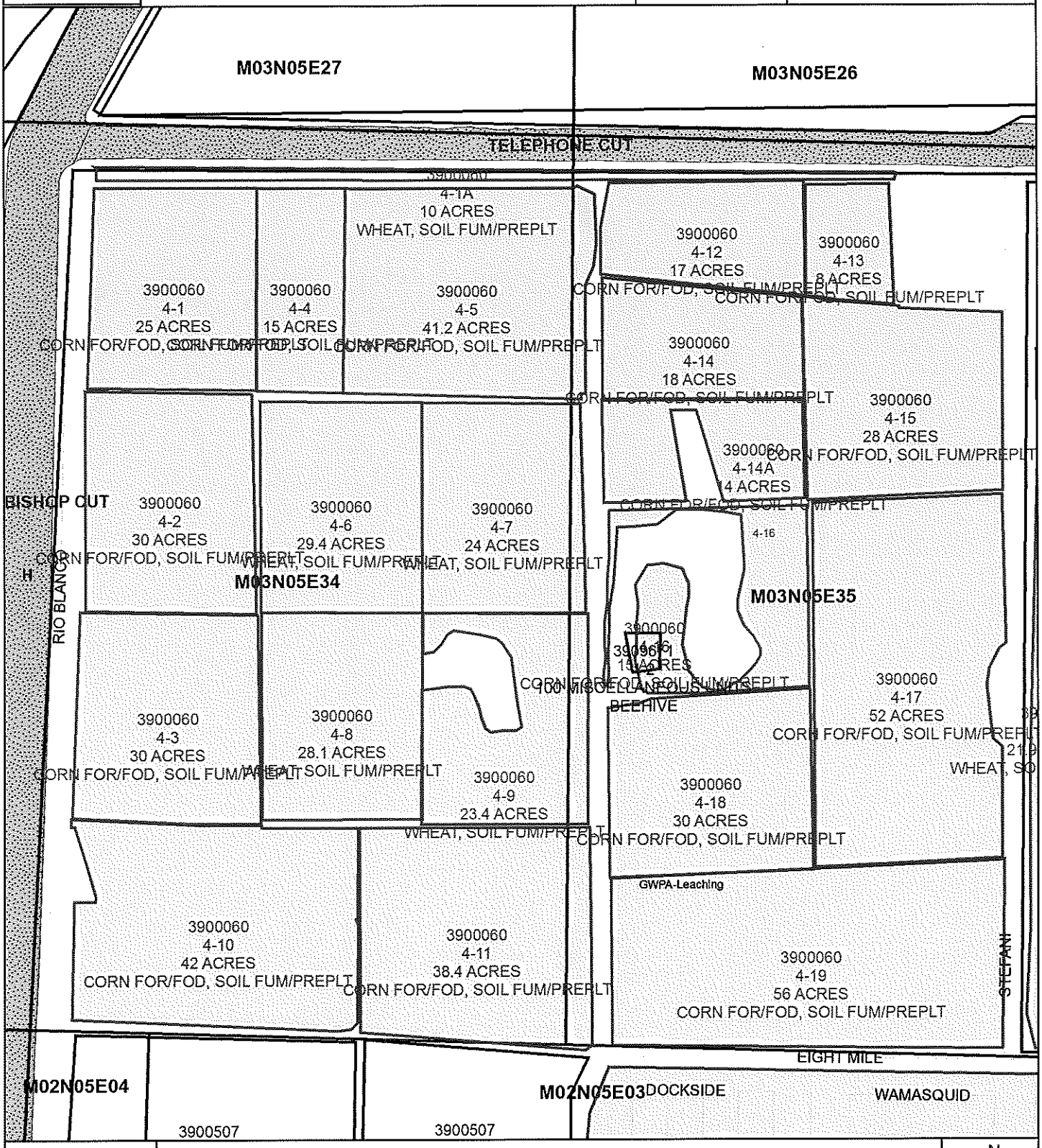
ISSUED BY [signature] DATE 1-30-18

DISTRIBUTION: WHITE & YELLOW - COUNTY AGRICULTURAL COMMISSIONER; PINK & GOLD - PERMITTEE

OSP 08 109802

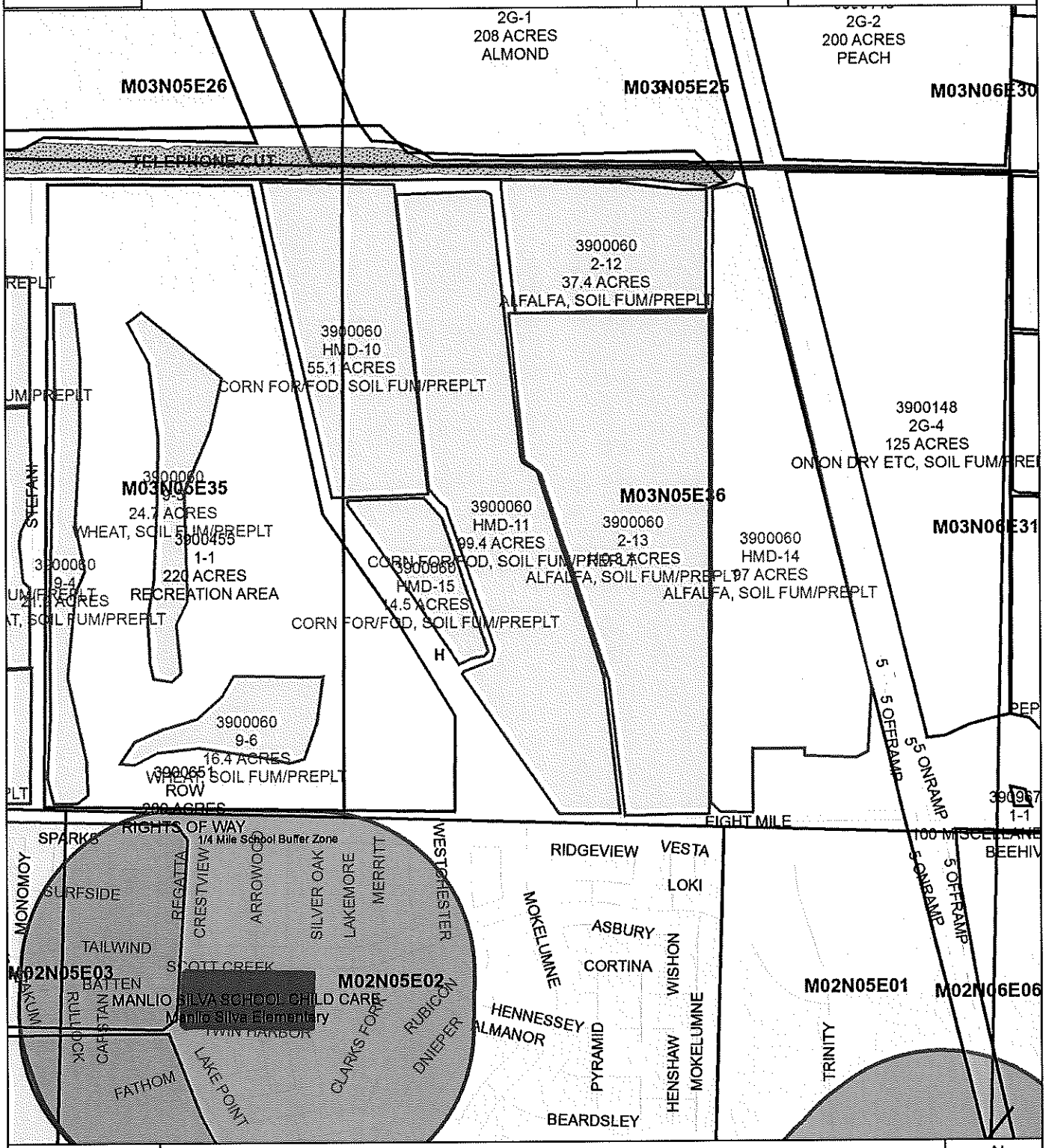
STATE OF CALIFORNIA
DEPARTMENT OF PESTICIDE REGULATION
PR-ENF-125A (REV. 10/07) Page 1 of 1

San Joaquin County	Permit Number:	3900060
Map 1B	Created On:	1/30/2018
Thompson Ranch, Bishop Tract	Operator:	BIAGI FARMS, GEORGE JR



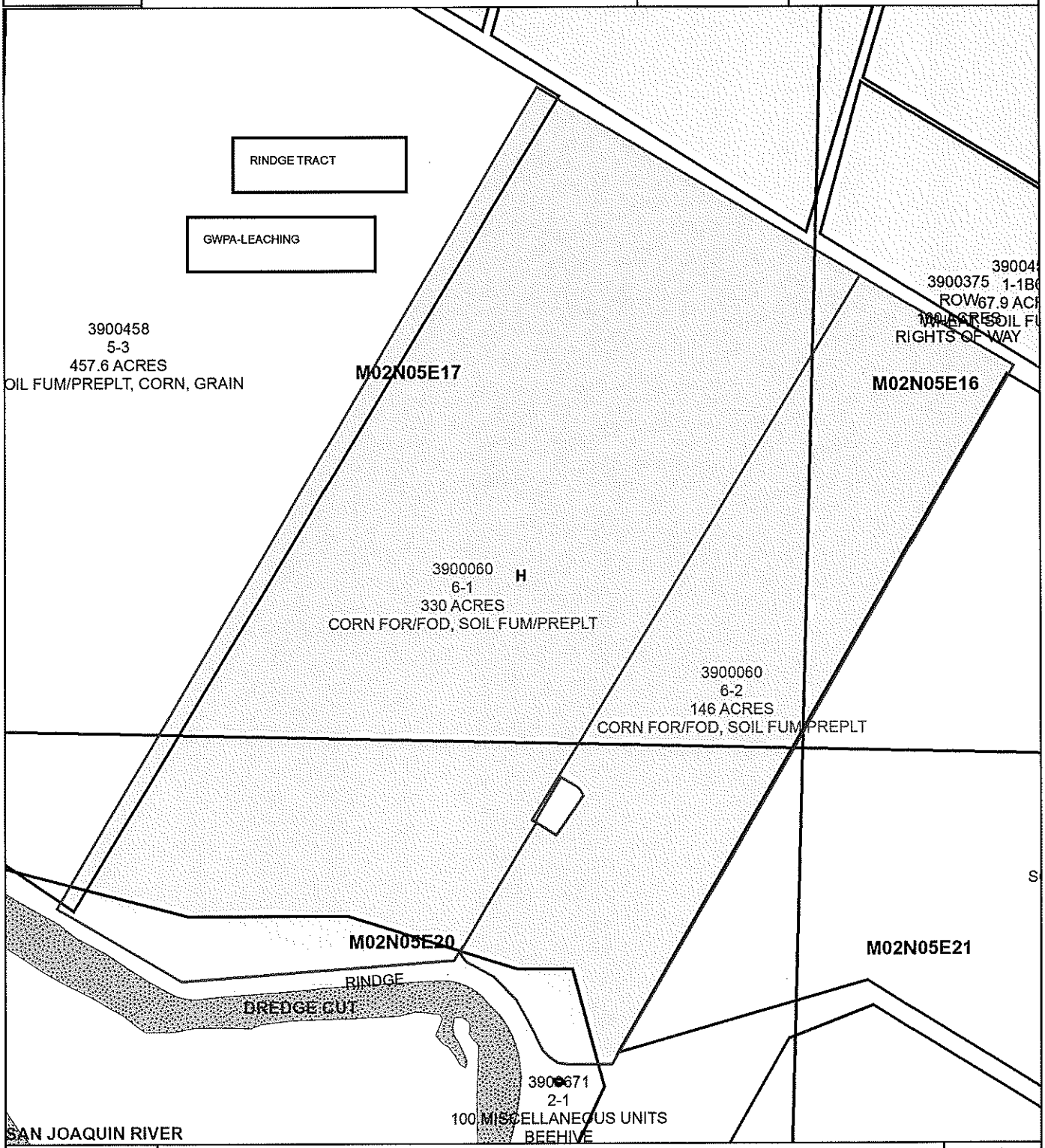
Included Sites:	4-1, 4-10, 4-11, 4-12, 4-13, 4-14, 4-14A, 4-15, 4-16, 4-17, 4-18, 4-19, 4-1A, 4-2, 4-3, 4-4, 4-5, 4-6, 4-7, 4-8, 4-9

San Joaquin County	Permit Number:	3900060
Map 2A	Created On:	1/31/2018
Hammond Ranch	Operator:	BIAGI FARMS, GEORGE JR



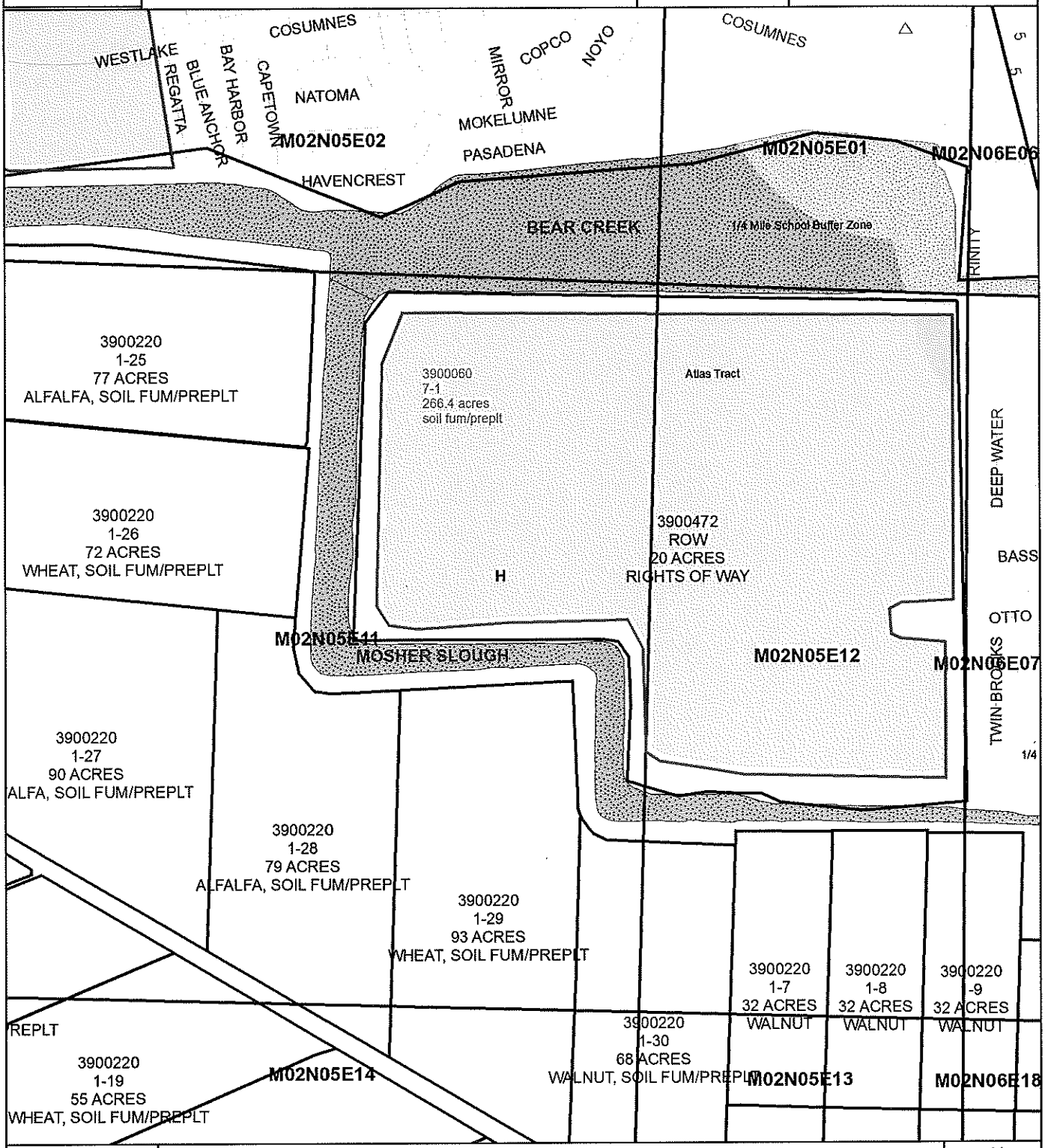
Included Sites:	2-12, 2-13, HMD-10, HMD-11, HMD-14, HMD-15

San Joaquin County	Permit Number:	3900060
Map 6	Created On:	1/8/2018
Rindge Tract	Operator:	BIAGI FARMS, GEORGE JR



Included Sites:	6-1, 6-2

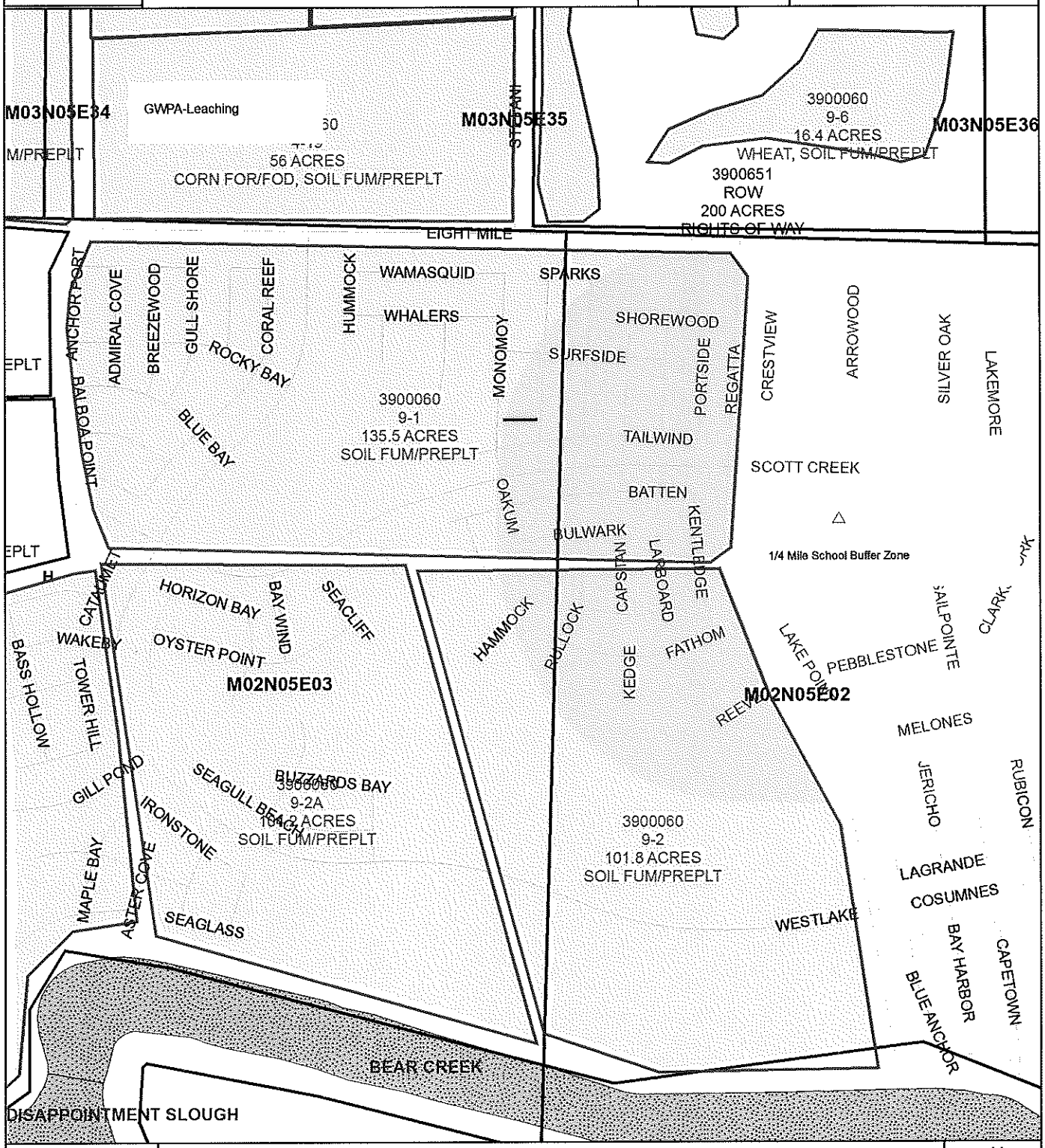
San Joaquin County	Permit Number:	3900060
Map 7	Created On:	1/8/2018
Atlas Tract	Operator:	BIAGI FARMS, GEORGE JR



Included Sites:	7-1

N
W E
S

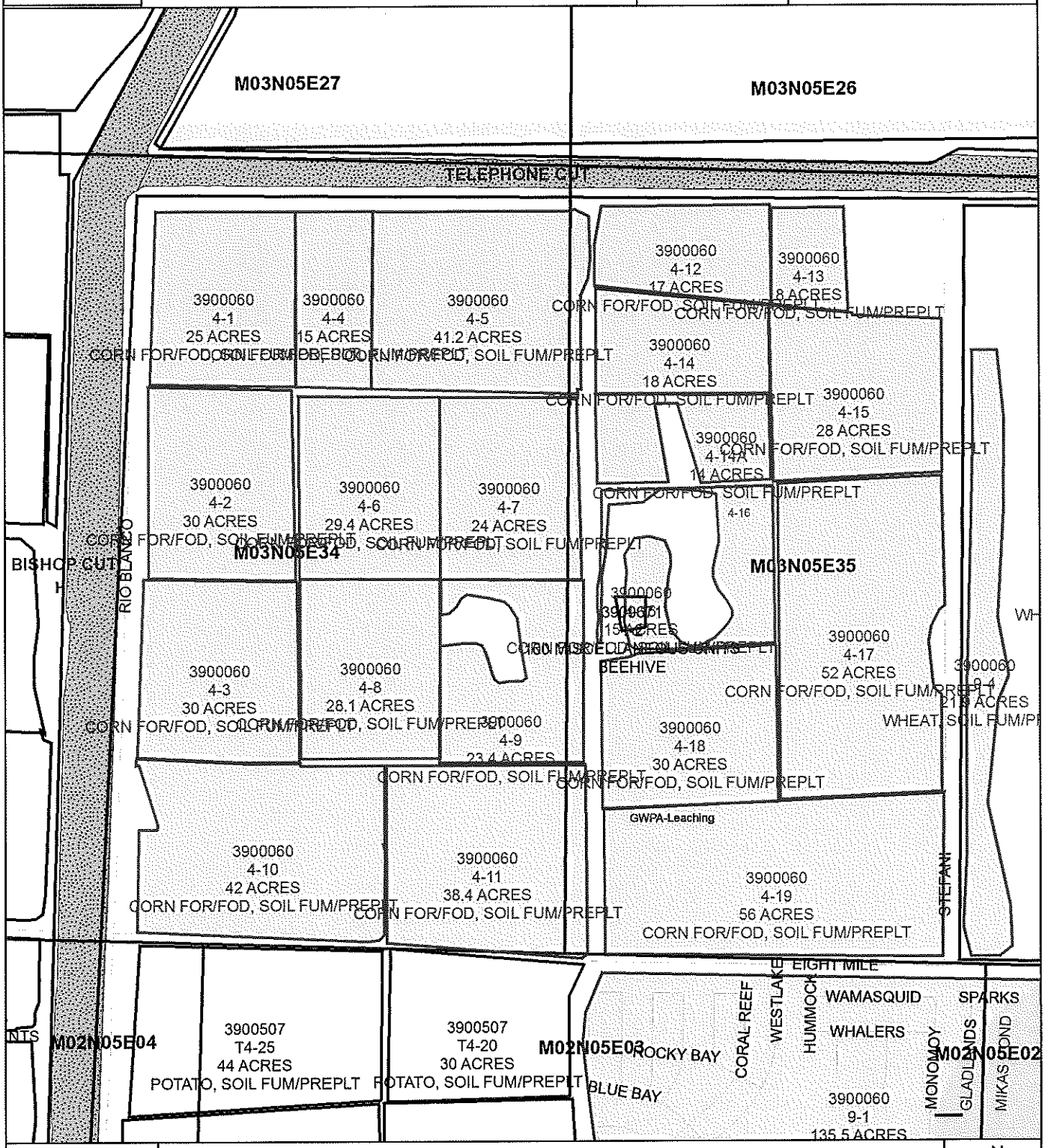
San Joaquin County	Permit Number:	3900060
Map 9C	Created On:	1/8/2018
Thompson Ranch, Bishop Tract	Operator:	BIAGI FARMS, GEORGE JR



Included Sites:	9-1, 9-2, 9-2A, 9-6

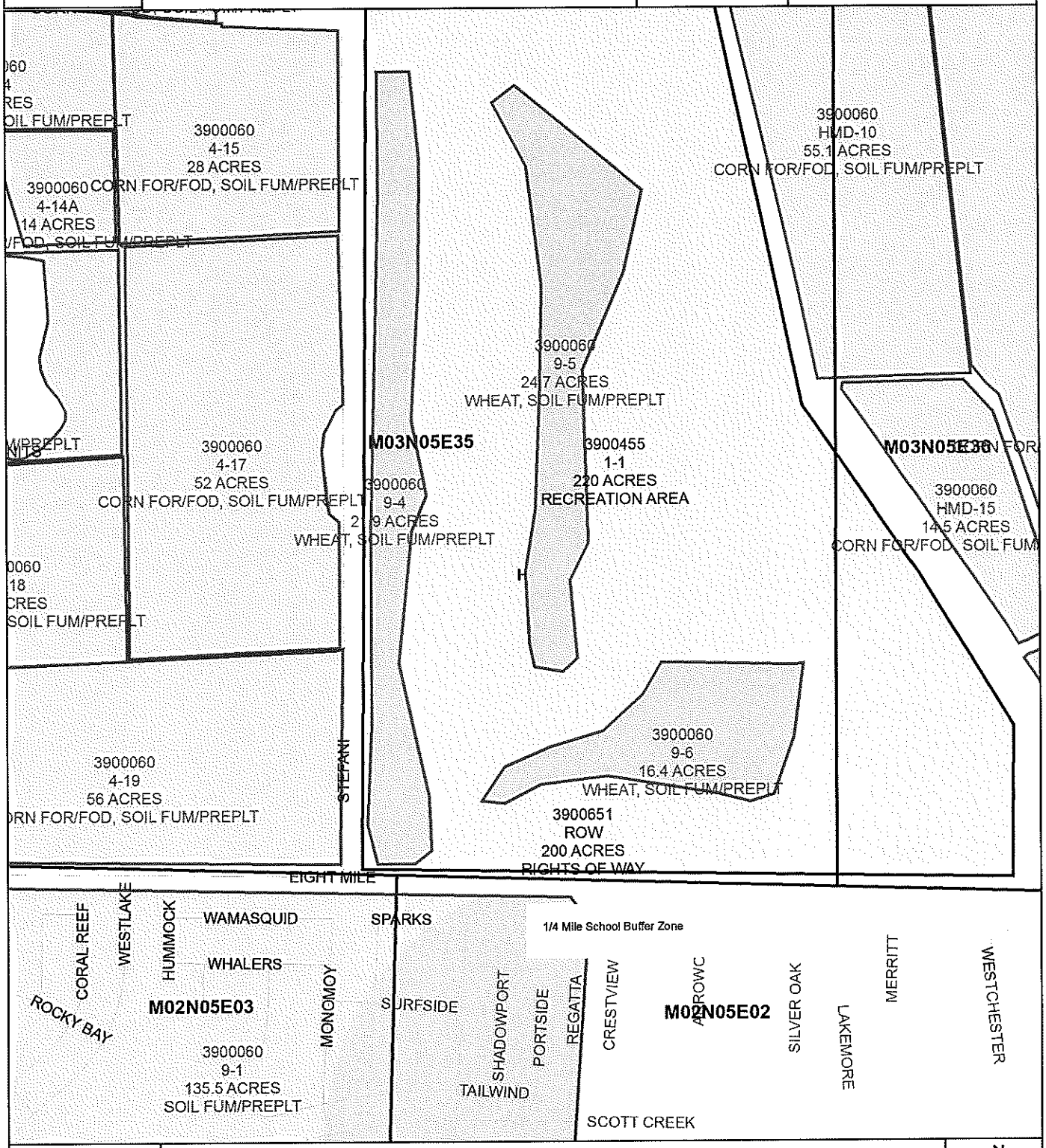
Revised 1-31-2018

San Joaquin County	Permit Number:	3900060
Map 1B	Created On:	1/8/2018
Thompson Ranch, Bishop Tract	Operator:	BIAGI FARMS, GEORGE JR



Included Sites:	4-1, 4-10, 4-11, 4-12, 4-13, 4-14, 4-14A, 4-15, 4-16, 4-17, 4-18, 4-19, 4-2, 4-3, 4-4, 4-5, 4-6, 4-7, 4-8, 4-9

San Joaquin County	Permit Number:	3900060
Map 9A	Created On:	1/8/2018
Bishop Tract	Operator:	BIAGI FARMS, GEORGE JR



Included Sites:	9-4, 9-5, 9-6

Revised 1-31-2018

San Joaquin County	Permit Number:	3900060
Map 2A	Created On:	1/8/2018
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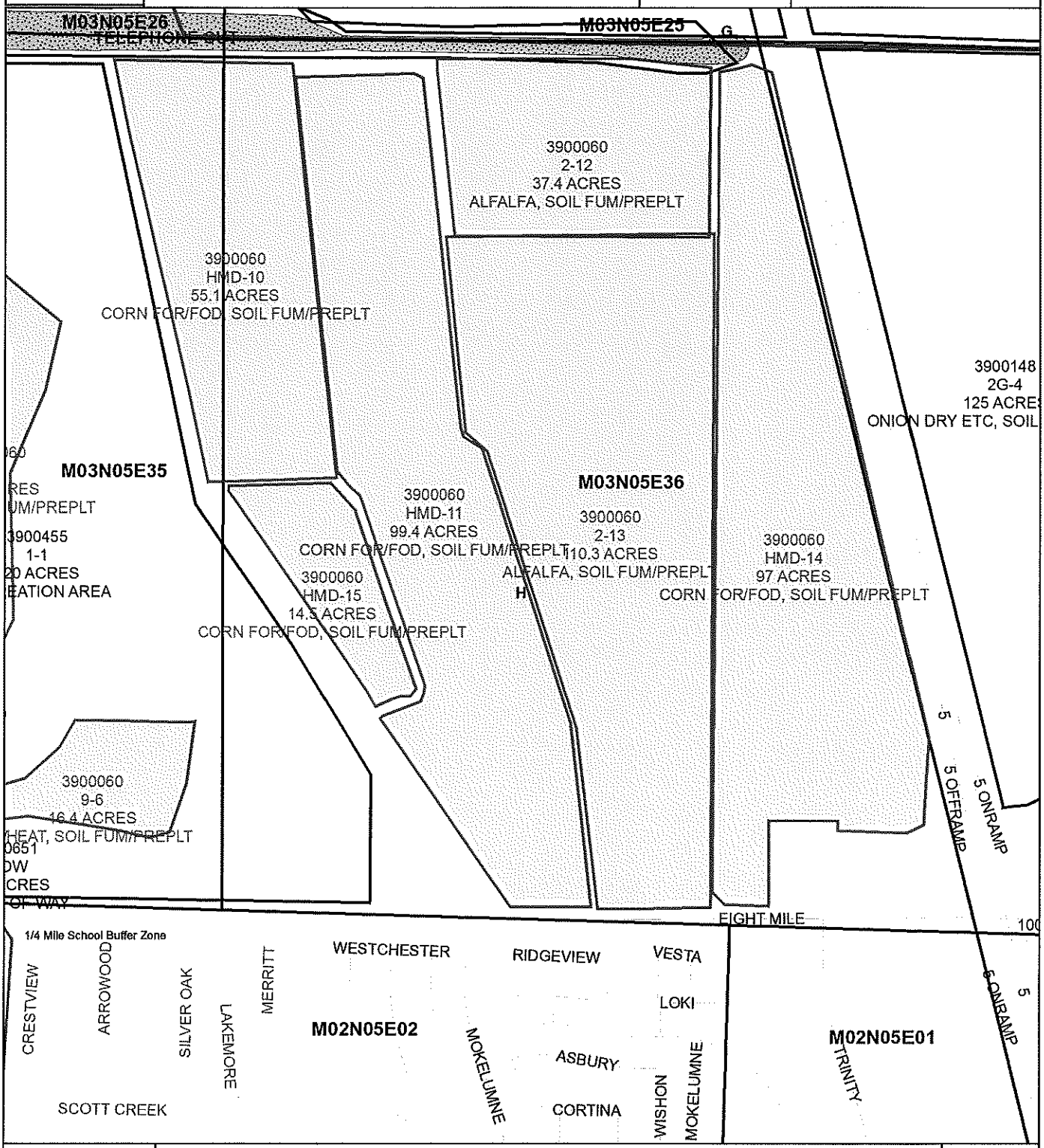
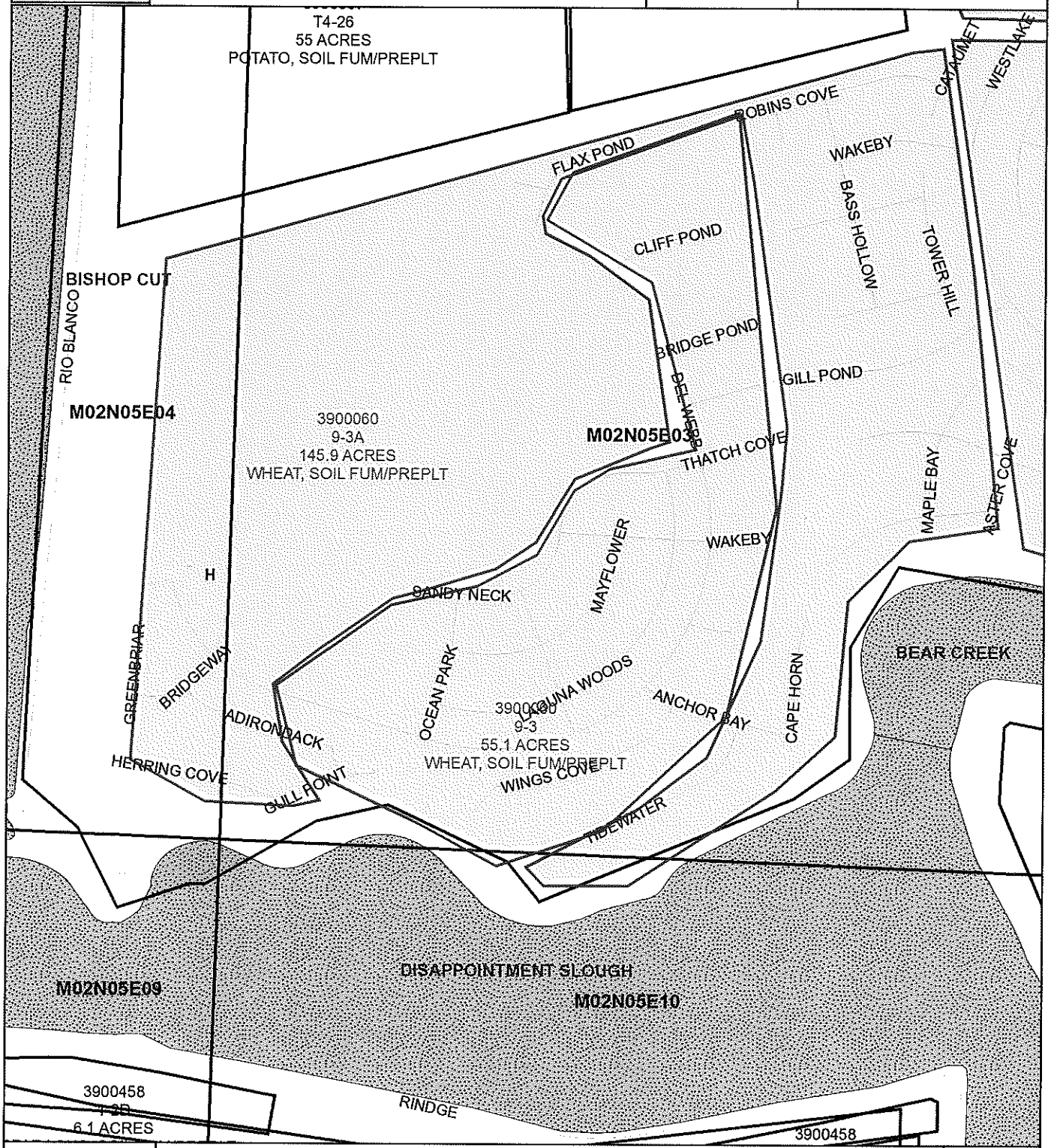


Included Sites:	2-12, 2-13, HMD-10, HMD-11, HMD-14, HMD-15

San Joaquin County	Permit Number:	3900060
Map 9B	Created On:	1/8/2018
Bishop Tract	Operator:	BIAGI FARMS, GEORGE JR



Included Sites:	9-3, 9-3A

APPENDIX E

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PRELIMINARY ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED SCHOOL SITE – STOCKTON SITE I CORNER OF WESTLAKE DRIVE & REGATTA LANE STOCKTON, CALIFORNIA



PROJECT NUMBER: 2019-00014
JULY 27, 2020
(REVISED SEPTEMBER 29, 2020)

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geophysics - environmental - geology

July 27, 2020
Revised September 29, 2020
Project No. 2019-00014

Ms. Elizabeth Tisdale
Engineering Geologist
Northern California Schools Unit
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, CA 95814
916-255-6666
Elizabeth.Tisdale@dtsc.ca.gov

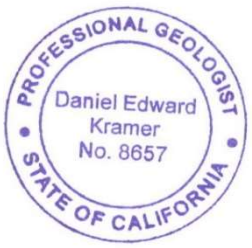
Subject: Preliminary Endangerment Assessment for the
Proposed School Site - Stockton Site - I
Corner of Westlake Drive and Regatta Lane
Stockton, CA 95219
APN: 066-050-07, -08 (portion)

Dear Ms. Tisdale:

Please find below our Preliminary Environmental Assessment (PEA) for the Proposed School Site – Stockton Site I on behalf of Lodi Unified School District for your review and consideration.

The Lodi Unified School District (LUSD) is currently in negotiations to purchase the above referenced property (APNs: 066-050-070, portion of -080) located at the corner of Westlake Drive and Regatta Lane, Stockton, California.

The accompanying PEA Report describes the methodologies, procedures, and findings of the PEA which was performed in general accordance with the California Department of Toxic Substances Control's PEA guidelines.



Sincerely,

Petralogix Engineering, Inc.

Tonya R. Scheftner, Project Geologist
B.Sc. Geology, GIT No. 685

Daniel E. Kramer, President
Professional Geologist No. 865

Petralogix Engineering, Inc.
26675 Bruella Road, Galt, Ca 95632
(209)-400-5729
www.petralogix.com

PRELIMINARY ENDANGERMENT ASSESSMENT
STOCKTON SITE I

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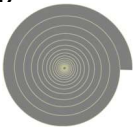

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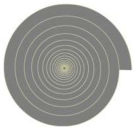


July 27, 2020
Revised September 29, 2020

PRELIMINARY ENDANGERMENT ASSESSMENT WORKPLAN

STOCKTON SITE I
CORNER OF WESTLAKE DRIVE & REGATTA LANE

STOCKTON, CALIFORNIA

OUR PROJECT NO: 2019-00014

EXECUTIVE SUMMARY

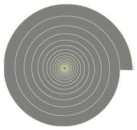
The purpose and objective of the Preliminary Environmental Assessment (PEA) is to assess environmental conditions for a proposed school site – Stockton Site I – located in the Westlake Villages development on the corner of Westlake Drive and Regatta Lane, Stockton, CA. The parcel is defined as San Joaquin County Assessor Parcel Number (APN: 066-050-070, portion of -080).

Lodi Unified School District is currently considering purchasing the parcel for a proposed school site. The proposed school is still in the design concept phase; however, the proposed school is anticipated to serve approximately 800 students with approximately 35 (K-8) classrooms. The Site will be connected to the sanitary sewer and water provided by the City of Stockton. The District is seeking state funding for this project.

Environmental conditions were identified for the parcel in a Phase I Environmental Site Assessment by Petralogix Engineering, dated November 18, 2019. The Phase I, in addition to a Scoping Meeting between LUSD and DTSC, identified the following environmental concerns:

- The potential presence of chemicals of concern (COCs) in soil at the Site from historical agricultural use, which includes the potential presence of organochlorine pesticides (OCPs), arsenic, and lead.
- An approximately 1.5-acre recently filled basin developed from at least 2006 was located on the southeastern boundary. Since the basin represents a low spot on the Site, OCPs, arsenic, and lead associated with agriculture are considered COCs for the basin.
- The southeastern portion of the subject property may have had up to two historic structures present from at least 1937 to 1947. Potential contamination from lead-based paint and organochlorine pesticides (OCPs) are considered COCs for this area.

This PEA report was prepared in accordance with the Revised PEA Workplan dated May 14, 2020 prepared by Petralogix. DTSC issued an approval letter for the PEA Workplan dated May 15, 2020. The purpose and objective of the PEA is to assess the potential presence of chemicals of concern (COCs) in soil at the Site from historical agricultural use, which includes the potential presence of organochlorine pesticides (OCPs), arsenic, and lead, and if present, the potential health risk to proposed future site user's (workers, students, residents). PEA investigation fieldwork was conducted on June 10, 2020 under DTSC oversight. Soil samples in the former agricultural field area were collected from the following locations on the Site, which are depicted on Plate 2.



- 30 locations within the agricultural use field boundary (including the former basin) to investigate presence of OCPs, arsenic, and lead in soil. 10 composite samples were prepared using the 30 discrete samples on a 3:1 or 4:1 ratio and analyzed for OCPs. 10 discrete samples were analyzed for arsenic and lead.
- 10 discrete samples from the Site at a depth of 5 to 5.5 feet below ground surface for background concentration of arsenic in soil. Background arsenic sample locations are depicted on Plate 3.

Based on a parcel expansion to accommodate the municipal lift station adjacent east of the Site, the two former historic structures are no longer within the parcel boundary, therefore, no sampling was performed for the former structures. In addition, the Phase I ESA report identified a pad-mounted transformer present on the Site since approximately 2006, however, the pad-mounted transformer was later determined to be outside the proposed school boundary; Plate 2 and Plate 3 show the transformer located outside the Site parcel boundary, adjacent west of Regatta Lane and south of Westlake Drive.

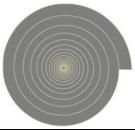
Arsenic was detected in 10 discrete soil samples (including co-located sample) from the upper 6 inches of soil in the former agricultural field, and one in the former basin at depth (2.5 feet below ground surface); concentrations ranged from 2.1 to 5.7 milligrams per kilogram (mg/kg). Arsenic was detected in 10 background samples obtained from the Site between 5 to 5.5 feet bgs with concentrations ranging from 1.5 to 4.0 mg/kg.

Lead was detected in 10 discrete soil samples (including co-located sample) from the upper 6 inches of soil in the former agricultural field, and one in the former basin at depth (2.5 feet bgs); concentrations ranged from 3.0 to 6.1 mg/kg.

Four OCP compounds (DDD, DDE, DDT, and dieldrin) were detected in the three 4-point composite samples, one co-located field duplicate sample, and the seven 3-point composite samples. The detected OCP concentrations were significantly less than the United States Environmental Protection Agency Regional Screening Levels (USEPA RSL) for residential soils.

A preliminary screening-evaluation human health risk assessment (HHRA) was performed to screen the Site for potential human health concerns. The soil results were compared to the DTSC-SLs and U.S. EPA Regional Screening Levels (April 2019) where DTSC-SLs were not available. The arsenic concentrations are considered similar to background arsenic when compared to local and regional background concentrations. The risk characterization methods used were consistent with the PEA Workplan and DTSC's PEA guidance for the calculation of cumulative cancer risk and noncancer hazard using the maximum exposure point concentrations for each COC. Detected concentrations of lead were assessed using DTSC's Lead Risk Assessment Version 8. The total noncancer hazard index is 5.54E-03 and cancer risk is 6.80E-08.

Based on the findings of the PEA investigation, Petralogix recommends no further action for the Site. The findings and conclusions presented herein are subject to review and approval by DTSC.



1.0 INTRODUCTION

On behalf of the Lodi Unified School District (LUSD), Petralogix Engineering Inc. (Petralogix) has performed a Preliminary Endangerment Assessment (PEA) to evaluate current Site conditions for the proposed new Stockton Site I school site located in Stockton, California (Plates 1 and 2). This PEA report was prepared in accordance with the Revised PEA Workplan dated May 14, 2020 prepared by Petralogix. DTSC issued an approval letter for the PEA Workplan dated May 15, 2020.

The approval letter is included in Appendix A.

1.1 PURPOSE

The purpose and objective of the PEA is to assess the potential presence of chemicals of concern (COCs) in soil at the Site from historical agricultural use, which includes the potential presence of organochlorine pesticides (OCPs), arsenic, and lead, and if present, the potential health risk to proposed future site user's (workers, students, residents).

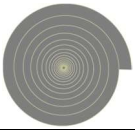
Based on the original PEA Workplan, COCs related to historical demolished buildings in the far east portion of the Site were to be investigated for potential lead, arsenic, and OCPs, however, based on a parcel lot adjustment, the area is now being utilized by an expanded lift station, new asphalt parking, and a storm basin, therefore, the historical building investigation is no longer applicable.

Findings of the PEA are used to evaluate risk. PEA is defined in California Health and Safe Code (HSC §25319.5) as follows:

Preliminary Endangerment Assessment means an activity which is performed to determine whether current or past waste management practices have resulted in the release or threatened release of hazardous substances which pose a threat to public health or the environment. The PEA is also applicable to releases of hazardous materials.

As stated in the *Preliminary Endangerment Assessment Guidance Manual* by DTSC (January 1994, *Revised October 2015*), specific objectives of the PEA include:

- Determining if a release of hazardous wastes/substances/materials has occurred at a site and delineating the general extent of the contamination;
- Estimating the potential threat to public health and/or the environment posed by the site and providing an indicator of the relative risk;
- Determining if an interim action is required to reduce and existing or potential threat to public health or the environment;
- Completing preliminary project scoping activities to identify data gaps and possible remedial action strategies that would form the basis for development of a site strategy;
- Providing data and information to DTSC; and
- Assessing and providing for the informational needs of the community.



The PEA was performed for the proposed Stockton Site I school Site in accordance with the PEA Workplan.

1.2 SITE DESCRIPTION

The Site consists of vacant land. The Site property has no site address; the Site is located at the corner of Westlake Drive & Regatta Lane, Stockton, San Joaquin County, California (APNs: 066-050-070, -080 portion of). The overall parcel, pending a proposed property line adjustment, will be approximately 19.36 gross/18.5 net acres in size and is currently owned by Stockton Westlake, LLC. The vicinity map and site map are available for review as Plates 1 and 2. The most recent proposed parcel map is included as Plate 4.

1.2.1 Site Identification

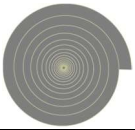
Site Identification Information	
Site Name	Stockton Site I
Contact Person	Ms. Vickie Brum, Lodi Unified School District
Site Address	Corner of Westlake Drive & Regatta Lane Stockton, California 95219
Mailing Address of Contact Person	1305 E. Vine Street, Lodi, CA 95240
Phone Number of Contact Person	(209) 331-7223
Other Site Names	None
USEPA Identification Number	None
Assessor Parcel Number(s)	066-050-070-000 and portion of 066-050-080-000
Township	2 North
Range	5 East
Land Use	Vacant
Zoning	Mixed Use

1.2.2 Adjacent Properties

The Site is bound by a municipal lift station and a pad-mounted transformer followed by Regatta Lane and housing to the east, vacant land planned for residential development to the north and west, and a levee followed by Bear Creek/Pixley Slough to the south.

1.2.2 Planned Development

Lodi Unified School District is currently considering purchasing the parcel for a proposed school site. The proposed school is still in the design concept phase; however, the proposed school is anticipated to serve approximately 800 students with approximately 35 (K-8) classrooms. The Site will be connected to the sanitary sewer and water provided by the City of Stockton. The District is seeking state funding for this project.



2.0 PRIOR ENVIRONMENTAL STUDIES

A Phase I Environmental Site Assessment designed to provide compliance with the ASTM E-1527-13 Standard and the *Department of Toxic Substances Control Phase I Site Assessment Advisory: School Property Evaluations*, *Revised September 5, 2001*, was prepared for the Site by Petralogix dated June 6, 2019. Further investigation was recommended to evaluate whether environmental media has been impacted by a release from historic agricultural practices and demolished structures.

Petralogix's professional opinion, in addition to a Scoping Meeting between DTSC, LUSD, and Petralogix dated November 18, 2019 occurred to discuss areas of concern.

The Phase I ESA and DTSC scoping meeting identified the following Recognized Environmental Conditions:

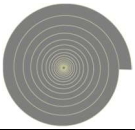
- Pesticides may have been applied to the subject property during possible agricultural use from at least 1937 to 1998. Organochlorine pesticides (OCPs), lead, and arsenic are considered chemicals of concern (COCs) for this past site use.
- An approximately 1.5-acre recently filled basin developed from at least 2006 was located on the southeastern boundary. Since the basin represents a low spot on the Site, OCPs, arsenic, and lead associated with agriculture are considered COCs for the basin.
- The southeastern portion of the subject property may have had up to two historic structures present from at least 1937 to 1947. Potential contamination from lead-based paint and organochlorine pesticides (OCPs) are considered COCs for this area.

Petralogix recommended that soil sampling for OCPs, arsenic, and lead be conducted in the former agricultural field and basin. According to Karen Garrett, Land Entitlement Manager for the A.G. Spanos Companies (property owner), the former basin was filled with native soil. However, because the basin was filled, the basin was recommended sampled at the new filled surface and the former basin surface prior to being filled, as interpreted during field sampling collection.

Based on a lot line adjustment in March 2020, the two historic structures are no longer within the proposed school boundary. The lot line adjustment was to accommodate an expansion of the lift station, a new asphalt parking area, and a new storm retention basin now expanded adjacent east of the Site. A.G. Spanos Corporation confirmed the proposed school site parcel was moved further west to accommodate the expansion while retaining the requested acreage.

3.0 ENVIRONMENTAL SETTING

A new campus (K-8) is proposed for the Site. Student capacity is anticipated to be approximately 800 students; however, the number of classrooms and administrative buildings are currently undetermined.



3.1 PHYSICAL SETTING

3.1.1 Regional Physiographic Conditions

The Site is located within the Great Valley Geomorphic Province of California (Great Valley), a ~100 million-year-old sedimentary basin that formed as a low lying region between a subducting oceanic plate to the west and the Sierra Nevada mountain range to the east. The province is approximately 450 miles long and 50 miles wide and is comprised of two northwest to southeast-trending sub-basins: the Sacramento Valley to the northwest and the San Joaquin Valley to the southeast. Each of these basins is filled by a thick sequence of Mesozoic to Quaternary sediment, whose terrigenous and subaerial depositional sources have been traced to the Sierra Nevada and Coast Range Geomorphic Provinces.

3.1.2 Geologic Conditions

Review of the Preliminary Geologic Map of the Lodi 30' x 60' Quadrangle[1], California indicates that the proposed school site is underlain by late Pleistocene-aged alluvium of the Modesto Formation. These deposits primarily consist of arkosic sands with minor silts and gravels.

3.1.3 Naturally Occurring Asbestos

According to the USGS Open-File Report 2011-1188, *Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California*[2], the project site does not lie within an area mapped as containing Naturally Occurring Asbestos (NOA). Naturally occurring asbestos occurring at the Site is therefore considered unlikely.

3.1.4 Radon

Radon gas emissions from the natural breakdown of elements in soil is a concern in many areas around the country. In particular, Radon gas can buildup in confined spaces such as tunnels and basements. A survey of the subject property was not conducted, but a review based on government data was performed. The area in question is listed on the US EPA Radon Check Map as having twenty (20) local tests historically performed. The Federal EPA Radon Zone for San Joaquin County is Zone 3, indoor average level <2 pCi/L. Based on this low potential, Radon is a low concern for the subject property.

3.1.5 Soil Conditions

The Site soil consists of Ryde clay loam (0-2 percent slopes) and Guard clay loam (0-2 percent slopes) for the western and eastern portions of the subject property, respectively. Ryde clay loam is very poorly drained with negligible runoff derived from herbaceous organic material derived from reeds and tules, and fine-loamy alluvium derived from mixed rock sources.[3] Guard clay loam is poorly drained with high runoff derived from alluvium and mixed rock sources.[1]

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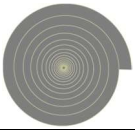
[1] California Geologic Society. Preliminary Geologic Map of the Lodi 30' x 60' Quadrangle. 2009.
2 Reported historic asbestos mines, historic asbestos prospects, and other natural occurrences of asbestos in California: USGS Open-File Report 2011-1188. Van Gosen, B.S., And Clinkenbeard, J.P., 2011.
[3] UC Davis California Soil Resource Lab, SoilWeb.



3.1.6 Groundwater Conditions

According to the San Joaquin County Spring 2016 and Fall 2016 Groundwater Reports[4] groundwater elevation contour map, groundwater elevation is approximately -22 feet below mean sea level (msl) during spring and -24 feet below msl during fall. The elevation at the site is approximately 0 feet msl, therefore, according to the regional groundwater elevation maps reviewed, depth to groundwater at the subject property is approximately 22 to 24 feet below ground surface (bgs). The groundwater flow direction is east with a gradient of approximately 4.5 and 5.5 feet per mile in the spring and fall, toward a cone of depression.

To supplement regional groundwater report information, groundwater data obtained on the California State Water Resources Control Board's GeoTracker Ambient Monitoring and Assessment (GAMA) website[5] was also reviewed. Groundwater elevation measurements recorded in groundwater monitoring well #02N5E01A006M, located approximately 1.25 miles northeast of the subject property indicates groundwater elevations have ranged from approximately -2.58 feet mean sea level (msl) and -11.58 feet msl as measured periodically between March 21, 2014 and October 17, 2016. GAMA well data indicates depth to groundwater is approximately 3 to 12 feet below ground surface. A LUSD Stockton-Lakeview School – Preliminary Geologic Hazards and Geotechnical Engineering Report[6] for the Site encountered groundwater at depths ranging from 7.5 to 10 feet below existing site grades within soil borings on May 3 and 16, 2019.

3.1.7 Nearest Surface Water

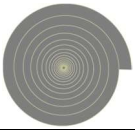
The Site is adjacent to Bear Creek/Pixley Slough to the south with Bishop Cut approximately 1.3 miles west of the Site.

4.0 IMPLEMENTATION OF PEA WORKPLAN

Fieldwork was conducted on June 10, 2020 under DTSC oversight. Soil samples in the former agricultural field area were collected from the following locations on the Site, which are depicted on Plate 2.

- 30 locations within the agricultural use field boundary (including the former basin) to investigate presence of OCPs, arsenic, and lead in soil. 10 composite samples were prepared using the 30 discrete samples on a 3:1 or 4:1 ratio and analyzed for OCPs. 10 discrete samples were analyzed for arsenic and lead.
- 10 discrete samples from the Site at a depth of 5 to 5.5 feet below ground surface for background concentration of arsenic in soil. Background arsenic sample locations are depicted on Plate 3.

[4] San Joaquin County Flood Control and Water Conservation District, Spring 2016 and Fall 2016 Flood Control and Water Conservation District Reports.
[5] https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/Default.asp
[6] Mid Pacific Engineering. Preliminary Geologic Hazards and Geotechnical Engineering Report – LUSD Stockton-Lakeview School. August 15, 2019.



4.1 PRE-FIELD ACTIVITIES

LUSD issued a DTSC-approved Field Work Notice via mail to neighboring residents within line of sight of the proposed school property nine days prior to the beginning of field work. The approved Field Work Notice is available in the PEA Workplan[7].

4.2 SOIL SAMPLING AND ANALYSIS

On June 10, 2020, Petralogix implemented the soil sampling and analysis plan presented in the DTSC-approved PEA Workplan. Tables A and B present a summary of laboratory results; sample locations are shown on Plates 2 and 3.

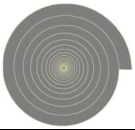
4.2.1 Former Agricultural Area

Based on the historic agricultural practices at the Site, organochlorine pesticides (OCPs), arsenic, and lead associated with pesticide use is a concern for the Site. The *Interim Guidance for Sampling Agricultural Fields for School Sites (Third Revision)*, dated August 7, 2008 by the Department of Toxic Substances (DTSC) was referenced to develop the sampling plan for the site to test for these constituents of potential concern (COPCs). The planned site acquisition is 18.5 net and approximately just over 19 acres gross; the sample plan uses the recommended sampling number per DTSC for a 20-acre site, which is a minimum of 30 sample locations, which were composited (3:1 or 4:1) into 10 samples for analysis as indicated in Plate 2. The proposed parcel is approximately rectangular in shape; locations were determined with approximately one-half acre grid locations superimposed onto the Site. The sampling locations were recorded with a handheld sub meter Trimble GeoXH GPS device and marked with flagging for future locating as needed. Plate 2 represents the Trimble GeoXH GPS coordinate locations. Soil samples were 'surface' samples collected from a depth interval of 0 to 6 inches below ground surface.

For OCP analysis, 11 composite samples (including 1 co-located duplicate) were prepared by the analytical laboratory (McCampbell Analytical, Pittsburg, California) using 33 samples with a 3:1 or 4:1 ratio (i.e. 3 or 4 discrete samples for every 1 composite sample including co-located duplicate).

For arsenic and lead, 11 discrete samples were analyzed, including co-located 1 duplicate sample. The 10 discrete samples were a subset of the 30 discrete samples (grid locations AG1, AG5, AG8, AG11, AG15, AG18, AG22, AG25, and AG28).

[7] Petralogix Engineering, Inc. Stockton Site I – Preliminary Workplan. May 14, 2020.



4.2.2 Former Basin Area

The former basin was filled sometime during the fall of 2019. According to personal email correspondence with Karen Garrett[8], Land Entitlement Manager for the A.G. Spanos Company (Appendix E), the basin was filled with native soil. The former agricultural sampling scheme took into consideration the approximate location of the former basin which was filled sometime during the fall of 2019. The sample locations (AG25, AG26, and AG27) within the former basin were sampled at the surface as well as at a depth that was determined by the onsite geologist to be native soil (labeled AG25@2.5', AG26@2', and AG27@4.5') with the label for each corresponding to the final depth interpreted as the original former basin surface. The soil encountered during hand auguring within the former basin was consistent with soil encountered throughout the Site. The native surface of the original basin was easily distinguished by the auger encountering a suddenly moist dark black soil containing preserved organic material; a field photo of the soil from the basin's former surface is available for review in Appendix B. The former basin samples at depth were composited 3:1 and analyzed for OCPs; AG25@2.5' was analyzed for arsenic and lead.

4.2.3 Former Structures

Based on the Phase I ESA (Petralogix, 2019) two former structures were observed in the historical photographs from 1937 and 1947 in the southeast portion of what was interpreted to be the proposed Site boundary. However, during field sample location activities, it was noted that the previous small lift station was expanded, with a larger lift station, new wall, and a large parking/driving area covered with asphalt now covering the former structure sample locations. Photos to document land use change associated with the lift station are available for review in Appendix B. In addition, an email correspondence with the parcel owner representative confirmed there was a lot line adjustment that involved shifting the municipal parcel further west onto what would have been the Site. Therefore, the former on-site structures were not sampled.

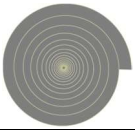
4.2.4 Background Soil

Ten discrete soil samples were collected from a depth of approximately 5 – 5.5 feet bgs at locations throughout the Site for assessing arsenic concentrations in undisturbed native soil. Per the workplan, the ten samples collected at depth were placed on hold and if all arsenic results were at or below the regional background of 12 mg/kg, then analysis of samples collected would not be required; however, based on correspondence with DTSC[9], it was communicated that running the background samples would be preferred. Background arsenic sample analysis is discussed in Section 4.3.2.

4.2.5 Collection and Handling of Soil Samples

Soil sampling was performed using Level D personal protective equipment. Depending on the depth of the sample required, samples were obtained with either a decontaminated hand auger or small decontaminated hand tool advanced in the soil to appropriate depth. All samples were surface

[8] Email correspondence with A.G. Spanos Land Entitlement Manager Karen Garrett. August 26, 2019 and September 28, 2020.
[9] Email correspondence with DTSC Project Manager, Elizabeth Tisdale. June 17, 2020.



samples (0-6 inches bgs) with the exception of the background soil samples (5-5.5 feet bgs) and the Former Basin at depth soil samples (2 to feet to 4.5 feet bgs).

Thirty-three discrete surface (0 to 6 inches bgs) samples were collected (OCPs, arsenic, and lead) in the former agricultural area, three discrete samples were collected (OCPs, arsenic, and lead) located at the bottom of the filled in basin (2 feet to 4.5 feet), and ten discrete soil samples were collected at a depth of 5 to 5.5 feet bgs to obtain background arsenic data.

Soil samples were placed in laboratory-provided glass jars. No preservatives were necessary for planned analyses. Soil samples were placed on ice and directly transported under chain-of-custody documentation to McCampbell Analytical Laboratories in Pittsburg, California the same day as sampling occurred (June 10, 2020).

Each sample was uniquely identified on laboratory-provided labels. Individual sample labels included the discrete location sample identification number provided in Plate 2 and the sample collection depth. For example, AG1@0' represents sample location AG1 collected at a depth of 0 to 6 inches. Surface samples are labeled "0" for 0 to 6-inch depths and the maximum depth of any non-surface sample are labeled accordingly.

Field documentation includes:

- Sample I.D. numbers
- Sample collection Date/Time
- Latitude and Longitude determined from GPS unit
- Field staff
- Flags were placed at each sample collection location

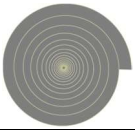
4.2.6 Decontamination

Prior to collection of each sample, all reusable sampling equipment was washed in a solution of Liqui-Nox detergent and water and rinsed twice with tap water and once with distilled water. Cleaning was conducted in such a manner so as to contain the water, which was placed in appropriate containment vessels.

4.2.7 Laboratory Analysis

Samples were transported under chain-of-custody to McCampbell Analytical, Inc. of Pittsburg, California (ELAP No. 1644). Laboratory analysis is summarized below:

- Six 3:1 composite samples, three 4:1 composite samples, and one 4:1 co-located composite duplicate sample obtained from the surface (0 to 6 inches bgs) of the former agricultural field and filled in basin (AG25, AG26, and AG27) were analyzed for OCPs by United States Environmental Protection Agency (USEPA) Method 8081A.
- Nine co-located discrete surface samples (AG1, AG5, AG8, AG11, AG15, AG18, AG22, AG25, and AG28) and one co-located duplicate sample (AG14-Dup) were analyzed for arsenic and lead by USEPA Method 6020.



- One 3:1 composite sample at depth (AG25@2.5', AG26@2', and AG27@4.5') located at the original "surface" of the filled in basin were analyzed for OCPs. One co-located sample AG25@2.5' was analyzed discretely for arsenic and lead by USEPA Method 6020.
- Ten discrete samples obtained at depth (5 to 5.5 feet bgs) were analyzed for arsenic by USEPA Method 6020.

Summary of relevant results for OCPs, arsenic, and lead are tabulated in Tables A and B.

4.3 DISCUSSION OF RESULTS FOR SOIL SAMPLES

This section discusses the analytical results for OCPs, arsenic, and lead. Detected concentrations are tabulated in Tables A and B. Copies of the laboratory reports are provided in Appendix C.

4.3.1 Screening Levels

The purpose of a PEA-based screening evaluation is to provide risk managers with a general overview of the site conditions and potential risks to human health and the environment. The screening levels are considered conservative, therefore, the presence of a chemical of concern at a concentration elevated above a screening level does not necessarily indicate negative impacts to human health but that further evaluation potential human health concerns are appropriate when screening values are exceeded.

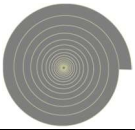
The screening levels of detected concentrations are compared to USEPA Regional Screening Levels (RSLs) for residential land use, modified as necessary by DTSC in HRRA Note 3. As described in the PEA guidance document (2015) the identification of human health screening levels will be compared to human health-risk-based residential screening level/concentration. Constituents of Concern (COCs) identified on the Site will be compared to the appropriate HHSL for soil, as indicated in Tables A and B. Arsenic concentrations are compared to the background concentrations calculated from the Site (Section 4.3.2).

The data obtained is used in this PEA screening evaluation to estimate risk to the public. The highest concentrations of each contaminant onsite are used to estimate the project site's potential threat.

4.3.2 Background Soil Arsenic Concentrations

The DTSC-SL for arsenic in residential (unrestricted) land use is 0.11 mg/kg. As stated in the *Preliminary Endangerment Assessment Guidance Manual*, arsenic is naturally present in soil at concentrations frequently greater than the risk-based screening level, and natural background levels can vary widely in different regions. Therefore, it is recommended that background samples be collected to determine background concentrations to use in determining between background concentrations and elevated concentrations due to past release of hazardous substances or waste disposal.

Petralogix collected Petralogix collected 9 discrete surface soil samples (0 to 6 inches), one sample at the surface of the filled in basin (AG25@2.5 feet bgs), and one duplicate surface at depth to analyze for arsenic. In addition, Petralogix collected 10 samples at a depth of 5 to 5.5 feet bgs in native,



undisturbed soil to use for background analysis, which is the recommended minimum sample number at depth per DTSC.

The framework provided by DTSC (1997) indicate the local ambient data set may be defined by combing all data and determining ambient conditions, therefore the detected arsenic concentrations were added to the Site background data set.

4.3.2.1 Statistical Evaluation Arsenic Background Concentration

ProUCL Version 5.1 (USEPA, 2016) was used to evaluate the background concentration for the Site utilizing the pooled data set. The data was subjected to summary statistics and the ProUCL Outlier Test (Dixon's); no outlying data was identified at 5 and 1 percent significance level, however for 10 percent significance the outlier test determined 5.7 mg/kg is an outlier. The relevant ProUCL statistical outputs are presented below:

Table 1. Summary Statistics for Background Arsenic (with Outliers)

Sample Size	21
Minimum Concentration	1.5
Maximum Concentration	5.7
Mean	3.03
First Quartile (Q_1)	2.1
Median (Q_2)	3.00
Third Quartile (Q_3)	3.5
95th Percentile	4.1
99th Percentile	5.38
95 Percent UCL	3.409
Standard Deviation	0.998

Outliers are defined as in the DTSC guidance document (2009):

Outlier ≥ Q3 + (1.5*(Q3-Q1))

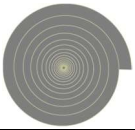
Outlier ≥ Q3 + (1.5*(3.5-2.1))

Outlier ≥ 5.6 mg/kg

Based on the statistical analysis above, arsenic concentrations exceeding 5.6 mg/kg are considered outliers. The outlier analysis is consistent with the ProUCL Box Plot and normality plot (Q-Q plot) are provided as in Appendix D. According to the ProUCL Technical Guide (USEPA, 2013), Background Threshold Values (BTVs) should be established using an "established" data set representing the background under consideration, "*this data set represents background conditions free of outliers*".

The outlier test was performed for the second set with the removed outlier of 5.7 mg/kg. After the outlier removal the outlier calculation was performed, as shown below:

Outlier ≥ Q3 + (1.5*(Q3-Q1))



Outlier ≥ Q3 + (1.5*(3.35-2.1))

Outlier ≥ 5.225 mg/kg

As indicated by the outlier test above, after removal of the outlier 5.7 mg/kg, no additional concentrations are considered outliers.

ProUCL was utilized to calculate the statistics in Table 2 below without outliers. Statistical evaluation for the adjusted data set was considered using the nonparametric distribution. According to the ProUCL Technical Guide (2016), *"since nonparametric upper limits (e.g. UTLs, UPLs) are based upon higher order statistics, often the CC achieved by these nonparametric upper limits is much lower that the specified CC of 0.95, especially when the sample size is small. In order to address this issue, one may want to compute a UPL based upon the Chebyshev inequality".* Due to the small sample size and slightly left-censored skewed data set, the upper prediction Chebyshev inequality was used to compute a "conservative but stable" UPL.

The ProUCL statistical outputs are in included in Appendix D. The statistical evaluation using the nonparametric distribution statistics output by ProUCL are summarized below:

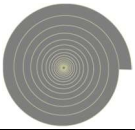
Table 2. Summary Statistics for Arsenic Background (without Outliers)

Sample Size	20
Minimum Concentration	1.5
Maximum Concentration	4.1
Mean	2.9
First Quartile (Q_1)	2.1
Median (Q_2)	3.00
Third Quartile (Q_3)	3.35
95th Percentile	4.1
99th Percentile	4.1
90 Percent Chebyshev UPL	5.39
95 Percent Chebyshev UPL	6.51
95 Percent UTL	4.1
95 Percent Students-t UCL	3.213
Standard Deviation	0.809

As discussed in the ProUCL user guide, UPLs and UTLs represent an upper limit to be used for point-by-point individual site observation comparisons and are computed based on background data sets. Based on Petralogix's professional judgement and experience with soil sampling in the region, the 95 Percent UPL of approximately 6.51 mg/kg is considered a reasonable upper limit for the background data set. The arsenic detected onsite is considered similar to local background. The concentration of 5.7 mg/kg was also compared to the regional background concentration of arsenic (12 mg/kg).

4.3.2.2 Arsenic Background Evaluation Summary

Comparison of existing Site data indicates arsenic is within the range of the calculated background concentration of 6.51 mg/kg. The arsenic concentration was additionally compared to the regional



background concentration of arsenic (12 mg/kg). Based on professional experience with arsenic results in the area with similar soil type, the regional background concentration of arsenic, and the statistical evaluation based on pooled Site data, the arsenic data evaluated appear similar to background concentrations.

4.3.3 Arsenic and Lead in Soil Samples

Lead concentrations detected in soil samples at the Site do not exceed the corresponding screening level of 80 mg/kg as determined by HHRA Note Number 4 (2019) for unrestricted land use. All arsenic sample concentrations were detected above the DTSC-SL for arsenic in residential soil, which is 0.11 mg/kg.

Arsenic was detected in 11 discrete samples (including co-located duplicate sample) obtained from the surface (0 to 6 inches) of soil at the Site with concentrations ranging from 2.1 to 5.7 mg/kg. The samples were obtained on June 10, 2020 and are shown referenced in Plate 2. Results are provided in Table B.

Arsenic was detected in 10 background samples obtained from 5 to 5.5 feet bgs located at the Site and concentrations ranged from 1.5 to 4 mg/kg. The background concentration samples were obtained on June 10, 2020 and are referenced in Plate 3. Results are provided in Table B.

4.3.4 Organochlorine Pesticides in Soil Samples

Four OCP compounds (DDD, DDE, DDT, and dieldrin) were detected in the three 4-point composite samples, the one co-located field duplicate sample, and the seven 3-point composite samples. The detected OCP concentrations were significantly less than the USEPA RSL for residential soils.

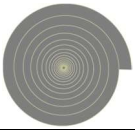
4.4 DATA QUALITY SUMMARY

4.4.1 Field Sampling and Field Variance

The sampling was performed in general agreement with the DTSC approved Workplan (Petralogix, 2020). A modification to the Workplan consisted of abandoning the planned sampling of the two former structures located in the southeast portion of the parcel based on a lot line adjustment.

4.4.2 Field Sampling and Field Variance

The sampling was performed in general agreement with the DTSC approved Workplan (Petralogix, 2020). A modification to the Workplan consisted of abandoning the planned sampling of the two former structures located in the southeast portion of the parcel based on a lot line adjustment.



4.4.3 Chain of Custody Evaluation

The chain of custody (COC) was delivered complete per the Workplan. As indicated in the workplan, a "J" flag was requested for arsenic. Samples were delivered to McCampbell Analytical Laboratory the same day as sampling, June 10. The samples were transported under ice and were cold and in good condition at sample delivery. Samples and analysis were consistent with the COC, with the exception of arsenic and lead analysis which were changed from USEPA 6010B to USEPA 6020.

4.4.4 Data Validation

Project data validation was performed by McCampbell Analytical Laboratory; data analysis was accepted as complete and released. Upon review of the laboratory data released by the McCampbell, the data quality was determined to be acceptable. The laboratory analytical reports provide a detailed summary of the QC/QA sample results. The data evaluation is available for review in Appendix C.

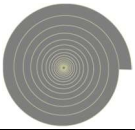
4.4.5 Health and Safety Procedures

Petralogix conducted a "tailgate" safety meeting prior to field sampling activities. Field work was performed in accordance with the Health and Safety Plan (HASP) with appropriate personal protective equipment and training.

5.0 HUMAN HEALTH SCREENING EVALUATION

As stated by DTSC's PEA guidance (2015), the purpose of a PEA-based human health evaluation is to estimate the potential chronic human health risk/hazard from soil and groundwater contamination at the Site and to assist in deciding whether further characterization, risk assessment or remediation is necessary. Although risk estimates are calculated as part of a PEA, it should be noted that these estimates are not definitive. Rather, because highly conservative screening assumptions are applied, the estimates are conservative and are only indicators of relative risk.

Laboratory data from the samples collected on June 10, 2020 were used for the HHRA, as shown in Tables A and B. The data evaluation and HHRA spreadsheets and are included for review in Appendix D.



5.1 Conceptual Site Model

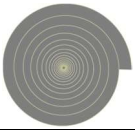
The conceptual site model (CSM) is a tool used to identify primary sources of contaminants of potential concern (COPC) at a Site, mechanisms of release for COPCs, points of exposure at the Site, and the exposure pathways (ingestion, inhalation, and dermal contact) for the screening level evaluation of health risks. The objective of the PEA Workplan is to evaluate the Site for an unrestricted residential land use scenario. The CSM also serves the purpose of guiding the progression of the risk assessment process, thereby functioning both as an organizational tool and as a check against omissions that might result in under- estimations of health risk. Three of the most important elements of the CSM are land use, potential receptors, and potential exposure pathways. Based on a review of existing data (site history, environmental setting, see Section 2), a Conceptual Site Model (CSM) has been developed for purposes of this PEA (Plate 5).

The conceptual site model has the following components:

- The primary source of COPCs are organochlorine pesticides associated with historical agriculture pesticide application practices.
- The primary release mechanism is uniform pesticide application to surface soil. It is worth noting, significantly elevated OCP compounds were not detected as an anomaly within the agricultural field sample area, therefore, spills and accidental pesticide release are not considered likely.
- Shallow soil containing residual pesticide compounds are considered the secondary source.
- Potential transport mechanisms would include soil disturbed for construction activities and soil erosion, specifically by wind and dust transport. Groundwater is not considered an expected concern for the Site due to the relatively immobile contaminants of concern.
- The exposure route for the Site is ingestion, dermal contact, and inhalation from exposure to dust created by wind and soil disturbance activities.
- The objective of the PEA Workplan is to evaluate the Site for an unrestricted residential land use scenario, and includes residents, school students and staff.

5.2 Exposure Point Concentrations and Chemical Groups

Exposure point concentrations (EPC) are the representative chemical concentrations to which it is assumed receptors (*e.g.,* residents) may be exposed in a prospective risk assessment. Constituents of concern (COCs) include OCPs associated with historical pesticide application, as well as arsenic and lead related to historical agricultural pesticides. Based on the small data set, the maximum detected concentration for each detected COC is used as the exposure point concentration. The use of the maximum concentration of each chemical measured on the property assumes that the maximum detected concentration of every chemical across the site is present at the same location regardless of whether this condition exists or not at the property. This is a very conservative approach and may greatly over-estimate risk on the site.



Arsenic concentrations detected in discrete surface samples at the Site range from 2.1 to 5.7 mg/kg which exceeds the DTSC-SL for residential soil (0.11 mg/kg). The exposure point concentration (EPC) for this Site of 5.7 mg/kg was detected in the southeastern portion of the agricultural field, location AG28. The detected concentrations appear similar to the local background values detected for the Site. The concentration was also compared to the regional background concentration of arsenic (12 mg/kg).

Lead concentrations detected in all discrete surface samples, but at concentrations below the respective DTSC-SLs. Lead concentrations detected at the Site range from 3 to 6.1 mg/kg. The EPC for lead is therefore 6.1 mg/kg.

The OCP compounds DDD, DDE, DDT, and Dieldrin were detected in several 3:1 and 4:1 composite samples, but at concentrations below their respective residential RSLs.

5.3 Soil Screening Evaluation

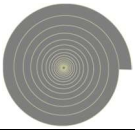
The soil results were compared to the DTSC-SLs and U.S. EPA Regional Screening Levels (April 2019) where DTSC-SLs were not available. The arsenic concentrations were compared to background concentration.

As discussed in the PEA Workplan, the methodology for assessing human health risks at the Site follow the preliminary evaluation of potential risk and hazard for a residential land use scenario Human Health screening evaluation. The Human Health screening evaluation is used to assist the project manager and project team in deciding whether further site characterization, risk assessment, or remediation is necessary.

The basic screening risk approach was to calculate the estimated risk or hazard posed by the maximum concentration of a chemical detected in the medium (in this case, soil) using an established human health-risk based residential screening level/concentration as a comparator, which is the *USEPA Regional Screening Level (RSL) for Residential Land Use*[10], modified as necessary by the *DTSC HHRA Note 3*[11]. The maximum exposure point concentrations for each COC are discussed above in Section 5.2. In addition, DTSC's 2015 Preliminary Endangerment Assessment Guidance Manual will be consulted as needed. All chemicals detected at the site are included in the assessment as COCs.

Detected concentrations of lead is assessed using DTSC's Lead Risk Assessment Spreadsheet, Version 8. If HHSLs are not available for constituents identified, alternative toxicity criteria and screening methods will be utilized pursuant to DTSC's PEA guidance (2015).

COC concentrations detected were below their respective screening criteria. A background concentration of 6.51 mg/kg was calculated for arsenic and a 95 percent UCL concentration was 3.21 calculated for arsenic.



5.4 Risk Characterization

The risk characterization methods to be used in the PEA, which are consistent with DTSC's PEA guidance, are presented in the following sections.

5.4.1 Calculation of Cumulative Cancer Risks and Noncancer Hazard

Per PEA manual guidance (2015), and as described in the PEA Workplan, the maximum chemical concentration for each site-related chemical should be divided by the corresponding screening level designated for cancer evaluation. For a carcinogenic chemical, the resulting ratio concentration will be multiplied by 10^{-6} to calculate the estimated cancer risk for that chemical. For multiple carcinogenic chemicals, the risks for individual chemicals are added to get a screening estimate of the cumulative risk. The cumulative risk is summed according to the following equation:

$$\text{Risk} = \left[\left(\frac{conc_x}{HHSL_x}\right) + \left(\frac{conc_y}{HHSL_y}\right) + \left(\frac{conc_z}{HHSL_z}\right)\right] * 10^{-6}$$

A risk level of 1×10^{-6} represents a probability of one in one million that an individual could develop cancer from exposure to the potential carcinogen under a defined set of exposure assumptions. If the estimated risk falls below the risk value considered acceptable by DTSC, the chemical is considered unlikely to pose a significant carcinogenic health risk to individuals under the given exposure conditions. DTSC considers a total carcinogenic risk of 1×10^{-6} the point of departure for conducting a more thorough risk assessment. However, risk management decisions are based on many factors, and a finding of no further action may be given for a site with a cancer risk greater than 1×10^{-6}.

Per the PEA manual guidance (2015), for all chemicals causing non-carcinogenic health effects, the ratios derived by dividing the maximum concentration of each chemical by its corresponding screening level based on non-cancer effects (HQ) are summed to get a site-related Hazard Index (HI) over all chemicals and media evaluated.

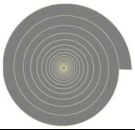
$$\text{Hazard Index} = \left[\left(\frac{conc_x}{HHSL_x}\right) + \left(\frac{conc_y}{HHSL_y}\right) + \left(\frac{conc_z}{HHSL_z}\right)\right]$$

This sum of the HQs is known as a hazard index (HI). A HI of 1 or less is generally considered "safe." If the cumulative risk is less than one-in-a-million (1×10^{-6}) and the Hazard Index is less than one, the PEA human health screening risk evaluation report may be used as support for a "no further action" (NFA) decision.

The cancer screening and non-cancer screening criteria and source for COCs are provided in Table C. As discussed above, the cancer risk and hazard indices were calculated using the maximum value and the above equations. Because all the exposure point concentration levels are from 3:1 composite analyses, the corresponding screening level was divided by 3 prior to calculating; for example, the DDD cancer screening level is 2.3 mg/kg, therefore, the 3:1 composite for the calculation is 2.3 mg/kg divided by 3, or 0.77 mg/kg.

[10] USEPA Regional Screening Levels (Formerly PRGS) Website. http://www.epa.gov/region9/superfund/prg/

[11] DTSC Human Health Risk resources page contains HHRA Note 3. Website: http://www.dtsc.ca.gov/assessingrisk/humanrisk2.cfm#Guidance



Based on the above calculations using the maximum exposure point concentrations, the hazard indices are below 1 for all detected OCPs and the cumulative hazard index is below 1. The cancer risks calculated using the maximum exposure point concentrations for all detected OCPs are below 10^{-6}. Based on the calculations and data, the health hazard and cancer risk from the COCs do not appear to be a significant risk.

Background arsenic in the Central Valley generally exceed the non-cancer and cancer screening criteria set forth by DTSC (0.4 mg/kg and 0.11 mg/kg, respectively). As discussed in the PEA Workplan, arsenic will only be evaluated quantitatively if concentrations exceed the ambient (background) levels. The arsenic detected in Site surface soil range from 2.1 to 5.7 mg/kg. The detected concentrations are similar to the statistical background value (95 percent UPL of 6.51 mg/kg) and below the regional background value (12 mg/kg).

5.4.2 Lead

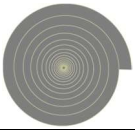
Lead was detected below the screening level (80 mg/kg) in all samples analyzed for the Site. Eleven samples were analyzed for lead, including one duplicate sample. Lead ranged from 3 to 6.1 mg/kg. The exposure point concentration (EPC) for lead is therefore 6.1 mg/kg. The EPC for lead was assessed using DTSC's Lead Risk Assessment Spreadsheet, Version 8. The result is well below the target Preliminary Remediation Goal 90th percentile (PRG90) of 1 ug/dL. The spreadsheet is available for review in Appendix D.

5.5 Ecological Screening Evaluation

The Site is located in a former agricultural field. Agricultural fields are generally dominated by cultivated crops and weeds and do not provide quality habitat for wildlife species. The proposed school site is located within the Westlake Village Subdivision Project, which was subject to an environmental impact report in 2004 with biological impact(s) for the greater parcels (including the Site) mitigated through the San Joaquin Multi-Species Conservation Plan (SJMSCP) in 2005. Prior to ground disturbance the project Site is eligible for a biological site visit through SJMSCP at no additional cost. In addition, proper storm water pollution prevention controls will be implemented to mitigate impacts to waters of the State.

6.0 COMMUNITY PROFILE

According to the US Census Bureau, there are approximately 28,000 people residing in the zip code 95219 associated with the Site. The racial demographics for the area is reported as primarily white, with the percentage of children under 18 living in the zip code large compared to other areas of the county.



7.0 PUBLIC PARTICIPATION

7.1 CEQA Option 'A'

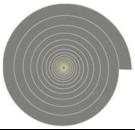
Pursuant to AB 972, the LUSD is pursuing the PEA process separately from the California Environmental Quality Act (CEQA) process under Option 'A.' LUSD provided a notice to all residents within line-of-site of the proposed school site approximately 10 days prior to commencement of field activities related to the PEA. The draft fieldwork notice is available for review in the PEA Workplan.

The draft PEA is submitted to DTSC in for review. Once the revised draft version is accepted by DTSC, LUSD will post a notice in a local newspaper of general circulation, at the LUSD office, and in a prominent manner at the proposed school site; DTSC will receive a copy of the notice. The notice will indicate LUSD's intent to make the PEA available for public review and comment. LUSD may receive written comments for at least 30 days after the PEA is submitted to DTSC and will hold a public hearing to receive further comments. The date, time, and location of the hearing will be included in the notice. All changes to the PEA requested by DTSC and correspondence between the district and DTSC related to the PEA will be available for public review both before and after the hearing. At the end of the public comment period and after the public hearing, any comments received by LUSD will be transmitted to DTSC. DTSC will review and either approve or disapprove the PEA within 30 calendar days of the close of the public review period.

8.0 CONCLUSIONS AND RECOMMENDATIONS

The PEA was performed in general accordance with the approved PEA Workplan. Soil samples were collected to evaluate historical agriculture use, including an area that was previously a basin, located on the Site.

Arsenic concentrations in surface soil range from 2.1 to 5.7 mg/kg and have an average value of 3.45 mg/kg. These concentrations exceed the DTSC-SL for residential soil (unrestricted land use). However, the arsenic detected onsite is considered similar to local and regional background concentrations of 6.51 mg/kg and 12 mg/kg, respectively. OCPs and lead detected in soil within the former agricultural area, including the former basin, are below DTSC-SLs. The preliminary evaluation of potential risk and hazard for a residential land use scenario human health screening evaluation indicated the maximum detected concentrations were below the hazard index and cancer risk threshold. **Based on the findings described above, we recommend no further action for this Site.**



9.0 REFERENCES

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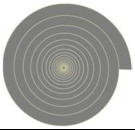

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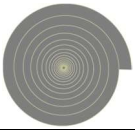
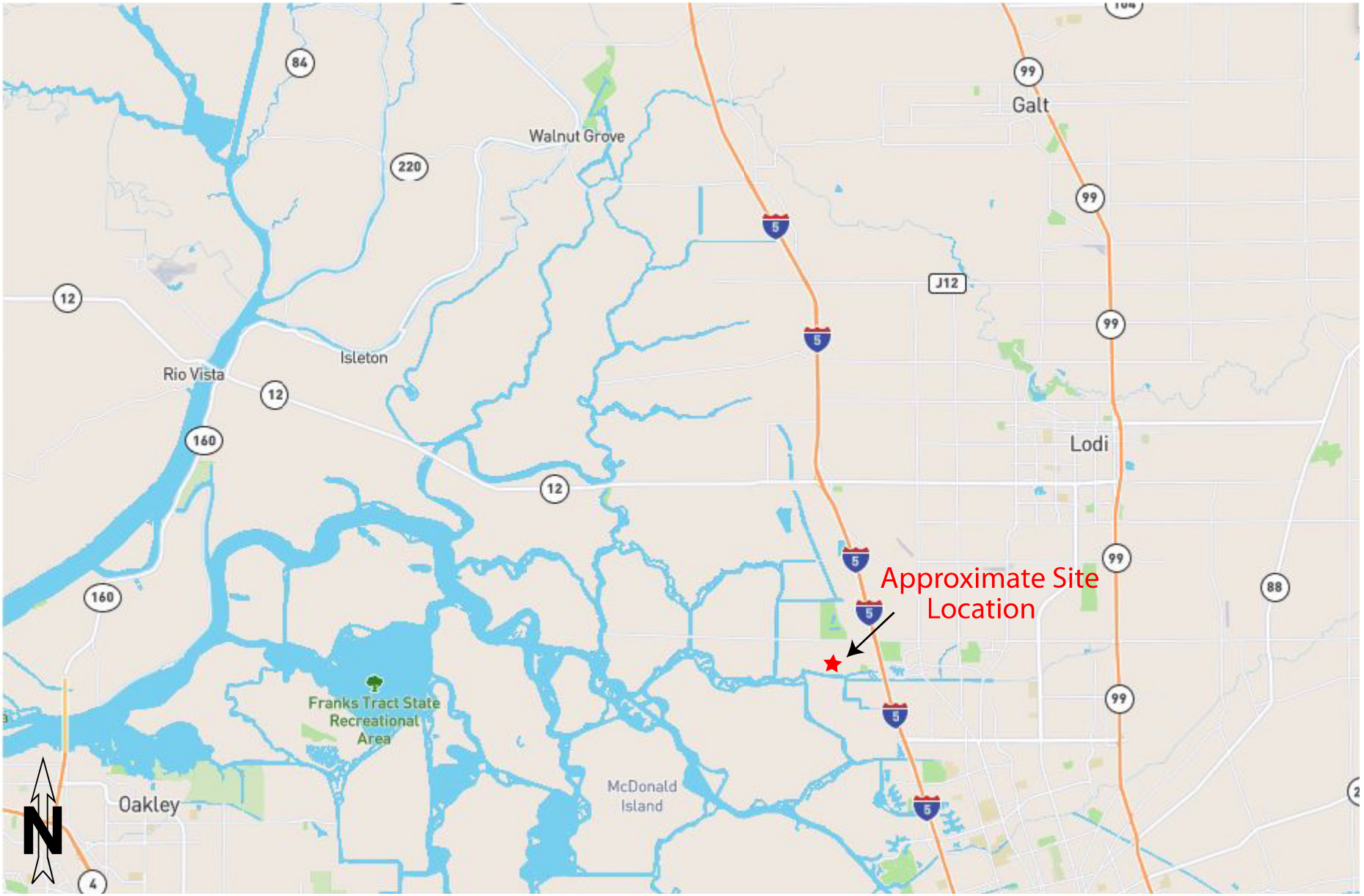


PLATES



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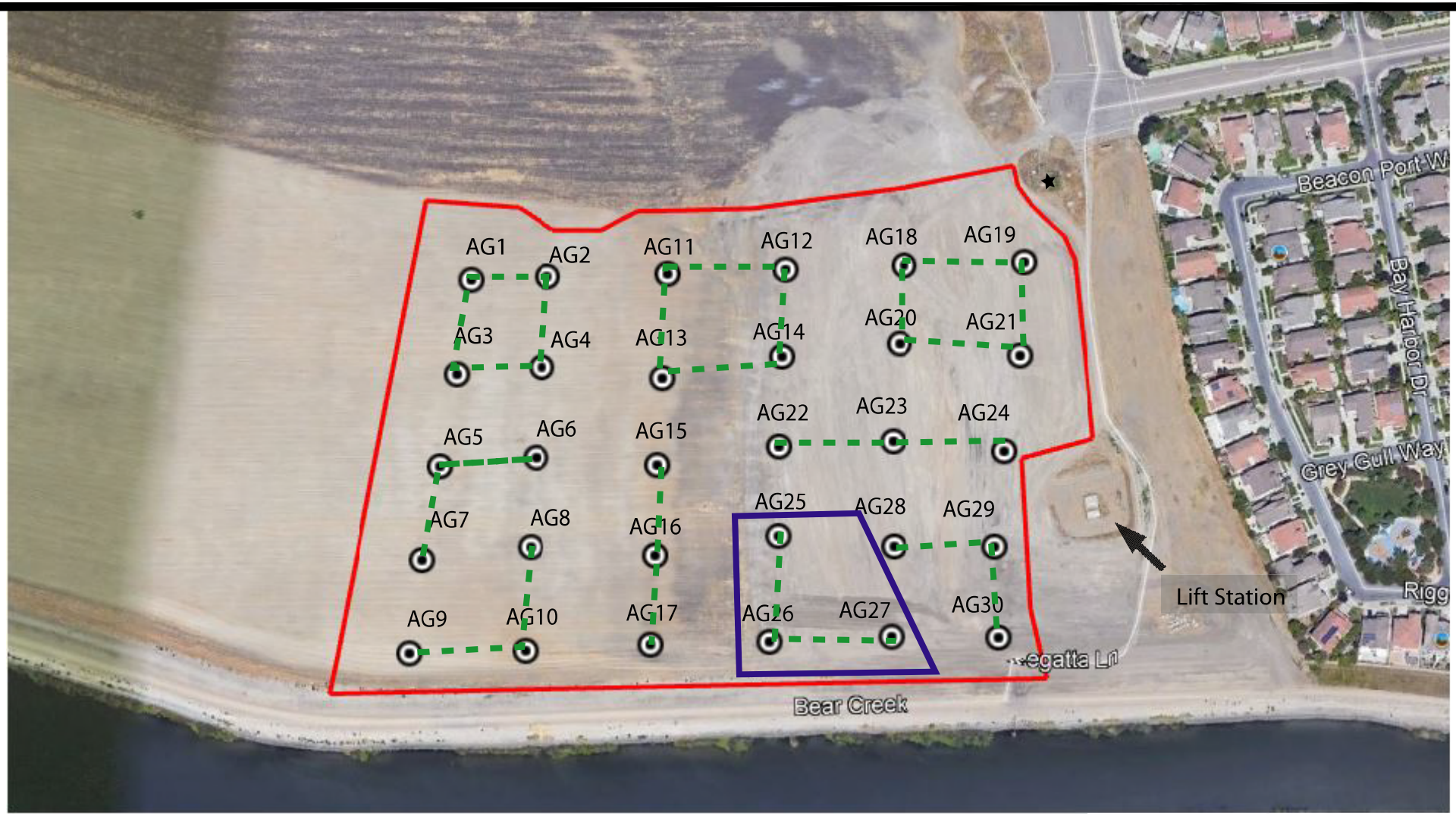
Vicinity Map

Proposed School Site - Stockton Site I
Corner of Westlake Drive & Regatta Lane
Stockton, CA 95219

DATE: July 2020
JOB NUMBER: 2019-00014
SCALE: Not to Scale
DRAWN BY: TS
CHECKED BY: DK
PLATE: 1



LEGEND

- Approximate Site Boundary
- Former Basin Area
- Sample Location
- Transformer
- Composite Analysis

Google Earth 2020

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Sample Locations Map

Proposed School Site - Stockton Site I
Corner of Westlake Drive & Regatta Lane
Stockton, CA 95219

DATE: July 2020
JOB NUMBER: 2019-00014
SCALE: Not to Scale
DRAWN BY: TS
CHECKED BY: DK
PLATE: 2



LEGEND

- Approximate Site Boundary
- Former Basin Area
- AG Sample Location
- Transformer
- BG Background Arsenic Location

Google Earth 2020

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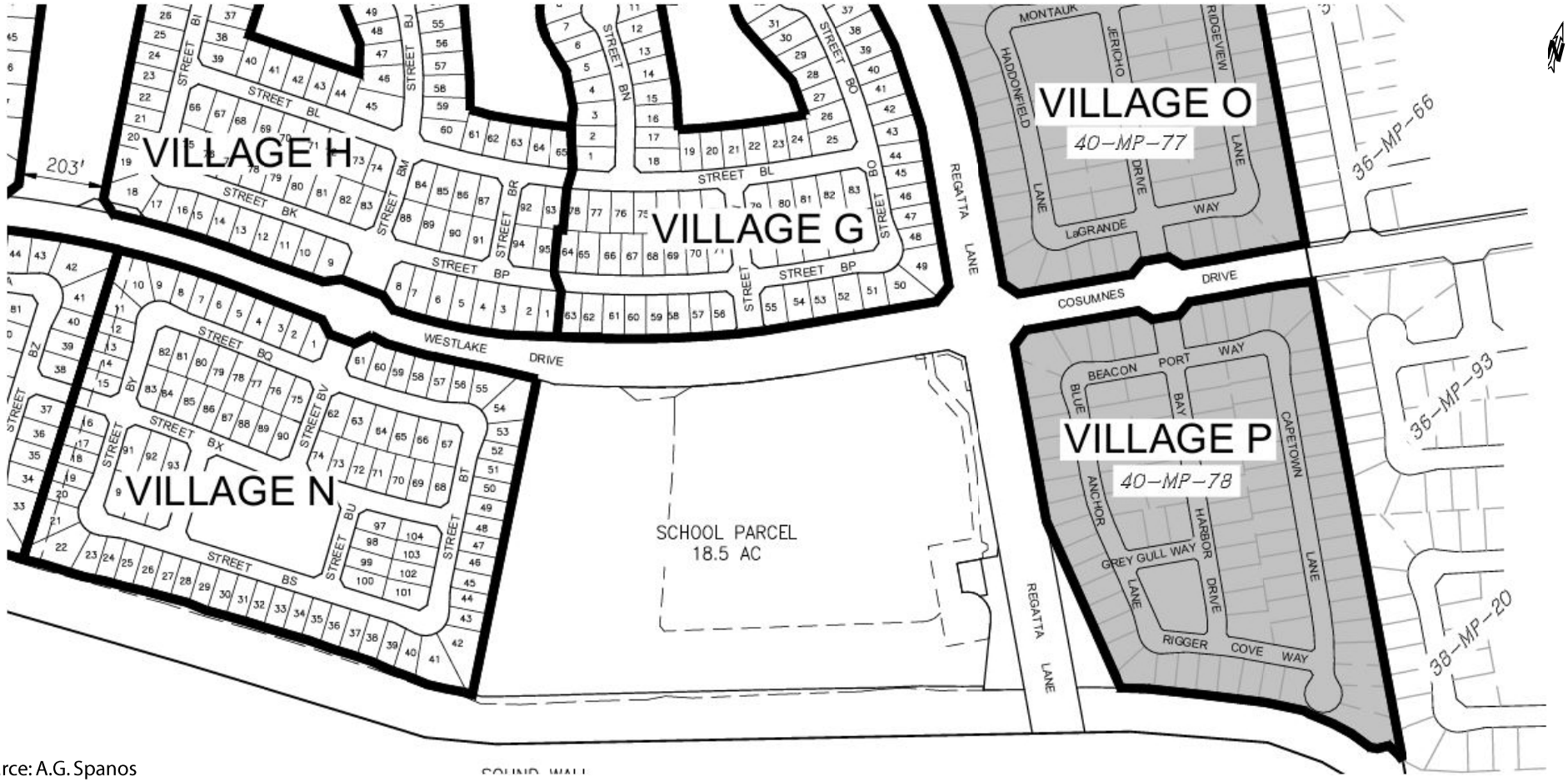
Background Arsenic Sample Location Map

Proposed School Site - Stockton Site I
Corner of Westlake Drive & Regatta Lane
Stockton, CA 95219

DATE: July 2020
JOB NUMBER: 2019-00014
SCALE: Not to Scale
DRAWN BY: TS
CHECKED BY: DK
PLATE: 3



Source: A.G. Spanos

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Westlake Villages
Proposed School Parcel
Proposed School Site - Stockton Site I
Corner of Westlake Drive & Regatta Lane
Stockton, CA 95219

DATE: July 2020
JOB NUMBER : 2019-00014
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DRAWN BY: TS
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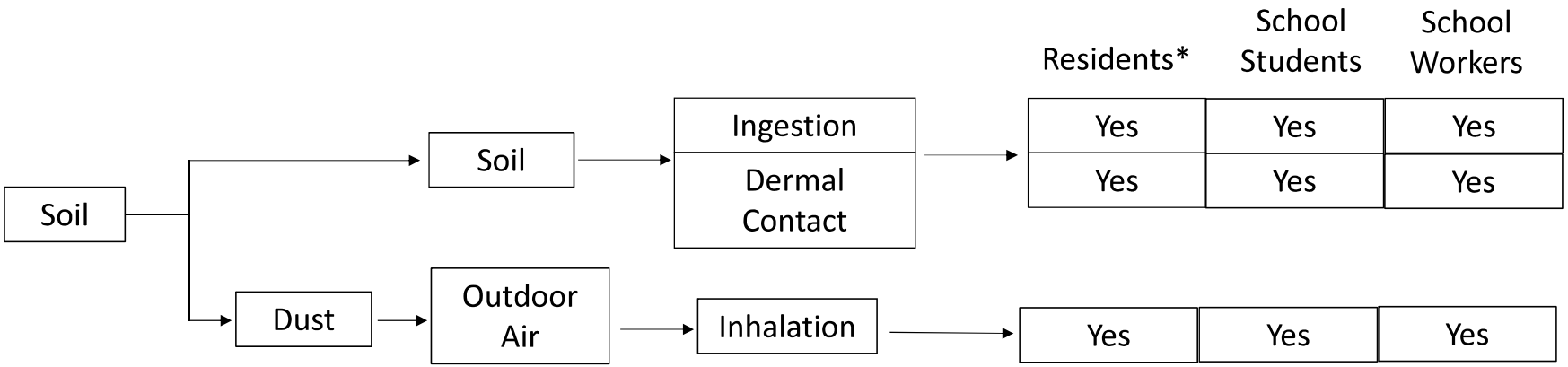
PLATE: 4

Primary Source	Primary Release Mechanism	Exposure Media	Exposure Route	Potential Receptors



*Although the property is proposed for development as a school site, a residential receptor is required by the PEA guidance.

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Conceptual Site Model

Proposed School Site - Stockton Site I
Corner of Westlake Drive & Regatta Lane
Stockton, CA 95219

DATE: July 2020
JOB NUMBER: 2019-00014
SCALE: Not to Scale
DRAWN BY: TS
CHECKED BY: DK
PLATE: 5

TABLES

Table A. Analytical Results of Selected Soil Samples - OCPs
(Cocentration in mg/kg)
Sample Date June 10, 2020

Analysis Type	Sample ID	Depth	DDD	DDE	DDT	Dieldrin	a-chlordane[1]	g-chlordane[1]
4:1 COMP	AG1-AG4@0'	0-6"	<0.00010	0.00028	0.00013	<0.00010	<0.00010	<0.00010
3:1 COMP	AG5-AG7@0'	0-6"	<0.00010	0.00016	0.00012	<0.00010	<0.00010	<0.00010
3:1 COMP	AG8-AG10@0'	0-6"	<0.00010	0.0021	0.00077	<0.00010	<0.00010	0.000072
4:1 COMP	AG11-AG14@0'	0-6"	0.00014	0.0024	0.00071	<0.00010	<0.00010	0.000065
4:1 COMP	AG11-AG14-DUP@0'	0-6"	0.000078	0.002	0.00062	<0.00010	<0.00010	0.000065
3:1 COMP	AG15-AG17@0'	0-6"	0.000071	0.0014	0.00064	<0.00010	<0.00010	<0.00010
4:1 COMP	AG18-AG21@0'	0-6"	0.0003	0.0056	0.0019	0.0001	0.00016	0.00015
3:1 COMP	AG22-AG24@0'	0-6"	0.00073	0.019	0.0062	<0.00010	0.00035	0.00043
3:1 COMP	AG25-AG27@0'	0-6"	0.00069	0.016	0.0054	0.00019	<0.00010	0.00011
3:1 COMP	AG25, AG26, AG27	2.5', 2.0', 4.5'	0.0013	0.016	0.0018	<0.00010	<0.00010	<0.00010
3:1 COMP	AG28-30@0'	0-6"	0.00077	0.012	0.0096	0.00025	0.00022	0.00029
Screening Criteria - RSLs - U.S. EPA Screening Levels (April 2019)			2.3	2.0	1.9	0.034	1.7	1.7
		4:1 COMP	0.77	0.67	0.63	0.011	0.6	0.6
		3:1 COMP	0.58	0.5	0.48	0.009	0.4	0.4

[1] RSL for Chrlodane (Technical) used - U.S. EPA Regional Screening Level (April 2019)

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Table B. Analytical Results of Soil Samples - Arsenic and Lead (Cocentration in mg/kg) Sample Date June 10, 2020			
Sample ID	Depth	Arsenic	Lead
AG1@0'	0-6"	2.1	3.7
AG5@0'	0-6"	4.1	6.1
AG8@0'	0-6"	3	3.7
AG11@0'	0-6"	2.9	4.7
AG11@0'-DUP	0-6"	3	5
AG15@0'	0-6"	3.3	4.9
AG18@0'	0-6"	2.4	3
AG22@0'	0-6"	4.1	5.3
AG25@0'	0-6"	3.3	5.6
AG25@2.5'	2.5'	4	5.8
AG28@0'	0-6"	5.7	6.1
BG1	5-5.5'	3.5	---
BG2	5-5.5'	3.2	---
BG3	5-5.5'	2.7	---
BG4	5-5.5'	2	---
BG5	5-5.5'	1.9	---
BG6	5-5.5'	2.1	---
BG7	5-5.5'	1.5	---
BG8	5-5.5'	1.9	---
BG9	5-5.5'	3	---
BG10	5-5.5'	4	---
95% UCL		3.21	---
Screening Criteria		6.51	80.0
Basis		BG[1]	DTSC-SL[2]

[1]Calculated background concentration using onsite detection of pooled data with statistical methods detailed in the PEA

[2]DTSC recommended Screening Level (SL), HERO Note 3 - June 2018

Table C. Non-Cancer Hazard Index and Cancer Risk Calculations

COC	EPC Sample Point (3:1 Composite)	Exposure Point Concentration (mg/kg)*	Non-Cancer (Child) Residential Screening Level (mg/kg)*	Source/Basis	Non-Cancer Hazard Index *	Cancer Residential Screening Level (mg/kg)*	Source/Basis	Cancer Risk
DDD	AG(28,29,30)	0.0013	0.63	RSL	2.05E-03	0.77	RSL	1.69E-09
DDE	AG(22,23,24)	0.019	7.67	RSL	2.48E-03	0.67	RSL	2.84E-08
DDT	AG(28,29,30)	0.0096	12.33	RSL	7.78E-04	0.63	RSL	1.52E-08
Dieldrin	AG(28,29,30)	0.00025	1.07	RSL	2.34E-04	0.011	RSL	2.27E-08
Total					5.54E-03	Total		6.80E-08

*RSL Divided by 3 due to 3:1 composite

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APPENDIX A – DTSC LETTER

Department of Toxic Substances Control

Meredith Williams, Ph.D., Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Jared Blumenfeld
Secretary for
Environmental Protection

Gavin Newsom
Governor

May 15, 2020

Mr. Leonard Kahn
Chief Business Officer
Lodi Unified School District
1305 East Vine Street
Lodi, California 95240

PRELIMINARY ENVIRONMENTAL ASSESSMENT WORKPLAN – APPROVAL, LODI UNIFIED SCHOOL DISTRICT, STOCKTON SITE I, CORNER OF WESTLAKE DRIVE AND REGATTA LANE, STOCKTON, SAN JOAQUIN COUNTY, CALIFORNIA (PROJECT CODE 104809)

Dear Mr. Kahn

The Department of Toxic Substances Control (DTSC) reviewed the revised *Preliminary Environmental Assessment Workplan* (PEA Workplan – Petralogix Engineering, Inc., May 14, 2020) received electronically on May 14, 2020. The PEA Workplan was revised in response to DTSC comments on the draft version forwarded in a letter dated April 10, 2020. The PEA Workplan includes project background information as well as proposed environmental investigation activities.

The Lodi Unified School District (District) is considering purchasing a 19.36-acre property located at the corner of Westlake Drive and Regatta Lane in Stockton, San Joaquin County, California (Site). The District intends to construct a K-8 school, which will accommodate a maximum of 800 students in 35 classrooms. The City of Stockton Municipal Utilities District will provide municipal water and sewer services.

The Site is identified by the San Joaquin County Assessor as Assessor's Parcel Numbers (APN) 066-050-070 (10.2 acres) and approximately 9.16 acres of APN 066-050-080 (27.8 acres). The Site is bounded to the north by vacant land; to the east by Regatta Lane followed by residential lots; to the south by White Slough followed by agricultural land; and to the west by vacant land.

According to the PEA Workplan, the Site was used for agricultural purposes from at least 1937 through 1998. Based on historic aerial photographs, two structures may have been present in the southeast portion of the Site from at least 1937 through 1947. A 1.5-acre basin located approximately along the south-central Site boundary was

developed at the Site in 2006 and was filled in sometime in 2019. A pad-mounted transformer has been present on the Site since approximately 2006.

The PEA Workplan includes activities to investigate the Site for potential impacts from the following environmental conditions that may pose a threat to human health or the environment:

- Organochlorine pesticides (OCPs), arsenic, and lead in surface soils from historic agricultural use; and,
- Lead in surface soils from the potential weathering of lead-based paint associated with the historic structures.

DTSC's comments have been adequately addressed, and the revised PEA Workplan is hereby approved. If Site conditions differ from those presented in the approved PEA Workplan, additional work may be necessary. In accordance with Education Code section 17210.1(b), the District shall provide written notice to businesses and residents in the immediate area, approved in form by DTSC, at least five days in advance of field investigation activities. The intent of this requirement is to provide advance notice of fieldwork such as drilling, sampling, and other environmental data collection activities to anyone who lives or works in the line of sight of the Site. Please notify DTSC a minimum of 48 hours in advance of fieldwork or schedule changes.

The PEA Workplan states that the District intends to make the Draft PEA Report available for public review in compliance with Option A of the Education Code section 17213.1(a)(6)(A). Pursuant to Education Code section 17213.1, subdivision (a)(6), at the same time the Draft PEA Report is submitted to DTSC for review, the District shall publish a DTSC approved notice in a local newspaper of general circulation and post the notice in a prominent manner at the Site. The notice should state the District's intent of making the Draft PEA Report available for public review pursuant Option A. A copy of the notice shall be submitted to DTSC with the Draft PEA Report.

If you have any questions regarding the project, please contact me at (916) 255-6666 or via email at Elizabeth.Tisdale@dtsc.ca.gov.

Sincerely,

E. Tisdale

Elizabeth Tisdale
Project Manager
Northern California Schools Unit
Site Mitigation and Restoration Program

cc: (see next page)

cc: (via e-mail)

Ms. Vickie Brum
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Mr. Daniel Kramer, PG
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Petralogix Engineering, Inc.
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Ms. Mai Ngo, PhD
Staff Toxicologist
DTSC Human and Ecological Risk Office
Mai.Ngo@dtsc.ca.gov

APPENDIX B – FIELD PHOTGRAPHS

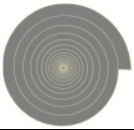


Figure 1 – View of soil interpreted to be the former basin surface, at sample location ID AG25.



Figure 2 – View of expanded lift station and associated improvements previously within the proposed project Site, looking northwest from the levee .

APPENDIX C – LAB REPORTS



McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 2006544

Report Created for: Petralogix

26675 Bruella Road
Galt, CA 95632

Project Contact: Daniel Kramer
Project P.O.:
Project: 2019-00014; Stockton Site I

Project Received: 06/10/2020

Analytical Report reviewed & approved for release on 06/17/2020 by:

Yen Cao
Project Manager

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Glossary of Terms & Qualifier Definitions

Client: Petralogix
Project: 2019-00014; Stockton Site I
WorkOrder: 2006544

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
CPT	Consumer Product Testing not NELAP Accredited
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
LQL	Lowest Quantitation Level
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
TZA	TimeZone Net Adjustment for sample collected outside of MAI's UTC.
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Analytical Qualifiers

J	Result is less than the RL/ML but greater than the MDL. The reported concentration is an estimated value.
P	Agreement between quantitative confirmation results exceed method recommended limits.
h7	Copper (EPA 3660B) cleanup.

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Analytical Report

Client:	Petralogix	**WorkOrder:**	2006544
Date Received:	06/10/2020 17:05	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	06/12/2020	**Analytical Method:**	SW8081A
Project:	2019-00014; Stockton Site I	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG1-4@0'	**2006544-001A**	**Soil**	**06/10/2020 09:12**	**GC23 06122040.d**	**200023**

Analytes	Result	MDL	RL	DF	Date Analyzed
Aldrin	ND	0.000036	0.00010	1	06/12/2020 21:19
a-BHC	ND	0.000025	0.00010	1	06/12/2020 21:19
b-BHC	ND	0.00025	0.00030	1	06/12/2020 21:19
d-BHC	ND	0.00013	0.00020	1	06/12/2020 21:19
g-BHC	ND	0.000066	0.00010	1	06/12/2020 21:19
Chlordane (Technical)	ND	0.00043	0.0025	1	06/12/2020 21:19
a-Chlordane	ND	0.000095	0.00010	1	06/12/2020 21:19
g-Chlordane	ND	0.000047	0.00010	1	06/12/2020 21:19
p,p-DDD	ND	0.000043	0.00010	1	06/12/2020 21:19
p,p-DDE	**0.00028**	0.000094	0.00010	1	06/12/2020 21:19
p,p-DDT	**0.00013**	0.000092	0.00010	1	06/12/2020 21:19
Dieldrin	ND	0.000061	0.00010	1	06/12/2020 21:19
Endosulfan I	ND	0.000048	0.00010	1	06/12/2020 21:19
Endosulfan II	ND	0.000076	0.00010	1	06/12/2020 21:19
Endosulfan sulfate	ND	0.000078	0.00010	1	06/12/2020 21:19
Endrin	ND	0.000035	0.00010	1	06/12/2020 21:19
Endrin aldehyde	ND	0.000067	0.00010	1	06/12/2020 21:19
Endrin ketone	ND	0.000084	0.00010	1	06/12/2020 21:19
Heptachlor	ND	0.000040	0.00010	1	06/12/2020 21:19
Heptachlor epoxide	ND	0.000054	0.00010	1	06/12/2020 21:19
Hexachlorobenzene	ND	0.00011	0.0010	1	06/12/2020 21:19
Hexachlorocyclopentadiene	ND	0.00034	0.0020	1	06/12/2020 21:19
Methoxychlor	ND	0.00013	0.00020	1	06/12/2020 21:19
Toxaphene	ND	0.0034	0.0050	1	06/12/2020 21:19

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	114	20-145	06/12/2020 21:19

Analyst(s): LT

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Analytical Report

Client:	Petralogix	**WorkOrder:**	2006544
Date Received:	06/10/2020 17:05	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	06/12/2020	**Analytical Method:**	SW8081A
Project:	2019-00014; Stockton Site I	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG5-7@0'	**2006544-002A**	**Soil**	**06/10/2020 09:38**	**GC23 06122041.d**	**200023**

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aldrin	ND		0.000036	0.00010	1	06/12/2020 21:35
a-BHC	ND		0.000025	0.00010	1	06/12/2020 21:35
b-BHC	ND		0.00025	0.00030	1	06/12/2020 21:35
d-BHC	ND		0.00013	0.00020	1	06/12/2020 21:35
g-BHC	ND		0.000066	0.00010	1	06/12/2020 21:35
Chlordane (Technical)	ND		0.00043	0.0025	1	06/12/2020 21:35
a-Chlordane	ND		0.000095	0.00010	1	06/12/2020 21:35
g-Chlordane	ND		0.000047	0.00010	1	06/12/2020 21:35
p,p-DDD	ND		0.000043	0.00010	1	06/12/2020 21:35
p,p-DDE	**0.00016**		0.000094	0.00010	1	06/12/2020 21:35
p,p-DDT	**0.00012**	P	0.000092	0.00010	1	06/12/2020 21:35
Dieldrin	ND		0.000061	0.00010	1	06/12/2020 21:35
Endosulfan I	ND		0.000048	0.00010	1	06/12/2020 21:35
Endosulfan II	ND		0.000076	0.00010	1	06/12/2020 21:35
Endosulfan sulfate	ND		0.000078	0.00010	1	06/12/2020 21:35
Endrin	ND		0.000035	0.00010	1	06/12/2020 21:35
Endrin aldehyde	ND		0.000067	0.00010	1	06/12/2020 21:35
Endrin ketone	ND		0.000084	0.00010	1	06/12/2020 21:35
Heptachlor	ND		0.000040	0.00010	1	06/12/2020 21:35
Heptachlor epoxide	ND		0.000054	0.00010	1	06/12/2020 21:35
Hexachlorobenzene	ND		0.00011	0.0010	1	06/12/2020 21:35
Hexachlorocyclopentadiene	ND		0.00034	0.0020	1	06/12/2020 21:35
Methoxychlor	ND		0.00013	0.00020	1	06/12/2020 21:35
Toxaphene	ND		0.0034	0.0050	1	06/12/2020 21:35

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	103	20-145	06/12/2020 21:35

Analyst(s): LT

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Client:	Petralogix	**WorkOrder:**	2006544
Date Received:	06/10/2020 17:05	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	06/12/2020	**Analytical Method:**	SW8081A
Project:	2019-00014; Stockton Site I	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG8-10@0'	**2006544-003A**	**Soil**	**06/10/2020 10:00**	**GC23 06122042.d**	**200023**

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aldrin	ND		0.000036	0.00010	1	06/12/2020 21:51
a-BHC	ND		0.000025	0.00010	1	06/12/2020 21:51
b-BHC	ND		0.00025	0.00030	1	06/12/2020 21:51
d-BHC	ND		0.00013	0.00020	1	06/12/2020 21:51
g-BHC	ND		0.000066	0.00010	1	06/12/2020 21:51
Chlordane (Technical)	ND		0.00043	0.0025	1	06/12/2020 21:51
a-Chlordane	ND		0.000095	0.00010	1	06/12/2020 21:51
g-Chlordane	**0.000072**	J	0.000047	0.00010	1	06/12/2020 21:51
p,p-DDD	ND		0.000043	0.00010	1	06/12/2020 21:51
p,p-DDE	**0.0021**		0.000094	0.00010	1	06/12/2020 21:51
p,p-DDT	**0.00077**		0.000092	0.00010	1	06/12/2020 21:51
Dieldrin	ND		0.000061	0.00010	1	06/12/2020 21:51
Endosulfan I	ND		0.000048	0.00010	1	06/12/2020 21:51
Endosulfan II	ND		0.000076	0.00010	1	06/12/2020 21:51
Endosulfan sulfate	ND		0.000078	0.00010	1	06/12/2020 21:51
Endrin	ND		0.000035	0.00010	1	06/12/2020 21:51
Endrin aldehyde	ND		0.000067	0.00010	1	06/12/2020 21:51
Endrin ketone	ND		0.000084	0.00010	1	06/12/2020 21:51
Heptachlor	ND		0.000040	0.00010	1	06/12/2020 21:51
Heptachlor epoxide	ND		0.000054	0.00010	1	06/12/2020 21:51
Hexachlorobenzene	ND		0.00011	0.0010	1	06/12/2020 21:51
Hexachlorocyclopentadiene	ND		0.00034	0.0020	1	06/12/2020 21:51
Methoxychlor	ND		0.00013	0.00020	1	06/12/2020 21:51
Toxaphene	ND		0.0034	0.0050	1	06/12/2020 21:51

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	116	20-145	06/12/2020 21:51

Analyst(s): LT

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Date Received:	06/10/2020 17:05	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	06/12/2020	**Analytical Method:**	SW8081A
Project:	2019-00014; Stockton Site I	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG11-14@0'	**2006544-004A**	**Soil**	**06/10/2020 11:40**	**GC23 06122043.d**	**200023**

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aldrin	ND		0.000036	0.00010	1	06/12/2020 22:06
a-BHC	ND		0.000025	0.00010	1	06/12/2020 22:06
b-BHC	ND		0.00025	0.00030	1	06/12/2020 22:06
d-BHC	ND		0.00013	0.00020	1	06/12/2020 22:06
g-BHC	ND		0.000066	0.00010	1	06/12/2020 22:06
Chlordane (Technical)	ND		0.00043	0.0025	1	06/12/2020 22:06
a-Chlordane	ND		0.000095	0.00010	1	06/12/2020 22:06
g-Chlordane	**0.000065**	JP	0.000047	0.00010	1	06/12/2020 22:06
p,p-DDD	**0.00014**		0.000043	0.00010	1	06/12/2020 22:06
p,p-DDE	**0.0024**		0.000094	0.00010	1	06/12/2020 22:06
p,p-DDT	**0.00071**		0.000092	0.00010	1	06/12/2020 22:06
Dieldrin	ND		0.000061	0.00010	1	06/12/2020 22:06
Endosulfan I	ND		0.000048	0.00010	1	06/12/2020 22:06
Endosulfan II	ND		0.000076	0.00010	1	06/12/2020 22:06
Endosulfan sulfate	ND		0.000078	0.00010	1	06/12/2020 22:06
Endrin	ND		0.000035	0.00010	1	06/12/2020 22:06
Endrin aldehyde	ND		0.000067	0.00010	1	06/12/2020 22:06
Endrin ketone	ND		0.000084	0.00010	1	06/12/2020 22:06
Heptachlor	ND		0.000040	0.00010	1	06/12/2020 22:06
Heptachlor epoxide	ND		0.000054	0.00010	1	06/12/2020 22:06
Hexachlorobenzene	ND		0.00011	0.0010	1	06/12/2020 22:06
Hexachlorocyclopentadiene	ND		0.00034	0.0020	1	06/12/2020 22:06
Methoxychlor	ND		0.00013	0.00020	1	06/12/2020 22:06
Toxaphene	ND		0.0034	0.0050	1	06/12/2020 22:06

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	115	20-145	06/12/2020 22:06

Analyst(s): LT

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Analytical Report

Client:	Petralogix	**WorkOrder:**	2006544
Date Received:	06/10/2020 17:05	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	06/12/2020	**Analytical Method:**	SW8081A
Project:	2019-00014; Stockton Site I	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG11-14-DUP@0'	**2006544-005A**	**Soil**	**06/10/2020 11:40**	**GC23 06122044.d**	**200023**

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aldrin	ND		0.000036	0.00010	1	06/12/2020 22:22
a-BHC	ND		0.000025	0.00010	1	06/12/2020 22:22
b-BHC	ND		0.00025	0.00030	1	06/12/2020 22:22
d-BHC	ND		0.00013	0.00020	1	06/12/2020 22:22
g-BHC	ND		0.000066	0.00010	1	06/12/2020 22:22
Chlordane (Technical)	ND		0.00043	0.0025	1	06/12/2020 22:22
a-Chlordane	ND		0.000095	0.00010	1	06/12/2020 22:22
g-Chlordane	**0.000065**	JP	0.000047	0.00010	1	06/12/2020 22:22
p,p-DDD	**0.000078**	JP	0.000043	0.00010	1	06/12/2020 22:22
p,p-DDE	**0.0020**		0.000094	0.00010	1	06/12/2020 22:22
p,p-DDT	**0.00062**		0.000092	0.00010	1	06/12/2020 22:22
Dieldrin	ND		0.000061	0.00010	1	06/12/2020 22:22
Endosulfan I	ND		0.000048	0.00010	1	06/12/2020 22:22
Endosulfan II	ND		0.000076	0.00010	1	06/12/2020 22:22
Endosulfan sulfate	ND		0.000078	0.00010	1	06/12/2020 22:22
Endrin	ND		0.000035	0.00010	1	06/12/2020 22:22
Endrin aldehyde	ND		0.000067	0.00010	1	06/12/2020 22:22
Endrin ketone	ND		0.000084	0.00010	1	06/12/2020 22:22
Heptachlor	ND		0.000040	0.00010	1	06/12/2020 22:22
Heptachlor epoxide	ND		0.000054	0.00010	1	06/12/2020 22:22
Hexachlorobenzene	ND		0.00011	0.0010	1	06/12/2020 22:22
Hexachlorocyclopentadiene	ND		0.00034	0.0020	1	06/12/2020 22:22
Methoxychlor	ND		0.00013	0.00020	1	06/12/2020 22:22
Toxaphene	ND		0.0034	0.0050	1	06/12/2020 22:22

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	99	20-145	06/12/2020 22:22

Analyst(s): LT

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Analytical Report

Client:	Petralogix	**WorkOrder:**	2006544
Date Received:	06/10/2020 17:05	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	06/12/2020	**Analytical Method:**	SW8081A
Project:	2019-00014; Stockton Site I	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG15-17@0'	**2006544-006A**	**Soil**	**06/10/2020 10:41**	**GC23 06122045.d**	**200023**

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aldrin	ND		0.000036	0.00010	1	06/12/2020 22:38
a-BHC	ND		0.000025	0.00010	1	06/12/2020 22:38
b-BHC	ND		0.00025	0.00030	1	06/12/2020 22:38
d-BHC	ND		0.00013	0.00020	1	06/12/2020 22:38
g-BHC	ND		0.000066	0.00010	1	06/12/2020 22:38
Chlordane (Technical)	ND		0.00043	0.0025	1	06/12/2020 22:38
a-Chlordane	ND		0.000095	0.00010	1	06/12/2020 22:38
g-Chlordane	ND		0.000047	0.00010	1	06/12/2020 22:38
p,p-DDD	**0.000071**	J	0.000043	0.00010	1	06/12/2020 22:38
p,p-DDE	**0.0014**		0.000094	0.00010	1	06/12/2020 22:38
p,p-DDT	**0.00064**		0.000092	0.00010	1	06/12/2020 22:38
Dieldrin	ND		0.000061	0.00010	1	06/12/2020 22:38
Endosulfan I	ND		0.000048	0.00010	1	06/12/2020 22:38
Endosulfan II	ND		0.000076	0.00010	1	06/12/2020 22:38
Endosulfan sulfate	ND		0.000078	0.00010	1	06/12/2020 22:38
Endrin	ND		0.000035	0.00010	1	06/12/2020 22:38
Endrin aldehyde	ND		0.000067	0.00010	1	06/12/2020 22:38
Endrin ketone	ND		0.000084	0.00010	1	06/12/2020 22:38
Heptachlor	ND		0.000040	0.00010	1	06/12/2020 22:38
Heptachlor epoxide	ND		0.000054	0.00010	1	06/12/2020 22:38
Hexachlorobenzene	ND		0.00011	0.0010	1	06/12/2020 22:38
Hexachlorocyclopentadiene	ND		0.00034	0.0020	1	06/12/2020 22:38
Methoxychlor	ND		0.00013	0.00020	1	06/12/2020 22:38
Toxaphene	ND		0.0034	0.0050	1	06/12/2020 22:38

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	115	20-145	06/12/2020 22:38

Analyst(s): LT

(Cont.)

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Date Received:	06/10/2020 17:05	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	06/12/2020	**Analytical Method:**	SW8081A
Project:	2019-00014; Stockton Site I	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG18-21@0'	**2006544-007A**	**Soil**	**06/10/2020 14:24**	**GC23 06122046.d**	**200023**

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aldrin	ND		0.000036	0.00010	1	06/12/2020 22:53
a-BHC	ND		0.000025	0.00010	1	06/12/2020 22:53
b-BHC	ND		0.00025	0.00030	1	06/12/2020 22:53
d-BHC	ND		0.00013	0.00020	1	06/12/2020 22:53
g-BHC	ND		0.000066	0.00010	1	06/12/2020 22:53
Chlordane (Technical)	ND		0.00043	0.0025	1	06/12/2020 22:53
a-Chlordane	**0.00016**		0.000095	0.00010	1	06/12/2020 22:53
g-Chlordane	**0.00015**		0.000047	0.00010	1	06/12/2020 22:53
p,p-DDD	**0.00030**		0.000043	0.00010	1	06/12/2020 22:53
p,p-DDE	**0.0056**		0.000094	0.00010	1	06/12/2020 22:53
p,p-DDT	**0.0019**		0.000092	0.00010	1	06/12/2020 22:53
Dieldrin	**0.00010**	J	0.000061	0.00010	1	06/12/2020 22:53
Endosulfan I	ND		0.000048	0.00010	1	06/12/2020 22:53
Endosulfan II	ND		0.000076	0.00010	1	06/12/2020 22:53
Endosulfan sulfate	ND		0.000078	0.00010	1	06/12/2020 22:53
Endrin	ND		0.000035	0.00010	1	06/12/2020 22:53
Endrin aldehyde	ND		0.000067	0.00010	1	06/12/2020 22:53
Endrin ketone	ND		0.000084	0.00010	1	06/12/2020 22:53
Heptachlor	ND		0.000040	0.00010	1	06/12/2020 22:53
Heptachlor epoxide	ND		0.000054	0.00010	1	06/12/2020 22:53
Hexachlorobenzene	ND		0.00011	0.0010	1	06/12/2020 22:53
Hexachlorocyclopentadiene	ND		0.00034	0.0020	1	06/12/2020 22:53
Methoxychlor	ND		0.00013	0.00020	1	06/12/2020 22:53
Toxaphene	ND		0.0034	0.0050	1	06/12/2020 22:53

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	124	20-145	06/12/2020 22:53

Analyst(s): LT

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Analytical Report

Client:	Petralogix	**WorkOrder:**	2006544
Date Received:	06/10/2020 17:05	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	06/12/2020	**Analytical Method:**	SW8081A
Project:	2019-00014; Stockton Site I	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG22-24@0'	**2006544-008A**	**Soil**	**06/10/2020 14:38**	**GC23 06122047.d**	**200023**

Analytes	Result	MDL	RL	DF	Date Analyzed
Aldrin	ND	0.000036	0.00010	1	06/12/2020 23:09
a-BHC	ND	0.000025	0.00010	1	06/12/2020 23:09
b-BHC	ND	0.00025	0.00030	1	06/12/2020 23:09
d-BHC	ND	0.00013	0.00020	1	06/12/2020 23:09
g-BHC	ND	0.000066	0.00010	1	06/12/2020 23:09
Chlordane (Technical)	ND	0.00043	0.0025	1	06/12/2020 23:09
a-Chlordane	**0.00035**	0.000095	0.00010	1	06/12/2020 23:09
g-Chlordane	**0.00043**	0.000047	0.00010	1	06/12/2020 23:09
p,p-DDD	**0.00073**	0.000043	0.00010	1	06/12/2020 23:09
p,p-DDE	**0.019**	0.000094	0.00010	1	06/12/2020 23:09
p,p-DDT	**0.0062**	0.000092	0.00010	1	06/12/2020 23:09
Dieldrin	ND	0.000061	0.00010	1	06/12/2020 23:09
Endosulfan I	ND	0.000048	0.00010	1	06/12/2020 23:09
Endosulfan II	ND	0.000076	0.00010	1	06/12/2020 23:09
Endosulfan sulfate	ND	0.000078	0.00010	1	06/12/2020 23:09
Endrin	ND	0.000035	0.00010	1	06/12/2020 23:09
Endrin aldehyde	ND	0.000067	0.00010	1	06/12/2020 23:09
Endrin ketone	ND	0.000084	0.00010	1	06/12/2020 23:09
Heptachlor	ND	0.000040	0.00010	1	06/12/2020 23:09
Heptachlor epoxide	ND	0.000054	0.00010	1	06/12/2020 23:09
Hexachlorobenzene	ND	0.00011	0.0010	1	06/12/2020 23:09
Hexachlorocyclopentadiene	ND	0.00034	0.0020	1	06/12/2020 23:09
Methoxychlor	ND	0.00013	0.00020	1	06/12/2020 23:09
Toxaphene	ND	0.0034	0.0050	1	06/12/2020 23:09

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	99	26-141	06/12/2020 23:09

Analyst(s): LT

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Analytical Report

Client:	Petralogix	**WorkOrder:**	2006544
Date Received:	06/10/2020 17:05	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	06/12/2020	**Analytical Method:**	SW8081A
Project:	2019-00014; Stockton Site I	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG25-27@0'	**2006544-009A**	**Soil**	**06/10/2020 15:17**	**GC23 06122048.d**	**200023**

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aldrin	ND		0.000036	0.00010	1	06/12/2020 23:25
a-BHC	ND		0.000025	0.00010	1	06/12/2020 23:25
b-BHC	ND		0.00025	0.00030	1	06/12/2020 23:25
d-BHC	ND		0.00013	0.00020	1	06/12/2020 23:25
g-BHC	ND		0.000066	0.00010	1	06/12/2020 23:25
Chlordane (Technical)	ND		0.00043	0.0025	1	06/12/2020 23:25
a-Chlordane	ND		0.000095	0.00010	1	06/12/2020 23:25
g-Chlordane	**0.00011**	P	0.000047	0.00010	1	06/12/2020 23:25
p,p-DDD	**0.00069**	P	0.000043	0.00010	1	06/12/2020 23:25
p,p-DDE	**0.016**		0.000094	0.00010	1	06/12/2020 23:25
p,p-DDT	**0.0054**		0.000092	0.00010	1	06/12/2020 23:25
Dieldrin	**0.00019**		0.000061	0.00010	1	06/12/2020 23:25
Endosulfan I	ND		0.000048	0.00010	1	06/12/2020 23:25
Endosulfan II	ND		0.000076	0.00010	1	06/12/2020 23:25
Endosulfan sulfate	ND		0.000078	0.00010	1	06/12/2020 23:25
Endrin	ND		0.000035	0.00010	1	06/12/2020 23:25
Endrin aldehyde	ND		0.000067	0.00010	1	06/12/2020 23:25
Endrin ketone	ND		0.000084	0.00010	1	06/12/2020 23:25
Heptachlor	ND		0.000040	0.00010	1	06/12/2020 23:25
Heptachlor epoxide	ND		0.000054	0.00010	1	06/12/2020 23:25
Hexachlorobenzene	ND		0.00011	0.0010	1	06/12/2020 23:25
Hexachlorocyclopentadiene	ND		0.00034	0.0020	1	06/12/2020 23:25
Methoxychlor	ND		0.00013	0.00020	1	06/12/2020 23:25
Toxaphene	ND		0.0034	0.0050	1	06/12/2020 23:25

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	112	20-145	06/12/2020 23:25

Analyst(s): LT

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Analytical Report

Client:	Petralogix	**WorkOrder:**	2006544
Date Received:	06/10/2020 17:05	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	06/12/2020	**Analytical Method:**	SW8081A
Project:	2019-00014; Stockton Site I	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG25@2.5',26@2',27@4.5'	**2006544-010A**	**Soil**	**06/10/2020 15:27**	**GC23 06162010.d**	**200023**

Analytes	Result	MDL	RL	DF	Date Analyzed
Aldrin	ND	0.000036	0.00010	1	06/16/2020 13:10
a-BHC	ND	0.000025	0.00010	1	06/16/2020 13:10
b-BHC	ND	0.00025	0.00030	1	06/16/2020 13:10
d-BHC	ND	0.00013	0.00020	1	06/16/2020 13:10
g-BHC	ND	0.000066	0.00010	1	06/16/2020 13:10
Chlordane (Technical)	ND	0.00043	0.0025	1	06/16/2020 13:10
a-Chlordane	ND	0.000095	0.00010	1	06/16/2020 13:10
g-Chlordane	ND	0.000047	0.00010	1	06/16/2020 13:10
p,p-DDD	**0.0013**	0.000043	0.00010	1	06/16/2020 13:10
p,p-DDE	**0.016**	0.000094	0.00010	1	06/16/2020 13:10
p,p-DDT	**0.0018**	0.000092	0.00010	1	06/16/2020 13:10
Dieldrin	ND	0.000061	0.00010	1	06/16/2020 13:10
Endosulfan I	ND	0.000048	0.00010	1	06/16/2020 13:10
Endosulfan II	ND	0.000076	0.00010	1	06/16/2020 13:10
Endosulfan sulfate	ND	0.000078	0.00010	1	06/16/2020 13:10
Endrin	ND	0.000035	0.00010	1	06/16/2020 13:10
Endrin aldehyde	ND	0.000067	0.00010	1	06/16/2020 13:10
Endrin ketone	ND	0.000084	0.00010	1	06/16/2020 13:10
Heptachlor	ND	0.000040	0.00010	1	06/16/2020 13:10
Heptachlor epoxide	ND	0.000054	0.00010	1	06/16/2020 13:10
Hexachlorobenzene	ND	0.00011	0.0010	1	06/16/2020 13:10
Hexachlorocyclopentadiene	ND	0.00034	0.0020	1	06/16/2020 13:10
Methoxychlor	ND	0.00013	0.00020	1	06/16/2020 13:10
Toxaphene	ND	0.0034	0.0050	1	06/16/2020 13:10

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	108	20-145	06/16/2020 13:10

Analyst(s): LT Analytical Comments: h7

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Analytical Report

Client:	Petralogix	**WorkOrder:**	2006544
Date Received:	06/10/2020 17:05	**Extraction Method:**	SW3550B/3640Am/3630Cm
Date Prepared:	06/12/2020	**Analytical Method:**	SW8081A
Project:	2019-00014; Stockton Site I	**Unit:**	mg/kg

Organochlorine Pesticides

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG28-30@0'	**2006544-011A**	**Soil**	**06/10/2020 14:43**	**GC23 06162013.d**	**200023**

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aldrin	ND		0.000036	0.00010	1	06/16/2020 13:57
a-BHC	ND		0.000025	0.00010	1	06/16/2020 13:57
b-BHC	ND		0.00025	0.00030	1	06/16/2020 13:57
d-BHC	ND		0.00013	0.00020	1	06/16/2020 13:57
g-BHC	ND		0.000066	0.00010	1	06/16/2020 13:57
Chlordane (Technical)	ND		0.00043	0.0025	1	06/16/2020 13:57
a-Chlordane	**0.00022**	P	0.000095	0.00010	1	06/16/2020 13:57
g-Chlordane	**0.00029**		0.000047	0.00010	1	06/16/2020 13:57
p,p-DDD	**0.00077**		0.000043	0.00010	1	06/16/2020 13:57
p,p-DDE	**0.012**		0.000094	0.00010	1	06/16/2020 13:57
p,p-DDT	**0.0096**		0.000092	0.00010	1	06/16/2020 13:57
Dieldrin	**0.00025**		0.000061	0.00010	1	06/16/2020 13:57
Endosulfan I	ND		0.000048	0.00010	1	06/16/2020 13:57
Endosulfan II	ND		0.000076	0.00010	1	06/16/2020 13:57
Endosulfan sulfate	ND		0.000078	0.00010	1	06/16/2020 13:57
Endrin	ND		0.000035	0.00010	1	06/16/2020 13:57
Endrin aldehyde	ND		0.000067	0.00010	1	06/16/2020 13:57
Endrin ketone	ND		0.000084	0.00010	1	06/16/2020 13:57
Heptachlor	ND		0.000040	0.00010	1	06/16/2020 13:57
Heptachlor epoxide	ND		0.000054	0.00010	1	06/16/2020 13:57
Hexachlorobenzene	ND		0.00011	0.0010	1	06/16/2020 13:57
Hexachlorocyclopentadiene	ND		0.00034	0.0020	1	06/16/2020 13:57
Methoxychlor	ND		0.00013	0.00020	1	06/16/2020 13:57
Toxaphene	ND		0.0034	0.0050	1	06/16/2020 13:57

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	115	20-145	06/16/2020 13:57

Analyst(s): LT

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Analytical Report

Client:	Petralogix	**WorkOrder:**	2006544
Date Received:	06/10/2020 17:05	**Extraction Method:**	SW3050B
Date Prepared:	06/11/2020	**Analytical Method:**	SW6020
Project:	2019-00014; Stockton Site I	**Unit:**	mg/kg

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG1@0'	**2006544-001B**	**Soil**	**06/10/2020 08:55**	**ICP-MS5 323SMPL.d**	**199897**

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**2.1**	0.15	0.50	1	06/11/2020 21:34
Lead	**3.7**	0.14	0.50	1	06/11/2020 21:34

Surrogates	REC (%)	Limits	
Terbium	111	70-130	06/11/2020 21:34

Analyst(s): MIG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG5@0'	**2006544-002B**	**Soil**	**06/10/2020 09:24**	**ICP-MS5 324SMPL.d**	**199897**

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**4.1**	0.15	0.50	1	06/11/2020 21:37
Lead	**6.1**	0.14	0.50	1	06/11/2020 21:37

Surrogates	REC (%)	Limits	
Terbium	107	70-130	06/11/2020 21:37

Analyst(s): MIG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG8@0'	**2006544-003B**	**Soil**	**06/10/2020 09:45**	**ICP-MS5 325SMPL.d**	**199897**

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**3.0**	0.15	0.50	1	06/11/2020 21:40
Lead	**3.7**	0.14	0.50	1	06/11/2020 21:40

Surrogates	REC (%)	Limits	
Terbium	105	70-130	06/11/2020 21:40

Analyst(s): MIG

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Analytical Report

Client:	Petralogix	**WorkOrder:**	2006544
Date Received:	06/10/2020 17:05	**Extraction Method:**	SW3050B
Date Prepared:	06/11/2020	**Analytical Method:**	SW6020
Project:	2019-00014; Stockton Site I	**Unit:**	mg/kg

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG11@0'	**2006544-004B**	**Soil**	**06/10/2020 11:15**	**ICP-MS5 326SMPL.d**	**199897**

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**2.9**	0.15	0.50	1	06/11/2020 21:44
Lead	**4.7**	0.14	0.50	1	06/11/2020 21:44

Surrogates	REC (%)	Limits	
Terbium	106	70-130	06/11/2020 21:44

Analyst(s): MIG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG11-DUP@0'	**2006544-005B**	**Soil**	**06/10/2020 11:14**	**ICP-MS5 330SMPL.d**	**199897**

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**3.0**	0.15	0.50	1	06/11/2020 21:57
Lead	**5.0**	0.14	0.50	1	06/11/2020 21:57

Surrogates	REC (%)	Limits	
Terbium	112	70-130	06/11/2020 21:57

Analyst(s): MIG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG15@0'	**2006544-006B**	**Soil**	**06/10/2020 10:41**	**ICP-MS4 442SMPL.d**	**199897**

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**3.3**	0.15	0.50	1	06/12/2020 13:37
Lead	**4.9**	0.14	0.50	1	06/12/2020 13:37

Surrogates	REC (%)	Limits	
Terbium	106	70-130	06/12/2020 13:37

Analyst(s): WV

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Analytical Report

Client:	Petralogix	**WorkOrder:**	2006544
Date Received:	06/10/2020 17:05	**Extraction Method:**	SW3050B
Date Prepared:	06/11/2020	**Analytical Method:**	SW6020
Project:	2019-00014; Stockton Site I	**Unit:**	mg/kg

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG18@0'	**2006544-007B**	**Soil**	**06/10/2020 11:49**	**ICP-MS4 396SMPL.d**	**199897**

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**2.4**	0.15	0.50	1	06/12/2020 10:45
Lead	**3.0**	0.14	0.50	1	06/12/2020 10:45

Surrogates	REC (%)	Limits	
Terbium	109	70-130	06/12/2020 10:45

Analyst(s): JAG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG22@0'	**2006544-008B**	**Soil**	**06/10/2020 10:56**	**ICP-MS4 400SMPL.d**	**199897**

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**4.1**	0.15	0.50	1	06/12/2020 11:00
Lead	**5.3**	0.14	0.50	1	06/12/2020 11:00

Surrogates	REC (%)	Limits	
Terbium	104	70-130	06/12/2020 11:00

Analyst(s): JAG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG25@0'	**2006544-009B**	**Soil**	**06/10/2020 15:17**	**ICP-MS4 401SMPL.d**	**199897**

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**3.3**	0.15	0.50	1	06/12/2020 11:03
Lead	**5.6**	0.14	0.50	1	06/12/2020 11:03

Surrogates	REC (%)	Limits	
Terbium	103	70-130	06/12/2020 11:03

Analyst(s): JAG

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Analytical Report

Client:	Petralogix	**WorkOrder:**	2006544
Date Received:	06/10/2020 17:05	**Extraction Method:**	SW3050B
Date Prepared:	06/11/2020	**Analytical Method:**	SW6020
Project:	2019-00014; Stockton Site I	**Unit:**	mg/kg

Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG25@2.5'	**2006544-010B**	**Soil**	**06/10/2020 15:27**	**ICP-MS4 402SMPL.d**	**199897**

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**4.0**	0.15	0.50	1	06/12/2020 11:07
Lead	**5.8**	0.14	0.50	1	06/12/2020 11:07

Surrogates	REC (%)	Limits	
Terbium	103	70-130	06/12/2020 11:07

Analyst(s): JAG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
AG28@0'	**2006544-011B**	**Soil**	**06/10/2020 14:35**	**ICP-MS4 403SMPL.d**	**199897**

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**5.7**	0.15	0.50	1	06/12/2020 11:11
Lead	**6.1**	0.14	0.50	1	06/12/2020 11:11

Surrogates	REC (%)	Limits	
Terbium	106	70-130	06/12/2020 11:11

Analyst(s): JAG

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Quality Control Report

Client:	Petralogix	**WorkOrder:**	2006544
Date Prepared:	06/12/2020	**BatchID:**	200023
Date Analyzed:	06/12/2020	**Extraction Method:**	SW3550B/3640Am/3630Cm
Instrument:	GC23	**Analytical Method:**	SW8081A
Matrix:	Soil	**Unit:**	mg/kg
Project:	2019-00014; Stockton Site I	**Sample ID:**	MB/LCS/LCSD-200023

QC Summary Report for SW8081A/8082

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Aldrin	ND	0.0000360	0.000100	-	-	-
a-BHC	ND	0.0000250	0.000100	-	-	-
b-BHC	ND	0.000250	0.000300	-	-	-
d-BHC	ND	0.000130	0.000200	-	-	-
g-BHC	ND	0.0000660	0.000100	-	-	-
Chlordane (Technical)	ND	0.000430	0.00250	-	-	-
a-Chlordane	ND	0.0000950	0.000100	-	-	-
g-Chlordane	ND	0.0000470	0.000100	-	-	-
p,p-DDD	ND	0.0000430	0.000100	-	-	-
p,p-DDE	ND	0.0000940	0.000100	-	-	-
p,p-DDT	ND	0.0000920	0.000100	-	-	-
Dieldrin	ND	0.0000610	0.000100	-	-	-
Endosulfan I	ND	0.0000480	0.000100	-	-	-
Endosulfan II	ND	0.0000760	0.000100	-	-	-
Endosulfan sulfate	ND	0.0000780	0.000100	-	-	-
Endrin	ND	0.0000350	0.000100	-	-	-
Endrin aldehyde	ND	0.0000670	0.000100	-	-	-
Endrin ketone	ND	0.0000840	0.000100	-	-	-
Heptachlor	ND	0.0000400	0.000100	-	-	-
Heptachlor epoxide	ND	0.0000540	0.000100	-	-	-
Hexachlorobenzene	ND	0.000110	0.00100	-	-	-
Hexachlorocyclopentadiene	ND	0.000340	0.00200	-	-	-
Methoxychlor	ND	0.000130	0.000200	-	-	-
Toxaphene	ND	0.00340	0.00500	-	-	-
Surrogate Recovery						
Decachlorobiphenyl	0.00461			0.005	92	28-170

(Cont.)

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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	Petralogix	**WorkOrder:**	2006544
Date Prepared:	06/12/2020	**BatchID:**	200023
Date Analyzed:	06/12/2020	**Extraction Method:**	SW3550B/3640Am/3630Cm
Instrument:	GC23	**Analytical Method:**	SW8081A
Matrix:	Soil	**Unit:**	mg/kg
Project:	2019-00014; Stockton Site I	**Sample ID:**	MB/LCS/LCSD-200023

QC Summary Report for SW8081A/8082

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aldrin	0.00376	0.00375	0.0050	75	75	31-155	0.404	20
a-BHC	0.00427	0.00439	0.0050	85	88	32-160	2.85	20
b-BHC	0.00382	0.00388	0.0050	77	78	44-149	1.34	20
d-BHC	0.00432	0.00427	0.0050	86	85	37-157	1.13	20
g-BHC	0.00418	0.00425	0.0050	84	85	43-154	1.71	20
a-Chlordane	0.00356	0.00347	0.0050	71	69	39-150	2.65	20
g-Chlordane	0.00399	0.00390	0.0050	80	78	39-151	2.36	20
p,p-DDD	0.00404	0.00391	0.0050	81	78	30-158	3.08	20
p,p-DDE	0.00385	0.00370	0.0050	77	74	47-149	4.08	20
p,p-DDT	0.00400	0.00377	0.0050	80	75	56-166	5.86	20
Dieldrin	0.00426	0.00412	0.0050	85	82	50-163	3.10	20
Endosulfan I	0.00375	0.00364	0.0050	75	73	45-159	3.02	20
Endosulfan II	0.00368	0.00354	0.0050	74	71	41-155	3.87	20
Endosulfan sulfate	0.00364	0.00352	0.0050	73	70	45-156	3.23	20
Endrin	0.00402	0.00386	0.0050	80	77	54-154	4.01	20
Endrin aldehyde	0.00354	0.00337	0.0050	71	67	27-159	4.74	20
Endrin ketone	0.00320	0.00302	0.0050	64	60	40-147	5.69	20
Heptachlor	0.00412	0.00421	0.0050	82	84	52-165	2.11	20
Heptachlor epoxide	0.00366	0.00363	0.0050	73	73	46-145	0.945	20
Hexachlorobenzene	0.00356	0.00362	0.0050	71	72	22-156	1.68	20
Hexachlorocyclopentadiene	0.00274	0.00267	0.0050	55	53	43-173	2.74	20
Methoxychlor	0.00396	0.00374	0.0050	79	75	49-150	5.55	20
Surrogate Recovery								
Decachlorobiphenyl	0.00448	0.00405	0.0050	90	81	28-170	10.1	20

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Quality Control Report

Client:	Petralogix	**WorkOrder:**	2006544
Date Prepared:	06/11/2020	**BatchID:**	199897
Date Analyzed:	06/11/2020	**Extraction Method:**	SW3050B
Instrument:	ICP-MS5	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/kg
Project:	2019-00014; Stockton Site I	**Sample ID:**	MB/LCS/LCSD-199897

QC Summary Report for Metals

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Arsenic	ND	0.150	0.500	-	-	-
Lead	ND	0.140	0.500	-	-	-
Surrogate Recovery						
Terbium	517			500	103	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Arsenic	51.6	50.4	50	103	101	75-125	2.34	20
Lead	50.6	48.6	50	101	97	75-125	4.03	20
Surrogate Recovery								
Terbium	523	510	500	105	102	70-130	2.46	20

McCampbell Analytical, Inc.
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Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 2006544 **ClientCode: PLGC**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☑ EQuIS ☐ Email ☐ HardCopy ☐ ThirdParty ☑ J-flag
☑ Detection Summary ☑ Dry-Weight

Report to:
Daniel Kramer
Petralogix
26675 Bruella Road
Galt, CA 95632
(209) 400-5729 FAX:

Email: dkramer@petralogix.com
cc/3rd Party: tscheftner@petralogix.com;
PO:
Project: 2019-00014; Stockton Site I

Bill to:
Accounts Payable
Petralogix
26675 Bruella Road
Galt, CA 95632

Requested TAT: **5 days;**

Date Received: **06/10/2020**
Date Logged: **06/11/2020**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
2006544-001	AG1@0'	Soil	6/10/2020 08:55	☐		B										
2006544-001	AG1-4@0'	Soil	6/10/2020 09:12	☐	A		A									
2006544-002	AG5@0'	Soil	6/10/2020 09:24	☐		B										
2006544-002	AG5-7@0'	Soil	6/10/2020 09:38	☐	A		A									
2006544-003	AG8@0'	Soil	6/10/2020 09:45	☐		B										
2006544-003	AG8-10@0'	Soil	6/10/2020 10:00	☐	A		A									
2006544-004	AG11@0'	Soil	6/10/2020 11:15	☐		B										
2006544-004	AG11-14@0'	Soil	6/10/2020 11:40	☐	A		A									
2006544-005	AG11-14-DUP@0'	Soil	6/10/2020 11:40	☐	A		A									
2006544-005	AG11-DUP@0'	Soil	6/10/2020 11:14	☐		B										
2006544-006	AG15@0'	Soil	6/10/2020 10:41	☐		B										
2006544-006	AG15-17@0'	Soil	6/10/2020 10:41	☐	A		A									
2006544-007	AG18@0'	Soil	6/10/2020 11:49	☐		B										
2006544-007	AG18-21@0'	Soil	6/10/2020 14:24	☐	A		A									
2006544-008	AG22@0'	Soil	6/10/2020 10:56	☐		B										

Test Legend:

1	8081_ESL_LL_S	2	METALSMS_TTLC_S	3	PRDisposal Fee	4	PRHOLD
5		6		7		8	
9		10		11		12	

Project Manager: Rosa Venegas

Prepared by: Tina Perez

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 2006544 **ClientCode: PLGC**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☑ EQuIS ☐ Email ☐ HardCopy ☐ ThirdParty ☑ J-flag
☑ Detection Summary ☑ Dry-Weight

Report to:
Daniel Kramer
Petralogix
26675 Bruella Road
Galt, CA 95632
(209) 400-5729 FAX:

Email: dkramer@petralogix.com
cc/3rd Party: tscheftner@petralogix.com;
PO:
Project: 2019-00014; Stockton Site I

Bill to:
Accounts Payable
Petralogix
26675 Bruella Road
Galt, CA 95632

Requested TAT: **5 days;**

Date Received: **06/10/2020**
Date Logged: **06/11/2020**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
2006544-008	AG22-24@0'	Soil	6/10/2020 14:38	☐	A		A									
2006544-009	AG25@0'	Soil	6/10/2020 15:17	☐		B										
2006544-009	AG25-27@0'	Soil	6/10/2020 15:17	☐	A		A									
2006544-010	AG25@2.5'	Soil	6/10/2020 15:27	☐		B										
2006544-010	AG25@2.5',26@2',27@4.5'	Soil	6/10/2020 15:27	☐	A		A									
2006544-011	AG28@0'	Soil	6/10/2020 14:35	☐		B										
2006544-011	AG28-30@0'	Soil	6/10/2020 14:43	☐	A		A									
2006544-012	BG1	Soil	6/10/2020 08:54	☑			A	A								
2006544-013	BG2	Soil	6/10/2020 09:18	☑			A	A								
2006544-014	BG3	Soil	6/10/2020 09:47	☑			A	A								
2006544-015	BG4	Soil	6/10/2020 11:23	☑			A	A								
2006544-016	BG5	Soil	6/10/2020 10:22	☑			A	A								
2006544-017	BG6	Soil	6/10/2020 11:52	☑			A	A								
2006544-018	BG7	Soil	6/10/2020 10:57	☑			A	A								
2006544-019	BG8	Soil	6/10/2020 14:13	☑			A	A								

Test Legend:

1	8081_ESL_LL_S	2	METALSMS_TTLC_S	3	PRDisposal Fee	4	PRHOLD
5		6		7		8	
9		10		11		12	

Project Manager: Rosa Venegas

Prepared by: Tina Perez

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

McCampbell Analytical, Inc.
1534 Willow Pass Rd
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(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 2006544 **ClientCode: PLGC**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☑ EQuIS ☐ Email ☐ HardCopy ☐ ThirdParty ☑ J-flag
☑ Detection Summary ☑ Dry-Weight

Report to:
Daniel Kramer
Petralogix
26675 Bruella Road
Galt, CA 95632
(209) 400-5729 FAX:

Email: dkramer@petralogix.com
cc/3rd Party: tscheftner@petralogix.com;
PO:
Project: 2019-00014; Stockton Site I

Bill to:
Accounts Payable
Petralogix
26675 Bruella Road
Galt, CA 95632

Requested TAT: **5 days;**

Date Received: **06/10/2020**
Date Logged: **06/11/2020**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
2006544-020	BG9	Soil	6/10/2020 09:04	☑			A	A								
2006544-021	BG10	Soil	6/10/2020 14:40	☑			A	A								

Test Legend:

1	8081_ESL_LL_S	2	METALSMS_TTLC_S	3	PRDisposal Fee	4	PRHOLD
5		6		7		8	
9		10		11		12	

Project Manager: Rosa Venegas

Prepared by: Tina Perez

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
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WORK ORDER SUMMARY

Client Name: PETRALOGIX
Client Contact: Daniel Kramer
Contact's Email: dkramer@petralogix.com

Project: 2019-00014; Stockton Site I
Comments:

Work Order: 2006544
QC Level: LEVEL 2
Date Logged: 6/11/2020

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☐ Email ☐ HardCopy ☐ ThirdParty ☑ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
2006544-001A	AG1-4@0'	Soil	SW8081A (OC Pesticides) ESLs	4 / (4:1)	4OZ GJ, Unpres	☐	6/10/2020 9:12	5 days		☐	
2006544-001B	AG1@0'	Soil	SW6020 (Metals) <Arsenic, Lead>	1	4OZ GJ, Unpres	☐	6/10/2020 8:55	5 days		☐	
2006544-002A	AG5-7@0'	Soil	SW8081A (OC Pesticides) ESLs	3 / (3:1)	4OZ GJ, Unpres	☐	6/10/2020 9:38	5 days		☐	
2006544-002B	AG5@0'	Soil	SW6020 (Metals) <Arsenic, Lead>	1	4OZ GJ, Unpres	☐	6/10/2020 9:24	5 days		☐	
2006544-003A	AG8-10@0'	Soil	SW8081A (OC Pesticides) ESLs	3 / (3:1)	4OZ GJ, Unpres	☐	6/10/2020 10:00	5 days		☐	
2006544-003B	AG8@0'	Soil	SW6020 (Metals) <Arsenic, Lead>	1	4OZ GJ, Unpres	☐	6/10/2020 9:45	5 days		☐	
2006544-004A	AG11-14@0'	Soil	SW8081A (OC Pesticides) ESLs	4 / (4:1)	4OZ GJ, Unpres	☐	6/10/2020 11:40	5 days		☐	
2006544-004B	AG11@0'	Soil	SW6020 (Metals) <Arsenic, Lead>	1	4OZ GJ, Unpres	☐	6/10/2020 11:15	5 days		☐	
2006544-005A	AG11-14-DUP@0'	Soil	SW8081A (OC Pesticides) ESLs	4 / (4:1)	4OZ GJ, Unpres	☐	6/10/2020 11:40	5 days		☐	
2006544-005B	AG11-DUP@0'	Soil	SW6020 (Metals) <Arsenic, Lead>	1	4OZ GJ, Unpres	☐	6/10/2020 11:14	5 days		☐	
2006544-006A	AG15-17@0'	Soil	SW8081A (OC Pesticides) ESLs	3 / (3:1)	4OZ GJ, Unpres	☐	6/10/2020 10:41	5 days		☐	
2006544-006B	AG15@0'	Soil	SW6020 (Metals) <Arsenic, Lead>	1	4OZ GJ, Unpres	☐	6/10/2020 10:41	5 days		☐	
2006544-007A	AG18-21@0'	Soil	SW8081A (OC Pesticides) ESLs	4 / (4:1)	4OZ GJ, Unpres	☐	6/10/2020 14:24	5 days		☐	
2006544-007B	AG18@0'	Soil	SW6020 (Metals) <Arsenic, Lead>	1	4OZ GJ, Unpres	☐	6/10/2020 11:49	5 days		☐	
2006544-008A	AG22-24@0'	Soil	SW8081A (OC Pesticides) ESLs	3 / (3:1)	4OZ GJ, Unpres	☐	6/10/2020 14:38	5 days		☐	
2006544-008B	AG22@0'	Soil	SW6020 (Metals) <Arsenic, Lead>	1	4OZ GJ, Unpres	☐	6/10/2020 10:56	5 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

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http://www.mccampbell.com / E-mail: main@mccampbell.com

WORK ORDER SUMMARY

Client Name: PETRALOGIX **Project:** 2019-00014; Stockton Site I **Work Order:** 2006544
Client Contact: Daniel Kramer **QC Level:** LEVEL 2
Contact's Email: dkramer@petralogix.com **Comments:** **Date Logged:** 6/11/2020

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☐ Email ☐ HardCopy ☐ ThirdParty ☑ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
2006544-009A	AG25-27@0'	Soil	SW8081A (OC Pesticides) ESLs	3 / (3:1)	4OZ GJ, Unpres	☐	6/10/2020 15:17	5 days		☐	
2006544-009B	AG25@0'	Soil	SW6020 (Metals) <Arsenic, Lead>	1	4OZ GJ, Unpres	☐	6/10/2020 15:17	5 days		☐	
2006544-010A	AG25@2.5',26@2',27@4.5'	Soil	SW8081A (OC Pesticides) ESLs	3 / (3:1)	4OZ GJ, Unpres	☐	6/10/2020 15:27	5 days		☐	
2006544-010B	AG25@2.5'	Soil	SW6020 (Metals) <Arsenic, Lead>	1	4OZ GJ, Unpres	☐	6/10/2020 15:27	5 days		☐	
2006544-011A	AG28-30@0'	Soil	SW8081A (OC Pesticides) ESLs	3 / (3:1)	4OZ GJ, Unpres	☐	6/10/2020 14:43	5 days		☐	
2006544-011B	AG28@0'	Soil	SW6020 (Metals) <Arsenic, Lead>	1	4OZ GJ, Unpres	☐	6/10/2020 14:35	5 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

MAI Work Order # 2006544

McCAMPBELL ANALYTICAL, INC.

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Telephone: (877) 252-9262 / Fax: (925) 252-9269
www.mccampbell.com main@mccampbell.com

CHAIN OF CUSTODY RECORD

Turn Around Time:	1 Day Rush		2 Day Rush		3 Day Rush		STD	●	Quote #														
J-Flag / MDL		ESL		Cleanup Approved		Dry Weight		Bottle Order #															
Delivery Format:	PDF		GeoTracker EDF		EDD		Write On (DW)		Detect Summary														

Report To: DANIEL KRAMER Bill To: DANIEL KRAMER

Company: Petralogix Engineering, Inc

Email: dkramer@petralogix.com

Alt Email: tscheftner@petralogix.com Tele: 209.770.0731

Project Name: Stockton Site I Project #: 2019-00014

Project Location: Corner of Westlake Dr & Regatta Lane PO #

Sampler Signature: Tonya Scheftner

	Sampling					Analysis Requested																		
SAMPLE ID Location / Field Point	Date	Time	#Containers	Matrix	Preservative	OCP's (8081A)	Arsenic (6010B)	Lead (6010B)																
AG1@0'	6/10/20	8:55	1	Soil		X	X																	
AG2@0'		9:02				X																		
AG3@0'		9:16				X																		
AG4@0'		9:12				X																		
AG5@0'		9:24				X	X	X																
AG6@0'		9:30				X																		
AG7@0'		9:38				X																		
AG8@0'		9:45				X	X	X																
AG9@0'		9:55				X																		
AG10@0'		10:00				X																		

4:1 3:1 3:1

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

J flag arsenic
Clean-up OCPs

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Tonya Scheftner / Petralogix	6/10/20	5:07		6/10/20	17:05

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 2.6 °C Initials TP

Wet

MAI Work Order # _____

McCAMPBELL ANALYTICAL, INC.

1534 Willow Pass Rd. Pittsburg, Ca. 94565-1701
Telephone: (877) 252-9262 / Fax: (925) 252-9269
www.mccampbell.com main@mccampbell.com

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush		2 Day Rush		3 Day Rush		STD	●	Quote #															
J-Flag / MDL		ESL		Cleanup Approved		Dry Weight		Bottle Order #															
Delivery Format:	PDF		GeoTracker EDF		EDD		Write On (DW)		Detect Summary														

Report To: DANIEL KRAMER Bill To: DANIEL KRAMER

Company: Petralogix Engineering, Inc

Email: dkramer@petralogix.com

Alt Email: tscheftner@petralogix.com Tele: 209.770.0731

Project Name: Stockton Site I Project #: 2019-00014

Project Location: Corner of Westlake Dr & Regatta Lane PO #

Sampler Signature: Tonya Scheftner

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	OCP's (8081A)	Arsenic (6010B)	Lead (6010B)															
AG11@0'	6/10/20	11:15	1	Soil		X	X	X															
AG12@0'		11:29																					
AG13@0'		11:20																					
AG14@0'		11:40																					
AG11-DUP@0'		11:14				X	X	X															
AG12-DUP@0'		11:29																					
AG13-DUP@0'		11:20																					
AG14-DUP@0'		11:40																					

4:1

4:1

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Tonya Scheftner / Petralogix	6/10/20	5:05		6/10/20	17:05

Comments / Instructions

J flag arsenic
Clean up OCPs

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp _____ °C Initials _____

General COC

MAI Work Order # _____

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www.mccampbell.com main@mccampbell.com

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush | 2 Day Rush | 3 Day Rush | STD ● | Quote #
J-Flag / MDL | ESL | Cleanup Approved | Dry Weight | Bottle Order #
Delivery Format: PDF | GeoTracker EDF | EDD | Write On (DW) | Detect Summary

Report To: DANIEL KRAMER Bill To: DANIEL KRAMER
Company: Petralogix Engineering, Inc
Email: dkramer@petralogix.com
Alt Email: tscheftner@petralogix.com Tele: 209.770.0731
Project Name: Stockton Site I Project #: 2019-00014
Project Location: Corner of Westlake Dr & Regatta Lane PO #
Sampler Signature: Tonya Scheftner

	SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	OCP's (8081A)	Arsenic (6010B)	Lead (6010B)
3:1	AG15@0'	6/10/20	10:41	1	SOIL		X	X	
	AG16@0'		10:24						
	AG17@0'		10:20						
4:1	AG18@0'		11:49				X	X	
	AG19@0'		2:22						
	AG20@0'		2:04						
	AG21@0'		2:24						
3:1	AG22@0'		10:56				X	X	
	AG23@0'		10:50						
	AG24@0'		2:38						

Analysis Requested

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Tonya Scheftner / Petralogix	6/10/20	5:05		6/10/20	17:05

Comments / Instructions
J flag ~~arsenic~~ arsenic
Clean up OCPs

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other
Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp _____ °C Initials _____

MAI Work Order #_____

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Telephone: (877) 252-9262 / Fax: (925) 252-9269
www.mccampbell.com main@mccampbell.com

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush | 2 Day Rush | 3 Day Rush | STD ● | Quote #
J-Flag / MDL | ESL | Cleanup Approved | Dry Weight | Bottle Order #
Delivery Format: PDF | GeoTracker EDF | EDD | Write On (DW) | Detect Summary

Report To: DANIEL KRAMER Bill To: DANIEL KRAMER
Company: Petralogix Engineering, Inc
Email: dkramer@petralogix.com
Alt Email: tscheftner@petralogix.com Tele: 209.770.0731
Project Name: Stockton Site I Project #: 2019-00014
Project Location: Corner of Westlake Dr & Regatta Lane PO #
Sampler Signature: Tonya Scheftner

Analysis Requested

	SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	OCP's (8081A)	Arsenic (6010B)	Lead (6010B)
3:1	AG25@0'	6/10/20	3:17	1	SOIL		X	X	
	AG26@0'	6/10/20	3:08						
	AG27@0'		2:57						
3:1	AG25@ 2.5'		3:27				X	X	
	AG26@ 2'		3:12						
	AG27@ 4.5'		3:03						
3:1	AG28@0'		2:35				X	X	
	AG29@0'		2:41						
	AG30@0'		2:43						

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

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Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Tonya Scheftner / Petralogix	6/10/20	5:05		6/10/20	17:05

Comments / Instructions
J flag arsenic
Clean up OCPs

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other
Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp _____ °C Initials _____

General COC

MAI Work Order #_____

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CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush | 2 Day Rush | 3 Day Rush | STD ● | Quote #
J-Flag / MDL | ESL | Cleanup Approved | Dry Weight | Bottle Order #
Delivery Format: PDF | GeoTracker EDF | EDD | Write On (DW) | Detect Summary

Report To: DANIEL KRAMER Bill To: DANIEL KRAMER
Company: Petralogix Engineering, Inc
Email: dkramer@petralogix.com
Alt Email: tscheftner@petralogix.com Tele: 209.770.0731
Project Name: Stockton Site I Project #: 2019-00014
Project Location: Corner of Westlake Dr & Regatta Lane PO #
Sampler Signature: Tonya Scheftner

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	OCP's (8081A)	Arsenic (6010B)	Lead (6010B)														
BG1	6/10/20	8:54	1	SOIL	—		X															
BG2	6/10/20	9:18					X															
BG3	6/10/20	9:47					X															
BG4	6/10/20	11:23					X															
BG5	6/10/20	10:22					X															5
BG6	6/10/20	11:52					X															
BG7	6/10/20	10:57					X															
BG8	6/10/20	2:13					X															
BG9	6/10/20	9:04					X															
BG10	6/10/20	2:40					X															

Hold

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Tonya Scheftner / Petralogix	6/10/20	5:05		6/10/20	17:05

Comments / Instructions
Hold all "BG" samples
Thank you

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other
Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp _____ °C Initials _____

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Sample Receipt Checklist

Client Name:	**Petralogix**	Date and Time Received:	**6/10/2020 17:05**
Project:	**2019-00014; Stockton Site I**	Date Logged:	**6/11/2020**
		Received by:	Tina Perez
WorkOrder №:	**2006544** Matrix: Soil	Logged by:	Tina Perez
Carrier:	Client Drop-In		

Chain of Custody (COC) Information

Chain of custody present?	Yes	☑	No	☐		
Chain of custody signed when relinquished and received?	Yes	☑	No	☐		
Chain of custody agrees with sample labels?	Yes	☑	No	☐		
Sample IDs noted by Client on COC?	Yes	☑	No	☐		
Date and Time of collection noted by Client on COC?	Yes	☑	No	☐		
Sampler's name noted on COC?	Yes	☑	No	☐		
COC agrees with Quote?	Yes	☐	No	☐	NA	☑

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes	☐	No	☐	NA	☑
Shipping container/cooler in good condition?	Yes	☑	No	☐		
Samples in proper containers/bottles?	Yes	☑	No	☐		
Sample containers intact?	Yes	☑	No	☐		
Sufficient sample volume for indicated test?	Yes	☑	No	☐		

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes	☑	No	☐	NA	☐
Samples Received on Ice?	Yes	☑	No	☐		
(Ice Type: OTHERS)						
Sample/Temp Blank temperature	Temp: 2.6°C				NA	☐
Water - VOA vials have zero headspace / no bubbles?	Yes	☐	No	☐	NA	☑
Sample labels checked for correct preservation?	Yes	☑	No	☐		
pH acceptable upon receipt (Metal: <2; Nitrate 353.2/4500NO3: <2; 522: <4; 218.7: >8)?	Yes	☐	No	☐	NA	☑
UCMR Samples:						
pH tested and acceptable upon receipt (200.8: ≤2; 525.3: ≤4; 530: ≤7; 541: <3; 544: <6.5 & 7.5)?	Yes	☐	No	☐	NA	☑
Free Chlorine tested and acceptable upon receipt (<0.1mg/L)?	Yes	☐	No	☐	NA	☑

Comments:

McCampbell Analytical, Inc.

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Analytical Report

WorkOrder: 2006544 A

Report Created for: Petralogix

26675 Bruella Road
Galt, CA 95632

Project Contact: Daniel Kramer
Project P.O.:
Project: 2019-00014; Stockton Site I

Project Received: 06/10/2020

Analytical Report reviewed & approved for release on 06/29/2020 by:

Yen Cao
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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Glossary of Terms & Qualifier Definitions

Client: Petralogix
Project: 2019-00014; Stockton Site I
WorkOrder: 2006544 A

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
CPT	Consumer Product Testing not NELAP Accredited
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
LQL	Lowest Quantitation Level
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
TZA	TimeZone Net Adjustment for sample collected outside of MAI's UTC.
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Analytical Report

Client:	Petralogix	**WorkOrder:**	2006544
Date Received:	06/10/2020 17:05	**Extraction Method:**	SW3050B
Date Prepared:	06/23/2020	**Analytical Method:**	SW6020
Project:	2019-00014; Stockton Site I	**Unit:**	mg/Kg

Arsenic

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
BG1	2006544-012A	Soil	06/10/2020 08:54	ICP-MS4 141SMPL.d	200567

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**3.5**	0.15	0.50	1	06/24/2020 11:46

Surrogates	REC (%)	Limits	
Terbium	106	70-130	06/24/2020 11:46

Analyst(s): MIG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
BG2	2006544-013A	Soil	06/10/2020 09:18	ICP-MS4 142SMPL.d	200567

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**3.2**	0.15	0.50	1	06/24/2020 11:49

Surrogates	REC (%)	Limits	
Terbium	103	70-130	06/24/2020 11:49

Analyst(s): MIG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
BG3	2006544-014A	Soil	06/10/2020 09:47	ICP-MS4 146SMPL.d	200567

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**2.7**	0.15	0.50	1	06/24/2020 12:04

Surrogates	REC (%)	Limits	
Terbium	101	70-130	06/24/2020 12:04

Analyst(s): WV

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
BG4	2006544-015A	Soil	06/10/2020 11:23	ICP-MS4 147SMPL.d	200567

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**2.0**	0.15	0.50	1	06/24/2020 12:08

Surrogates	REC (%)	Limits	
Terbium	100	70-130	06/24/2020 12:08

Analyst(s): WV

(Cont.)

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Analytical Report

Client:	Petralogix	**WorkOrder:**	2006544
Date Received:	06/10/2020 17:05	**Extraction Method:**	SW3050B
Date Prepared:	06/23/2020	**Analytical Method:**	SW6020
Project:	2019-00014; Stockton Site I	**Unit:**	mg/Kg

Arsenic

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
BG5	**2006544-016A**	**Soil**	**06/10/2020 10:22**	**ICP-MS4 148SMPL.d**	**200567**

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**1.9**	0.15	0.50	1	06/24/2020 12:12

Surrogates	REC (%)	Limits	
Terbium	102	70-130	06/24/2020 12:12

Analyst(s): WV

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
BG6	**2006544-017A**	**Soil**	**06/10/2020 11:52**	**ICP-MS4 149SMPL.d**	**200567**

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**2.1**	0.15	0.50	1	06/24/2020 12:15

Surrogates	REC (%)	Limits	
Terbium	101	70-130	06/24/2020 12:15

Analyst(s): WV

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
BG7	**2006544-018A**	**Soil**	**06/10/2020 10:57**	**ICP-MS4 150SMPL.d**	**200567**

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**1.5**	0.15	0.50	1	06/24/2020 12:19

Surrogates	REC (%)	Limits	
Terbium	103	70-130	06/24/2020 12:19

Analyst(s): WV

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
BG8	**2006544-019A**	**Soil**	**06/10/2020 14:13**	**ICP-MS4 151SMPL.d**	**200567**

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**1.9**	0.15	0.50	1	06/24/2020 12:23

Surrogates	REC (%)	Limits	
Terbium	103	70-130	06/24/2020 12:23

Analyst(s): WV

(Cont.)

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Analytical Report

Client:	Petralogix	**WorkOrder:**	2006544
Date Received:	06/10/2020 17:05	**Extraction Method:**	SW3050B
Date Prepared:	06/23/2020	**Analytical Method:**	SW6020
Project:	2019-00014; Stockton Site I	**Unit:**	mg/Kg

Arsenic

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
BG9	**2006544-020A**	**Soil**	**06/10/2020 09:04**	**ICP-MS4 152SMPL.d**	**200567**

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**3.0**	0.15	0.50	1	06/24/2020 12:27

Surrogates	REC (%)	Limits	
Terbium	105	70-130	06/24/2020 12:27

Analyst(s): WV

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
BG10	**2006544-021A**	**Soil**	**06/10/2020 14:40**	**ICP-MS4 153SMPL.d**	**200567**

Analytes	Result	MDL	RL	DF	Date Analyzed
Arsenic	**4.0**	0.15	0.50	1	06/24/2020 12:30

Surrogates	REC (%)	Limits	
Terbium	105	70-130	06/24/2020 12:30

Analyst(s): WV

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Quality Control Report

Client:	Petralogix	**WorkOrder:**	2006544
Date Prepared:	06/23/2020	**BatchID:**	200567
Date Analyzed:	06/24/2020	**Extraction Method:**	SW3050B
Instrument:	ICP-MS4	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/kg
Project:	2019-00014; Stockton Site I	**Sample ID:**	MB/LCS/LCSD-200567

QC Summary Report for Metals

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Arsenic	ND	0.150	0.500	-	-	-
Surrogate Recovery						
Terbium	524			500	105	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Arsenic	49.2	52.3	50	98	105	75-125	5.99	20
Surrogate Recovery								
Terbium	507	522	500	101	104	70-130	3.01	20

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CHAIN-OF-CUSTODY RECORD

WorkOrder: 2006544 A **ClientCode: PLGC**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☑ EQuIS ☐ Email ☐ HardCopy ☐ ThirdParty ☑ J-flag
☑ Detection Summary ☑ Dry-Weight

Report to:
Daniel Kramer
Petralogix
26675 Bruella Road
Galt, CA 95632
(209) 400-5729 FAX:

Email: dkramer@petralogix.com
cc/3rd Party: tscheftner@petralogix.com;
PO:
Project: 2019-00014; Stockton Site I

Bill to:
Accounts Payable
Petralogix
26675 Bruella Road
Galt, CA 95632

Requested TAT: 5 days;

Date Received: **06/10/2020**
Date Logged: **06/11/2020**
Date Add-On: **06/23/2020**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
2006544-012	BG1	Soil	6/10/2020 08:54	☐	A	A										
2006544-013	BG2	Soil	6/10/2020 09:18	☐	A	A										
2006544-014	BG3	Soil	6/10/2020 09:47	☐	A	A										
2006544-015	BG4	Soil	6/10/2020 11:23	☐	A	A										
2006544-016	BG5	Soil	6/10/2020 10:22	☐	A	A										
2006544-017	BG6	Soil	6/10/2020 11:52	☐	A	A										
2006544-018	BG7	Soil	6/10/2020 10:57	☐	A	A										
2006544-019	BG8	Soil	6/10/2020 14:13	☐	A	A										
2006544-020	BG9	Soil	6/10/2020 09:04	☐	A	A										
2006544-021	BG10	Soil	6/10/2020 14:40	☐	A	A										

Test Legend:

1	ASMS_6020_TTLC_S	2	PRHOLD Credit	3		4	
5		6		7		8	
9		10		11		12	

Project Manager: Rosa Venegas

Prepared by: Tina Perez

Add-On Prepared By: Maria Venegas

Comments: BG samples off HOLD 6/23/2020 STAT.

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: PETRALOGIX
Client Contact: Daniel Kramer
Contact's Email dkramer@petralogix.com

Project: 2019-00014; Stockton Site I
Comments: BG samples off HOLD 6/23/2020 STAT.

Work Order: 2006544
QC Level: LEVEL 2
Date Logged: 6/11/2020
Date Add-On: 6/23/2020

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
2006544-012A	BG1	Soil	SW6020 (Arsenic)	1	4OZ GJ, Unpres	6/10/2020 8:54	5 days		☐	
2006544-013A	BG2	Soil	SW6020 (Arsenic)	1	4OZ GJ, Unpres	6/10/2020 9:18	5 days		☐	
2006544-014A	BG3	Soil	SW6020 (Arsenic)	1	4OZ GJ, Unpres	6/10/2020 9:47	5 days		☐	
2006544-015A	BG4	Soil	SW6020 (Arsenic)	1	4OZ GJ, Unpres	6/10/2020 11:23	5 days		☐	
2006544-016A	BG5	Soil	SW6020 (Arsenic)	1	4OZ GJ, Unpres	6/10/2020 10:22	5 days		☐	
2006544-017A	BG6	Soil	SW6020 (Arsenic)	1	4OZ GJ, Unpres	6/10/2020 11:52	5 days		☐	
2006544-018A	BG7	Soil	SW6020 (Arsenic)	1	4OZ GJ, Unpres	6/10/2020 10:57	5 days		☐	
2006544-019A	BG8	Soil	SW6020 (Arsenic)	1	4OZ GJ, Unpres	6/10/2020 14:13	5 days		☐	
2006544-020A	BG9	Soil	SW6020 (Arsenic)	1	4OZ GJ, Unpres	6/10/2020 9:04	5 days		☐	
2006544-021A	BG10	Soil	SW6020 (Arsenic)	1	4OZ GJ, Unpres	6/10/2020 14:40	5 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

General COC

MAI Work Order # 2006544

McCAMPBELL ANALYTICAL, INC.

1534 Willow Pass Rd. Pittsburg, Ca. 94565-1701
Telephone: (877) 252-9262 / Fax: (925) 252-9269
www.mccampbell.com main@mccampbell.com

CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush | 2 Day Rush | 3 Day Rush | STD ● | Quote #
J-Flag / MDL | ESL | Cleanup Approved | Dry Weight | Bottle Order #
Delivery Format: PDF | GeoTracker EDF | EDD | Write On (DW) | Detect Summary

Report To: DANIEL KRAMER Bill To: DANIEL KRAMER
Company: Petralogix Engineering, Inc
Email: dkramer@petralogix.com
Alt Email: tscheftner@petralogix.com Tele: 209.770.0731
Project Name: Stockton Site I Project #: 2019-00014
Project Location: Corner of Westlake Dr & Regatta Lane PO #
Sampler Signature: Tonya Schaftner

Analysis Requested

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	OCP's (8081A)	Arsenic (6010B)	Lead (6010B)	
BG1	6/10/20	8:54	1	SOIL	—		X		
BG2	6/10/20	9:18					X		
BG3	6/10/20	9:47					X		
BG4	6/10/20	11:23					X		
BG5	6/10/20	10:22					X		5
BG6	6/10/20	11:52					X		
BG7	6/10/20	10:57					X		
BG8	6/10/20	2:13					X		
BG9	6/10/20	9:04					X		
BG10	6/10/20	2:40					X		

HOLD

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions
Hold all "BG" samples
Thank you
Off HOLD 6/23/2020

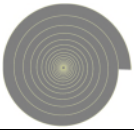
Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Tonya Schaftner / Petralogix	6/10/20	5:05		6/10/20	17:05

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other
Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp _____ °C Initials _____

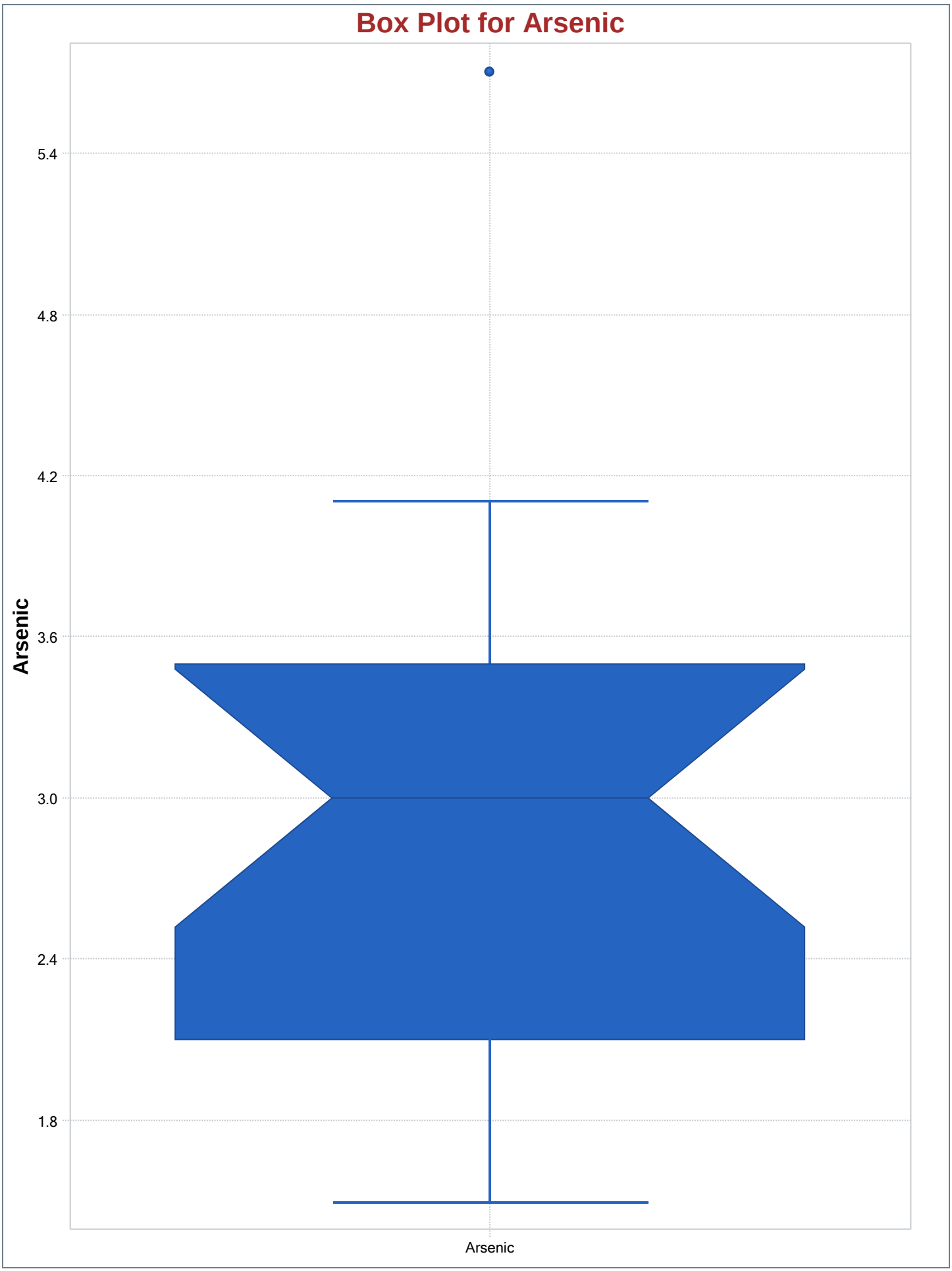
Page 5 of 5

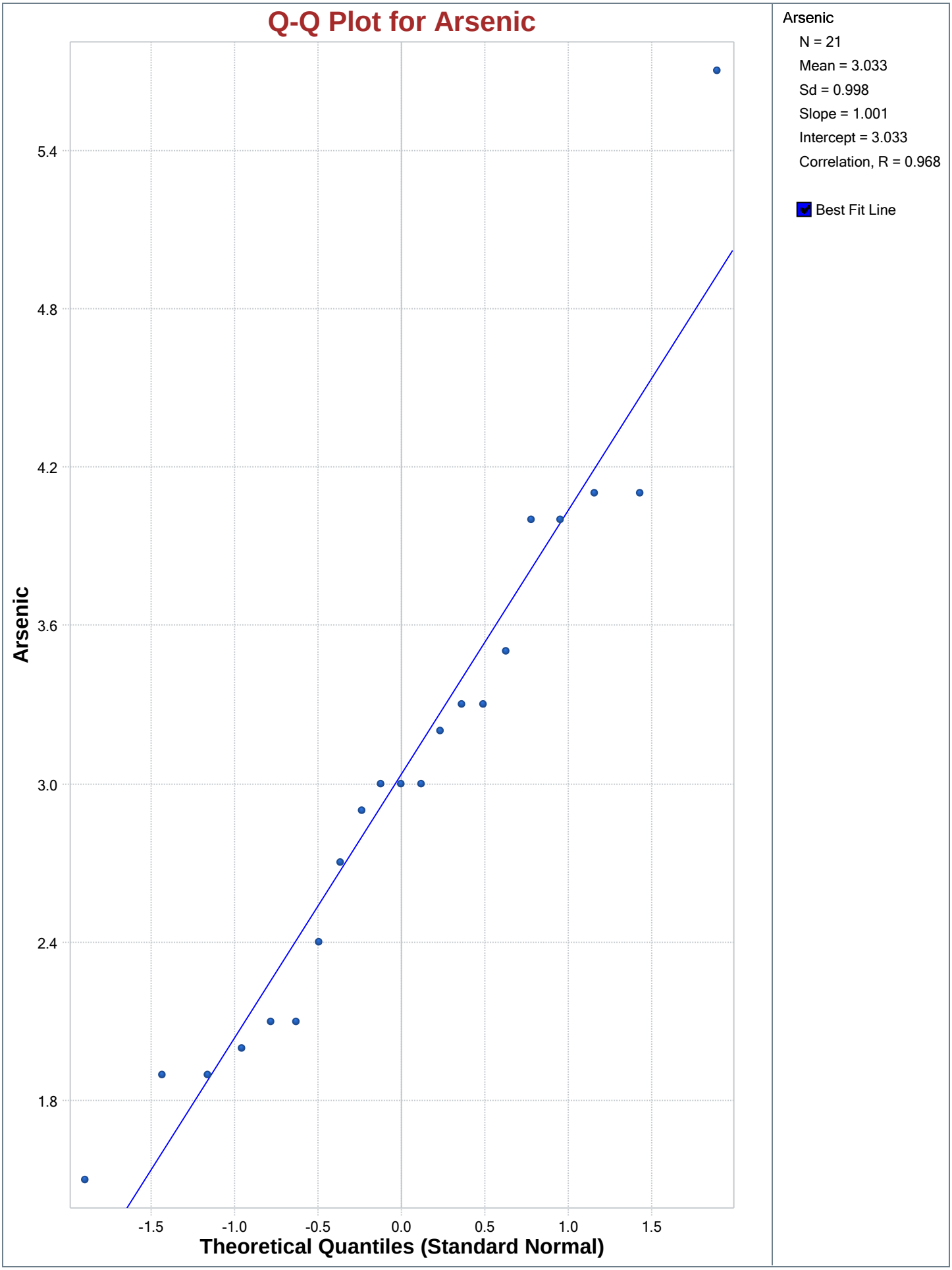
APPENDIX D – SUMMARY STATISTICS



	0	1
	As	As w/o Outlier
1	3.5	3.5
2	3.2	3.2
3	2.7	2.7
4	2	2
5	1.9	1.9
6	2.1	2.1
7	1.5	1.5
8	1.9	1.9
9	3	3
10	4	4
11	2.1	2.1
12	4.1	4.1
13	3	3
14	2.9	2.9
15	3.3	3.3
16	2.4	2.4
17	4.1	4.1
18	3.3	3.3
19	4	4
20	5.7	3
21	3	

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2				User Selected Options								
3			Date/Time of Computation	ProUCL 5.17/19/2020 11:12:02 PM								
4				From File	WorkSheet.xls							
5				Full Precision	OFF							
6												
7												
8			Dixon's Outlier Test for C0									
9												
10	Number of Observations = 21											
11	10% critical value: 0.391											
12	5% critical value: 0.44											
13	1% critical value: 0.524											
14												
15	1. Observation Value 5.7 is a Potential Outlier (Upper Ta											
16												
17	Test Statistic: 0.421											
18												
19	For 10% significance level, 5.7 is an outlier.											
20	For 5% significance level, 5.7 is not an outlier.											
21	For 1% significance level, 5.7 is not an outlier.											
22												
23	2. Observation Value 1.5 is a Potential Outlier (Lower Tai											
24												
25	Test Statistic: 0.154											
26												
27	For 10% significance level, 1.5 is not an outlier.											
28	For 5% significance level, 1.5 is not an outlier.											
29	For 1% significance level, 1.5 is not an outlier.											
30												


Box Plot for Arsenic
5.4
4.8
4.2
3.6
3.0
2.4
1.8
Arsenic
Arsenic


Q-Q Plot for Arsenic
Arsenic
N = 21
Mean = 3.033
Sd = 0.998
Slope = 1.001
Intercept = 3.033
Correlation, R = 0.968
Best Fit Line
5.4
4.8
4.2
3.6
3.0
2.4
1.8
Arsenic
-1.5
-1.0
-0.5
0.0
0.5
1.0
1.5
Theoretical Quantiles (Standard Normal)

1			Background Statistics for Uncensored Full Data Sets								
2	User Selected Options										
3	Date/Time of Computation		ProUCL 5.17/19/2020 11:21:56 PM								
4	From File		WorkSheet.xls								
5	Full Precision		OFF								
6	Confidence Coefficient		95%								
7	Coverage		95%								
8	New or Future K Observations		1								
9	Number of Bootstrap Operations		2000								
10											
11	Arsenic - w/o Outlier										
12											
13	General Statistics										
14				Total Number of Observations	20			Number of Distinct Observations	13		
15				Minimum	1.5			First Quartile	2.1		
16				Second Largest	4.1			Median	3		
17				Maximum	4.1			Third Quartile	3.35		
18				Mean	2.9			SD	0.809		
19				Coefficient of Variation	0.279			Skewness	-0.0152		
20				Mean of logged Data	1.025			SD of logged Data	0.297		
21											
22						Critical Values for Background Threshold Values (BTVs)						
23				Tolerance Factor K (For UTL)	2.396			d2max (for USL)	2.557		
24											
25						Normal GOF Test					
26				Shapiro Wilk Test Statistic	0.94			Shapiro Wilk GOF Test			
27				5% Shapiro Wilk Critical Value	0.905			Data appear Normal at 5% Significance Level			
28				Lilliefors Test Statistic	0.139			Lilliefors GOF Test			
29				5% Lilliefors Critical Value	0.192			Data appear Normal at 5% Significance Level			
30						Data appear Normal at 5% Significance Level					
31											
32						Background Statistics Assuming Normal Distribution					
33			95% UTL with	95% Coverage	4.839			90% Percentile (z)	3.937		
34				95% UPL (t)	4.334			95% Percentile (z)	4.231		
35				95% USL	4.969			99% Percentile (z)	4.782		
36											
37						Gamma GOF Test					
38				A-D Test Statistic	0.471			Anderson-Darling Gamma GOF Test			
39				5% A-D Critical Value	0.742			Detected data appear Gamma Distributed at 5% Significance Level			
40				K-S Test Statistic	0.14			Kolmogorov-Smirnov Gamma GOF Test			
41				5% K-S Critical Value	0.194			Detected data appear Gamma Distributed at 5% Significance Level			
42						Detected data appear Gamma Distributed at 5% Significance Level					
43											
44						Gamma Statistics					
45				k hat (MLE)	12.66			k star (bias corrected MLE)	10.79		
46				Theta hat (MLE)	0.229			Theta star (bias corrected MLE)	0.269		
47				nu hat (MLE)	506.3			nu star (bias corrected)	431.7		
48				MLE Mean (bias corrected)	2.9			MLE Sd (bias corrected)	0.883		
49											
50						Background Statistics Assuming Gamma Distribution					
51			95% Wilson Hilferty (WH) Approx. Gamma UPL		4.546			90% Percentile	4.073		
52			95% Hawkins Wixley (HW) Approx. Gamma UPL		4.584			95% Percentile	4.488		
53			95% WH Approx. Gamma UTL with	95% Coverage	5.288			99% Percentile	5.337		

	A	B	C	D	E	F	G	H	I	J	K	L
54	95% HW Approx. Gamma UTL with 95% Coverage					5.371						
55					95% WH USL	5.491					95% HW USL	5.589
56												
57	Lognormal GOF Test											
58					Shapiro Wilk Test Statistic	0.933	Shapiro Wilk Lognormal GOF Test					
59					5% Shapiro Wilk Critical Value	0.905	Data appear Lognormal at 5% Significance Level					
60					Lilliefors Test Statistic	0.154	Lilliefors Lognormal GOF Test					
61					5% Lilliefors Critical Value	0.192	Data appear Lognormal at 5% Significance Level					
62	Data appear Lognormal at 5% Significance Level											
63												
64	Background Statistics assuming Lognormal Distribution											
65				95% UTL with 95% Coverage		5.676				90% Percentile (z)		4.077
66					95% UPL (t)	4.716				95% Percentile (z)		4.541
67					95% USL	5.954				99% Percentile (z)		5.56
68												
69	Nonparametric Distribution Free Background Statistics											
70	Data appear Normal at 5% Significance Level											
71												
72	Nonparametric Upper Limits for Background Threshold Values											
73					Order of Statistic, r	20				95% UTL with 95% Coverage		4.1
74					Approx, f used to compute achieved CC	1.053				pproximate Actual Confidence Coefficient achieved by UTL		0.642
75										Approximate Sample Size needed to achieve specified CC		59
76	95% Percentile Bootstrap UTL with 95% Coverage					4.1				95% BCA Bootstrap UTL with 95% Coverage		4.1
77					95% UPL	4.1				90% Percentile		4.01
78					90% Chebyshev UPL	5.387				95% Percentile		4.1
79					95% Chebyshev UPL	6.514				99% Percentile		4.1
80					95% USL	4.1						
81												
82	Note: The use of USL tends to yield a conservative estimate of BTV, especially when the sample size starts exceeding 20.											
83	Therefore, one may use USL to estimate a BTV only when the data set represents a background data set free of outliers											
84	and consists of observations collected from clean unimpacted locations.											
85	The use of USL tends to provide a balance between false positives and false negatives provided the data											
86	represents a background data set and when many onsite observations need to be compared with the BTV.											
87												

1			Background Statistics for Uncensored Full Data Sets								
2	User Selected Options										
3	Date/Time of Computation		ProUCL 5.17/19/2020 11:21:56 PM								
4	From File		WorkSheet.xls								
5	Full Precision		OFF								
6	Confidence Coefficient		95%								
7	Coverage		95%								
8	New or Future K Observations		1								
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68												
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79					95% Chebyshev UPL	6.514				99% Percentile		4.1
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81												
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85	The use of USL tends to provide a balance between false positives and false negatives provided the data											
86	represents a background data set and when many onsite observations need to be compared with the BTV.											
87												

LEAD RISK ASSESSMENT SPREADSHEET 8

CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL

Click here for ABBREVIATED INSTRUCTIONS FOR LEADSPREAD 8

INPUT	
MEDIUM	LEVEL
Lead in Soil/Dust (ug/g)	6.1
Respirable Dust (ug/m^3)	1.5

OUTPUT						
Percentile Estimate of Blood Pb (ug/dl)						PRG-90
	50th	90th	95th	98th	99th	(ug/g)
BLOOD Pb, CHILD	0.0	0.1	0.1	0.1	0.1	77
BLOOD Pb, PICA CHILD	0.1	0.2	0.2	0.2	0.3	39

EXPOSURE PARAMETERS		
	units	children
Days per week	days/wk	7
Geometric Standard Deviation		1.6
Blood lead level of concern (ug/dl)		1
Skin area, residential	cm^2	2900
Soil adherence	ug/cm^2	200
Dermal uptake constant	(ug/dl)/(ug/day	0.0001
Soil ingestion	mg/day	100
Soil ingestion, pica	mg/day	200
Ingestion constant	(ug/dl)/(ug/day	0.16
Bioavailability	unitless	0.44
Breathing rate	m^3/day	6.8
Inhalation constant	(ug/dl)/(ug/day	0.192

PATHWAYS						
CHILDREN	typical			with pica		
	Pathway contribution			Pathway contribution		
Pathway	PEF	ug/dl	percent	PEF	ug/dl	percent
Soil Contact	5.8E-5	0.00	1%		0.00	0%
Soil Ingestion	7.0E-3	0.04	99%	1.4E-2	0.09	100%
Inhalation	2.0E-6	0.00	0%		0.00	0%

Click here for REFERENCES

MODIFIED VERSION OF USEPA ADULT LEAD MODEL

CALCULATIONS OF BLOOD LEAD CONCENTRATIONS (PbBs) AND PRELMIINARY REMEDIATION GOAL (PRG)

EDIT RED CELL

Variable	Description of Variable	Units	
PbS	Soil lead concentration	ug/g or ppm	6.1
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4
GSD_i	Geometric standard deviation PbB	--	1.8
PbB_0	Baseline PbB	ug/dL	0.0
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050
$AF_{S, D}$	Absorption fraction (same for soil and dust)	--	0.12
$EF_{S, D}$	Exposure frequency (same for soil and dust)	days/yr	250
$AT_{S, D}$	Averaging time (same for soil and dust)	days/yr	365
PbB_{adult}	**PbB of adult worker, geometric mean**	**ug/dL**	**0.0**
$PbB_{fetal, 0.90}$	90th percentile PbB among fetuses of adult workers	ug/dL	0.0
PbB_t	Target PbB level of concern (e.g., 10 ug/dL)	ug/dL	**1.0**
$P(PbB_{fetal} > PbB_t)$	**Probability that fetal PbB > PbB_t, assuming lognormal distributio**	**%**	**0.0%**

PRG90 **318**

Click here for REFERENCES

APPENDIX E – PROJECT CORRESPONDENCE

Re: Stockton Site I

Karen Garrett <kgarrett@agspanos.com>

Mon 9/28/2020 5:34 PM

To: Tonya Scheftner <tscheftner@petralogix.com>

Sorry, dropped my phone. We used native on site soil to fill the basin, we have not ever brought in outside soil. Let me know if you need anything else. Thank you.

Karen E. Garrett
Land Entitlement Manager
Northern California
A.G. Spanos Companies
209-955-2574 direct
209-993-2745 cell

> On Sep 28, 2020, at 5:32 PM, Karen Garrett <kgarrett@agspanos.com> wrote:
>
> Yes, I confirm that we used native soil to fill the basin , not outside soildha aever been
>
> Karen E. Garrett
> Land Entitlement Manager
> Northern California
> A.G. Spanos Companies
> 209-955-2574 direct
> 209-993-2745 cell
>
> > On Sep 28, 2020, at 4:42 PM, Tonya Scheftner <tscheftner@petralogix.com> wrote:
> >
> > Hi Karen,
> >
> > We are addressing some final minor comments from DTSC for the Preliminary Site Investigation at the Stockton Site I parcel. Based on a previous email, I had confirmed that no off-site soil was brought to the site and confirmed that the basin filled in last year was therefore filled from onsite native soil. DTSC is requesting the email correspondence documentation and it's not coming up in my search. Can you please respond to this email stating onsite native soil was used to fill in the former basin last year?
> >
> > The DTSC process has experienced time delays due to the COVID pandemic and a lack of in office staffing there, however, we are close to finalizing the PEA.
> >
> > Thank you,

Tonya R. Scheftner, Project Geologist
Petralogix Engineering, Inc.
209-770-0731
www.petralogix.com

RE: Stockton Westlake School Site

Karen Garrett <kgarrett@agspanos.com>

Mon 8/26/2019 8:37 AM

To: Tonya Scheftner <tscheftner@petralogix.com>

In Westlake we have NEVER stored off site soil. Too risky. Any soil pile came from the existing site. Hope this answers your question. Thank you.,

Karen E. Garrett
Land Development Manager
Northern California
The Spanos Corporation
(209) 478-7954 (Main)
(209) 955-2574 (direct)
(209) 993-2745 (Cell)

From: Tonya Scheftner <tscheftner@petralogix.com>
Sent: Monday, August 26, 2019 8:34 AM
To: Karen Garrett <kgarrett@agspanos.com>
Subject: Re: Stockton Westlake School Site

Good morning Karen,

Thank you for this information. Did you happen to get a chance to discuss any potential off-site soil being stored on this site in the past?

Have a great day,

Tonya

From: Karen Garrett <kgarrett@agspanos.com>
Sent: Tuesday, August 20, 2019 1:39 PM
To: Tonya Scheftner <tscheftner@petralogix.com>
Subject: RE: Stockton Westlake School Site

Yes, it was the same farmer and owner for years before we purchased all the property.

Karen E. Garrett
Land Development Manager
Northern California
The Spanos Corporation
(209) 478-7954 (Main)
(209) 955-2574 (direct)
(209) 993-2745 (Cell)

From: Tonya Scheftner <tscheftner@petralogix.com>
Sent: Tuesday, August 20, 2019 12:57 PM
To: Karen Garrett <kgarrett@agspanos.com>
Subject: Stockton Westlake School Site

Hi Karen,

Hope your Tuesday is going well. I just have a couple more questions regarding the Westlake School Site.

Do you know if the Stockton Westlake School Site parcel has the same previous owner/ag farmer as the Manlio Silva Elementary school property? There is a site history description for the Manlio Silva site on GeoTracker that states there was an EIR submitted to the county that included pesticide sampling for the land within 100 feet of the site (Manlio Silva school) but I don't see any reference to such testing in the Westlake Villages EIR (SCH# 2004052105).

I understand you may not have any further information regarding this, but wanted to cover all the bases.

Thank you,

Tonya R. Scheftner, Project Geologist
Petralogix Engineering, Inc.
209-770-0731
www.petralogix.com

APPENDIX F

May 19, 2020

Native American Heritage Commission
1550 Harbor Blvd., Suite 100
Sacramento, CA 95691

Subject: Lodi Unified School District – Proposed School Site – Stockton Site I Project
Corner of Westlake Drive and Regatta Lane
Stockton, San Joaquin County, California

To Whom it May Concern:

Our office has been retained by the Lodi Unified School District to perform an Initial Study for the proposed School Site – Stockton Site I Project. The Lodi Unified School District (LUSD) is proposing to construct a new school site that will be approximately 19 acres in size after property line adjustments. The proposed school site – Stockton Site I – is still in the design concept phase, however, LUSD anticipates the proposed school site would serve approximately 800 students with approximately 35 (K-8) classrooms to accommodate the ongoing West Lakes Development in Stockton, California. The proposed project site is within the footprint of the Westlake at Spanos Park West Master Development Plan (2004), Development Agreement, and Environmental Impact Report (State Clearinghouse No. 2004052105) which created a framework for future development, including the development of a future school. The City of Stockton approved the Westlake Master Development Plan which included a 10-acre school site listed to be developed by LUSD and was tentatively located in the proposed Site "I" Area. The Project Area is located in the Terminous Quadrangles 7.5' USGS topographic maps (T2N, R5E, S2).

The Native American Heritage Commission (NAHC) Sacred Land File search was negative for pre-contact resources in the project area. The archaeological records search at the Northern California Information System at California State University, Stanislaus, indicated the project area is within the boundaries of the former Southern Bishop Tract Farm (P-39-004492) and the General Land Office survey plat for T2N R5E (dated 12/5/1879) shows the project area in "Swamp and Overflowed Land" in the proximity of Sections 1 and 2.

We are writing to see if you know of any unrecorded pre-contact resources in the involved parcel you would like to be considered in the Initial Study. Any input would be greatly appreciated. Please know this is for informational purposes only and is not part of SB 18 or AB 52 review.

Please send any findings, recommendations or questions to my attention at Petralogix Engineering, Inc., 26675 Bruella Road, Galt, California 95632 or email the findings to tscheftner@petralogix.com.

Thank you for your assistance in this matter.

Sincerely,

Tonya R. Scheftner

Tonya R. Scheftner, Project Geologist
B.Sc. Geology, GIT No. 685

Attachments: Proposed Project Maps

Petralogix Engineering, Inc.
26675 Bruella Road, Galt, Ca 95632
(209)-400-5729
www.petralogix.com

May 19, 2020

Buena Vista Rancheria of MeWuk Indians
Rhonda Morningstar Pope
1418 20th Street, Suite 200
Sacramento, CA 95811

Subject: Lodi Unified School District – Proposed School Site – Stockton Site I Project
Corner of Westlake Drive and Regatta Lane
Stockton, San Joaquin County, California

Dear Ms. Pope,

Our office has been retained by the Lodi Unified School District to perform an Initial Study for the proposed School Site – Stockton Site I Project. The Lodi Unified School District (LUSD) is proposing to construct a new school site that will be approximately 19 acres in size after property line adjustments. The proposed school site – Stockton Site I – is still in the design concept phase, however, LUSD anticipates the proposed school site would serve approximately 800 students with approximately 35 (K-8) classrooms to accommodate the ongoing West Lakes Development in Stockton, California. The proposed project site is within the footprint of the Westlake at Spanos Park West Master Development Plan (2004), Development Agreement, and Environmental Impact Report (State Clearinghouse No. 2004052105) which created a framework for future development, including the development of a future school. The City of Stockton approved the Westlake Master Development Plan which included a 10-acre school site listed to be developed by LUSD and was tentatively located in the proposed Site "I" Area. The Project Area is located in the Terminous Quadrangles 7.5' USGS topographic maps (T2N, R5E, S2).

The Native American Heritage Commission (NAHC) Sacred Land File search was negative for pre-contact resources in the project area. The archaeological records search at the Northern California Information System at California State University, Stanislaus, indicated the project area is within the boundaries of the former Southern Bishop Tract Farm (P-39-004492) and the General Land Office survey plat for T2N R5E (dated 12/5/1879) shows the project area in "Swamp and Overflowed Land" in the proximity of Sections 1 and 2.

We are writing to see if you know of any unrecorded pre-contact resources in the involved parcel you would like to be considered in the Initial Study. Any input would be greatly appreciated. Please know this is for informational purposes only and is not part of SB 18 or AB 52 review.

Please send any findings, recommendations or questions to my attention at Petralogix Engineering, Inc., 26675 Bruella Road, Galt, California 95632 or email the findings to tscheftner@petralogix.com.

Thank you for your assistance in this matter.

Sincerely,

Tonya R. Scheftner

Tonya R. Scheftner, Project Geologist
B.Sc. Geology, GIT No. 685

Attachments: Proposed Project Maps

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26675 Bruella Road, Galt, Ca 95632
(209)-400-5729
www.petralogix.com

May 19, 2020

Ione Band of Miwok Indians
Sara Setchwaelo
P.O. Box 699
Plymouth, CA 95669

Subject: Lodi Unified School District – Proposed School Site – Stockton Site I Project
Corner of Westlake Drive and Regatta Lane
Stockton, San Joaquin County, California

Dear Ms. Setchwaelo,

Our office has been retained by the Lodi Unified School District to perform an Initial Study for the proposed School Site – Stockton Site I Project. The Lodi Unified School District (LUSD) is proposing to construct a new school site that will be approximately 19 acres in size after property line adjustments. The proposed school site – Stockton Site I – is still in the design concept phase, however, LUSD anticipates the proposed school site would serve approximately 800 students with approximately 35 (K-8) classrooms to accommodate the ongoing West Lakes Development in Stockton, California. The proposed project site is within the footprint of the Westlake at Spanos Park West Master Development Plan (2004), Development Agreement, and Environmental Impact Report (State Clearinghouse No. 2004052105) which created a framework for future development, including the development of a future school. The City of Stockton approved the Westlake Master Development Plan which included a 10-acre school site listed to be developed by LUSD and was tentatively located in the proposed Site "I" Area. The Project Area is located in the Terminous Quadrangles 7.5' USGS topographic maps (T2N, R5E, S2).

The Native American Heritage Commission (NAHC) Sacred Land File search was negative for pre-contact resources in the project area. The archaeological records search at the Northern California Information System at California State University, Stanislaus, indicated the project area is within the boundaries of the former Southern Bishop Tract Farm (P-39-004492) and the General Land Office survey plat for T2N R5E (dated 12/5/1879) shows the project area in "Swamp and Overflowed Land" in the proximity of Sections 1 and 2.

We are writing to see if you know of any unrecorded pre-contact resources in the involved parcel you would like to be considered in the Initial Study. Any input would be greatly appreciated. Please know this is for informational purposes only and is not part of SB 18 or AB 52 review.

Please send any findings, recommendations or questions to my attention at Petralogix Engineering, Inc., 26675 Bruella Road, Galt, California 95632 or email the findings to tscheftner@petralogix.com.

Thank you for your assistance in this matter.

Sincerely,

Tonya R. Scheftner

Tonya R. Scheftner, Project Geologist
B.Sc. Geology, GIT No. 685

Attachments: Proposed Project Maps

Petralogix Engineering, Inc.
26675 Bruella Road, Galt, Ca 95632
(209)-400-5729
www.petralogix.com

May 19, 2020

North Valley Yokuts Tribe
Katherine Erolinda Perez
P.O. Box 717
Linden, CA 95236

Subject: Lodi Unified School District – Proposed School Site – Stockton Site I Project
Corner of Westlake Drive and Regatta Lane
Stockton, San Joaquin County, California

Dear Ms. Perez,

Our office has been retained by the Lodi Unified School District to perform an Initial Study for the proposed School Site – Stockton Site I Project. The Lodi Unified School District (LUSD) is proposing to construct a new school site that will be approximately 19 acres in size after property line adjustments. The proposed school site – Stockton Site I – is still in the design concept phase, however, LUSD anticipates the proposed school site would serve approximately 800 students with approximately 35 (K-8) classrooms to accommodate the ongoing West Lakes Development in Stockton, California. The proposed project site is within the footprint of the Westlake at Spanos Park West Master Development Plan (2004), Development Agreement, and Environmental Impact Report (State Clearinghouse No. 2004052105) which created a framework for future development, including the development of a future school. The City of Stockton approved the Westlake Master Development Plan which included a 10-acre school site listed to be developed by LUSD and was tentatively located in the proposed Site "I" Area. The Project Area is located in the Terminous Quadrangles 7.5' USGS topographic maps (T2N, R5E, S2).

The Native American Heritage Commission (NAHC) Sacred Land File search was negative for pre-contact resources in the project area. The archaeological records search at the Northern California Information System at California State University, Stanislaus, indicated the project area is within the boundaries of the former Southern Bishop Tract Farm (P-39-004492) and the General Land Office survey plat for T2N R5E (dated 12/5/1879) shows the project area in "Swamp and Overflowed Land" in the proximity of Sections 1 and 2.

We are writing to see if you know of any unrecorded pre-contact resources in the involved parcel you would like to be considered in the Initial Study. Any input would be greatly appreciated. Please know this is for informational purposes only and is not part of SB 18 or AB 52 review.

Please send any findings, recommendations or questions to my attention at Petralogix Engineering, Inc., 26675 Bruella Road, Galt, California 95632 or email the findings to tscheftner@petralogix.com.

Thank you for your assistance in this matter.

Sincerely,

Tonya R. Scheftner

Tonya R. Scheftner, Project Geologist
B.Sc. Geology, GIT No. 685

Attachments: Proposed Project Maps

Petralogix Engineering, Inc.
26675 Bruella Road, Galt, Ca 95632
(209)-400-5729
www.petralogix.com

May 19, 2020

United Auburn Indian Community of the Auburn Rancheria
Gene Whitehouse
10720 Indian Hill Road
Auburn, CA 95603

Subject: Lodi Unified School District – Proposed School Site – Stockton Site I Project
Corner of Westlake Drive and Regatta Lane
Stockton, San Joaquin County, California

Dear Mr. Whitehouse,

Our office has been retained by the Lodi Unified School District to perform an Initial Study for the proposed School Site – Stockton Site I Project. The Lodi Unified School District (LUSD) is proposing to construct a new school site that will be approximately 19 acres in size after property line adjustments. The proposed school site – Stockton Site I – is still in the design concept phase, however, LUSD anticipates the proposed school site would serve approximately 800 students with approximately 35 (K-8) classrooms to accommodate the ongoing West Lakes Development in Stockton, California. The proposed project site is within the footprint of the Westlake at Spanos Park West Master Development Plan (2004), Development Agreement, and Environmental Impact Report (State Clearinghouse No. 2004052105) which created a framework for future development, including the development of a future school. The City of Stockton approved the Westlake Master Development Plan which included a 10-acre school site listed to be developed by LUSD and was tentatively located in the proposed Site "I" Area. The Project Area is located in the Terminous Quadrangles 7.5' USGS topographic maps (T2N, R5E, S2).

The Native American Heritage Commission (NAHC) Sacred Land File search was negative for pre-contact resources in the project area. The archaeological records search at the Northern California Information System at California State University, Stanislaus, indicated the project area is within the boundaries of the former Southern Bishop Tract Farm (P-39-004492) and the General Land Office survey plat for T2N R5E (dated 12/5/1879) shows the project area in "Swamp and Overflowed Land" in the proximity of Sections 1 and 2.

We are writing to see if you know of any unrecorded pre-contact resources in the involved parcel you would like to be considered in the Initial Study. Any input would be greatly appreciated. Please know this is for informational purposes only and is not part of SB 18 or AB 52 review.

Please send any findings, recommendations or questions to my attention at Petralogix Engineering, Inc., 26675 Bruella Road, Galt, California 95632 or email the findings to tscheftner@petralogix.com.

Thank you for your assistance in this matter.

Sincerely,

Tonya R. Scheftner

Tonya R. Scheftner, Project Geologist
B.Sc. Geology, GIT No. 685

Attachments: Proposed Project Maps

Petralogix Engineering, Inc.
26675 Bruella Road, Galt, Ca 95632
(209)-400-5729
www.petralogix.com

petralogix
geophysics - environmental - geology

May 19, 2020

Wilton Rancheria
Raymond Hitchcock
9728 Kent Street
Elk Grove, CA 95624

Subject: Lodi Unified School District – Proposed School Site – Stockton Site I Project
Corner of Westlake Drive and Regatta Lane
Stockton, San Joaquin County, California

Dear Mr. Hitchcock,

Our office has been retained by the Lodi Unified School District to perform an Initial Study for the proposed School Site – Stockton Site I Project. The Lodi Unified School District (LUSD) is proposing to construct a new school site that will be approximately 19 acres in size after property line adjustments. The proposed school site – Stockton Site I – is still in the design concept phase, however, LUSD anticipates the proposed school site would serve approximately 800 students with approximately 35 (K-8) classrooms to accommodate the ongoing West Lakes Development in Stockton, California. The proposed project site is within the footprint of the Westlake at Spanos Park West Master Development Plan (2004), Development Agreement, and Environmental Impact Report (State Clearinghouse No. 2004052105) which created a framework for future development, including the development of a future school. The City of Stockton approved the Westlake Master Development Plan which included a 10-acre school site listed to be developed by LUSD and was tentatively located in the proposed Site "I" Area. The Project Area is located in the Terminous Quadrangles 7.5' USGS topographic maps (T2N, R5E, S2).

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Please send any findings, recommendations or questions to my attention at Petralogix Engineering, Inc., 26675 Bruella Road, Galt, California 95632 or email the findings to tscheftner@petralogix.com.

Thank you for your assistance in this matter.

Sincerely,

Tonya R. Scheftner

Tonya R. Scheftner, Project Geologist
B.Sc. Geology, GIT No. 685

Attachments: Proposed Project Maps

Petralogix Engineering, Inc.
26675 Bruella Road, Galt, Ca 95632
(209)-400-5729
www.petralogix.com

May 19, 2020

Wilton Rancheria
Antonio Ruiz
9728 Kent Street
Elk Grove, CA 95624

Subject: Lodi Unified School District – Proposed School Site – Stockton Site I Project
Corner of Westlake Drive and Regatta Lane
Stockton, San Joaquin County, California

Dear Mr. Ruiz,

Our office has been retained by the Lodi Unified School District to perform an Initial Study for the proposed School Site – Stockton Site I Project. The Lodi Unified School District (LUSD) is proposing to construct a new school site that will be approximately 19 acres in size after property line adjustments. The proposed school site – Stockton Site I – is still in the design concept phase, however, LUSD anticipates the proposed school site would serve approximately 800 students with approximately 35 (K-8) classrooms to accommodate the ongoing West Lakes Development in Stockton, California. The proposed project site is within the footprint of the Westlake at Spanos Park West Master Development Plan (2004), Development Agreement, and Environmental Impact Report (State Clearinghouse No. 2004052105) which created a framework for future development, including the development of a future school. The City of Stockton approved the Westlake Master Development Plan which included a 10-acre school site listed to be developed by LUSD and was tentatively located in the proposed Site "I" Area. The Project Area is located in the Terminous Quadrangles 7.5' USGS topographic maps (T2N, R5E, S2).

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We are writing to see if you know of any unrecorded pre-contact resources in the involved parcel you would like to be considered in the Initial Study. Any input would be greatly appreciated. Please know this is for informational purposes only and is not part of SB 18 or AB 52 review.

Please send any findings, recommendations or questions to my attention at Petralogix Engineering, Inc., 26675 Bruella Road, Galt, California 95632 or email the findings to tscheftner@petralogix.com.

Thank you for your assistance in this matter.

Sincerely,

Tonya R. Scheftner

Tonya R. Scheftner, Project Geologist
B.Sc. Geology, GIT No. 685

Attachments: Proposed Project Maps

Petralogix Engineering, Inc.
26675 Bruella Road, Galt, Ca 95632
(209)-400-5729
www.petralogix.com

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691 Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov

August 22, 2019

Tonya Scheftner
City of Lodi

VIA Email to: tscheftner@petralogix.com

RE: Native American Tribal Consultation, Pursuant to the Assembly Bill 52 (AB 52), Amendments to the California Environmental Quality Act (CEQA) (Chapter 532, Statutes of 2014), Public Resources Code Sections 5097.94 (m), 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3, Proposed School Site, Stockton Site I Project, San Joaquin County.

Dear Ms. Scheftner:

Pursuant to Public Resources Code section 21080.3.1 (c), attached is a consultation list of tribes that are traditionally and culturally affiliated with the geographic area of the above-listed project. Please note that the intent of the AB 52 amendments to CEQA is to avoid and/or mitigate impacts to tribal cultural resources, (Pub. Resources Code §21084.3 (a)) ("Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.")

Public Resources Code sections 21080.3.1 and 21084.3(c) require CEQA lead agencies to consult with California Native American tribes that have requested notice from such agencies of proposed projects in the geographic area that are traditionally and culturally affiliated with the tribes on projects for which a Notice of Preparation or Notice of Negative Declaration or Mitigated Negative Declaration has been filed on or after July 1, 2015. Specifically, Public Resources Code section 21080.3.1 (d) provides:

> Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The AB 52 amendments to CEQA law does not preclude initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction prior to receiving requests for notification of projects in the tribe's areas of traditional and cultural affiliation. The Native American Heritage Commission (NAHC) recommends, but does not require, early consultation as a best practice to ensure that lead agencies receive sufficient information about cultural resources in a project area to avoid damaging effects to tribal cultural resources.

The NAHC also recommends, but does not require that agencies should also include with their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential effect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

   - A listing of any and all known cultural resources that have already been recorded on or adjacent to the APE, such as known archaeological sites;

   - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;

   - Whether the records search indicates a low, moderate, or high probability that unrecorded cultural resources are located in the APE; and

   - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

   - Any report that may contain site forms, site significance, and suggested mitigation measures.

     All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code section 6254.10.

3. The result of any Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was negative.
4. Any ethnographic studies conducted for any area including all or part of the APE; and

5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS are not exhaustive and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: Nancy.Gonzalez-Lopez@nahc.ca.gov.

Sincerely,

Nancy Gonzalez-Lopez
Staff Services Analyst

Attatchment

Native American Heritage Commission
Tribal Consultation List
San Joaquin County
8/22/2019

Buena Vista Rancheria of Me-Wuk Indians
Rhonda Morningstar Pope, Chairperson
1418 20th Street, Suite 200 — Me-Wuk
Sacramento, CA, 95811
Phone: (916) 491 - 0011
Fax: (916) 491-0012
rhonda@buenavistatribe.com

Ione Band of Miwok Indians
Sara Setchwaelo, Chairperson
P.O. Box 699 — Miwok
Plymouth, CA, 95669
Phone: (209) 245 - 5800
Fax: (209) 245-6377
sara@ionemiwok.org

North Valley Yokuts Tribe
Katherine Erolinda Perez, Chairperson
P.O. Box 717 — Costanoan
Linden, CA, 95236 — Northern Valley
Phone: (209) 887 - 3415 — Yokut
canutes@verizon.net

United Auburn Indian Community of the Auburn Rancheria
Gene Whitehouse, Chairperson
10720 Indian Hill Road — Maidu
Auburn, CA, 95603 — Miwok
Phone: (530) 883 - 2390
Fax: (530) 883-2380
bguth@auburnrancheria.com

Wilton Rancheria
Raymond Hitchcock, Chairperson
9728 Kent Street — Miwok
Elk Grove, CA, 95624
Phone: (916) 683 - 6000
Fax: (916) 683-6015
rhitchcock@wiltonrancheria-nsn.gov

Wilton Rancheria
Antonio Ruiz, Cultural Resources Officer
9728 Kent Street — Miwok
Elk Grove, CA, 95624
Phone: (916) 683 - 6000
aruiz@wiltonrancheria-nsn.gov

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and section 5097.98 of the Public Resources Code.

This list is only applicable for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Proposed School Site, Stockton Site I Project, San Joaquin County.

Fw: Lodi Unified School District-Proposed School Site - Stockton Site 1 Project Corner of Westlake Drive and Regatta Lane

Tonya Scheftner <tscheftner@petralogix.com>

Mon 6/15/2020 12:49 PM

To: Daniel Kramer <dkramer@petralogix.com>

4 attachments (80 KB)

1_Mitigation_Measures_CEQA_Avoidance.docx; 2_Mitigation_Measures_ CEQA NativeAmericanMonitors.docx; 3_Mitigation_Measures_CEQA_Discoveries.docx; 4_Mitigation_Measures_CEQA_Construction_Worker_Awareness_Training 04-19-19.docx;

See below. Thanks!

From: Cultural Resource Department Inbox <crd@wiltonrancheria-nsn.gov>
Sent: Monday, June 15, 2020 12:23 PM
To: Tonya Scheftner <tscheftner@petralogix.com>
Cc: Cultural Resource Department Inbox <crd@wiltonrancheria-nsn.gov>
Subject: Lodi Unified School District-Proposed School Site - Stockton Site 1 Project Corner of Westlake Drive and Regatta Lane

Hello,

Thank you for your invitation to consult on the above-named project under SB18. And thank you for initiating formal consultations with Wilton Rancheria concerning the General Plan Amendment for Lodi Unified School District-Proposed School Site - Stockton Site 1 Project Corner of Westlake Drive and Regatta Lane. Wilton Rancheria is comprised of Nisenan and Miwok people whose traditional homelands includes Sacramento County, as well as Amador, Contra Costa, El Dorado, Nevada, Placer, San Joaquin, and Solano, Yolo counties. Wilton Rancheria is concerned with infrastructure, infill, and development within its ancestral territory that has potential to impact sacred sites and tribal cultural resources. We appreciate the opportunity to comment on this and other projects in your jurisdiction.
We would like to make a few general points for consideration in developing the scope and content of the General Plan Amendment:

- The Wilton Rancheria recommends that projects within the General Plan Amendment jurisdiction be designed to incorporate known cultural sites into open space or other protected areas;
- The Wilton Rancheria is interested in holding conservation easements for culturally significant prehistoric sites;
- The Wilton Rancheria would like the opportunity to provide Tribal representatives to monitor projects if excavation and data recovery are required for prehistoric cultural sites, or in cases where ground disturbance is proposed at or near sensitive cultural resources;
- The Wilton Rancheria is interested in receiving cultural materials from prehistoric sites where excavation and data recovery has been performed;
- The Wilton Rancheria would like to receive copies of environmental notices and documents for projects within the jurisdiction of the General Plan Amendment.

Wilton Rancheria would like to arrange a meeting with your department to discuss how potential impacts to cultural resources of importance to the Wilton Rancheria can best be addressed in any future environmental documents. Thank you again for taking these matters into consideration, and for involving the Tribe early in the planning process. We would also like to request the Cultural Report for this project. We look forward to reviewing the documents requested above and consulting on your project. Please contact Mariah Mayberry by email at crd@wiltonrancheria-nsn.gov if you have any questions.

Sincerely,

, Chairman

Mariah Mayberry
Wilton Rancheria
Tel: 916.683.6000 ext 2023 | Fax: 916.683.6015
9728 Kent Street | Elk Grove | CA | 95624
mmayberry@wiltonrancheria-nsn.gov
wiltonrancheria-nsn.gov

Proposed School Site- Lodi Unified School District

Richard Hawkins <richardh@buenavistatribe.com>

Wed 7/8/2020 10:08 AM

To: Tonya Scheftner <tscheftner@petralogix.com>
Cc: Mike DeSpain <mike@buenavistatribe.com>

July 8, 2020

Tonya R. Scheftner, Project Geologist
Petralogix Engineering, Inc.
26675 Bruella Rd.
Galt CA 95632

Dear Ms. Scheftner,

Thank you for the notification dated May 19, 2020 and received by this office June 9, 2020.
I apologize for the late response to the notification. The Covid-19 situation has significantly impacted receipt and response to notifications.
The Buena Vista Rancheria (BVR) is not aware of cultural resources present at the project location and don't object to commencement of the project
We do request a copy of the Initial Study referenced in the notification when it is published so it may be determined if necessary action should be taken by BVR to request formal consultation.

Respectfully,

Richard Hawkins
THPO Coordinator
Buena Vista Rancheria
1418 20th Street, Suite 200
Sacramento, CA 95811
richardh@buenavistatribe.com
Office: (916) 941-0011 ext. 255
Cell: (209) 890-5685
Fax: (916) 941-0012